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Dairy

Background for 1995 Farm Legislation

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Abstract

The U.S. dairy industry is heavily influenced by public dairy policies and programs. The 1980's were marked by attempts to reduce government program costs by adjusting dairy price supports and initiating voluntary supply control measures. So far the same trends have continued into the 1990's. General issues of concern for the industry include: structural change in milk production, surplus production, international trade issues, and price policies. A key issue for legislators in 1995 will be price volatility in milk and dairy product markets.

Keywords: dairy, domestic use, industry structure, international dairy trade, milk marketing orders, milk pricing, price support, production costs and returns, program effects.

Foreword

Congress will soon consider legislation to replace the expiring Food, Agriculture, Conservation, and Trade Act of 1990. In preparation for these deliberations, the U.S. Department of Agriculture and other groups are studying previous legislation to see what lessons can be learned that are applicable to the 1990's and beyond. This report updates ***Dairy: Background for 1990 Farm Legislation*** (AGES 9020), by Richard F. Fallert, Don P. Blayney, and James J. Miller. It is one of a series of updated and new Economic Research Service background papers for farm legislation discussions. These reports summarize the experiences with various farm programs and the key characteristics of the commodities and the industries that produce them. For more information, see Additional Readings at the end of the text.

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Summary

The increased variability in U.S. dairy prices and obligations resulting from new international trade agreements will be major points of concern during the 1995 farm bill debate.

The likely parameters of that debate are outlined in this report, which describes dairy policy options, the history of dairy policy, and the current state of the U.S. dairy sector.

In addition to trade concerns, other important dairy-policy issues this year include the price support system, possible policy alternatives, desires to cut the Federal budget, and environmental concerns, including water quality, air quality, animal waste management, and water availability (an issue in areas where production agriculture is competing more and more with urban and environmental water "customers.")

Government policy has traditionally played a major role in the pricing and marketing of milk and dairy products in the United States. Federal regulations prevail in most areas, with California's State dairy program being one prominent exception.

The major Federal dairy policies date from the 1930's and 1940's, but have been modified significantly since then as the structure of the dairy sector has evolved. The two principal parts of Federal dairy policy are the price support and milk marketing order programs, both of which have been under increasing pressure to change. Import quotas on dairy products have been used with the price support program.

The 1980's and the first few years of the 1990's were marked by attempts to reduce government dairy program costs by adjusting price supports and initiating voluntary supply control measures. Government spending limits are expected to be an important factor in the debates over dairy policy and other farm legislation this year.

Recent years have seen a revival of State regulations aimed at improving dairy farmers' income. However, most of the new regulations have not survived court tests.

Cash receipts from milk marketings totaled $19.3 billion in 1993, ranking milk third in value among all U.S. agricultural commodities. Consumers spend about 13 percent of their food budget on milk and milk products. Milk is produced and processed in every State, but more than half of total production in 1993 came from five States: Wisconsin, California, New York, Pennsylvania, and Minnesota.

Farm numbers and cow numbers continue to decline while output rises. Milk production is growing in sections of the country outside the traditional dairy areas of the upper Midwest and the Northeast. California recently surpassed Wisconsin as the top milk-producing State.

Various measures suggest that the financial well-being of dairy farmers has substantially improved over the last decade. Capital expenditure decisions affecting production response are essentially based on long-term expectations.

U.S. commercial disappearance of milk (the total demands of all commercial buyers) has grown by about 1.5 percent per year since 1980. Imports during the 1988-92 period averaged less than 2 percent of domestic disappearance. U.S. exports averaged about 2 percent of production during the same period. Trade may increase as barriers to international commerce are removed.

A wide array of firms is engaged in processing, manufacturing, and distributing milk and milk products in this country. Highly developed commercial fluid and manufactured dairy products industries have been built up over recent decades, each characterized by fewer plants serving larger markets than previously. Dairy cooperatives play an important role in the dairy sector.

Also described in this publication are many of the fundamental relationships and the history underlying milk production and marketing in the United States. These factors comprise part of the complex set of economic, political, and social forces affecting the industry today.

Dairy

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Introduction

A complex set of social, economic, and political relationships affects the dairy industry in the United States. Certain beliefs about milk and its production have been fostered by the European heritage underlying the development of the country. The industry is diverse, partly in response to development patterns and resource availability over a large land mass. The ability of the U.S. farm sector to provide ample supplies of low-cost inputs to dairying (feed grains and forages, for example) and the availability of competing products (such as margarine) have played major roles in industry developments. Lastly, the industry operates under a wide range of public policies and regulations--Federal, State, and local--which create a complex regulatory system.

The U.S. Dairy Industry

The dairy industry includes milk producers, dairy cooperatives, processors and manufacturers, and the firms that market milk and dairy products. Dairying is an important part of the agricultural economy of the United States. In 1993, cash receipts from milk marketings totaled $19.3 billion. This was 10.3 percent of the total cash receipts (including government payments) from farming. Only meat animals ($51.4 billion) and feed crops ($19.4 billion) had greater cash receipts for the year. Milk products are also an important part of food industry receipts. Consumers spend about 13 percent of their food budget on milk and dairy products. Food expenditures comprise about 12 percent of disposable personal income (Putnam and Allshouse, 1993).

The dairy industry is shaped by the production and market characteristics of milk. Raw milk is a bulky (about 87 percent water), extremely perishable product with a high potential for disease transmittal. Sanitary production and handling conditions, rapid movement, refrigeration, and heat treatment are a must. Efficient assembly and hauling require a number of dairy farmers in most cases. Production (supply) and demand are seasonally unsynchronized and supply and demand responses to price changes are highly inelastic--small changes in supply and/or demand will cause large price changes.

Milk production, assembly, processing and manufacturing, and distribution (marketing) are coordinated by prices. During much of the history of the United States, fluid milk markets were local and largely isolated, with supplies and prices varying dramatically across markets and seasons. The production of storable manufactured dairy products (primarily cheese, butter, and nonfat dry milk) has linked most milk markets. As the needs of fresh milk markets change, milk is diverted from manufacturing and supplies of manufactured products are drawn into markets from other areas or from storage. Almost all milk and milk product prices are thereby linked to the prices of the storable products.

In theory, the prices for manufactured products and milk for manufacturing can be said to be in equilibrium when: (1) the value of milk is the same in all manufactured products, (2) geographic price differences are defined by costs of transporting products from surplus to deficit areas, and (3) seasonal price differences are defined by costs of storing products for the deficit season. Milk and

dairy product markets can be said to be in overall equilibrium when: (1) manufacturing markets are in equilibrium, (2) the farm value of milk used in fluid is the same as the manufacturing value in areas where there is manufacturing, and (3) milk prices in other areas are defined by milk transportation costs from surplus areas.

It is unlikely that the theoretical equilibriums have or will be achieved. Some of the problems that interfere with achievement of the theoretical overall milk and dairy product market equilibrium in the United States can be identified: geographic mismatches between milk supplies and the available product manufacturing capacity, and an inability to efficiently coordinate the fluid market and to price market balancing services accurately. Government programs can mitigate market deficiencies (and have done so) but can also create distortions of their own.

Milk Production

Key features of milk production are: location, quantities (both aggregate and per cow), herd size and distribution, farm numbers and ownership, producers' financial conditions, and the ability of producers to respond to changing economic conditions. Divergent beliefs as to what are sound farming practices and differing viewpoints about the changes taking place in farming and rural areas underlie these issues in the dairy industry. The major factors affecting milk supply are shown in app. table 1.

Location and Quantities

Regional issues quickly surface in discussions of milk production and dairy programs. These issues relate to the geographic location of milk production and the character of dairy farms in different parts of the country. Milk production has grown in areas outside the heavy producing tier of States stretching from New England to Minnesota (table 1). Wisconsin is still considered to be "America's Dairyland," but California surpassed it in milk production in August 1993 and has maintained this monthly production advantage. In 1993, Wisconsin produced just over 23 billion pounds of milk, 15.3 percent of total U.S. production, while California's production totaled about 22.9 billion pounds or 15.2 percent of the U.S. total. In 1960, Wisconsin outproduced California by more than two to one (14.4 percent versus 6.6 percent).

Past regional population shifts in part help to explain the current location of milk production in States such as Arizona, California, Texas, and Florida. The current growth of production in those States, and others, is likely related more to factors such as land and facilities costs, climate, the supply and quality of hay and forage, the availability of a labor supply compatible with dairy operations, and opportunities to strictly specialize in managing and milking cows. Large drylot facilities of 1,000 cows or more, which are common in Western States, apparently show economies of both specialization and scale, which lead to reduced production costs.

Over half of 1993's total milk production (51.2 percent) came from five States--Wisconsin, California, New York, Pennsylvania, and Minnesota--and more than two-thirds was produced in 10 States. Production per cow varied widely among States, ranging from 19,425 pounds in California (24.9 percent above the U.S. average of 15,423 pounds) to 11,492 pounds (26.1 percent below the U.S. average) in Tennessee.

One recent attempt to develop an aggregate measure of the changes in location of milk production in the United States is the "propensity to produce milk" index (PTPM) as shown in app. table 2. The PTPM in a particular State reflects the State's change in share of U.S. production adjusted by the change in its relative milk price.

The top 10 States based on PTPM indices in 1992 were New Mexico, Arizona, Nevada, California, Florida, Washington, Texas, Colorado, Utah, and Idaho. The PTPM index in each of these States was much greater in 1992 when compared with both 1985 and 1975. The 10 States with the lowest PTPM's--ranked in reverse order--were Rhode Island, New Jersey, West Virginia, Illinois, North Dakota, Wyoming, Mississippi, Kansas, Iowa, and Alabama. In contrast to the top 10 States, these PTPM's were much lower in 1992 when compared with both 1985 and 1975.

A careful evaluation of the PTPM indices and a look at the underlying forces of change indicate that the growth of milk production in the West and

Table 1--Regional shares of U.S. milk production

Region	1965	1975	1985	1990	1991	1992	1993
				Percent of U.S. total			
Northeast	20.7	20.4	20.0	18.3	18.5	18.7	18.6
Lake States	28.3	28.0	28.7	26.7	26.3	26.0	25.3
Corn Belt	17.1	13.6	11.8	11.5	11.3	11.1	10.9
Northern Plains	5.3	4.6	3.9	3.6	3.5	3.4	3.2
Appalachia	6.9	6.9	6.1	5.6	5.5	5.4	5.3
Southeast	3.0	3.8	3.1	3.3	3.3	3.3	3.3
Delta	2.3	2.3	1.8	1.7	1.7	1.7	1.6
Southern Plains	3.5	3.7	3.6	4.6	4.5	4.5	4.7
Mountain	3.7	4.4	5.5	6.4	6.7	7.0	7.5
Pacific	9.2	12.3	15.5	18.3	18.7	19.0	19.7

Southwest will likely continue. Some location-related factors, such as climate, are essentially fixed. However, many of the other forces affecting the location and structure of the dairy industry--size and enterprise specialization, good management practices, business and sociological philosophies, dairy and business support systems and economic development strategies--are open to change (Fallert, Weimar, and Crawford).

Farm Numbers

The number of operations in 1993 with at least one milk cow was estimated to be 162,450, down from almost 2.8 million in 1955. Included in this number are operations that do not sell milk. Milk cow numbers (excluding heifers not yet fresh--cows that have not yet had a calf) have also declined--from 21 million head in 1955 to 9.7 million in 1993. The changing average herd size on all farms with milk cows--from 8 in 1955 to 52 in 1990 and to 60 in 1993--is one indicator of the structural changes taking place in milk production (table 2).

Herd Size and Distribution

The National Agricultural Statistics Service (NASS) of the U.S. Department of Agriculture reported that operations with 1-49 head accounted for just under 60 percent of all operations in 1993. About 20 percent of the cow inventory was in the 1-49 head category. Farms with 100 or more cows represented almost 14 percent of the operations in 1993 and accounted for just over 50 percent of the cows.

Dairy Farm Ownership

Since 1969, individual or family ownership organizations have accounted for 80 percent or more of the reporting farms with milk cows, reaching almost 89 percent in 1974. Corporate organizations ranged from 0.5 to 4 percent of farms over the 1969-1992 period. Most corporate organizations are family-held with small numbers (10 or fewer) of stockholders. Ownership and operational decisionmaking in milk production are firmly in the hands of individuals and families, even for very large farms.

Financial Conditions of Milk Producers

The financial position of milk producers is a key element in understanding structural changes in the dairy industry. A perspective on current conditions can be gained by reviewing the financial problems faced by dairy farmers in the 1980's, a decade marked by periods of severe financial stress in U.S. agriculture.

Dairy farmers' financial problems in the 1980's were a result of industry forces at work in the previous decade. Periods of relatively strong market prices in the 1970's, with support prices tied to inflation, led to expectations that at least nominal prices would not fall. The early 1980's saw an increase in investments in productive

Table 2--Changes in the dairy industry, selected years

Item	1955	1975	1990	1993
		Thousands		
Cows	21,044	11,139	10,127	9,705
Farms with milk cows	2,763	444	194	162
		Number		
Average cows per farm	8	25	52	60
		Pounds		
Milk per cow (annual)	5,842	10,360	14,646	15,554
		Billion pounds		
Total milk production	122.95	115.4	148.31	150.95

capacity financed by debt, with productivity gains permitting debt repayment despite falling real milk prices. In the mid-1980's, dairy farmers were faced with the prospects of continued real milk price declines. The 1985 Food Security Act contained provisions that would trigger a lower support price for milk under certain conditions. Surviving producers were forced to reduce production costs and debt.

USDA's 1984 Farm Costs and Returns Survey (FCRS) data confirm the effects of the forces at work in the 1970's--17.8 percent of dairy farms were highly leveraged (40-70 percent debt/asset ratio) and 8.7 percent were very highly leveraged (greater than 70 percent debt/asset ratio). While the percentages themselves are of interest, more important is the change in these numbers since 1980. The percentage of highly leveraged dairy farms in 1984 was 60 percent greater than in 1980 while the very highly leveraged group nearly quadrupled. Since 1987, the overall financial position of dairy farmers has improved. Greater proportions of dairy farms have been classified in a favorable financial position and the percentages of marginally solvent and vulnerable farms have fallen.

1992 Conditions. The average net cash farm income of dairy farms in the 1992 FCRS (app. table 3) was $38,674, well above that reported in 1991 but slightly lower than in 1990. The farm milk price in 1992 averaged $13.15 per cwt. Regional average net cash incomes ranged from $21,798 per farm in the Northern Plains to $131,075 in the Pacific region.

From a balance sheet perspective, the financial position of dairy farms changed from 1991 to 1992. Debts in 1991 were 18 percent of assets compared with 14 percent in 1992. Liabilities, particularly noncurrent liabilities, fell in 1992, which combined with modest rises in assets led to the low debt/asset ratio. Regional debt/asset ratios varied from 0.07 in Appalachia to 0.21 in the Mountain States in 1992 (app. table 4).

Revenues. Dairy farm cash receipts come from three sources: (1) milk sales, (2) sales of replacement cows, calves, and cull cows, and (3) other sources (including leasing cattle, sale of manure, and dairy cooperative patronage dividends). Milk sales accounted for just over 91 percent, on average, of U.S. dairy enterprise revenues during the 1982-1992 period. Steady gains in production per cow and more volatile milk

prices during the late 1980's and early 1990's led to a cyclic pattern of total cash receipts from 1988 to 1992 (app. table 5).

Costs. Variable and fixed cash production expenses are influenced by several factors, including government policies and programs. Feed and forage costs can be affected by feed grain programs, conservation policies, disaster relief programs and, in some regions, policies related to irrigation water. Environmental, wage, and budget policies directly affect other variable expenses such as energy costs, labor costs, and assessments. Fixed cash expenses such as taxes, insurance, and interest payments are affected by Federal, State, and local actions. Tax policies and agricultural and nonagricultural credit and interest rate policies play roles in the entry, exit, and expansion decisions of dairy farmers and in the well-being of the entire industry.

The quantity data for calculating the cost of production (COP) of milk are not collected every year. Estimates for the years between surveys are based on price indices. From 1982 to 1992, variable cash expenses nationwide ranged from $7.39 to $9.00 per cwt, averaging just under 80 percent of total cash expenses. Feed and forage costs, the largest component of cash expenses, averaged almost 64 percent of total variable cash expenses. Fixed cash expenses, from a low of $1.60 to a high of $2.57 per cwt, accounted for the remaining 20 percent of total cash expenses.

The effect of recombinant bovine somatotropin (rbST) technology on the milk supply will depend on the extent to which it lowers milk production costs. Studies show that rbST will lower the cost of producing milk by increasing milk per cow and allowing costs other than feed costs to be distributed over greater output.

In a recent study (Executive Office of the President, 1994) based on 1989 FCRS dairy COP data and assuming an increase of 1,800 pounds of milk and additional costs of using rbST, cost changes were estimated by regions and by size (table 3). The 1,800-pound increase in milk per cow per year is the level that would be expected, based on reported test-herd results of using rbST. There appears to be little difference in the actual levels of increased revenues between herd sizes; however, there is some variation if the increases are expressed as percentage changes. The regional impacts of rbST show a little more variation. The rbST technology appears to be size neutral, which is contrary to many people's beliefs. Good management skills are required in the use of rbST; therefore, rbST technology is not management neutral.

Returns. Cash returns (gross value of production less cash expenses) for dairy enterprises ranged from $2.78 to $4.76 per cwt during the 1982-92 period (app. table 5). Milk prices ranged from $12.20 to $13.70 per cwt over the same period. We observe both increases and decreases in year-to-year returns during the period. Cash returns peaked in 1982 at $4.76 and generally declined until 1986. Since 1987 there have been more numerous ups and downs with greater magnitudes of change. Average cash returns in the 1980's (1982-89) were $3.85 per cwt compared with $4.13 per cwt in the 1990's (1990-92).

Supply Adjustments

The U.S. dairy industry has frequently faced milk surpluses--the result of prices high enough to generate production greater than commercial needs. Major expansions or contractions of the total milk supply are commonly viewed as long-term processes. The milk supply can be thought of as a flow process, a flow that involves the cow herd and the physical plant (capacity) of the industry. Unlike other livestock producers, dairy farmers can influence aggregate milk supply from either end of the "life" of the herd or physical plant production assets. For a given price structure, the dairy farmer may retain more heifer calves for the herd and lower culling rates to alter supplies of milk. Physical capacity changes are the result of long-term investment (or disinvestment) decisions. Entry, expansion, or exit decisions are not rapidly made.

Changes in culling and feeding can quickly generate either higher or lower production in the short term--but the aggregate magnitudes of such changes are likely to be small. A product like rbST could also accelerate increases in output per cow, but the aggregate effect of its use will depend on the adoption rate of producers.

Table 3--Net cash balance comparison with and without use of rbST

Classification	Without rbST, 1989 FCRS Survey				With rbST, 1989 FCRS Survey			Percantage change in net cash balance with with rbST
	Percentage of farms	Cows per farms	Milk per cow	Net cash balance per cow 1/	Milk per cow	Net cash balance per cow 1/	Net cash advantage with rbST, per cow 2/	
	Percent	*Number*	*Pounds*	*Dollars*	*Pounds*	*---- Dollars ----*		*Percent*
Fewer than 75 cows	77.4	41	13,988	689	15,788	794	105	15.2
75-149 cows	16.6	98	14,886	707	16,686	810	103	14.6
150-299 cows	4.1	195	15,028	638	16,828	753	115	18.0
300-599 cows	1.0	396	16,467	560	18,267	667	107	19.1
More than 599 cows	0.8	1,044	16,966	475	18,766	552	77	16.2
Southeast	1.0	244	13,129	391	14,929	478	87	22.2
Appalachia	7.9	65	13,732	623	15,532	733	110	17.7
Corn Belt	13.7	51	13,930	620	15,730	713	93	15.0
Southern Plains	1.7	181	14,064	517	15,864	624	107	20.7
Northeast	26.3	63	14,574	727	16,374	833	106	14.6
Upper Midwest	45.9	50	14,655	747	16,455	860	113	15.1
Pacific	3.6	330	17,132	484	18,932	563	79	16.3
United States	100.0	69	14,841	653	16,641	755	102	15.6

1/ Net cash balance is milk and dairy cattle sales less cash costs (variable and fixed).
2/ Net cash balance with rbST less net cash balance without rbST.

Source: USDA, 1989 Farm Costs and Returns Survey (FCRS).

Marketing Milk and Dairy Products

Raw milk from the farm is usually jointly assembled and transported to firms where it is either processed into fluid (beverage) or perishable products or manufactured into storable products such as butter, hard cheeses, or dry milk products. The dairy cooperative is an important link in the movement of milk from the farm to dairy product markets. In 1992, about 82 percent of the milk sold to plants and dealers in the United States was marketed through 265 dairy cooperatives.

Agricultural cooperatives have been important in the United States since the late 19th century. Dairy cooperatives' involvement in marketing and pricing fluid milk coincided with the growth of Eastern and Midwestern cities and the rise of milk dealers. Dealers were concerned with meeting their supply and demand needs in an environment of seasonal production and fluctuating prices. One method used was refusal of milk during low-demand periods. This type of action led dairy farmers to successfully form bargaining organizations which gave them greater control of milk prices.

Effective member representation and business operations required that agricultural cooperatives be recognized as legal entities. Specific statutes related to agricultural cooperatives or cooperative marketing adopted in all States have eliminated reliance on general incorporation rules. Federal laws and regulations, particularly the Capper-Volstead Act, have greatly facilitated dairy cooperative organization and operation.

The Fluid Processing Industry

The U.S. commercial fluid milk processing industry is over a century old (Lough, August 1991). In its early stages, the industry produced a highly perishable, relatively homogeneous product at low cost. Such factors generally promote a competitive industry structure, and fluid milk processing was no exception. The number of processors increased steadily to 1940, when there were almost 10,000 plants in the industry.

Technological advances, stricter health and sanitary regulations, and changes in milk pricing contributed to the development of the commercial fluid milk processing industry. The glass milk bottle, mechanical refrigeration, power fillers and

cappers, improved transportation, and homogenization are examples of technological innovations that underlie the factory structure of fluid milk processing.

The linkage of bacteria to disease emphasized the importance of sanitation and sterile conditions in processing fluid milk. Pasteurization came into use in 1893, but there was public resistance. Recognizing the potential for milk-borne diseases, public health officials had implemented sanitary and health regulations for milk in most cities by 1920. There is little doubt that public health concerns were behind the regulations, but they also had economic effects (Manchester, 1983).

As producers and dealers adapted to the commercial fluid processing and distribution industry, there was experimentation with various pricing plans. Both the large processors and the producer cooperatives eventually adopted classified pricing as a solution to pricing problems. Classified pricing was introduced in the Boston market about 1886, with other markets following suit.

By 1962, the fluid milk processing industry had changed as a result of population shifts, ongoing technological innovation, reduced institutional barriers to milk movement, classified pricing plans, a changing marketing channel, and the mergers and acquisitions among dairy companies. Another factor was the role of Federal and State programs in marketing and pricing milk and milk products.

Two general forces have affected the fluid processing industry: a declining number of processors serving geographically larger markets, and the changing ownership of leading fluid milk firms. Many of the trends leading toward fewer plants serving larger geographical markets existed prior to 1940. The number of plants processing fluid products declined steadily, from 9,950 in 1940 to 558 in 1992.

Vertical integration by food chains and some dairy cooperatives is another feature of today's fluid processing industry. A few food chains operated fluid plants as early as the 1930's, but the major structural change occurred in the 1960's. Integration by cooperatives followed the formation in the 1960's of a few regional dairy cooperatives. The integrated food chain and dairy cooperative (both regional and local) shares of estimated fluid product sales have increased over time, but cooperatives have not played the major role that they have in the manufactured products industry.

The Manufactured Dairy Products Industry

Like fluid milk processing, the manufactured dairy products industry had its beginnings on the farm (Lough, July 1991). Farm-separated cream was churned into butter for home use and for sale to neighbors. Some types of cheese were also produced, although probably not to the same extent as butter. Creameries, canning plants, and cheese factories, the pioneers of a commercial manufactured dairy products industry, developed in the middle to late 1800's, slightly predating commercial fluid processing. The manufacturing industry--firms producing butter, cheeses, dry milk powders, and canned milk--faced the same forces as the fluid processing industry. Technological advances on the farm, in transportation, and in product manufacturing processes combined to create an industry tending toward fewer and larger manufacturing plants (table 4).

Table 4--Number of dairy product manufacturing plants, selected years

Product	1950	1970	1980	1990	1993
			Number		
American cheese	1,620	669	483	298	252
All cheese	2,158	963	737	516	464
Butter	3,060	622	258	152	123
Nonfat dry milk (human food)	459	219	113	76	62

Source: *Dairy Products, Annual Summary*, U.S. Dept. Agr., Natl. Agr. Stat. Serv., various years.

Prior to World War II, manufacturing was characterized by highly specialized plants. The advantages of flexible, diversified operations were recognized in the late 1930's and early 1940's. As product prices and profitability measures changed, milk could be shifted among the products produced in the plants. The height of flexible plants was probably in the 1970's. Flexibility today is more likely to mean the operation of several specialized plants by a single firm or cooperative.

The technology of manufacturing products has changed from the batch process to the continuous process. Butter production is generally a continuous process of churning, printing, and molding (packaging) taking place under one roof. Adoption of similar innovations in cheese-making and other manufactured products production has led to an industry with fewer numbers of plants with expanding production per plant.

Manufactured dairy product markets are regional or national in the United States. Improved manufacturing processes and storage technologies have contributed to this development. Transportation advances have made it feasible to move products long distances at little cost. International trade opportunities take the markets (and marketing) one more step--to a global scope.

There are markets for manufactured dairy products that contribute to price discovery; central markets have been particularly important in pricing cheese and butter at various points in time. In 1993, futures for nonfat dry milk and Cheddar cheese were introduced on the New York Coffee, Sugar, and Cocoa Exchange. It remains to be seen if these markets develop into viable pricing mechanisms; trading has not been active as of this writing.

Dairy cooperatives have played a major role in the manufactured dairy products industry since the 1850's. By 1992, the number of cooperatively owned and operated plants producing manufactured products had decreased, mirroring the overall industry trend. In 1992, cooperatives handled about 65 percent of the butter produced, 81 percent of the dry milk products, and 43 percent of the cheese (Ling and Liebrand).

Demand for Milk and Dairy Products: Consumers and International Trade

There are active wholesale and retail markets for milk and dairy products in the United States. The U.S. Government participates as both a buyer and, in some cases, a seller of manufactured dairy products. International markets offer another outlet for both commercial and government dairy product sales.

Commercial Disappearance

Commercial disappearance measures the quantity of a particular product or all dairy products as a group demanded by all commercial buyers. It includes the generally small export quantities that are made without subsidy. Changes in commercial use reflect consumer responses to price changes and underlying demand shifts.

During the 1970's, commercial use of all dairy products grew about 1 percent annually on a milkfat basis. Retail dairy prices rose at about the same rate as general inflation. Since 1980, eroding real retail dairy prices have boosted growth in commercial disappearance to about 1.5 percent per year.

Sales of milkfat and of skim solids have risen at similar rates in the long run but often are not synchronized in the short run. Adjustment to changes in relative prices, including limited substitution of fat and skim solids in some products, and changes in demand trends account for most of the differences. During 1970-87, milkfat sales rose slightly more than did skim solids sales. Sharp shifts during 1987-91 resulted in more than a 2-percent yearly increase in skim solids sales, while commercial use of milkfat grew less than 1 percent per year. The difference was almost erased by 1994 as consumers responded to changes in relative prices (app. table 6).

Trends in the commercial use of individual dairy products vary greatly. In general, products with rising or declining use patterns are not identified by any common characteristics (app. tables 6 and 7).

Fluid Milk and Cream Products. Per capita consumption of fluid milk and cream has declined at a fairly steady rate since World War II. However, major consumption shifts among the fluid milk and cream products were steady until the late 1980's. Whole milk sales dropped steadily, lowfat milk use grew steadily, and skim milk sales were fairly stable. These trends appear to be changing. Skim milk sales have risen sharply since the late 1980's. Since 1991, growth in lowfat milk sales and declines in whole milk use have slowed and become more irregular. Fluid cream use rose steadily, in part because of better shelf life and lower prices.

Perishable Manufactured Products. Use of perishable manufactured products such as cottage cheese, ice cream, and yogurt has been variable. In general, the importance of these products in aggregate measures of milk and dairy product consumption has declined. Ice cream use was steady during the late 1970's and early 1980's, grew in the mid-1980's, dropped by 1990, and has recovered partially since then. Sales of other frozen desserts were steady until significant growth started in the mid-1980's. Cottage cheese use dropped steadily. Yogurt sales grew steadily into the 1980's but have been relatively stable since 1986.

Storable Manufactured Products. Strong, steady growth in cheese sales has been the dominant factor in demand for storable manufactured dairy products and the overall aggregate demand for milk. Per capita sales of Mozzarella more than tripled between 1975 and 1992, mostly because of the growing pizza market. Sales of other varieties of cheese also have risen, including Cheddar and the other American varieties.

Butter sales were generally flat between the early 1970's and 1991. Low prices have triggered large increases since then. Commercial consumption of nonfat dry milk declined until the late 1980's, in part because of substitution of whey products. Sales have been higher in recent years, but some of the increase has been to produce other manufactured products. Canned milk use generally decreased.

Demand Responses to Changing Prices and Incomes

Aggregate milk demand is relatively unresponsive to both price and income changes (inelastic demand). Consumer responses to individual product prices and the effects of income changes on individual product demands have been widely studied. While product demand elasticities do vary, they are still generally in the inelastic range. Income effects on dairy product demands are also small.

Commercial International Trade

There is a tendency to envision international trade of dairy products as a large market, similar to some of the grains. In fact, international dairy product trade, primarily of butter, butteroil, nonfat dry milk, dry whole milk, cheeses, and casein, is a relatively small proportion of total milk production (approximately 7 percent of the 1988-1992 annual average world cows' milk production of 430 million tons). The European Union (EU), New Zealand, and Australia together account for about three-quarters of the exports (table 5). Major net importers of dairy products include Mexico, Russia, and Japan.

The equilibrium pricing conditions described previously apply also to the international dairy markets. Butter and nonfat dry milk play the key roles in international trade and their prices would, if allowed, bring the world's dairy markets into alignment (table 6). However, export subsidies and import restrictions reflecting the domestic policies of the major dairy trading countries have distorted the international dairy product markets.

The United States was the largest milk producing country in the world in 1992 but traditionally has not played a major role in international dairy trade. Average imports from 1988 to 1992 were 2.5 billion pounds, milk equivalent, milkfat basis, about 1.8 percent of domestic disappearance. Cheeses accounted for nearly 90 percent of the dairy products imported. Exports during the same period averaged 3.0 billion pounds, milk equivalent, about 2 percent of U.S. milk production.

Table 5--Average exports and market shares for selected countries of butter, cheese, and nonfat dry milk, 1990-93

Item	Butter				Cheese				Nonfat dry milk			
	1990	1991	1992	1993 1/	1990	1991	1992	1993 1/	1990	1991	1992	1993 1/
	Thousand metric tons											
Annual exports 2/	740	794	719	698	755	769	783	873	817	787	982	799
	Percent											
Shares 2/												
EU 3/	36	51	32	27	58	59	58	58	42	32	39	31
United States	4	8	22	23	2	1	2	2	1	9	13	18
Canada	1	2	2	1	1	1	2	1	5	5	3	2
New Zealand	31	22	31	33	12	13	14	14	22	22	17	14
Australia	7	7	8	10	7	8	9	10	12	16	12	16
Total	79	90	95	94	80	82	85	85	82	84	84	81

1/ Preliminary.
2/ Excludes intra-EU trade.
3/ Formerly the European Community (EC).

Source: *Dairy: World Markets and Trade Circular,* U.S. Dept. Agr., Foreign Agr. Serv.

Table 6--International and U.S. market prices for selected traded products, 1990-93

Product	1990	1991	1992	1993
	Dollars per metric ton			
Butter	1,363	1,410	1,498	1,343
Butter-U.S. 1/	2,251	2,189	1,819	1,640
Butter-GATT minimum	1,350	1,350	1,350	1,350
Nonfat dry milk	1,431	1,350	1,685	1,545
Nonfat dry milk-U.S. 1/	2,218	2,072	2,361	2,469
Nonfat dry milk-GATT minimum	1,200	1,200	1,200	1,200

1/ U.S. butter price is Chicago wholesale price for Grade A. U.S. nonfat dry milk price is for Extra Grade and Grade A, all heat treatments, in the Central production area.

Sources: *Dairy: World Markets and Trade Circular,* U.S. Dept. Agr., Foreign Agr. Serv., various issues, and *Dairy: Situation and Outlook Yearbook,* DS-411, U.S. Dept. Agr., Econ. Res. Serv.

As the world moves toward more open agricultural trade, embodied in the Uruguay Round of the General Agreement on Tariffs and Trade (GATT), it is simultaneously embracing regional trading blocs such as the North American Free Trade Agreement (NAFTA). The GATT Uruguay Round, concluded on December 15, 1993, is to be implemented over the 1995-2000 period and addresses four agricultural areas: export subsidies, market access, internal support measures, and sanitary and phytosanitary rules. The GATT agreement is potentially significant for the U.S. dairy industry in two of the areas--export subsidy programs and market access. The Dairy Export Incentive Program (DEIP) is in fact an export subsidy, and U.S. market access has long been curtailed by Section 22 quota rules. Long-term effects on the industry are expected to be minor (USDA, March 1994).

NAFTA, which was effective as of January 1, 1994, sets out separate bilateral agreements on cross-border agricultural trade between the United States and Mexico and Mexico and Canada. U.S.-Canada trade is still covered by the U.S.-Canada Free Trade Agreement. The major agricultural issues addressed by NAFTA are: nontariff barriers, tariffs, producer safeguards, rules of origin, and sanitary and phytosanitary rules. Market access under NAFTA is a primary concern for the U.S. dairy industry, as are rules of origin. The U.S. dairy industry is expected to benefit from NAFTA in that Mexican demand for milk and dairy products will likely continue to outpace Mexico's domestic production (USDA, 1993).

History of U.S. Dairy Programs

The U.S. dairy industry is affected by a set of regulations including Federal dairy price supports and milk marketing orders, import restrictions, export subsidies, domestic and international food aid programs, and State milk market regulations. The major Federal dairy programs (and some State regulations) date from the 1930's and 1940's. The current dairy price support program was established by the Agricultural Act of 1949, Federal milk marketing orders date to the Agricultural Marketing Agreement Act of 1937, and Section 22 dairy import quotas derive from the Agricultural Adjustment Acts of 1933 and 1935, as amended. Federal dairy programs have often been modified to meet changing industry and economic conditions.

State regulations operate separately or are superseded by Federal statutes. There are some shared State/Federal regulatory activities--milk safety, sanitary conditions, and environmental regulations, for example. State regulations are less prevalent today than previously, but State lawmakers have recently shown they are ready and willing to try to establish rules to aid their dairy farmers. Dairy farmers, analysts, policymakers, and other interested parties need to appreciate the multijurisdictional nature of dairy industry regulation.

Price Support Activities

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 their milk by offering to purchase any butter, nonfat dry milk, and Cheddar cheese (meeting announced specifications) at announced purchase prices (app. table 8). Purchase prices are calculated using a formula that combines the support price for milk, quoted for manufacturing grade (Grade B) milk, with "make allowances," which enable plants to process and market products to the CCC and pay, on average, the announced support price to milk producers (table 7; Appendix A).

Farmers can and have received more or less than the support price, depending on supply and demand conditions and market competitiveness (app. table 9). Plant location, the type of product manufactured, the quantity of milk delivered, milk composition, local competition between processors for milk supplies, and plant operating efficiency all play a role in determining the price individual dairy farmers receive for their milk.

Prices to farmers for manufacturing grade milk moved above the support level in the tight portion of the marketing season of most years (usually in the fall when production reaches a seasonal low, and seasonal milk demand is high) until 1980, and at times even during the flush season (when production reaches its spring peak). During 1980 to 1986, manufacturing grade milk prices were

Table 7--USDA purchase prices under dairy price support program, 1977-93 1/

Effective date of change	Butter at Chicago, Grade A or higher	Nonfat dry milk, extra grade, spray or higher	Natural Cheddar cheese, Grade A
		Cents per pound	
10/01/77	100.71	68.00	98.00
4/01/78	106.71	71.00	103.25
10/01/78	111.30	73.75	106.00
4/01/79	121.80	79.00	116.00
10/01/79	131.33	84.00	124.00
4/01/80	140.58	89.50	132.50
10/01/80	149.00	94.00	139.50
4/01/81	153.00	96.50	143.25
10/21/81	149.00	94.00	139.50
10/01/82	149.00	94.00	139.50
10/01/83	149.00	94.00	139.50
12/01/83	143.25	91.00	134.75
10/01/84	143.25	91.00	134.75
4/01/85	143.25	84.75	128.75
7/01/85	139.75	80.75	125.00
1/01/87	137.75	78.75	122.50
10/01/87	135.75	76.75	120.00
1/01/88	132.00	72.75	115.25
4/01/89	132.00	79.00	120.25
7/01/89	120.50	79.00	115.50
1/01/90	109.25	79.00	111.00
4/21/90	98.25	85.00	111.00
1/17/92	87.25	91.20	111.38
5/13/92	76.25	97.30	111.75
7/07/93	65.00	103.40	112.00

1/ Prices for bulk containers--butter, 64- and 68-pound packages; nonfat dry milk, nonfortified in 50-pounds bags; and cheese, 40- or 60-pound blocks. See DS-387, December 1981, table 3 for earlier data.

below the support level. In 1989 and so far in the 1990's, manufacturing grade milk prices have been above the support level.

The basic structure of the price support program remained essentially unchanged from 1949 to 1981. In the 1980's, four major departures from traditional dairy price support policy occurred:

(1) Price supports were separated from parity or any other index.
(2) Voluntary supply management provisions were used on a temporary basis to hasten industry adjustment (1984 Milk Diversion Program; 1986 Dairy Termination Program).
(3) Changes in dairy price supports were linked directly to projected annual government purchases, limiting the Secretary of Agriculture's discretion in setting the support price.
(4) Through assessments, dairy farmers assumed some responsibility for the program.

Appendix B contains a list of major price support actions for the 1970-93 period. Readers seeking more detail on changes made prior to the 1990 farm legislation are referred to the previous dairy background publication (Fallert, Blayney, and Miller).

On January 1, 1990, the support price for manufacturing grade milk was lowered 50 cents to $10.10 per cwt. The cut was made because CCC purchases during calendar 1990 were projected to exceed 5 billion pounds milk equivalent. The authorizing legislation, as amended by the Budget

Reconciliation Act of 1989, permitted the support price to remain unchanged or to be lowered by up to 50 cents under these conditions.

Butter and nonfat dry milk purchase prices continue to be adjusted to reflect changes in the relative market values of cream and skim milk. In 1980, butter carried 46 percent of the combined value of butter and nonfat dry milk in CCC support price calculations. Brisk sales of cream-based products in the mid-1980's led to butter's share being raised to 50 percent by 1988. The emergence of a commercial export market for nonfat dry milk in 1988 and domestic market adjustments to earlier changes in relative prices reversed the imbalance in butter and nonfat dry milk prices and resulted in the shifts in relative support price. By 1994, butter's share of the combined value was 26 percent.

The dairy provisions of Title I of the Food, Agriculture, Conservation, and Trade Act of 1990 (1990 Act) made minor adjustments to previous policy. Although price support adjustments are still triggered by CCC purchase levels, combined purchases of cheese, butter, and nonfat dry milk are measured on a milk equivalent, total milk solids basis, instead of a milkfat basis. The 1990 Act also provides that the price of milk be supported at not less than $10.10 per cwt through 1995. The 1990 Act continued the search for new methods of supporting and stabilizing milk prices without increasing government expenditures. The budget pressures that shaped the 1990 Act have not lessened as the 1995 farm legislation debate approaches.

The 1990 Act authorizes the Secretary of Agriculture, for calendar years 1991-95, to:

(1) Increase the support price at least 25 cents if USDA's estimate of purchases in the coming year does not exceed 3.5 billion pounds milk equivalent, total milk solids basis.
(2) Not decrease the support price if USDA's estimate of purchases in each of calendar years 1991-95 exceeds 3.5 billion pounds but not 5 billion pounds milk equivalent, total milk solids basis.
(3) Decrease the support price by 25 to 50 cents if USDA's estimate of purchases in the coming year exceeds 5 billion pounds milk equivalent, total milk solids basis.

In estimating the level of CCC purchases, the Secretary is instructed to deduct from this figure any increase in the most recent calendar year's dairy product imports from the average imports during 1986-90.

The 1990 Act contained provisions requiring producers to help finance CCC program purchases during calendar years 1991-95 under certain conditions. Any expected purchases above 7 billion pounds, total solids basis, would be financed through a producer assessment on milk marketings. Excess production assessments have not yet been triggered. The Secretary was given discretionary authority to adjust support purchase prices for butter and nonfat dry milk in a way that would result in the lowest cost to the CCC or would achieve other objectives considered appropriate.

The Agricultural Reconciliation Act of 1990 implemented the 1990 deficit reduction agreement, which prescribed spending cuts of more than $13 billion for agriculture over fiscal years 1991-95. This act modified the 1990 Act in order to reduce outlays as required by the deficit reduction agreement. For the dairy industry, this meant a producer assessment of 5 cents per cwt of milk marketed during calendar 1991. For calendar years 1992-95, the assessment increased to 11.25 cents per cwt.

Producers who do not increase marketings from the previous year are eligible for an annual refund of the budget reduction assessment. The assessments in a specific year must be raised to recapture refunds made on the previous year's marketings. Eligible producers claimed refunds totaling $23.2 million in calendar year 1991, $50.7 million in 1992, and $80.3 million in 1993. The assessment rate was set at 19.28 cents per cwt beginning in May 1994 for the remainder of the year to cover the refunds.

The Omnibus Budget Reconciliation Act of 1993 contained several provisions related to the dairy price support program. Most of the 1990 Act's dairy price support provisions were extended to 1996. The butter purchase price was restricted to

no more than $0.65 per pound while nonfat dry milk's purchase price could be no less than $1.034 per pound. Instead of 11.25 cents, the reconciliation assessment was set at 10 cents per cwt for 1996 and 1997. Finally, a 90-day moratorium on the sale of rbST for commercial milk production from the date of FDA approval was written into the legislation. During the moratorium, which has run its course, the deficit reduction assessments were to be lowered by 10 percent.

Priorities for Purchases under Price Support Programs

Products acquired under the price support program are committed to specific uses or are put into storage for future dispositions. Uses can be categorized as: (1) domestic donations (food aid) such as The Emergency Food Assistance Program (TEFAP) which donates surplus stocks directly to needy persons; and child feeding programs, including the School Lunch Program and the Child Care Food Program; (2) international food aid though Section 416(b) of the Agricultural Act of 1949, as amended, and the Food for Peace Program (P.L. 480) of 1954; (3) direct export sales; and (4) sales back to the domestic industry for unrestricted use. Priorities are based on perceived social value by use and increasingly on budgetary impacts.

In the 1970's, CCC supplies generally were relatively small. Domestic donations, primarily to the school feeding programs, had top priority for butter and cheese. For nonfat dry milk, international food aid, primarily donations under P.L. 480, were the first choice. Export sales were not heavily used, even though they generate revenues partially offsetting program costs, because it was felt they conflicted with overall trade policy by involving an export subsidy. Most sales were directly to other governments and had significant food aid aspects.

The extreme surpluses of the early 1980's made disposing of dairy products the prime priority. Large export sales of butter and nonfat dry milk were made. Direct distribution of dairy products to the needy and the elderly was resumed on a large scale for the first time since the widespread adoption of food stamps.

In the late 1980's and early 1990's, CCC supplies of butter stayed large, but cheese and nonfat dry milk supplies shrank dramatically. Butter has gone into all possible outlets. The very small amounts of cheese stocks have been committed to selected domestic donation programs. The biggest change since the 1970's has been the priority shift for nonfat dry milk to export sales (either direct CCC sales or through DEIP) from humanitarian exports.

Unrestricted sales back to the domestic dairy industry have occurred occasionally. Normally, the CCC offers products not committed to programs at a price above the support purchase price (110 percent of the support purchase price most of the time). Conceptually, this provides market incentives for normal storage and transportation, but helps to stabilize prices in a tight market. Storage of products specifically to stabilize prices has not been deemed a high priority.

Trade and Other Programs

In addition to direct sales from CCC supplies, the Government assists exports through the Dairy Export Incentive Program (DEIP) and export credits. Imports of dairy products into the United States have been subject to quotas since the 1950's. Recently completed trade negotiations will require conversion of the quotas to tariff-rate quotas, with reduction in those tariffs to follow. The demand for dairy products is affected by several domestic food assistance programs, which are either targeted at the products specifically or designed to raise consumption of all foods.

DEIP and CCC Export Credits. The Dairy Export Incentive Program (DEIP) is an export subsidy program similar to the Export Enhancement Program (EEP) for other U.S. agricultural commodities. The program is used to assist U.S. dairy products to meet competition from subsidizing countries, especially the European Union, in targeted markets. Products currently eligible for the DEIP are milk powders, butterfat, and several cheese varieties. USDA, members of the agricultural community, foreign government officials and others may recommend countries for targeting. The DEIP is currently authorized through December 31, 2000.

DEIP sales are made by private firms. Upon contacting a potential buyer, the prospective exporter submits a bid to USDA requesting a cash DEIP bonus that would allow the sale to take place. The bonus (if accepted by USDA) is paid after the exporter furnishes evidence that the specified commodity has been exported to the target country under the terms of the sales agreement. The DEIP was relatively dormant until 1991, the first year bonuses exceeded $10 million. The highest level of DEIP activity to date is $143 million (FY 1993).

In addition to promoting U.S. trade policy and market expansion, an active DEIP program can also enhance domestic U.S. milk prices under many market conditions. The exception would be when the surplus is heavy enough that DEIP export quantities cannot move prices above support. It is widely accepted that the DEIP enhanced 1992 milk prices, with estimates of the effect ranging from 30 cents to 50 cents per cwt. It is also the case that price variability is affected by DEIP sales.

Export credit programs to assist commercial exports of U.S. dairy products can also be used. Only GSM-102 is used for dairy product exports (only 5 percent of the total commodities exported under the program). Export credits and the DEIP can be used in combination if the destination country is eligible for both programs.

Import Controls. Section 22 dairy product import quotas were designed to prevent imports from undermining the dairy price support program. U.S. purchases of dairy products would support international product prices if there were no binding import quotas. Imports of ingredient products are severely restricted under the quota authority while more liberal treatment is given to products that are noncompetitive or partially so--some specialty cheeses, for example.

Implementation of the GATT and the NAFTA trade agreements will have important ramifications for the dairy industry. When the agreements are implemented, all quotas will be converted to tariff-rate quotas, which will be reduced over time. Also included in the GATT and NAFTA agreements are minimum access requirements, which will allow more dairy products to enter the United States than currently. The yearly minimum access increases are clearly defined in the agreements.

Other Domestic Programs. Domestic food assistance programs have operated in the United States since the 1930's. Program goals in the early years were to help feed the poor and the unemployed and to help stabilize farm prices by disposing of growing stocks of surplus commodities. Over time, another goal has been added and emphasized--improving the nutritional well-being of low-income persons and other target groups, such as children and the elderly.

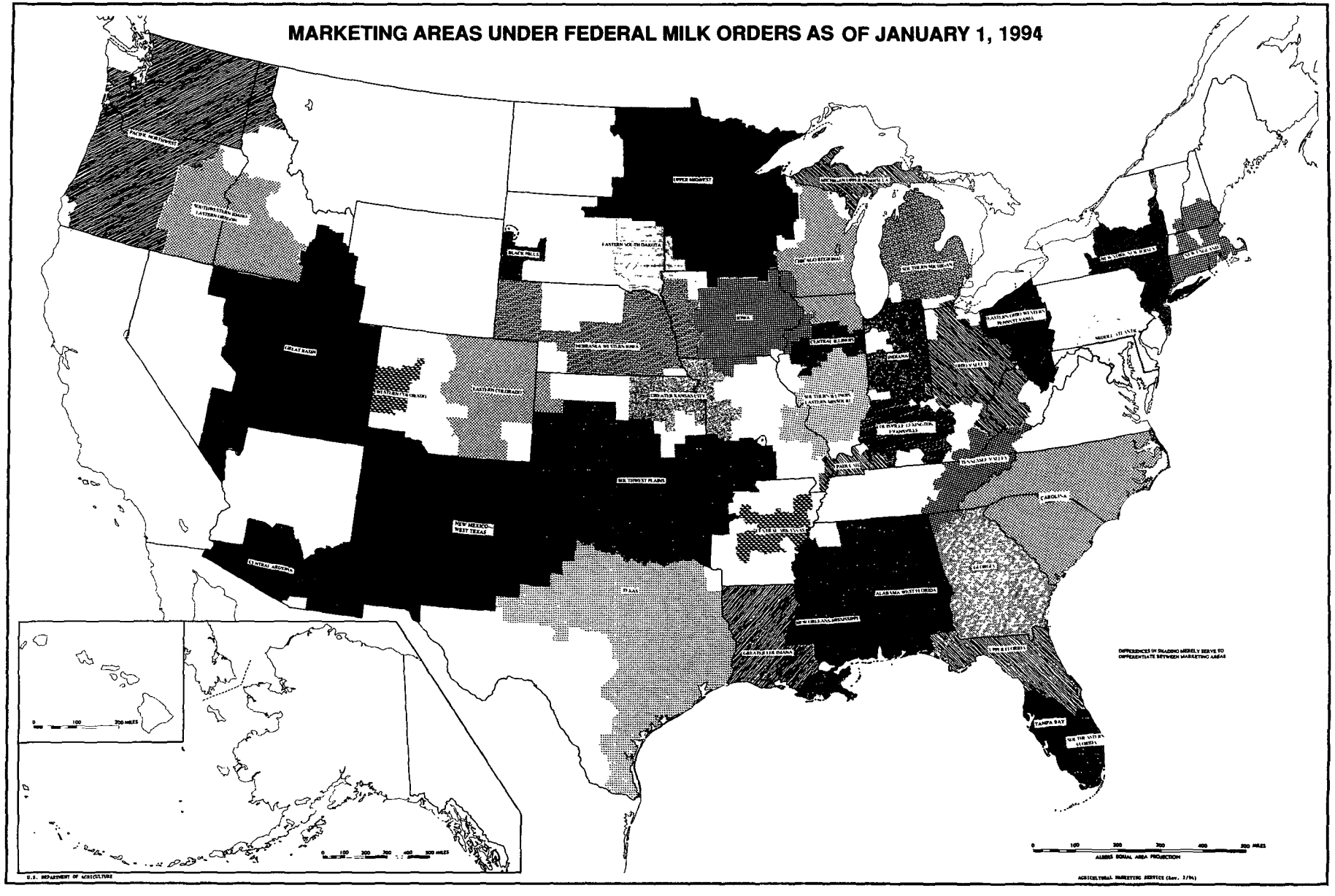
Food assistance programs take a variety of forms and have varying effects on dairy markets and the dairy price support program. Market purchases of all foods are subsidized by the Food Stamp and school feeding programs. Some programs specifically target the purchase or consumption of milk and dairy products--the Women, Infants, and Children (WIC) program and the Special Milk Program.

Federal Milk Marketing Orders

Federal milk marketing orders are authorized by the Agricultural Marketing Agreement Act of 1937. One of the original intents of the 1937 Act was to secure fair exchange value for farm products by establishing orderly marketing conditions for farmers. These goals were to be met while accounting for consumer interests. The general administration and oversight of the Federal milk marketing orders are the responsibilities of the Dairy Division of USDA's Agricultural Marketing Service (AMS).

Only Grade A milk is regulated under Federal milk marketing orders. In 1993, some 93,000 producers delivered just under 104 billion pounds of milk to handlers regulated under Federal orders. There were 38 orders in effect as of January 1, 1994 (fig. 1). Federal order deliveries represented 70 percent of total U.S. milk marketings during 1993 (74 percent of the Grade A milk marketed). California, which is not part of the Federal order system, had milk marketings in 1993 representing about 16 percent of the U.S total Grade A milk.

Figure 1


MARKETING AREAS UNDER FEDERAL MILK ORDERS AS OF JANUARY 1, 1994
PACIFIC NORTHWEST
UPPER MIDWEST
BLACK HILLS
EASTERN SOUTH DAKOTA
GREAT BASIN
ARIZONA
CENTRAL ILLINOIS
INDIANA
EASTERN PENNSYLVANIA
SOUTHWEST PLAINS
NEW MEXICO-WEST TEXAS
CENTRAL ARIZONA
TEXAS
ALABAMA-WEST FLORIDA
CAROLINA
TAMPA BAY
DIFFERENCES IN SHADING MERELY SERVE TO DIFFERENTIATE BETWEEN MARKETING AREAS
ALBERS EQUAL AREA PROJECTION
U.S. DEPARTMENT OF AGRICULTURE

Whenever the Secretary of Agriculture has reason to believe that the issuance of an order is necessary to achieve the declared policy of the 1937 Act, a notice of a public hearing on the proposed order is issued. All interested parties--including producers, cooperatives, processors, handlers, consumer groups, and the general public--may present evidence at the hearing. If the hearing record supports it, the Secretary issues an order. Milk producers delivering to handlers with sales in the geographical area to be covered must approve the order before it becomes effective. Procedures for amending orders are essentially the same as for establishing a new order.

Procedures for terminating orders if producers indicate a desire to do so are specified. The Secretary can also terminate or suspend, without notice or a hearing, orders or most particular order provisions if it is determined that they "obstruct or do not tend to effectuate the purpose of the Act." The Secretary may not terminate or suspend pricing provisions.

The legal scope of milk marketing orders is defined by the provisions of the 1937 Act. Each order includes provisions for:

(1) Classifying milk according to use.
(2) Establishing the minimum class prices that handlers must pay for milk used in each class.
(3) Pooling (averaging proceeds of sales by class and apportioning the payments to producers).
(4) Verifying weights and tests of milk shipped by producers.
(5) Auditing handler reports to verify milk utilization and payments to producers.
(6) Providing market information.

Federal milk marketing orders do not contain provisions that:

(1) Control production or restrict individual producers' marketings.
(2) Guarantee producers a market with any buyer.
(3) Regulate handlers' decisions--from whom to buy, to whom to sell, quantity purchased, or what selling price is charged.
(4) Set maximum prices handlers may pay for milk.
(5) Guarantee a fixed price to producers.
(6) Establish sanitary or quality standards for Grade A milk.
(7) Set wholesale or retail milk and dairy product prices.

Classified pricing, pooling, uniform payments to producers, and no restrictions on marketing are key elements of milk marketing orders. Classified pricing is a pricing system based on the use (utilization) of milk purchased by regulated handlers. All Federal milk marketing orders now provide for at least three classes of milk. Twenty-seven (27) orders, of the 38 in effect at the beginning of 1994, have been granted the authority for an additional class called III-A. When this fourth class is permitted, the order classifications are:

- Class I - milk used for fluid milk products.
- Class II - milk used for fluid cream or in perishable manufactured products such as ice cream, cottage cheese, and yogurt.
- Class III - milk used in hard cheeses, butter, and some dried milk products.
- Class III-A - milk used in nonfat dry milk.

When there are only three classes in an order, Classes I and II are as above with Class III and III-A combined as the single Class III.

Each order specifies the minimum price that must be paid by handlers for milk used in each class, which is to be uniform to all handlers, with enumerated provisos. Class I milk receives the highest price, Class III (or Class III-A) milk the lowest. Class II prices are currently determined by formula and on average are somewhat higher than Class III prices. Producers and/or their cooperatives are free to negotiate for prices above the minimums with the handlers buying their milk. In many marketing orders, effective class prices (at least for Class I) are above the established minimums--the result of these "over-order" payment negotiations.

The basis of the class prices in the Federal milk marketing orders currently is the Minnesota-Wisconsin (M-W) price, the average price paid for

manufacturing grade milk in the two-State area. The minimum Class III price is set equal to the M-W price and is generally the same in all orders. The minimum Class I price in each order is the M-W price for the second previous month plus a fixed Class I differential, which is different in each order and generally increases with distance from the Minnesota-Wisconsin production area. Class I differentials are meant to reflect the additional costs associated with producing and marketing milk for the fluid markets, such as increased sanitary requirements, balancing, and transportation costs.

Pooling provisions provide the mechanism for payment of uniform or "blend" prices to the producers whose milk is purchased by regulated handlers under the orders. Two types of pools are permitted, marketwide and individual handler. The marketwide pool is currently in use in all but one order. Under a marketwide pool, the dollar value of all milk delivered by producers to regulated handlers is calculated by summing the minimum class price multiplied by the quantity of milk from producers used in each class. The total value is divided by the total producer milk delivered to arrive at the minimum blend or uniform price to be paid to pooled producers, subject to some adjustments if authorized (Appendix C).

Milk Marketing Orders Under Pressure

Federal milk marketing orders have been much debated and analyzed. We focus here on the period beginning in 1985 but refer to order changes or actions prior to that date where necessary. More detailed studies of Federal milk marketing orders can be found in the list of readings at the end of this report.

The geographic structure of minimum Class I prices that exists in Federal milk orders evolved naturally over a period of 20 years or more (Novakovic and Pratt). The minimum Class I differentials in markets east of the Rocky Mountains generally increased with the distance from the single basing point located in the surplus area of the Upper Midwest (Minnesota and Wisconsin). This "price surface" implied that any changes in the minimum Class I differential for a particular order would or could result in a series of minimum Class I differential changes to maintain price alignment in the order markets.

Until 1985, the geographic structure of minimum Class I price differentials remained essentially unchanged. The 1985 Food Security Act mandated higher Class I differentials in 35 of the 44 orders in place at the time, with the largest increases in southern deficit orders. The higher Class I differentials became effective in 1986.

A peripheral but not unimportant hearing for Federal milk marketing orders was mandated by the 1990 Act to examine replacements for the M-W price. The M-W was first used in the Federal milk marketing orders in 1961 and since 1975 has been the basis for establishing minimum class prices in all orders. In May 1990, NASS notified AMS that it would not be able to report an accurate M-W price beyond the middle of 1992 but would continue to do so until a replacement was selected. AMS issued a final decision that adopted a base month M-W price updated by a butter/cheese/-powder formula as a temporary replacement. The decision recognizes that adoption of the base month M-W price will allow the Department and the industry with additional time to develop a long-term solution.

A hearing to consider a separate Class III-A price for milk used to make nonfat dry milk under about three-fourths of the orders was held in mid-1991. Proponents of the new class and price argued that milk used for nonfat dry milk should be based on wholesale prices of nonfat powder, rather than the cheese-driven M-W price. In November 1992, Class III-A pricing and a product price formula for milk used for nonfat dry milk was adopted in three orders--New England, the Middle Atlantic, and the Pacific Northwest. At the request of the industry, the hearing was later reopened to receive evidence regarding the 24 markets where pricing changes were not initially recommended. Based on the new evidence, Class III-A pricing was adopted in those 24 orders effective December 1, 1993.

Milk has traditionally been priced on volume and milkfat content. Multiple component pricing results in a farmer's milk price being adjusted for the content and value of the other components, such as protein or solids-not-fat (SNF), in milk as well as for milkfat. California, which is outside the Federal milk marketing order system, has had multiple component pricing since 1962. Multiple component pricing of milk was first implemented

under Federal milk market orders in the Great Basin order in 1988.

Multiple component pricing (MCP) has been adopted in seven orders--the Great Basin, Middle Atlantic, Eastern Ohio-Western Pennsylvania, Ohio Valley, Indiana, Pacific Northwest, and Southwestern Idaho-Eastern Oregon. USDA has recommended MCP for six more orders--Chicago Regional, Upper Midwest, Iowa, Nebraska-Western Iowa, Eastern South Dakota, and Southern Michigan. Of the thirteen orders, eleven have or are recommending adoption of pricing based on the protein of milk and two on the SNF content. The recommendation for the five Midwest orders will include pricing on other nonfat solids in addition to protein pricing. For Southern Michigan, pricing is recommended on a fluid carrier component in addition to protein. Nine of the orders are or are recommending that adjustments to producer payments based on the producers' milk somatic cell count be made.

USDA recently changed Class II pricing in all orders. The formula-based Class II price is to be replaced by a fixed differential approach like the Class I price. In all orders the Class II price would be equal to the basic formula (M-W) price of the second preceding month plus a differential of 30 cents. This pricing change will be effective on April 1, 1995.

Federal Program Linkages

The price support and Federal milk marketing order programs are connected, which implies that changes in one will affect both. The link between the two programs is a price--currently the M-W price. Class prices under Federal milk marketing orders are directly tied to the value of milk for manufacturing, which is a market price influenced by the support price for milk (fig. 2). As the mover of class prices in all Federal milk marketing orders, the M-W price coordinates price signals to producers under the orders. For example, a lower M-W (due to a support price reduction) assures that minimum class prices would not continue rising (providing a production incentive) when the support price reduction signals the desire for lower production.

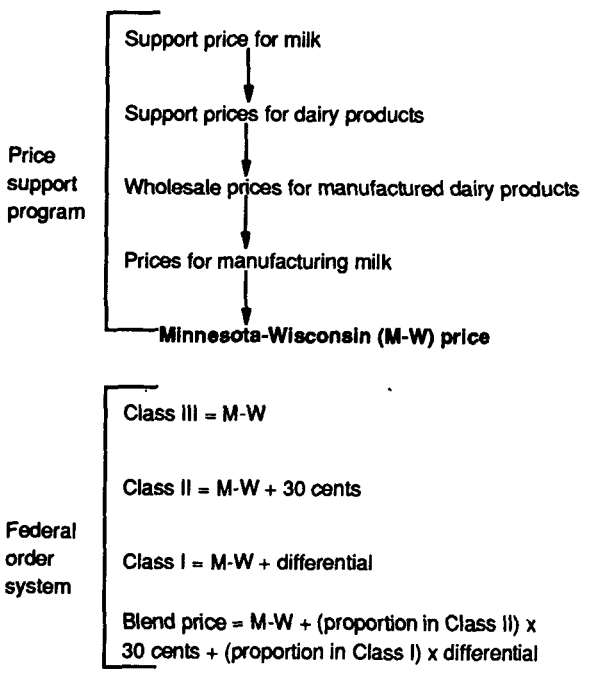
The Federal order system similarly affects manufacturing milk markets and the price support program. Production responses to order-induced price adjustments or to any stability benefits of the orders will alter the overall market balance, all milk prices, the size of the surplus, and (ultimately) the milk support price.

State Regulations

Several States enforced their own milk pricing and marketing regulations prior to implementation of Federal laws, particularly the marketing orders, and some still do (app. table 10). Many States have laws still in place that are not being used. Regulation of milk markets by States and how that regulation affects Federal policies has been the subject of many debates.

Prices paid to producers for fluid-grade milk are regulated by Federal orders and by 10 States. The share regulated by the States has declined from nearly 25 percent at one time. California is the largest producing State with only State pricing regulations. In a number of cases, Federal orders were introduced after State legislation had been repealed or declared unconstitutional.

Figure 2
Price linkage between the price support program and Federal orders



Improvements in transporting milk have diminished the ability of States to effectively regulate markets. Less than 1 percent of the fluid-grade milk sold in the United States is unregulated.

Many States have enacted legislation to raise milk producers' prices in recent years. New legislation in Maine has reinstated the vendor's fee on fluid milk sales in the State. The new law eliminates the tie between the fees and payouts to dairy farmers with funds from the new tax going directly into the State's general fund. The Maine legislature currently is considering legislation that will provide payouts to dairy farmers in the State. The Maine policymakers believe this approach will not be declared unconstitutional by the courts, as was their previous vendor's fee program. Several States have enacted producer security trust funds that provide farmers with compensation should a handler go bankrupt and be unable to pay producers. While most recent plans have not survived the courts, there appears to be renewed willingness by States to consider ways to assist their milk producers.

Six States regulate wholesale or retail prices, or both, of fluid milk products. States differ in resale price regulations--some set minimum prices, some set maximum prices, and some set both. Other States set prices that must be paid by the retailer but do not restrict the price the retailer charges consumers. Most States with resale price-fixing authority--as well as a number of others--have authority to regulate trade practices. Several States require a minimum markup, particularly by retailers, while others require that prices be filed with the State agency (Manchester, Weimar, and Fallert).

Effects of Dairy Programs

Dairy programs are meant to influence prices so that policy objectives are reached. The effects of each Federal program are, in general terms, well defined in the economics literature. National policies, as we have noted, can and do have varying effects at the local, State, or regional level.

In the 1990's, dairy issues receiving the most attention are milk price volatility, the relative prices of fat and skim solids, and the capacity of manufacturing plants (both regionally and nationally) to produce the products demanded by consumers.

The Dairy Price Support Program

Generating adequate supplies of high-quality milk and price stabilization are dairy price support program objectives. The program has enhanced producer incomes at times. This was particularly evident during the early 1980's when support price rigidities enacted by Congress prevented prices from adjusting to rapid supply shifts. Net removals of dairy products from the commercial market by CCC accounted for 14 percent of milk marketings in 1983, compared with less than 2 percent in 1979 and 3 percent recently.

Program effects on consumers are measured by the changes in prices paid and quantities consumed. Since the 1970's, the net effect of the dairy price support program is that consumer prices probably averaged higher than they would have without the program. Price support reductions since 1983 have brought prices more in line with supply and demand conditions and reduced consumer prices from levels at which they would have been without the price support reductions.

The direct cost of the price support program to taxpayers ranged from $69 million to $612 million between FY 1953 and FY 1973, averaging $325 million for the period. Over the 1970's, outlays fluctuated with the variability in milk surplus. Program costs exceeded $1 billion per year from FY 1980 through FY 1989, reaching a maximum of $2.6 billion in FY 1983. Program costs for recent years are similar to those from FY 1953 to FY 1973: $232 million in FY 1992, $253 million in FY 1993, and $158 million in FY 1994 (USDA, June 1994).

Federal Milk Marketing Orders

The minimum classified prices and the pooling provisions of Federal milk marketing orders have effects for both producers and handlers related to equity. The minimum prices assure that handlers who are similarly located pay at least the same minimum prices for their milk. Producers on the market all receive the same blend price.

Estimating the benefits and costs of the orders is not easy, nor is there consensus among agricultural economists on how to do it. Many issues associated with assessing the economic consequences of the milk marketing orders were discussed in a 1986 report by the American Agricultural Economics Association (AAEA, 1986).

Prices under the orders serve to increase the income of dairy farmers by raising some prices of milk in fluid uses above what they would be without the orders, while lowering the prices of milk in manufacturing uses. Income increases accrue as long as fluid demand is less elastic than manufacturing demand (Babb, Boynton, Dobson, and Novakovic). Most studies suggest that the increase in average producer prices is modest, considerably less than 5 percent (AAEA, p.18, 1986).

Consumers face higher prices for fluid products and lower prices for manufactured dairy products as a result of the orders (Babb, Boynton, Dobson, and Novakovic; Dahlgran; Ippolito and Masson). The empirical estimates of consumer effects are subject to the same problems as those related to producers. Spread over the quantities of milk regulated under orders, these costs are relatively small. Government costs of the orders are minor as well.

In the atmosphere that has characterized recent agricultural policy discussions, the Federal milk marketing orders have often been targeted for change. There is no clear evidence that eliminating or drastically altering the provisions of orders would generate the economic effects expected by proponents of such moves.

Import Quotas

Section 22 restrictions have helped keep dairy imports at predictable, steady levels. On a milk equivalent, milkfat basis, imports have varied from 2.4 to 2.8 billion pounds over the past decade. The fluctuation that occurs can be attributed to market conditions within the import quota categories and to changes in imports of non-quota dairy products, mostly soft-ripened cheeses and cheeses not made from cows' milk. Casein imports also are unrestricted, because casein is not categorized as a dairy product but rather as an industrial product.

The implementation of the Uruguay Round GATT agreement will have important ramifications for the dairy industry. When the agreement is implemented, all quotas are to be converted to tariff-rate quotas and reduced over time. Also included in the agreement is a minimum access requirement, which will allow more dairy products to enter the United States than currently. The yearly minimum access increases are clearly defined in the agreement. NAFTA, which became effective on January 1, 1994, sets out separate bilateral agreements on cross-border agricultural trade between the United States and Mexico and Mexico and Canada. NAFTA also includes provisions for conversion of quotas to tariff-rate quotas and market access.

Issues To Be Addressed in 1995

As the "market-oriented" dairy policies of 1985 and 1990 have run their course, milk producers, cooperatives, processors and manufacturers, retailers, and consumers have had to cope with changing relationships in the dairy industry. More price variations are examples of these changes. As a result, some parts of the industry have been stressed.

Two approaches to the 1995 agricultural legislative debate appear possible. The first rests on a continued belief that the regulated market should approximate an "idealized" market solution and carries with it a legislative agenda that seeks to continue current programs while adjusting them to meet new conditions, particularly with regard to trade agreements. The second is based on an agenda that is "nontraditional" in the sense that objectives other than those of commercial agriculture drive the debate. Regardless of the approach taken, the desire to continue reducing government budget deficits will play a major role.

Adjusting Current Dairy Programs

Adjusting current dairy programs to changing industry conditions in 1995 will require examination of two key areas: export subsidies and how they fit into recently signed (and implemented) trade agreements, and the milk price support level and how to make adjustments to it. Both of these issues have ramifications for price volatility.

Export Subsidies and Trade Agreements

The way in which export programs, including the DEIP, are operated is an important issue. The Uruguay Round GATT agreement, when fully implemented, eventually will limit subsidized dry milk exports (DEIP and sales from CCC stocks) to about half the 1993 level. The restrictions on butter and cheese exports are not expected to have significant effects other than eliminating any potential for growth in subsidized export sales. Mechanisms for implementing these restrictions would have to be developed.

Even without the GATT agreement, recent operation of the DEIP raises important questions about its effects on price volatility in domestic markets. The DEIP does not currently include domestic market impacts as a criterion for acceptance of bids. At times in recent years, DEIP contracts were accepted to remove large quantities from already tight markets. Such contracts boosted average prices but also increased price volatility. Possible measures to lessen the DEIP's effect on price volatility would include limits on domestic price benchmarks used to calculate acceptable bids, automatic suspension of contract acceptance during periods of market tightness, and authority to reject bids on the basis of domestic market impacts.

The DEIP is only one export subsidy program that conflicts with the earlier trade policy stance against the use of export subsidies. Now that the GATT negotiations are over, these programs are likely to be evaluated for consistency with long-term trade policy and market development goals and for effectiveness as price support measures. In particular, comparisons of DEIP exports with CCC purchases and export sales (in terms of CCC cost, domestic market impacts, and international market effects) are relevant. A final question is whether particular circumstances warrant elimination of dairy export subsidies while subsidies are kept for other products.

Support Level and Adjustment Mechanisms

The level of the support price and its adjustment to changing market conditions remains an issue to be taken up in the 1995 farm bill debate. At the core of this issue is the flexibility in adjusting the price and the level of removals at which such adjustments can be made. A related question is who should pay for the support program--producers, consumers, taxpayers, or all of these groups.

Estimated levels of surplus, as noted earlier, trigger support price adjustments under current law. There is some debate as to what those levels should be and whether they should be affected by import quantities. In addition, a minimum support price of $10.10 per cwt has been in effect since January 1990. The trigger levels and the related price floor bear directly on the issue of government program budget exposure and the degree of price stabilization.

In conjunction with the $10.10 price floor, an assessment on producers to cover projected government purchases over 7 billion pounds, milk equivalent, was also included in the 1990 Farm Act. The "over 7" assessment has never been implemented. The Omnibus Budget Reconciliation Acts of 1990 and 1993 resulted in an assessment on producers to be used for deficit reduction for all milk marketed. This assessment forces producer contributions toward the costs of operating the dairy purchase program and the DEIP.

Deficit reduction assessments are unpopular with producers and their levels are independent of market conditions. However, assessments generally can achieve the same budget savings as a reduction in the support price, with less of a decrease in net producer returns.

New Policy "Direction"

Dairy programs have generally been operated with industry economic criteria as the primary concerns. Benefits were not targeted to specific groups, and relative prices across products and regions

generally were intended to approximate an unregulated market. This approach minimizes efficiency losses from government intervention. However, program benefits are distributed proportionally to production and may not best meet social, environmental, or other goals. There is a growing potential that dairy program objectives may become more defined by external forces.

In the view of some groups, special assistance should be directed to small farms or to farmers in particular regions. In general, commodity programs are not well suited to deliver such assistance efficiently. However, mechanisms could be developed to target support program benefits to certain groups, possibly most easily by modifying the assessment procedures.

Some segments of the dairy industry have embraced "self help" as an approach to addressing some of the issues mentioned above and to replacing, at least in part, the present support price program. Generally stated, self help rests on the creation of a private board to dispose of U.S. dairy products in international markets. This board would purchase dairy products to export at international prices. The effects of the lower priced purchases would be distributed among all producers through either a national export (Class IV) pool or an assessment on all milk marketed in the United States. It is hoped that exports by the board would (1) lower Federal price support program costs, (2) allow the Government to reduce assessment levels, and (3) enhance domestic producer prices. Some of these objectives would be difficult to meet given the acceptance of the GATT trade agreement, which would limit subsidized dairy product exports.

Like its predecessor, the 1990 Farm Act addressed environmental and conservation issues. While adding new programs, the 1990 Act also clarified the costs of noncompliance. Environmental issues will likely be a part of 1995 farm legislation debates, particularly with regard to water (Crutchfield, Hansen, and Ribaudo).

Water quality and nonpoint source pollution questions have become more prominent since 1990. Existing concentrations of dairy cows in some areas are one issue and expansion of dairies into environmentally sensitive areas is another. New York City's actions to regulate upstate watersheds supplying its drinking water are one example. Rather than control the water quality after it reached the city (an expensive undertaking), control at the source was attempted (McGuire).

Water quantity is another potentially serious issue for dairy farmers. Water availability for agriculture is likely to be reduced. Central Valley Project water allocations in California and designation of water requirements for fisheries in the Pacific Northwest (Aillery and others) are two examples.

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Glossary

Agricultural Marketing Service (AMS). A USDA agency responsible for administering marketing order programs, standardization, inspection and grading programs, market news programs, and research and promotion programs.

Balancing. A service, usually provided by cooperative associations of milk producers, to tailor the milk supplied to each handler on a market to that handler's needs. It involves directing milk movements between producers' farms and handlers' plants and diverting supplies in excess of handlers' needs to alternative outlets such as manufactured dairy product plants.

Blend price. A weighted average price based on the proportion of Grade A milk in a pool allocated to each of the use classes. Producers participating in a pool receive its blend price with adjustments for butterfat content and farm location if so specified.

Class I differential. The amount added to the M-W price to obtain a given order's Class I price. Two components usually make up the effective or total Class I differential: a minimum Federal order differential and an over-order payment.

Class I use. Grade A milk used in Class I milk products as defined under a milk marketing order. Class I products generally include all beverage milks and may include other fluid products.

Class II use. Grade A milk used in fluid cream products or perishable manufactured products (ice cream, cottage cheese, and yogurt) under Federal marketing orders with three classes.

Class III use. Grade A milk used to produce storable manufactured products (cheese, butter, canned milk, and dry milk) under a Federal marketing order with three classes.

Class III-A use. Grade A milk used to produce nonfat dry milk under Federal milk marketing orders where the class has been established.

Classified pricing. A structure of prices that differ according to category of use. In particular, the Federal order pricing system under which regulated processors pay for Grade A milk according to the class in which it is used.

Commodity Credit Corporation (CCC). A federally owned and operated corporation within USDA created to stabilize, support, and protect farm income and prices through loans, purchases, payments, and other operations.

Consolidated Farm Service Agency (CFSA). A USDA agency responsible for administering farm price support and income support programs and some conservation and forestry cost-sharing programs.

Cooperative. A firm that is owned by its farmer-members, is operated for their benefit, and distributes earnings on the basis of patronage (volume of milk).

Cost of production. An amount, measured in dollars, of all purchased inputs, allowances for operator labor and management, and rent that is necessary to produce farm products.

Economies of size. Increasing returns as use of factors is expanded in least-cost combinations. Once an operation reaches a certain size, the marginal cost of producing additional output begins to decline.

Equalization pool. With a classified pricing system such as that used in Federal and State orders, processors pay for milk at different prices for each use category. Producers are paid a weighted average, or "blend" price for all uses of milk in a particular order or market. Processors pay into or draw out of the pool on the basis of their utilization of milk relative to market average utilization. Producers participating in the pool receive identical uniform blend prices, with adjustments for butterfat content and location. In markets with multiple component pricing, adjustments are also made for protein or nonfat solids content.

European Union. Formerly known as the European Community, originated under the Treaty of Rome in 1957 to unify and integrate member economies by establishing a customs union and common economic policies, including the Common Agricultural Policy. The EU currently has 12 members.

Farm act. The omnibus agricultural legislation that expires every 4 or 5 years. The act's titles include program commodities, trade, conservation, credit, agricultural research, food stamps, and marketing.

Federal milk marketing order. A regulation issued by the Secretary of Agriculture specifying

minimum prices and conditions under which regulated milk handlers must operate within a specified geographic area.

Fluid grade (Grade A) milk. Milk produced under sanitary conditions that qualify it for fluid consumption. Only Grade A milk is regulated under Federal marketing orders.

Fluid product. Packaged dairy products traditionally including beverage milks, milk and cream mixtures, cream, eggnog, and yogurt.

Fluid utilization. The proportion of Grade A milk pooled in a market and used to produce fluid (Class I) products.

Food, Agriculture, Conservation, and Trade Act of 1990 (P.L. 101-624). The omnibus food and agricultural legislation signed into law on November 28, 1990, that provides a 5-year framework for the Secretary of Agriculture to administer various agriculture and food programs.

General Agreement on Tariffs and Trade (GATT). An agreement originally negotiated in 1947 by 23 countries, including the United States, to increase international trade by reducing tariffs and other trade barriers. The agreement provides a code of conduct and a framework for periodic multilateral negotiations on trade issues.

Handlers. Generally refers to fluid milk processors but can include manufacturing plants that also supply fluid markets.

Make allowance. The difference between the government support price for milk and the value of its products at the CCC-announced purchase prices for butter, nonfat dry milk, and cheese. The allowance is administratively set to attain the desired level of prices for milk in manufacturing uses.

Manufacturing grade (Grade B) milk. Milk not meeting the fluid grade standards. Less stringent standards generally apply.

Manufacturing milk. Grade B milk or the Grade A milk assigned to Class II and Class III or otherwise used in the production of a manufactured product.

Manufacturers. Generally refers to the producers of cheese, butter, nonfat dry milk, and other storable dairy products.

Milk equivalent. The amount of farm milk represented by a quantity of dairy products. Most often used to aggregate stocks, trade, or removals of various dairy products on a common basis, either milkfat or skim solids. Milkfat basis refers to the quantity of milk needed to provide the milkfat contained in the dairy products. Similarly, skim solids basis refers to the milk needed to provide the skim solids used in production. Total solids basis is an arbitrary weighting of net removals on the two bases used for adjusting the support price for milk. The weights currently are 40 percent milkfat basis and 60 percent skim solids basis.

Minnesota-Wisconsin (M-W) price. A monthly average price per cwt paid by plants for manufacturing grade milk in Minnesota and Wisconsin as estimated by NASS.

North American Free Trade Agreement (NAFTA). A region-wide (the United States, Canada, and Mexico) agreement effective January 1, 1994, which: (1) progressively eliminates tariffs and nontariff barriers to trade in goods; (2) establishes principles of and improves access for services trade; (3) establishes rules for investment; (4) strengthens protection of intellectual property rights; and (5) creates an effective dispute settlement mechanism. Other countries have expressed interest in joining in the agreement.

Over-order payment. A payment above Federal order minimum prices negotiated between buyers and sellers to cover the cost of providing market services or attracting milk away from manufacturing plants. Over-order payments could also result from market power.

Parity price. Originally defined as the price which gives a unit of a commodity the same purchasing power today as it had in a base period, traditionally

1910-14. In 1948, parity procedures were modified to adjust for changes in relative farm prices between the base period and the most recent 10 years.

Perishable manufactured dairy products. Manufactured dairy products with limited storage life, including ice cream, cottage cheese, yogurt, and sour cream.

Processors. Generally refers to firms that process raw Grade A milk into fluid dairy products.

Public Law 480 (P.L. 480). Common name for the Agricultural Trade Development and Assistance Act of 1954, which seeks to expand foreign markets for U.S. agricultural products, combat hunger, and encourage economic development in developing countries.

rbST (recombinant bovine somatotropin). A synthesized copy of a protein hormone, bovine somatotropin (bST), which naturally occurs in cattle. The hormone is secreted by the cow's pituitary gland and directs how energy and nutrients from feeds are used for growth, milk production, and other body functions. Initial studies of the hormone emphasized its relation to growth and led to it being called bovine growth hormone (bGH), a name that is still sometimes used.

Reconstituted milk. Fluid milk recombined from ingredients (nonfat dry milk, condensed milk, cream, butter, and butter oil) or concentrated milk.

Section 22. A section of the Agricultural Adjustment Act of 1933 (P.L. 73-10) that authorizes the President to restrict imports by imposing quotas or fees if the imports interfere with Federal price support programs or substantially reduce U.S. production of products processed from farm commodities.

Storable manufactured dairy products. Manufactured dairy products, including butter, nonfat dry milk, and hard cheeses, which can be stored for relatively long periods of time.

Surplus. The difference between commercial milk supplies and the amount demanded by the market at a given price. CCC net removals (price-support purchases plus DEIP shipments minus domestic sales for unrestricted use) approximate the surplus during a particular period.

Appendix A--Calculation of CCC Purchase Prices for Dairy Products

Calculations of CCC purchase prices for dairy products with support price for manufacturing grade milk of $10.10 per cwt. The last change in the purchase price calculations became effective in 1993.

	Effective July 7, 1993
Support price, $/cwt, at 3.67 percent milkfat	10.10
Support price, $/cwt, at 3.5 percent milkfat	10.00
Butterfat differential 1/	6.1
Yields per 100 pounds of milk (3.67% milkfat)	
Butter	4.48
Nonfat dry milk (NDM)	8.13
Cheese	10.1
Butter-Nonfat dry milk calculations	
Return to butter-powder plants, $/cwt	10.10
CCC manufacturing allowance for butter and NDM, $/cwt	1.22
Value of butter and NDM (U.S. average) made from 100 pounds of milk, $/cwt	11.32
Nonfat dry milk purchase price (rounded), $/lb	1.0340
Value of NDM per 100 pounds milk, $/cwt 2/	8.41
Value of butter:	
Dollars per 100 pounds of milk	2.91
Dollars per pound (calculated) 3/	.6496
Butter purchase price (rounded), $/lb	.6500
Cheese calculation	
Return to cheese plants, $/cwt	10.10
CCC manufacturing allowance for cheese and whey, $/cwt	1.37
Value of cheese and whey per 100 pounds of milk, $/cwt	11.47
Value of .25 pound of whey fat: $ 4/	.16
Value of cheese:	
Dollars per 100 pounds of milk	11.31
Dollars per pound (calculated) 5/	1.1198
Cheese purchase prices (rounded), $/lb	
Block	1.1200
Barrel	1.0900

1/ (Butter purchase price times 0.138) - (.0028 times 3.67 price). 2/ NDM price per pound times 8.13. 3/ Value of butter per 100 pounds of milk divided by 4.48. 4/ Butter purchase price times 0.25. 5/ Value of cheese per 100 pounds divided by 10.1.

Appendix B--Major Price Support Actions, 1970-94

1970-72 Support prices set at levels above the minimum of 75 percent of parity.

1973 The Agricultural and Consumer Protection Act of 1973 set a minimum support level of 80 percent of parity through March 1974.

1974-77 Support prices, set at 80 percent of current parity, adjusted frequently because of rapid inflation.

1977 The Food and Agriculture Act of 1977 set a minimum support price of 80 percent of parity and required semi-annual adjustments to reflect changes in prices paid by farmers. These provisions were to be in effect for 2 years.

1979 The support price provisions of the 1977 Act were extended for 2 additional years.

1981 The Agriculture and Food Act of 1981 decoupled support prices from the parity concept and implemented a set of triggers relating the minimum support level to the size of CCC purchases.

1982 The support price was frozen at $13.10 per cwt.

The Omnibus Budget Reconciliation Act of 1982 authorized a 50-cent deduction per cwt on all milk marketed, first collected in April 1983. An additional 50-cent deduction, implemented on September 1, 1983, was refundable to producers who reduced marketings by a specified amount.

1983 The Dairy and Tobacco Adjustment Act of 1983 lowered the support price to $12.60 effective December 1, 1983. A 50-cent assessment was continued through March 1985. Because purchases were projected to exceed trigger levels specified in the legislation, the support price dropped to $11.60 by July 1, 1985. The Act also provided for a milk diversion program, which operated between January 1984 and March 1985, that paid contracting producers $10 per cwt for reductions from base milk marketings.

1985 The Food Security Act of 1985 authorized a voluntary dairy termination program in which producers submitted bids to remove milk production for at least 5 years. The Act also set the support price at $11.60 for calendar 1986, $11.35 for January-September 1987, and $11.10 through 1990. Further adjustments to the support price on January 1, 1988, 1989, and 1990 were to be tied to projected removals. Higher minimum Class I differentials were also legislated.

1986 The Food Security Improvement Act of 1986 initiated a 12-cent per cwt assessment on all milk marketings from April 1, 1986, through September 30, 1986. The assessment was put in place to meet outlays reduction required by the Balanced Budget and Emergency Deficit Control Act of 1985.

1987 The Omnibus Budget Reconciliation Act of 1987 required a 2.5-cent per cwt outlays reduction assessment for calendar year 1988.

1988 The Disaster Assistance Act of 1988, as amended by P.L. 101-7 in 1989, prohibited any January 1, 1989, reduction in the support price. It also required a 50-cent increase on April 1, 1989, to be followed by a 50-cent reduction on July 1, 1989. The increase was achieved by increasing the support purchase price for nonfat dry milk, while the decline was achieved by decreasing butter's.

1990 The support price was lowered to $10.10 per cwt.

Under the Food, Agriculture, Conservation, and Trade Act of 1990, adjustments to the support price during 1991 through 1995 were to be made according to CCC purchases measured on a milk equivalent, total milk solids basis instead of a milkfat basis. However, the support price cannot be less than $10.10 per cwt through 1995. CCC program expenditures are limited to the purchase of 7 billion pounds of milk. Purchases above this amount are to be financed through a producer assessment. To deal with the milkfat surplus, adjustment to support purchase prices for butter and nonfat dry milk are limited to not more than two per year.

The Agricultural Reconciliation Act of 1990 implemented the 1990 deficit reduction agreement. For 1991, the assessment on milk marketings was 5 cents per cwt of milk marketed. For calendar years 1992-95, it increases to 11.25 cents. Refunds are to be made available to producers not increasing marketings from the previous year. Higher assessments were authorized to recapture refunds.

1991 First heavy use of the Dairy Export Incentive Program. CCC commodities removed from the sellback list.

1992 January 17 - Support purchase price for butter lowered 11 cents; nonfat dry milk price raised 6.2 cents. The support price remained at $10.10 per cwt.

May 1 - Deficit reduction assessment raised to 13.65 cents per cwt of milk marketed through the remainder of 1992.

May 13 - Support purchase price for butter lowered 11 cents; nonfat dry milk price raised 6.1 cents. The support price remained at $10.10 per cwt.

1993 May 1 - Deficit reduction assessments raised to 16.35 cents per cwt of milk marketed through the remainder of 1993.

July 7 - Support purchase price for butter lowered 11.25 cents; nonfat dry milk price raised 6.1 cents. The support price remained at $10.10 per cwt.

1994 May 1- Deficit reduction assessments set at 19.28 cents per cwt of milk marketed through the remainder of 1994.

Appendix C--How Federal Milk Marketing Order Pricing Works

Federal milk marketing orders establish the minimum prices that regulated handlers must pay for Grade A milk based on its uses. However, those prices are not paid directly to the producers delivering milk to the regulated handler. Milk receipts are pooled by the market administrator and a weighted average, or blend, price (based on milk uses) is paid to producers each month. This marketwide pooling is the predominant pricing method in Federal milk marketing orders. An example based on a hypothetical order will help to illustrate the procedure.

Suppose there is a marketing order covering the area surrounding Emerald City. Three regulated handlers are pooled under the order: a fluid milk bottler, an ice cream plant, and a cheese plant. Each handler is representative of one of four class uses (Class I, Class II, Class III, and Class III-A) in many of the Federal orders. Because the milk in our hypothesized example is under the Federal order, it is assumed to be all Grade A.

Mr. Ozburn sells his milk to the cheese plant, which is required to pay the minimum Class III price for its milk. The Class III price in the Emerald City order is set equal to the M-W price, the price unregulated manufacturing plants pay for Grade B milk in Minnesota and Wisconsin. For this July 1993 example, that price is $11.41 per cwt.

Milk is sold to the ice cream plant by Ms. North, a milk producer living just down the road from Mr. Ozburn. For this example we use the recently proposed Class II price determination, the M-W 2 months previous plus a fixed differential of $0.30 per cwt (May M-W + $0.30) of $11.81 per cwt.

Finally, the fluid milk bottler buys milk from Mr. Crowe, a farmer on the other side of town. The fluid processor must pay a minimum Class I price based on the M-W 2 months previous (May) plus a fixed Class I differential based on various cost factors. We assume that the Class I differential in the Emerald City order is $2.45 per cwt. Therefore, the minimum Class I price is $13.96 per cwt.

Even though the producers sold their milk to different types of plants, they will each receive the same (minimum) price for their milk. The monthly minimum blend is calculated by first multiplying the class prices by the amounts of milk used in each class to determine the total receipts under the order. Assume that the cheese plant bought 80,000 cwt of milk, the ice cream plant 15,000 cwt, and the fluid plant 48,000 cwt. The receipts for August are:

Class III	$11.41	x	80,000 cwt	=	$ 912,800
Class II	$11.81	x	15,000 cwt	=	$ 177,150
Class I	$13.96	x	48,000 cwt	=	$ 670,080
				Total	$ 1,760,030

The total receipts are then divided by the total quantity of milk sold to the regulated handlers (143,000 cwt) to determine the minimum blend price ($12.30 per cwt) each producer receives for milk sold in July. In actuality, Federal order pricing is not so simple. But, regardless of technical language involved, Federal order minimum blend prices are the outcome of an accounting of how much milk is purchased by regulated handlers, and how that milk is used.

Appendix table 1--Milk production and factors affecting supply, 1970-93

Year	Milk cattle on farms, January 1			Milk cows on farms, average during year	Milk production		Average prices received by farmers per cwt		
	Milk cows and heifers that have calved	Milk cow replacements; heifers 500 pounds and over			Per cow	Total	All milk wholesale	Milk eligible for fluid market	Milk manufacturing grade
	-----Thousands-----		*Number per 100 cows*	*Thousands*	*Pounds*	*Million pounds*	*--------- Dollars ---------*		
1970	12,091	3,880	32.1	12,000	9,751	117,007	5.71	6.05	4.70
1971	11,909	3,843	32.3	11,839	10,015	118,566	5.87	6.19	4.86
1972	11,776	3,828	32.5	11,700	10,259	120,025	6.07	6.38	5.08
1973	11,622	3,872	33.3	11,413	10,119	115,491	7.14	7.42	6.20
1974	11,297	3,941	34.9	11,230	10,293	115,586	8.33	8.66	7.13
1975	11,220	4,087	36.4	11,139	10,360	115,398	8.75	9.02	7.63
1976	11,071	3,956	35.7	11,032	10,894	120,180	9.66	9.93	8.56
1977	10,998	3,887	35.3	10,945	11,206	122,654	9.72	9.96	8.70
1978	10,896	3,886	35.7	10,803	11,243	121,461	10.60	10.80	9.65
1979	10,790	3,932	36.4	10,734	11,492	123,350	12.02	12.20	11.06
1980	10,758	4,159	38.6	10,799	11,891	128,406	13.05	13.23	12.01
1981	10,849	4,342	40.0	10,898	12,183	132,770	13.77	13.95	12.72
1982	10,986	4,547	41.4	11,011	12,306	135,505	13.61	13.80	12.60
1983	11,047	4,545	41.1	11,059	12,622	139,588	13.58	13.75	12.61
1984	11,059	4,533	41.0	10,793	12,541	135,351	13.46	13.61	12.49
1985	10,777	4,770	44.3	10,981	13,024	143,012	12.76	12.90	11.72
1986	11,116	4,709	42.4	10,773	13,285	143,124	12.51	12.62	11.46
1987	10,466	4,305	41.1	10,327	13,819	142,709	12.54	12.66	11.37
1988	10,311	4,122	40.0	10,262	14,145	145,152	12.26	12.36	11.15
1989	10,212	4,161	40.7	10,126	14,244	144,239	13.56	13.66	12.38
1990	10,153	4,227	41.6	10,127	14,646	148,314	13.74	13.89	12.34
1991	10,156	4,220	41.6	9,992	14,860	148,477	12.27	12.30	11.05
1992	9,913	4,202	42.4	9,835	15,419	151,647	13.15	13.19	11.91
1993 1/	9,838	4,224	42.9	9,705	15,554	150,954	12.86	12.88	11.80

See footnotes at end of table.

Continued--

Appendix table 1--Milk production and factors affecting supply, 1970-93--Continued

Year	Dairy ration value per cwt	Milk/feed price ratio 2/	Milk cow cost		Grain and other concentrates fed to milk cows			Dairy pasture feed conditions, as percent of normal	Alfalfa hay prices received by farmers per ton	Slaughter cow prices per cwt 3/
			Price received per head	Milk required to buy a cow	Total fed	Per cow	Per cwt of milk produced			
	Dollars	*Pounds*	*Dollars*	*Cwt*	*Thousand tons*	*---- Pounds ---*		*Percent*	*---- Dollars ----*	
1970	3.28	1.74	332	58	24,870	3,979	42.4	81	24.70	21.32
1971	3.44	1.71	358	61	25,107	4,070	42.4	79	27.10	21.62
1972	3.52	1.72	397	65	25,162	4,298	41.9	80	31.45	25.21
1973	4.88	1.46	496	69	25,042	4,389	43.4	83	41.55	32.82
1974	6.23	1.34	500	60	24,586	4,384	42.6	75	52.58	25.56
1975	6.25	1.40	412	47	24,274	4,357	42.1	79	54.38	21.09
1976	6.30	1.53	477	49	25,083	4,545	41.7	70	60.81	25.31
1977	6.20	1.57	504	52	25,518	4,709	42.1	72	60.57	25.32
1978	6.08	1.74	675	64	26,018	4,803	42.8	76	52.25	36.79
1979	6.68	1.80	1,040	87	27,207	5,070	44.1	82	60.37	50.10
1980	7.42	1.76	1,190	91	28,433	5,260	44.2	70	72.00	45.73
1981	8.02	1.72	1,200	87	28,513	5,220	42.9	79	70.90	41.93
1982	7.45	1.83	1,110	82	29,661	5,380	43.7	83	72.73	39.96
1983	7.88	1.72	1,030	76	30,162	5,438	43.2	77	78.70	39.35
1984	8.16	1.65	895	66	28,449	5,253	42.0	74	79.48	39.81
1985	7.35	1.73	860	67	8,891	5,427	41.8	77	73.67	38.31
1986	7.00	1.79	820	66	29,913	5,534	41.8	80	64.85	37.18
1987	6.81	1.84	920	73	29,607	5,736	41.6	79	65.97	44.80
1988	7.74	1.58	990	81	29,853	5,820	41.2	59	82.51	47.91
1989	8.20	1.65	1,030	76	29,602	5,845	41.0	73	95.98	50.11
1990	7.98	1.71	1,160	84	32,402	6,397	43.7	74	92.56	53.32
1991	7.73	1.58	1,100	90	30,934	6,192	41.7	78	78.96	51.50
1992	7.68	1.69	1,130	86	31,572	6,417	41.6	82	75.45	49.69
1993 1/	7.73	1.64	1,160	90	32,185	6,637	42.7	84	85.73	50.14

1/ Preliminary.
2/ Pounds of average concentrate ration equal in value to 1 pound of milk.
3/ Utility grade, Omaha 1965-87, Wisconsin auctions 1988 and after.

Appendix table 2--Propensity to produce milk index, relative production index, and relative price index, by State, 1992, 1985 and 1975

State	Propensity to produce milk index 1/				Relative production index 2/			Relative price index 3/		
	1992	1992	1985	1975	1992	1985	1975	1992	1985	1975
	Rank	*Index*								
New Mexico	1	1,070	474	198	749	394	166	70	83	84
Arizona	2	421	324	257	341	268	211	81	83	82
Nevada	3	378	282	222	291	231	182	77	82	82
California	4	278	206	155	231	185	150	83	90	97
Florida	5	254	193	233	183	152	182	72	79	78
Washington	6	236	154	147	212	137	134	90	89	91
Texas	7	189	137	137	151	114	114	80	83	83
Colorado	8	153	113	115	136	110	105	89	97	91
Utah	9	152	124	131	146	129	131	96	104	100
Idaho	10	150	117	96	164	134	107	109	114	111
Pennsylvania	11	141	151	130	130	132	177	92	87	90
Georgia	12	140	132	152	113	103	120	81	78	79
Oregon	13	138	121	101	124	110	94	90	91	93
Vermont	14	124	126	127	110	111	116	89	88	91
Louisiana	15	115	115	155	94	95	136	82	82	88
New York	16	103	104	120	96	94	109	93	91	91
N. Carolina	17	93	110	111	76	93	99	82	84	89
Virginia	18	91	103	102	83	90	93	91	87	91
Wisconsin	19	87	99	97	110	121	114	127	122	118
Maine	20	86	96	109	74	81	94	86	84	86
New Hampshire	21	86	102	113	70	81	94	81	80	83
Maryland	22	84	108	117	77	95	109	92	88	93
S. Dakota	23	83	92	108	94	107	116	113	116	107
Connecticut	24	81	95	113	60	72	88	74	76	78
Michigan	25	79	87	88	84	92	91	106	105	104
Ohio	26	72	80	86	73	80	87	101	100	101
Tennessee	27	71	78	92	77	83	94	109	107	102
Oklahoma	28	70	71	79	66	66	74	94	94	94
Delaware	29	67	73	76	60	64	70	90	87	92
S. Carolina	30	67	100	106	55	86	94	82	86	89
Minnesota	31	63	75	82	82	95	98	130	126	119
Kentucky	32	61	68	92	69	75	97	113	110	105
Massachusetts	33	61	86	106	51	66	84	83	76	79
Arkansas	34	59	66	71	61	69	72	104	105	108
Montana	35	58	65	65	55	63	62	95	96	96
Missouri	36	57	59	76	63	64	79	110	109	104
Indiana	37	51	57	66	55	61	69	108	107	105
Nebraska	38	49	55	77	47	54	72	96	98	93
Alabama	39	48	52	78	39	44	69	82	85	89
Iowa	40	46	48	58	56	56	67	122	118	115
Kansas	41	46	48	68	48	54	73	103	111	108
Mississippi	42	46	56	70	45	55	69	98	98	99
Wyoming	43	44	58	58	43	58	59	98	100	102
N. Dakota	44	43	52	57	46	53	56	106	102	98
Illinois	45	41	45	51	47	51	56	116	113	109
West Virginia	46	35	52	57	31	46	52	89	88	92
New Jersey	47	32	47	62	26	37	50	80	78	80
Rhode Island	48	29	39	71	21	28	52	72	72	73

1/ The "propensity to produce milk index" is the relative production index divided by the relative price index. Figures may not divide exactly because of rounding.

2/ The relative production index is:

$$\frac{\text{(State's milk prod. in year t)}}{\text{(Total U.S. milk prod. in year t)}} \div \frac{\text{(State's avg. milk prod. in 1957-59)}}{\text{(U.S. avg. total milk prod. in 1957-59)}} \times 100$$

3/ The relative price index is:

$$\frac{\text{(State's all milk price in year t)}}{\text{(U.S. all milk price in year t)}} \div \frac{\text{(State's avg. all milk price, 1957-59)}}{\text{(U.S. avg. all milk price, 1957-59)}} \times 100$$

Appendix table 3--Farm operation income statement for dairy farms by region, 1992 1/

	North-east	Lake States	Corn Belt	Northern Plains	Appa-lachia	South-east	Delta	Southern Plains	Mountain	Pacific	All farms
						Dollars per farm					
Gross cash income	147,959	123,643	114,096	96,704	153,815	465,161	221,328	301,985	365,540	754,709	166,766
Livestock and milk sales	140,362	113,761	104,798	80,878	140,361	455,220	208,542	282,517	354,112	716,481	155,785
Crop sales (including net CCC loans)	3,457	4,943	6,991	7,666	10,958	1,122	3,559	8,224	4,257	13,200	5,586
Government payments	1,941	3,025	1,385	3,874	1,325	2,167	1,442	2,896	1,661	1,501	2,356
Other farm-related income 2/	2,199	1,914	922	4,286	1,171	6,652	7,785	8,348	5,510	23,527	3,039
Less: Cash expenses	115,157	88,769	91,861	74,906	107,659	380,125	191,550	221,461	295,456	623,634	128,092
Variable	98,792	71,662	77,260	60,114	95,929	351,843	174,498	190,884	267,500	557,216	109,350
Livestock purchases	4,920	4,201	3,686	4,312	5,944	22,982	14,472	17,439	20,508	22,865	6,143
Feed	37,661	21,166	33,227	21,143	39,657	194,163	82,421	100,756	143,460	307,051	45,686
Other livestock-related expenses 3/	6,672	6,217	4,305	3,102	4,402	12,068	3,787	5,119	13,220	27,599	6,796
Seed and plants	2,109	3,019	2,178	1,882	2,090	2,757	3,232	1,745	1,563	2,819	2,529
Fertilizer and chemicals	7,279	7,637	6,593	4,661	8,599	13,649	14,362	7,585	5,108	11,658	7,592
Labor	12,068	8,454	7,025	2,991	13,321	47,112	24,307	18,122	30,191	79,048	13,100
Fuels and oils	3,976	3,603	3,421	5,096	3,591	6,950	4,976	6,146	6,581	10,859	4,165
Repairs and maintenance	9,199	7,281	6,851	6,397	7,001	14,783	8,257	9,864	12,071	25,870	8,565
Machine-hire and custom work	5,758	2,719	4,073	4,147	5,802	17,337	10,392	12,849	15,625	28,328	5,579
Utilities	4,527	3,208	2,854	3,070	2,995	10,953	4,947	5,244	8,928	21,340	4,398
Other variable expenses 4/	4,623	4,157	3,047	3,313	2,527	9,089	3,345	6,015	10,245	19,779	4,797
Fixed	16,365	17,107	14,601	14,792	11,730	28,282	17,052	30,577	27,956	66,418	18,742
Real estate and property taxes	3,678	3,626	1,721	1,459	1,603	4,002	706	1,825	2,931	6,081	3,180
Interest	6,392	7,169	5,302	6,863	5,193	12,054	11,033	14,263	17,803	30,525	8,005
Insurance premiums	2,846	2,229	1,596	1,935	2,331	6,644	2,198	2,893	3,147	7,721	2,558
Rent and lease payments	3,449	4,083	5,982	4,535	2,603	5,582	3,115	11,596	4,075	22,091	4,999
Equals: Net cash farm income	32,802	34,874	22,235	21,798	46,156	85,036	29,778	80,524	70,084	131,075	38,674
Less:											
Depreciation	15,442	12,988	12,287	8,870	8,867	29,008	22,653	17,321	21,913	31,762	14,431
Labor, noncash benefits	1,122	334	371	3	856	3,065	372	1,350	901	6,870	840
Plus:											
Value of inventory change	5,872	8,198	5,499	7,545	1,745	14,315	3,074	7,089	23,481	4,206	7,132
Nonmoney income 5/	4,569	3,668	3,672	1,898	3,830	4,478	3,343	3,895	4,213	5,096	3,903
Equals: Net farm income	26,679	33,418	18,748	22,368	42,008	71,756	13,170	72,837	74,964	101,745	34,438

1/ Dairy farms defined as farms generating at least 50 percent of the total value of production from dairy production.
2/ Includes income from machine-hire, custom work, livestock grazing, land rental, contract production fees, outdoor recreation, and any other farm-related source.
3/ Includes veterinary services and supplies, livestock leasing, custom feed processing, bedding, and grazing.
4/ Includes supplies, registration fees, transportation, storage, and general business expenses.
5/ Defined as the value of home consumption and imputed value of farm dwellings owned by the farm operation.

Source: Farm Costs and Returns Surveys, USDA, Mitchell Morehart, 202-219-0801.

Appendix table 4--Farm operation balance sheet for dairy farms by region, 1992 1/ 2/

	North-east	Lake States	Corn Belt	Northern Plains	Appa-lachia	South-east	Delta	Southern Plains	Mountain	Pacific	All farms
						Dollars per farm					
Total assets	637,408	491,527	463,596	352,783	608,701	1,466,852	542,823	775,579	850,617	1,759,352	595,245
Current assets	69,243	45,373	61,650	88,482	99,838	136,252	81,993	137,577	180,565	204,440	70,241
Livestock inventory	11,555	7,978	13,373	18,227	17,249	24,643	32,327	33,255	37,746	64,565	14,317
Crop inventory	18,039	16,597	22,672	11,993	10,432	6,920	6,505	18,664	35,877	31,430	18,190
Purchased inputs	5,704	6,045	4,101	2,748	4,846	7,862	7,478	5,693	24,299	33,316	6,985
Cash invested in growing crops	1,266	319	190	2,670	694	423	1,395	2,233	276	803	694
Prepaid insurance	712	557	399	484	583	1,661	550	723	787	1,930	640
Other assets 3/	31,967	13,877	20,915	52,360	66,034	94,743	33,738	77,009	81,580	72,396	29,415
Noncurrent assets	568,165	446,154	401,946	264,301	508,863	1,330,600	460,830	638,002	670,052	1,554,912	525,004
Investments	2,965	2,388	636	1,451	2,323	1,055	795	1,181	3,208	7,653	2,375
Land and buildings 4/	400,058	258,933	269,222	147,529	363,057	1,038,322	287,068	357,374	367,773	950,337	333,188
Operator's dwelling	52,184	40,486	44,865	14,432	45,921	61,063	47,107	43,229	51,043	67,746	44,885
Farm equipment	90,015	101,992	71,763	66,887	73,113	89,612	69,497	129,259	98,600	161,181	94,469
Breeding animals	75,127	82,841	60,325	48,434	70,370	201,611	103,470	150,188	200,471	435,741	94,972
Total liabilities	80,690	76,907	57,985	64,051	40,192	179,469	96,804	117,423	181,125	277,149	85,007
Current liabilities	22,433	23,296	13,412	19,396	8,077	48,193	67,796	34,609	47,653	109,902	25,681
Notes payable within one year	8,758	11,585	3,066	10,365	1,714	25,402	57,876	14,732	21,079	73,284	12,496
Current portion of term debt	9,301	7,292	6,601	5,558	3,909	14,353	5,938	12,858	18,836	21,244	8,422
Accrued interest	2,290	2,175	1,627	1,817	1,132	5,131	2,785	3,312	5,202	7,853	2,407
Accounts payable	2,084	2,244	2,118	1,656	1,322	3,307	1,197	3,707	2,536	7,521	2,356
Noncurrent liabilities	58,257	53,611	44,573	44,655	32,115	131,276	29,008	82,814	133,472	167,247	59,326
Non-real estate	18,547	11,853	12,071	7,752	5,212	14,624	14,608	24,868	32,320	30,795	14,571
Real estate	39,710	41,758	32,502	36,903	26,903	116,652	14,400	57,946	101,152	136,452	44,755
Farm equity 5/	556,718	414,620	405,611	288,732	568,509	1,287,383	446,019	658,156	669,492	1,482,203	510,238
Debt/asset ratio 6/	0.13	0.16	0.13	0.18	0.07	0.12	0.18	0.15	0.21	0.16	0.14

1/ As of December 31.
2/ Dairy farms defined as farms generating at least 50 percent of the total value of production from dairy production.
3/ Includes accounts receivable, certificates of deposit, checking and savings balances, and any other financial assets of the farm business.
4/ The value of the operator's dwelling and any associated liabilities were included if the dwelling was located on the farm.
5/ Total farm assets minus total debt associated with the farm business.
6/ Indicates the degree of security for a lender and the relative use of an owner's capital.

Source: Farm Costs and Returns Surveys, USDA, Mitchell Morehart, 202-219-0801.

Appendix table 5--U.S. milk production cash costs and returns, per cwt, 1982-92

Item	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992
						Dollars					
Gross value of production:											
Milk	13.52	13.50	13.38	12.69	12.46	12.48	12.20	13.53	13.70	12.24	13.15
Cattle	1.14	1.09	1.07	1.06	1.01	1.17	1.24	1.35	1.43	1.36	1.27
Other income 1/	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.12	0.14	0.14	0.16
Total, gross value of production	14.66	14.59	14.45	13.74	13.47	13.65	13.44	15.01	15.27	13.73	14.58
Cash expenses:											
Feed--											
Concentrates	3.28	3.43	3.47	3.35	3.19	3.06	3.42	3.75	3.68	3.66	3.43
Byproducts 2/				0.21	0.20	0.18	0.22	0.27	0.28	0.29	0.29
Hay	0.86	0.85	0.82	1.10	1.04	0.99	1.37	1.24	1.18	1.04	1.06
Silage	0.54	0.56	0.58	0.58	0.57	0.53	0.82	0.93	0.86	0.86	0.81
Pasture and other forage	0.04	0.04	0.04	0.06	0.06	0.06	0.07	0.09	0.09	0.09	0.09
Other--											
Milk hauling and marketing	0.45	0.44	0.45	0.58	0.55	0.61	0.61	0.56	0.58	0.57	0.59
Artificial insemination	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.13
Veterinary and medicine	0.20	0.21	0.22	0.20	0.20	0.20	0.20	0.21	0.21	0.20	0.23
Livestock hauling	0.02	0.02	0.02	0.03	0.03	0.03	0.03	0.02	0.02	0.02	0.02
Fuel, lube, and electricity	0.40	0.37	0.33	0.32	0.22	0.23	0.22	0.27	0.29	0.29	0.28
Machinery and building repairs	0.37	0.37	0.37	0.40	0.39	0.38	0.38	0.50	0.54	0.48	0.49
Hired labor	0.87	0.85	0.91	0.69	0.68	0.68	0.69	0.71	0.72	0.75	0.77
DHIA fees	0.05	0.05	0.05	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06
Dairy supplies	0.19	0.19	0.19	0.21	0.19	0.19	0.20	0.21	0.21	0.21	0.20
Dairy assessment	0.00	0.48	0.50	0.13	0.36	0.19	0.03	0.00	0.01	0.05	0.13
Other variable cash expenses 3/	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.06	0.07	0.07	0.06
Total, variable cash expenses	7.39	7.98	8.07	8.04	7.86	7.51	8.44	9.00	8.92	8.76	8.64
General farm overhead	0.60	0.50	0.60	0.53	0.59	0.70	0.81	0.44	0.53	0.48	0.45
Taxes and insurance	0.35	0.36	0.34	0.37	0.35	0.35	0.39	0.39	0.37	0.39	0.39
Interest	1.56	1.55	1.63	1.41	1.23	1.03	1.02	0.77	0.83	0.78	0.66
Total, fixed cash expenses	2.51	2.41	2.57	2.31	2.17	2.08	2.22	1.60	1.73	1.65	1.50
Total, cash expenses	9.90	10.39	10.64	10.35	10.03	9.59	10.66	10.60	10.65	10.41	10.14
Gross value of production less cash expenses	4.76	4.20	3.80	3.39	3.43	4.06	2.78	4.41	4.62	3.32	4.44
Gross value of production:											
Milk	13.52	13.50	13.38	12.69	12.46	12.48	12.20	13.53	13.70	12.24	13.15
Cattle	1.14	1.09	1.07	1.06	1.01	1.17	1.24	1.35	1.43	1.36	1.27
Other income	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.12	0.14	0.14	0.16
Total, gross value of production	14.66	14.59	14.45	13.74	13.47	13.65	13.44	15.01	15.27	13.73	14.58
Economic (full ownership) costs:											
Variable cash expenses	7.39	7.98	8.07	8.04	7.86	7.51	8.44	9.00	8.92	8.76	8.64
General farm overhead	0.60	0.50	0.60	0.53	0.59	0.70	0.81	0.44	0.53	0.48	0.45
Taxes and insurance	0.35	0.36	0.34	0.37	0.35	0.35	0.39	0.39	0.37	0.39	0.39
Capital replacement	1.57	1.56	1.54	1.66	1.60	1.55	1.67	1.48	1.70	1.35	1.29
Operating capital	0.12	0.12	0.12	0.08	0.05	0.06	0.08	0.09	0.08	0.06	0.04
Other nonland capital	1.04	0.99	0.93	0.53	0.51	0.57	0.65	0.77	0.97	0.86	0.87
Land	0.36	0.36	0.36	0.17	0.14	0.13	0.17	0.42	0.39	0.40	0.38
Unpaid labor	1.51	1.46	1.55	1.68	1.66	1.65	1.67	1.72	1.77	1.84	1.88
Total, economic costs	12.94	13.32	13.52	13.07	12.76	12.52	13.88	14.31	14.73	14.14	13.94
Residual returns to management and risk	1.72	1.27	0.93	0.68	0.71	1.13	-0.44	0.70	0.54	-0.41	0.64

Note: Survey base changed in 1989.

1/ Includes the dairy enterprise share of receipts from cooperative patronage dividends, assessment refunds, renting or leasing of dairy animals, manure sales, and insurance indemnity payments.

2/ The byproducts feed category first appeared in the 1985 FCRS.

3/ Includes the dairy enterprise share of expenses for bedding and litter, and custom manure hauling and disposal.

Appendix table 6--Commercial disappearance: Selected manufactured dairy products, 1970-93 1/

Year	Butter 2/	Cheese		Nonfat dry milk	Canned milk	Frozen products 4/	Milkfat	Skim solids
		American 3/	Other					
		Million pounds				*Million gallons*	*Million pounds*	
1970	898.2	1,401.9	904.8	983.2	1,213.8	1,097.3	3,974	9,369
1971	847.1	1,454.8	987.0	981.8	1,186.9	1,102.4	3,986	9,522
1972	885.4	1,595.7	1,127.8	919.2	1,102.6	1,108.6	4,140	9,837
1973	855.6	1,677.1	1,210.2	1,110.1	1,056.7	1,118.6	4,143	10,068
1974	929.9	1,780.6	1,276.5	809.9	999.5	1,128.0	4,118	9,570
1975	950.8	1,717.1	1,331.9	697.0	923.9	1,183.9	4,170	9,587
1976	919.0	1,920.9	1,458.0	719.2	899.0	1,154.0	4,253	9,936
1977	859.8	1,958.8	1,512.3	682.2	775.2	1,167.6	4,223	9,995
1978	903.5	2,064.7	1,655.5	658.4	776.1	1,173.5	4,339	10,150
1979	895.0	2,113.1	1,730.4	603.1	773.7	1,152.1	4,380	10,221
1980	878.8	2,023.9	1,827.9	538.9	732.5	1,166.9	4,333	10,184
1981	869.2	2,147.9	1,875.6	464.1	750.4	1,167.7	4,359	10,229
1982	897.3	2,166.8	2,044.6	447.7	715.3	1,178.2	4,445	10,290
1983	881.7	2,083.3	2,134.3	459.9	685.8	1,224.2	4,457	10,328
1984	902.7	2,253.6	2,310.9	497.8	643.6	1,241.8	4,736	10,726
1985	918.2	2,279.1	2,515.7	435.0	598.1	1,251.0	4,771	10,966
1986	922.9	2,382.8	2,684.9	479.1	582.7	1,248.6	4,871	11,257
1987	902.5	2,437.1	2,880.2	492.9	577.3	1,260.7	4,939	11,569
1988	909.8	2,570.0	3,034.5	734.3	563.3	1,248.0	5,003	12,177
1989	876.0	2,683.1	3,208.9	873.0	520.9	1,214.0	4,978	12,532
1990	915.2	2,784.4	3,426.4	697.6	547.3	1,174.6	5,055	12,600
1991	903.0	2,792.7	3,574.0	663.8	543.7	1,196.1	5,090	12,703
1992	944.2	2,902.7	3,795.4	662.7	571.6	1,203.1	5,090	12,703
1993 5/	1,040.4	2,945.5	3,884.3	628.9	547.8	1,198.3	5,319	12,821

1/ Totals may not add because of rounding.
2/ Imports include butter-equivalent of butteroil.
3/ Imports include Colby cheese; stocks do not include processed cheese.
4/ Excludes Mellorine. Excludes soft ice cream starting 1986.
5/ Preliminary.

Appendix table 7--Fluid milk sales by product, 1970-93

Year	Plain whole milk	Flavored whole milk	Plain lowfat milk	Plain skim milk	Flavored lowfat and skim milk	Buttermilk	Total beverage milk
				Million pounds			
1970	41,363	1,144	6,082	2,368	611	1,130	52,698
1971	41,043	1,287	7,022	2,552	538	1,153	53,595
1972	40,027	1,484	8,207	2,599	533	1,131	53,981
1973	38,473	1,549	9,100	2,921	571	1,065	53,679
1974	36,765	1,440	9,763	2,959	561	988	52,476
1975	36,188	1,366	11,468	2,480	719	1,011	53,232
1976	35,241	1,475	12,431	2,524	864	1,021	53,556
1977	34,036	1,446	13,426	2,617	1,062	1,007	53,594
1978	33,235	1,359	14,250	2,543	1,097	983	53,467
1979	32,480	1,236	15,043	2,604	1,129	939	53,431
1980	31,253	1,075	15,918	2,636	1,197	927	53,006
1981	30,397	843	16,662	2,583	1,288	926	52,699
1982	29,350	710	17,038	2,449	1,283	950	51,780
1983	28,871	749	17,638	2,474	1,374	1,006	52,112
1984	28,204	907	18,525	2,726	1,409	1,020	52,791
1985	27,760	882	19,812	3,009	1,430	1,046	53,939
1986	26,446	851	21,157	3,236	1,516	1,017	54,223
1987	25,622	829	21,722	3,403	1,607	1,039	54,222
1988	24,423	807	21,974	3,936	1,612	995	53,747
1989	22,743	767	23,769	4,988	1,606	907	54,780
1990	21,333	691	24,508	5,702	1,657	879	54,770
1991	20,848	675	25,136	6,023	1,726	858	55,266
1992	20,303	691	25,341	6,375	1,751	806	55,267
1993	19,634	693	25,040	6,886	1,783	784	54,820

Continued--

Appendix table 7--Fluid milk sales by product, 1970-93--Continued

Year	Half and half	Light cream	Heavy cream	Sour cream and dip	Total cream products	Eggnog	Yogurt	Total all products
				Million pounds				
1970	591	76	111	222	1,000	61	169	53,928
1971	557	67	113	246	983	74	229	54,881
1972	540	60	111	264	975	103	281	55,340
1973	554	80	120	272	1,026	80	307	55,092
1974	522	85	116	310	1,033	81	324	53,914
1975	514	87	119	350	1,070	76	442	54,820
1976	530	76	129	350	1,085	87	481	55,209
1977	536	68	126	364	1,094	94	533	55,315
1978	537	70	123	374	1,104	94	563	55,228
1979	543	66	139	395	1,143	94	565	55,233
1980	551	55	159	408	1,173	95	583	54,857
1981	568	56	166	424	1,214	100	580	54,593
1982	569	62	172	451	1,254	104	614	53,752
1983	599	67	196	484	1,346	112	760	54,330
1984	656	74	221	523	1,474	116	866	55,247
1985	714	85	243	544	1,586	121	974	56,620
1986	759	102	260	565	1,686	121	1,051	57,082
1987	754	103	271	588	1,716	124	1,073	57,135
1988	744	99	290	602	1,735	128	1,138	56,748
1989	766	101	317	620	1,804	124	1,073	57,781
1990	738	87	325	625	1,775	123	1,028	57,696
1991	771	79	318	661	1,829	111	1,063	58,269
1992	806	88	336	694	1,924	115	1,089	58,395
1993	823	91	351	697	1,962	108	1,144	58,034

Appendix table 8--Dairy products removed from the commercial market by USDA programs, 1970-93 1/

Year	Butter 2/	American cheese	Evaporated milk 3/	Nonfat dry milk	Milk equivalent (milkfat)	As percent of marketings	Milk equivalent (skim solids)	As percent of marketings
		Million pounds				*Percent*	*Million pounds*	*Percent*
1970	246.4	48.9	48.4	451.6	6,027	5.3	5,845	5.2
1971	292.2	90.7	111.4	456.2	7,547	6.6	6,448	5.6
1972	233.7	30.4	97.0	345.0	5,660	4.9	4,526	3.9
1973	97.7	3.2	53.7	36.8	2,283	2.0	582	.5
1974	32.7	60.3	28.3	265.0	1,389	1.2	3,728	3.3
1975	63.4	68.2	24.5	394.5	2,151	1.9	5,302	4.7
1976	39.4	38.0	21.8	157.1	1,291	1.1	2,245	1.9
1977	221.8	148.2	15.9	461.7	6,340	5.3	6,874	5.7
1978	112.0	39.7	17.6	285.0	2,909	2.4	3,743	3.2
1979	81.6	40.2	16.4	255.3	2,243	1.9	3,399	2.8
1980	257.0	349.7	17.5	634.3	9,008	7.1	10,875	8.6
1981	351.5	563.0	18.6	851.3	13,087	10.0	15,513	11.9
1982	382.0	642.5	20.8	948.1	14,512	10.9	17,429	13.1
1983	413.2	832.8	24.6	1,061.0	16,982	12.4	20,632	15.0
1984	202.3	447.3	19.0	678.4	8,730	6.6	12,430	9.4
1985	334.2	629.0	26.8	940.6	13,356	9.5	17,216	12.2
1986	287.6	8.4	28.8	827.3	10,837	7.7	14,311	10.2
1987	187.3	282.0	24.1	559.4	6,861	4.9	9,343	6.7
1988	312.6	238.1	23.1	267.5	9,120	6.4	5,540	3.9
1989	413.4	37.4	28.8	0	9,419	6.6	480	.3
1990	400.3	21.5	30.7	117.8	9,017	6.2	1,689	1.2
1991	442.9	76.9	27.9	269.5	10,425	7.1	3,938	2.7
1992	439.5	14.4	32.8	136.7	9,936	6.6	1,989	1.3
1993 4/	288.8	8.3	25.9	304.3	6,654	4.5	3,876	2.6

1/ Removals are delivery basis, after unrestricted domestic sales. Includes removals under the DEIP and similar export programs and may include purchases under Sec. 709 and 4a.
2/ Includes butter-equivalent of anhydrous milkfat.
3/ Starting in 1991 no longer considered a price support removal.
4/ Preliminary.

Appendix table 9--Manufacturing milk: Comparisons of announced support prices and U.S. average market prices paid to producers, marketing years, 1974-94 1/

Marketing year beginning in: 2/	Date effective 3/	Support level		Market price per cwt
		Percentage of parity equivalent 4/	Price per cwt	
		Percent	---- *Dollars* ---	
1974		81	6.57	
	1/04/75	89	7.24	6.87
1975		79	7.24	
	10/02/75	84	7.71	8.12
1976		80	8.13	
	10/01/76	81	8.26	8.52
1977 5/		82	9.00	6/8.77
1977		82	9.00	
	4/01/78	86	9.43	9.30
1978		80	9.87	
	4/01/79	87	10.76	10.86
1979		80	11.49	
	4/01/80	87	12.36	11.75
1980		80	13.10	12.71
1981		75	13.49	
	10/21/81	73	13.10	12.66
1982		69	13.10	12.66
1983		65	13.10	
	12/01/83	62	12.60	12.47
1984		59	12.60	
	4/01/85	57	12.10	
	7/01/85	55	11.60	12.13
1985		55	11.60	11.41
1986		54	11.60	
	1/01/87	52	11.35	11.55
1987		51	11.10	
	1/01/88	48	10.60	11.03
1988		47	10.60	
	4/01/89	49	11.10	
	7/01/89	47	10.60	11.93
1989		45	10.60	
	1/01/90	43	10.10	13.27
1990		42	10.10	10.67
1991		41	10.10	12.05
1992		41	10.10	11.65
1993		41	10.10	12.93
1994		41	10.10	

1/ See Dairy Situation-387, December 1981, table 2 for earlier data.
2/ Start of marketing year changed from April 1 to October 1 in 1977.
3/ If other than start of year.
4/ Except as noted, this is the percentage published in month before the marketing year. In some cases, the announced percentages, based on forward Estimates of parity, were slightly different. Parity equivalent is based on prices for all manufacturing grade milk.
5/ April-September transition period.
6/ Adjusted to annual average fat test.

Appendix table 10--States regulating milk prices, spring 1993

State	None	Minimum producer pricing 1/	Sales below cost 2/	Resale price 3/	Trade practice 4/	Bonding 5/
Alabama	X					
Alaska	X					
Arizona	X					
Arkansas	X					
California		X	X	6/		X
Colorado			X		X	
Connecticut	X					
Delaware	X					
Florida	X					X
Georgia	X					
Hawaii 7/		X				
Idaho	X					
Illinois		X				
Indiana	X					
Iowa					X	
Kansas				X		X
Kentucky	X					
Louisiana 7/	X					X
Maine 8/		X				
Maryland	X					
Massachusetts 8/			X	6/	X	X
Michigan	X					X
Minnesota			X			
Mississippi	X					
Missouri			X	X	X	
Montana	X		X	X		
Nebraska					X	
Nevada		X		X	X	
New Hampshire	X					X
New Jersey		9/	X	X	X	X
New Mexico	X					
New York 10/		X			X	X
North Carolina	X					
North Dakota	X		X	X		
Ohio	X					
Oklahoma	X					
Oregon	X					
Pennsylvania 10/		X		X	X	X
Rhode Island	X	6/				
South Carolina	X					
South Dakota	X					
Tennessee	X					
Texas	X					
Utah	X					
Vermont	X					
Virginia		X	X	6/	6/	
Washington	X					
West Virginia	X					
Wisconsin			X		X	X
Wyoming	X					

1/ State sets producer prices. 2/ Sale below cost, however cost is defined, is prohibited. 3/ State sets minimum retail and/or wholesale prices. 4/ Prohibitions on certain trade practices. 5/ Either an escrow-type bond or some statement of net worth is required to be a milk dealer. Statute protects dairy producers in cases of milk dealer default. 6/ Statute in place, but not enforced. 7/ Enforces butterfat testing law. 8/ Vendor fee which is returned to State's producers. In Maine, it is equal to $0.01-0.05 per cwt. Both the Maine and the Massachusetts programs were struck down by the courts after the spring of 1993. 9/ Set by the Federal milk marketing orders. 10/ Licenses milk dealers.

Appendix table 11--Commercial disappearance: Total milk, 1970-94 1/

Year	Production	Farm use	Marketings	Beginning commercial stocks	Imports	Total supply	Ending commercial stocks	Net removals	Commercial disappearance
					Billion pounds				
1970	117.0	4.0	113.0	3.7	1.9	118.5	3.6	6.0	108.9
1971	118.6	3.8	114.8	3.6	1.3	119.8	3.5	7.5	108.7
1972	120.0	3.5	116.5	3.5	1.7	121.6	3.4	5.7	112.6
1973	115.5	3.4	112.1	3.4	3.9	119.4	3.9	2.3	113.2
1974	115.6	3.2	112.4	3.9	2.9	119.2	5.4	1.4	112.4
1975	115.4	3.1	112.3	5.4	1.7	119.4	3.6	2.2	113.7
1976	120.2	3.0	117.2	3.6	1.9	122.7	5.1	1.3	116.3
1977	122.7	2.8	119.9	5.1	2.0	127.0	4.8	6.3	115.8
1978	121.5	2.7	118.8	4.8	2.3	125.9	4.3	2.9	118.6
1979	123.4	2.5	120.9	4.3	2.3	127.5	5.3	2.2	120.0
1980	128.4	2.3	126.1	5.3	2.1	133.5	5.6	9.0	118.8
1981	132.8	2.3	130.5	5.6	2.3	138.4	5.3	13.1	120.0
1982	135.5	2.4	133.1	5.3	2.5	140.9	4.5	14.5	121.9
1983	139.6	2.4	137.2	4.5	2.6	144.3	5.1	17.0	122.2
1984	135.4	2.9	132.5	5.1	2.7	140.3	4.8	8.7	126.7
1985	143.0	2.5	140.5	4.8	2.8	148.1	4.5	13.4	130.3
1986	143.1	2.4	140.7	4.5	2.7	147.9	4.1	10.8	133.0
1987	142.7	2.3	140.5	4.1	2.5	147.1	4.6	6.8	135.7
1988	145.2	2.2	142.9	4.6	2.4	149.9	4.3	9.1	136.5
1989	144.2	2.1	142.2	4.3	2.5	149.0	4.1	9.4	135.4
1990	148.3	2.0	146.3	4.1	2.7	153.1	5.1	9.0	138.9
1991	148.5	2.0	146.5	5.1	2.6	154.3	4.5	10.4	139.4
1992	151.6	1.9	149.7	4.5	2.5	156.7	4.7	10.0	142.1
1993	151.0	1.9	149.0	4.7	2.8	156.5	4.6	6.7	145.2
1994	153.6	1.9	151.7	4.6	2.9	159.1	4.3	4.8	150.1

1/ Milkfat basis. Totals may not add because of rounding.

Appendix table 12--Retail price indexes, for all urban consumers, 1978-93

Year	Consumer Price Index	All food	All dairy products	Fluid milk and cream	Whole milk	Other fluid items	Manufactured dairy products	Cheese	Frozen desserts	Other manufactured
					1982-84=100					
1978	65.2	72.0	74.2	76.8	77.0	76.4	70.8	71.8	68.2	71.4
1979	72.6	79.9	82.8	85.6	85.9	85.0	79.1	80.6	76.2	79.2
1980	82.4	86.8	90.9	93.2	93.5	92.3	88.1	88.7	86.4	88.4
1981	90.9	93.6	97.4	98.6	98.8	98.3	95.8	96.1	95.9	95.3
1982	96.5	97.4	98.8	99.3	99.3	99.1	98.2	98.5	97.9	97.8
1983	99.6	99.4	100.0	99.9	100.0	100.0	100.0	100.2	99.7	99.8
1984	103.9	103.2	101.3	100.8	100.7	100.9	101.9	101.3	102.4	102.4
1985	107.6	105.6	103.2	102.3	102.3	102.3	104.4	103.2	105.8	105.1
1986	109.6	109.0	103.3	101.8	101.7	101.9	105.4	103.5	107.4	107.1
1987	113.6	113.5	105.9	104.0	103.6	104.5	108.2	105.9	111.1	109.6
1988	118.3	118.2	108.3	106.4	106.0	106.7	110.8	109.2	113.3	110.8
1989	124.0	125.1	115.6	114.4	114.3	114.6	117.3	117.6	118.8	112.8
1990	130.7	132.4	126.5	126.5	126.7	126.1	127.1	131.2	126.8	113.6
1991	136.2	136.2	125.1	122.4	122.4	122.2	128.5	132.8	128.5	113.7
1992	140.3	137.9	128.5	127.0	126.4	127.8	130.5	135.5	130.9	113.6
1993	144.5	140.9	129.4	128.7	127.9	129.8	130.6	135.3	131.7	113.2

U.S. Department of Agriculture
Economic Research Service

SUMMARY OF REPORT #AER-714

The 1995 Farm Bill

Planting Flexibility and Acreage Idling Are Key Issues for Feed Grains

April 1995

Contact: William Lin (202) 219-0848

Key issues to be addressed in the feed grains portion of this year's farm legislation deliberations include planting flexibility and acreage idling under both the Conservation Reserve Program (CRP) and the Acreage Reduction Program (ARP). These and other policy matters are discussed in detail in ***Feed Grains: Background for 1995 Farm Legislation***, a new report from USDA's Economic Research Service.

Policy options in regard to the planting flexibility issue include (1) expanding the normal flex acreage beyond the current 15 percent, (2) combining all crop acreage base into a farm program base and allowing complete planting flexibility within the base, and (3) implementing a normal crop acreage concept, such as the one under the 1977 Farm Act.

Options for the CRP include extending the current program for another 10-15 years but under more critical criteria to reduce soil and wind erosion and to preserve water quality and other environmental benefits.

Policy decisions that continue to hold land out of production will be critical given expectations for continued growth in both domestic use and exports. However, the program cost is likely to be the dominant criterion for legislation.

Producers benefit from participating in the government feed grains program directly through support prices and direct payments and indirectly through higher market prices. U.S. feed grain farmers have received program payments since 1961. During 1991-93, direct payments as a percentage of annual gross income were in ranges of 12-17 percent for corn, 19-22 percent for sorghum, 24-31 percent for barley, and 18-25 percent for oats. These percentages were well under those much of the 1980's. In 1986-88, for example, direct payments were 25-37 percent of annual gross income from corn production. Deficiency payments averaged $5.5 billion for feed grain producers during that late-1980's period, compared with $2.8 billion during 1991-93.

During 1991-93, returns over cash expenses for corn producers averaged $0.66 per bushel (in 1987 dollars), compared with $0.71 in 1985 and $0.86 in 1990. However, returns over cash expenses for corn producers were still the highest among feed grain producers on a per acre basis. Overall, returns over cash expenses are expected to improve considerably in 1994/95 because of record yields, greater domestic and export demands, and higher deficiency payments.

The U.S. Feed Grain Industry. U.S. feed grain production has trended upward since the 1930's, reaching a record 285 million metric tons in 1994/95. Much of the increase was due to yield improvements, especially for corn. Corn production increased from 5.8 billion bushels in 1975 to 10.1 billion bushels in 1994. However, acres planted to sorghum, barley, and oats have declined.

To Order This Report...

The information presented here is excerpted from ***Feed Grains: Background for 1995 Farm Legislation,*** AER-714, by William Lin, Peter Riley, and Sam Evans. The cost is $12.00.

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