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Fact Sheet for the Chairman, Committee on Agriculture, Nutrition, and Forestry, U.S. Senate

June 1988

CALIFORNIA DAIRY

Production, Sales, and Product Disposition

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GAO

United States
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Washington, D.C. 20548

Resources, Community, and
Economic Development Division

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June 15, 1988

The Honorable Patrick J. Leahy
Chairman, Committee on Agriculture,
Nutrition, and Forestry
United States Senate

Dear Mr. Chairman:

As requested, this fact sheet presents information on California's (1) milk production, (2) costs of production and economic returns to milk production, (3) pricing system for grade A milk, and (4) manufacture and disposition of butter, nonfat dry milk, and cheese. California, the major milk-producing state west of the Rocky Mountains, is not covered by the federal milk marketing order system.[1]

In summary,

-- Milk production in California has grown faster than in the nation as a whole. California supplied 12.6 percent of the milk produced in the United States in 1987 compared to 10.6 percent in 1980.

-- Costs of production (for concentrates, forage, hired labor, and interest) from 1981 to 1986 were high in California relative to other regions. Overhead expenses, taxes, insurance, and capital replacement costs were lower for California than for the Upper Midwest, Corn Belt, and Northeast regions. Residual returns[2] to

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[1] Federal milk marketing orders set forth acceptable marketing practices, terms and conditions of sale, and prices.

[2]According to the Economic Research Service, U.S. Department of Agriculture, residual returns are cash receipts less all costs of production, including the cost of providing land, labor, and capital to a milk production operation.

California milk production have been considerably greater than residual returns to milk production in the other three regions.

-- Grade A milk purchases from producers, under both the federal and California systems, are priced according to use (i.e., for drinking or manufacturing products like cheese). Unlike the federal system, however, California's system uses marketing quotas and a weighted formula to determine prices. The prices paid to California producers were lower than prices elsewhere under federal marketing orders during 1986 and 1987.

-- Milk product manufacturing increased from 1982 to 1987. Most of the increase has been in cheese production. California cheese manufacturing has increased to almost 500 million pounds in 1987 from about 250 million pounds in 1982. California cheese, butter, and nonfat dry milk sales to the U.S. Department of Agriculture (USDA) have fluctuated from year to year. However, 1987 sales levels are about the same as they were in 1982.

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We obtained the data in this fact sheet primarily from USDA's Agricultural Marketing Service, Agricultural Stabilization and Conservation Service, Economic Research Service, and National Agricultural Statistics Service; California's Bureaus of Milk Pricing and Milk Stabilization; and reports from universities and other research institutions. We did not independently verify the data provided by these agencies. However, officials from the California Department of Food and Agriculture; the University of California, Davis; the Dairy Institute of California; and USDA reviewed the charts, tables, and graphs used in this fact sheet. They generally agreed with this material, and their comments have been incorporated where appropriate.

Copies of this fact sheet are being sent to the Chairman of the House Committee on Agriculture. Copies are also being sent to the Secretary of Agriculture; Director, Office of Management and Budget; the Governor of California; and other interested parties. Copies will be available to others upon request. If we can be of further assistance, please contact me at (202) 275-5138.

Major contributors to this fact sheet are listed in appendix I.

Sincerely yours,

Brian P. Crowley
Senior Associate Director

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ABBREVIATIONS

GAO	General Accounting Office
RCED	Resources, Community, and Economic Development Division
USDA	U.S. Department of Agriculture

SECTION 1

CALIFORNIA DAIRY PRODUCTION

This section presents information on California milk production, number of cows, and the average yield per cow.

Table 1.1 shows that of the 15-billion-pound increase in total milk production on U.S. farms between 1980 and 1987, more than 3.5 billion pounds came from California. California increased its share of total U.S. milk production from 10.6 percent to 12.6 percent.

Table 1.1: Total Milk Production on Farms, 1980-87

Year	California	U.S.	California as a percent of U.S.
	--(millions of pounds)--		
1980	13,577	128,525	10.6
1981	14,248	133,013	10.7
1982	14,528	135,505	10.7
1983	14,743	139,672	10.6
1984	15,299	135,450	11.3
1985	16,768	143,147	11.7
1986	17,235	143,381	12.0
1987	17,934	142,462	12.6

Source: National Agricultural Statistics Service, USDA.

Table 1.2 shows that the number of milk cows and heifers that had calved in the United States was approximately the same during 1987 as during 1980. The number of California cows and heifers increased about 100 thousand to nearly one million. We did not obtain information on the source of the increased herd, whether from California or imported from other states.

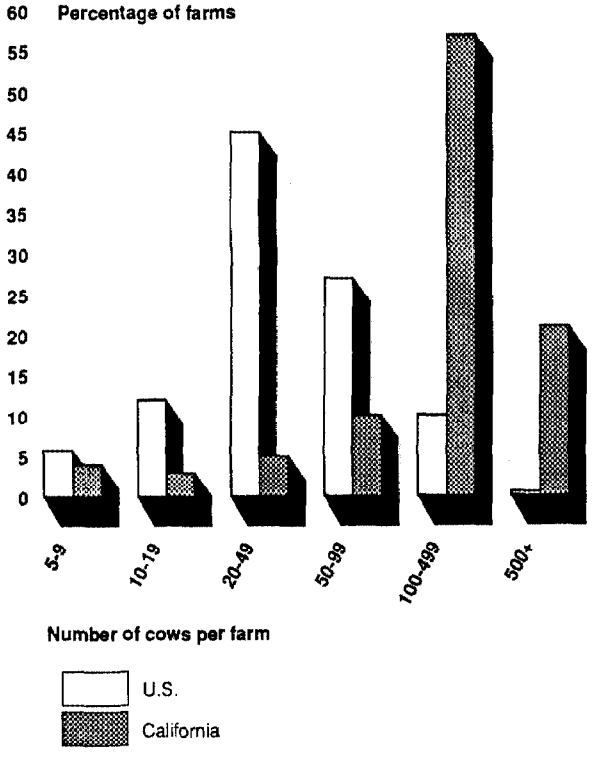
Table 1.2: Average Number of Milk Cows on Farms, 1980-87

Year	California	U.S.	California as a percent of U.S.
	(thousands)		
1980	896	10,810	8.3
1981	923	10,923	8.5
1982	940	11,011	8.5
1983	951	11,098	8.6
1984	967	10,833	8.9
1985	1,004	11,016	9.1
1986	1,013	10,839	9.3
1987	998	10,334	9.7

Source: National Agricultural Statistics Service, USDA. California Dairy Industry Statistics, 1986, California Department of Food and Agriculture

Figure 1.1 shows that the average inventory of dairy cattle per farm is considerably greater in California than in the country as a whole. Nearly 80 percent of the dairy farms in California had more than 100 dairy animals in 1982; about 10 percent of the dairy farms in the United States had more than 100 dairy animals.

Figure 1.1: Size of California and U.S. Dairy Herds, 1982



Source: Census of Agriculture, 1982

Table 1.3 shows that, from 1980 through 1987, the difference between the average milk yield per cow in California and in the United States widened from over 3,200 pounds per year to almost 4,200 pounds.

Table 1.3: Average Milk Yields of Dairy Cows, 1980-87

Year	California	U.S.	Difference between yields
	(pounds per year)		
1980	15,153	11,889	3,264
1981	15,437	12,177	3,260
1982	15,455	12,306	3,149
1983	15,503	12,585	2,918
1984	15,821	12,503	3,318
1985	16,701	12,994	3,707
1986	17,014	13,293	3,721
1987	17,970	13,786	4,184

Source: National Agricultural Statistics Service, USDA.

SECTION 2

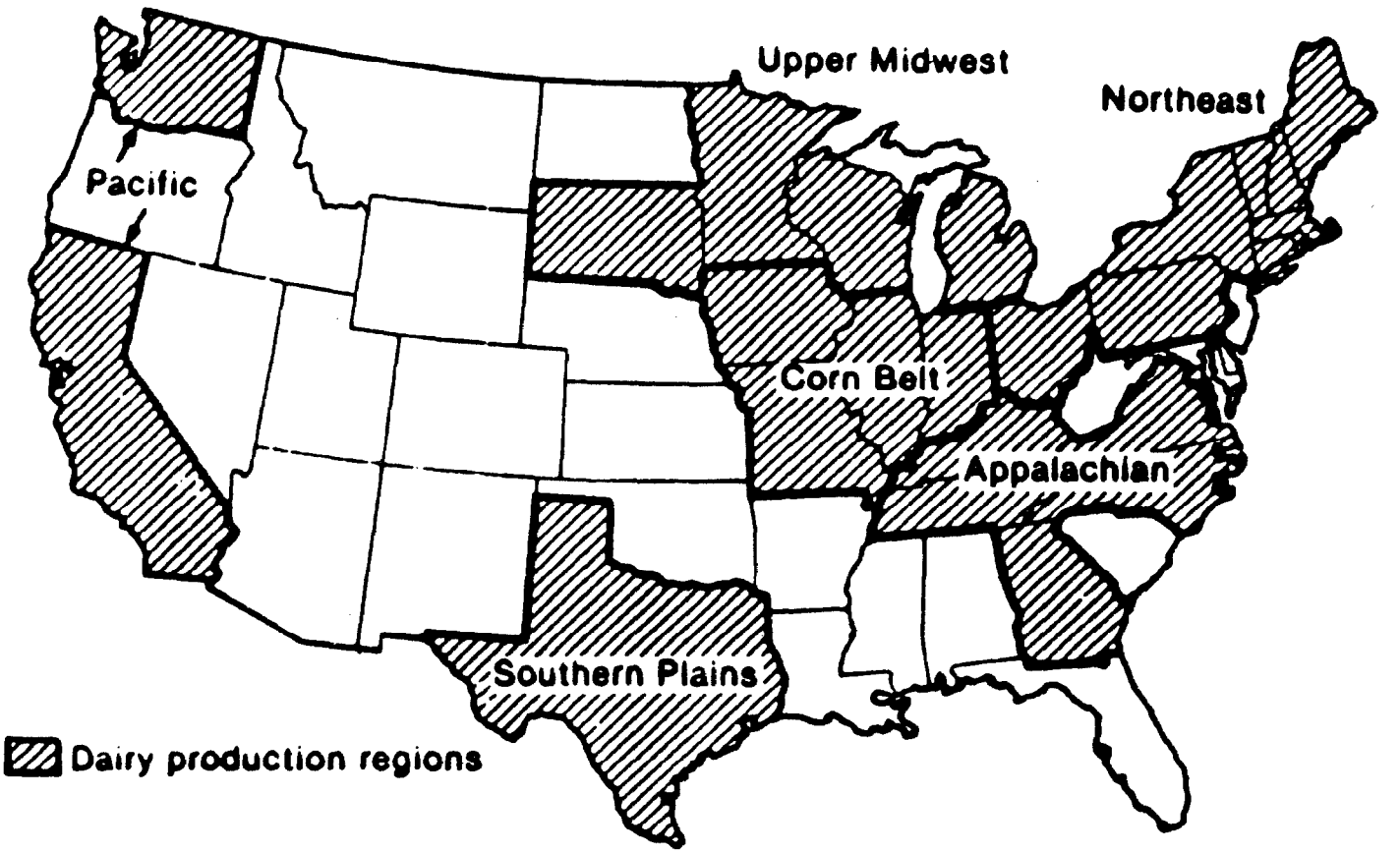
COSTS OF PRODUCTION AND ECONOMIC RETURNS TO CALIFORNIA DAIRY OPERATIONS

This section presents information on the cost and economic returns to California dairy production and compares California with the other major dairy producing regions.

Figure 2.1 depicts the six dairy production regions for which cost estimates are calculated by the Economic Research Service, U.S. Department of Agriculture. The regions are grouped according to similarity of dairy production practices. Four of the six regions are analyzed in this fact sheet: Pacific, Upper Midwest, Corn Belt, and Northeast, which account for 75 percent of total dairy production in the United States.

The Pacific Region constituted about 15 percent of total U.S. dairy production in 1987. California's milk production accounts for more than 80 percent of the Pacific Region's milk production.

Figure 2.1: U.S. Dairy Production Regions



Source: Economic Research Service, USDA.

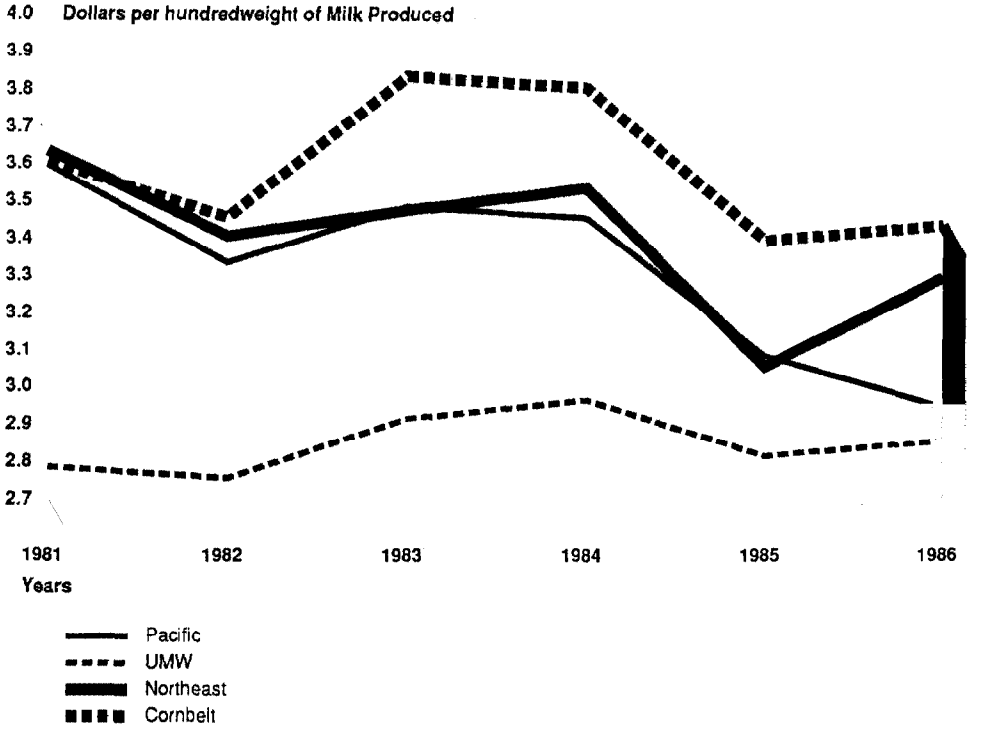
Table 2.1 details four major cash costs of dairy production. For the United States as a whole, concentrates (including grain), forage (including hay and pasture), hired labor, and interest costs together comprise about 70 percent of total cash costs. In 1986, concentrates, forage, hired labor, and interest ranged from $6.09 per hundredweight of milk produced in the Corn Belt to $6.76 in the Pacific Region. Figures 2.2, 2.3, 2.4, and 2.5 show how the four cash costs compare regionally. The difference between these costs in the Pacific Region and the Corn Belt narrowed from $1.58 per hundredweight in 1980 to $.67 in 1986.

Table 2.1: Costs of Concentrates, Forage, Hired Labor, and Interest In Milk Production, 1980-86

	1980	1981	1982	1983	1984	1985	1986
	(dollars per hundredweight)						
Pacific Region							
Concentrates	3.77	3.59	3.33	3.48	3.46	3.09	2.95
Forage	2.65	2.47	2.52	2.74	2.49	2.42	2.00
Hired labor	.86	.90	.95	.96	1.02	.99	.93
Interest	.93	1.09	1.18	1.17	1.01	1.02	.88
	8.21	8.05	7.98	8.35	7.98	7.52	6.76
Upper Midwest							
Concentrates	2.74	2.78	2.75	2.90	2.96	2.81	2.85
Forage	1.32	1.21	1.20	1.17	1.20	1.11	1.00
Hired labor	.58	.63	.67	.61	.67	.66	.64
Interest	1.64	1.94	1.95	1.94	2.11	1.93	1.70
	6.28	6.56	6.57	6.62	6.94	6.51	6.19
Northeast							
Concentrates	3.36	3.63	3.40	3.47	3.53	3.05	3.30
Forage	1.26	1.17	1.26	1.18	1.17	1.01	.93
Hired labor	.91	.97	1.05	1.04	1.13	1.14	1.15
Interest	.90	1.06	1.10	1.09	1.12	.97	.84
	6.43	6.83	6.81	6.78	6.95	6.17	6.22
Corn Belt							
Concentrates	3.37	3.60	3.45	3.84	3.80	3.39	3.43
Forage	1.23	1.13	1.11	1.24	1.16	.97	.89
Hired labor	.61	.68	.65	.66	.69	.69	.67
Interest	1.42	1.68	1.71	1.70	1.82	1.26	1.10
	6.63	7.09	6.92	7.44	7.47	6.31	6.09

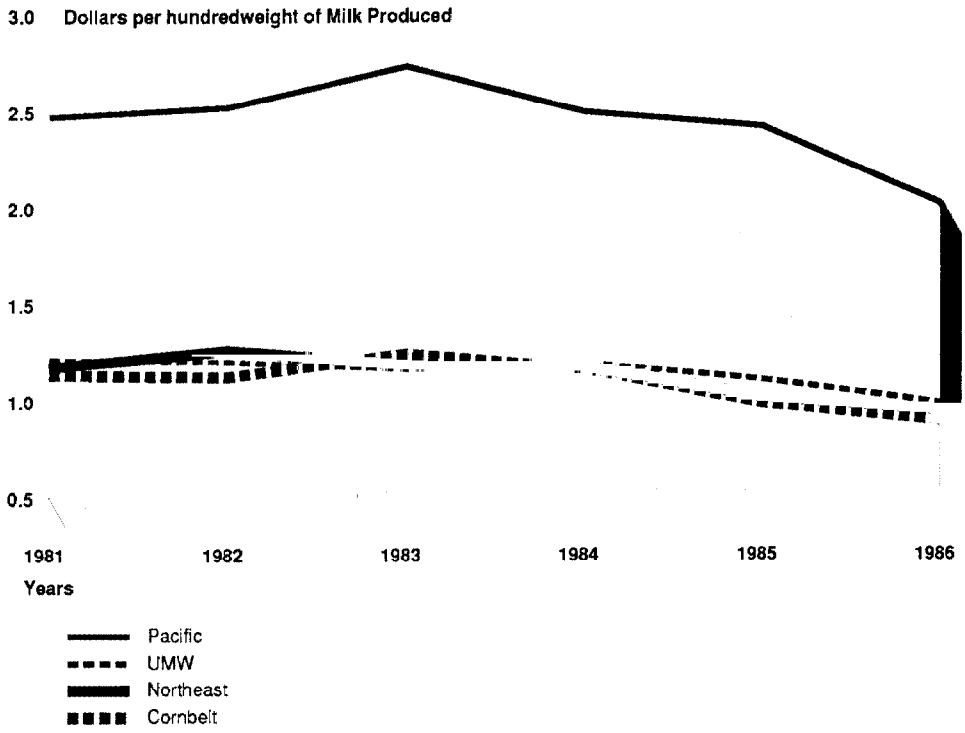
Source: Economic Research Service, USDA

Figure 2.2: Cost of Concentrates, 1981-86



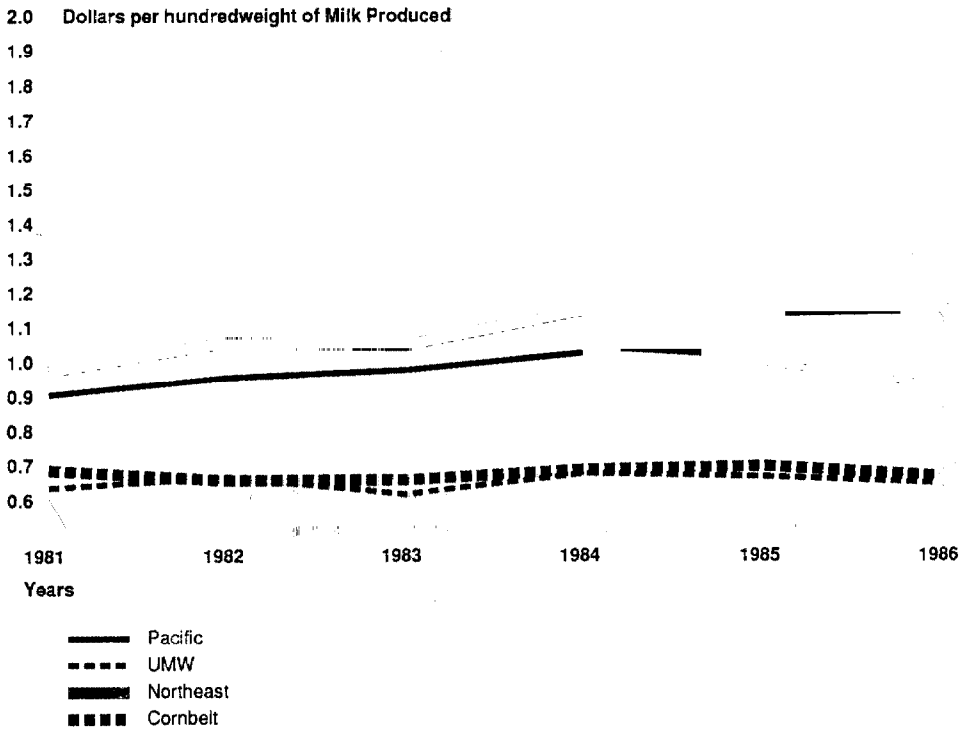
Source: Economic Research Service, USDA.

Figure 2.3: Cost of Forage, 1981-86



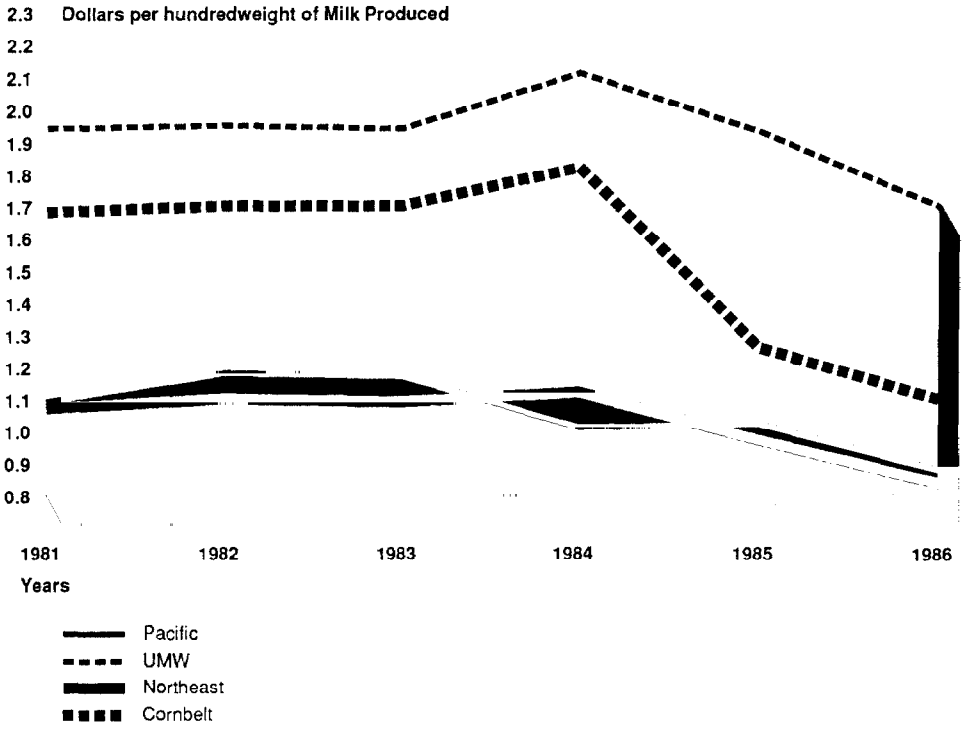
Source: Economic Research Service, USDA.

Figure 2.4: Cost of Hired Labor, 1981-86



Source: Economic Research Service, USDA.

Figure 2.5: Cost of Interest, 1981-86



Source: Economic Research Service, USDA.

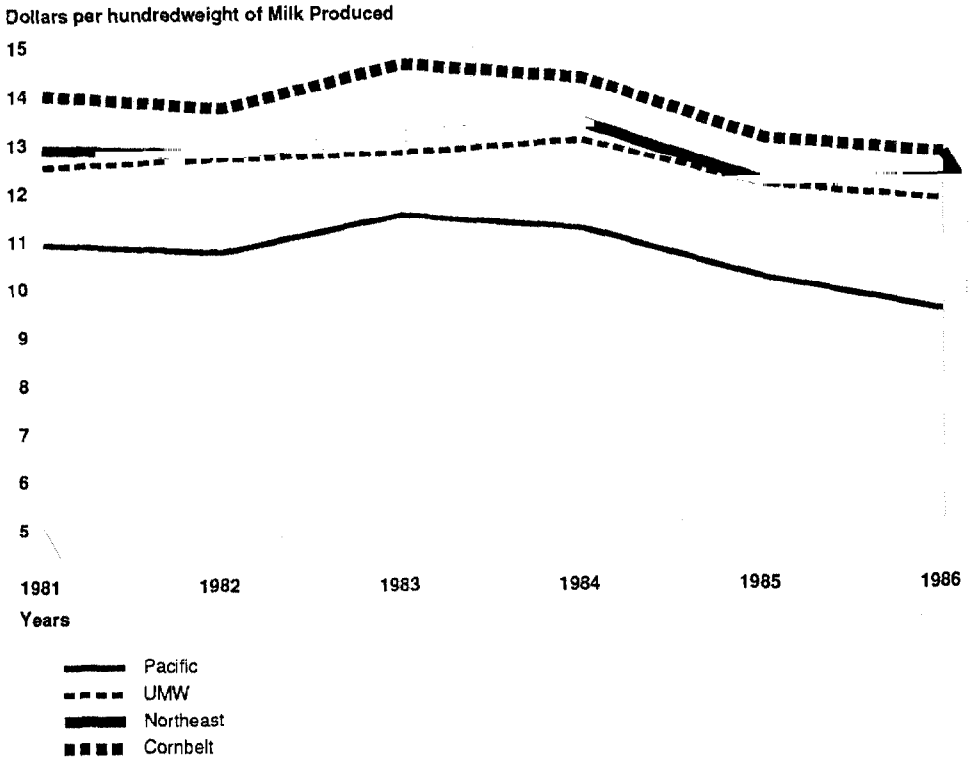
As table 2.2 and figure 2.6 show, economic costs for the Pacific Region were the lowest of the four regions, declining more than those of other regions since 1981. Economic (or full ownership) costs include variable expenses, taxes, insurance, general farm overhead, capital replacement, and the cost of providing land, labor, and capital to a milk production operation.

Table 2.2: Economic Costs of Milk Production for Four Regions, 1981-86

Region	1981	1982	1983	1984	1985	1986
		(dollars per hundredweight)				
Northeast	$12.85	$12.73	$13.11	$13.36	$12.10	$12.14
Pacific	10.89	10.70	11.47	11.17	10.14	9.43
Upper Midwest	12.49	12.63	12.75	13.00	12.05	11.74
Corn Belt	13.97	13.68	14.58	14.28	13.02	12.69

Source: Economic Research Service, USDA.

Figure 2.6: Economic Costs, 1981-86



Source: Economic Research Service, USDA.

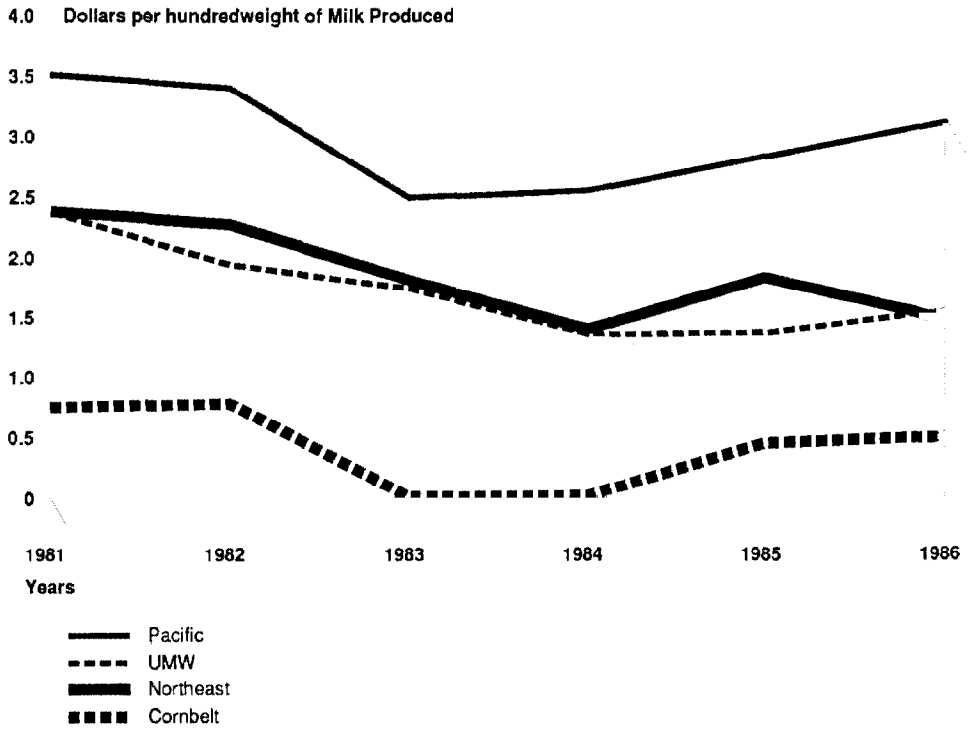
Table 2.3 shows that at $3.10 per hundredweight in 1986, residual returns in the Pacific Region were the highest of the four regions. According to the Economic Research Service, USDA, residual returns are cash receipts less all costs of production, including the cost of providing land, labor, and capital to a milk production operation. Figure 2.7 portrays this information graphically.

Table 2.3 Residual Returns for Four Regions, 1981-86

Region	1981	1982	1983	1984	1985	1986
		(dollars per hundredweight)				
Northeast	$2.37	$2.26	$1.80	$1.39	$1.82	$1.47
Pacific	3.50	3.39	2.48	2.54	2.82	3.10
Upper Midwest	2.36	1.93	1.73	1.35	1.36	1.54
Cornbelt	.74	.77	(.17)	.01	.44	.49

Source: Economic Research Service, USDA.

Figure 2.7: Residual Returns, 1981-86



Source: Economic Research Service, USDA.

SECTION 3

PRICING GRADE A MILK IN CALIFORNIA:

A COMPARISON WITH THE FEDERAL MARKETING ORDER SYSTEM

This section compares the California marketing order system with the federal marketing order system. Table 3.1 lists key features for comparison, such as the type of milk covered by each system, basis for milk payment, classification of products made from milk, importance of dairy production history, prices paid to producers for manufacturing dairy products, and prices paid to producers for milk for fluid use. (For clarity in this fact sheet, we have used Roman numerals to refer to pricing classifications under both the federal and California milk marketing order systems, although Arabic numerals are normally used under the California system.)

Table 3.1: Comparison of Federal Milk Marketing Orders and the California Milk Marketing System

Feature	Federal milk marketing orders	California system
U.S. milk covered (1986)	70 percent	12 percent
Type of milk covered	grade A	"Market" milk (same as grade A)
Basis for payment	"Use", or product manufactured from milk. A higher price is paid for grade A milk used for drinking than for identical milk processed into soft or hard dairy products.	"Use", or product manufactured from milk. A higher price is paid for grade A milk used for drinking than for identical milk processed into soft or hard dairy products.
Number of "use" classes	Three: I. whole, skim, and lowfat milk II. ice cream, other frozen desserts, cottage cheese III. butter, nonfat dry milk, all cheese except cottage cheese	Five: I. whole, skim, and lowfat milk II. heavy cream, cottage cheese III. ice cream, other frozen desserts IVa. butter, nonfat dry milk IVb. all cheese except cottage cheese
Milk components on which payment is based	Butterfat for all classes.	Fat and solids-not-fat components for all classes. Fluid component also for class I.
Dairy Enterprise Characteristics on which payment is based	Producers of grade A milk within a single order are paid the same "blend price" for each hundredweight of milk marketed, regardless of how milk from the operation is used. The blend price is a weighted average of prices paid for grade A milk for each use class within the order. Producers' milk marketing histories are irrelevant.	Producers of grade A milk are assigned "bases" (allotments) according to milk production history. "Quotas" (proportion of base eligible for class I price) are also assigned. Producers with base and quota are paid for each hundredweight of milk marketed according to state-wide use of grade A milk and their assigned bases and quotas. Hence, each grade A producer does not receive the same "blend price." (All milk

Feature	Federal milk marketing orders	California system
		marketed in excess of base is usually paid the lowest or "overbase" price for grade A milk.)
Price determination of milk used in hard dairy products	Most federal orders require that handlers pay the same price that manufacturing plants pay for grade B milk in Minnesota and Wisconsin.	The price that handler must pay for grade A milk is derived from a product price formula. The price for the butterfat component is based on 1) a wholesale butter price, 2) a yield factor, and 3) a manufacturing or "make" allowance.
Class I price determination	A fixed amount of 1.04 cents per hundredweight is added to class III price and a distance differential is added to the sum. The distance differential is related to the distance of the relevant sale from Eau Claire, Wis.	Bimonthly, a price adjuster is calculated according to a formula in which the following weights are incorporated: 0.43 for cost of production, 0.42 for class IV price, and 0.15 for consumer earnings, all relative to the same base period. The calculated price adjuster is multiplied by the current statewide average price to derive the new price. The current statewide average price is subtracted from the new price to derive the price change. The price change is allocated to the components of class I milk as follows: 0.40 to butterfat, 0.40 to solids-not-fat, 0.20 to fluid carrier.

Source: L. J. (Bees) Butler, "Do State/Local Regulations Interfere With the Federal Milk (Price Support) Program? A Case Study: California Pricing," Paper prepared for the National Commission on Dairy Policy, Nov. 1987; Robert D. Boynton, "The California Milk Marketing System," Paper for Federal Milk Marketing Order Conference, Sept. 1985; Edward V. Jesse and Robert A. Cropp, "Milk Pricing and Pooling in California," University of Wisconsin-Extension, 1985.

Table 3.2 shows that monthly 1986-87 class I prices in California were lower than average federal market order minimum prices and very close to the lowest federal market order price for each month studied.

Table 3.2: Federal Marketing Order and California Class I Prices, February 1986-February 1988

Year	Month	Federal market order			California
		Average	High	Low	
		(dollars per hundredweight)			
1986	February	$13.35	$14.33	$12.30	$12.51
	March	13.29	14.27	12.24	12.51
	April	13.21	14.19	12.16	12.57
	May	13.58	15.20	12.22	12.57
	June	13.55	15.16	12.18	12.66
	July	13.54	15.16	12.18	12.66
	August	13.54	15.18	12.20	12.58
	September	13.60	15.24	12.26	12.58
	October	13.87	15.51	12.53	12.63
	November	14.10	15.73	12.75	12.63
	December	14.24	15.87	12.89	12.56
1987	January	14.47	16.09	13.11	12.56
	February	14.44	16.06	13.08	12.48
	March	14.26	15.88	12.90	12.48
	April	13.83	15.45	12.47	12.26
	May	13.59	15.21	12.23	12.26
	June	13.56	15.18	12.20	12.21
	July	13.55	15.18	12.20	12.21
	August	13.60	15.25	12.27	12.04
	September	13.70	15.35	12.37	12.04
	October	13.81	15.45	12.47	12.21
	November	13.97	15.60	12.62	12.21
	December	13.90	15.53	12.55	12.00
1988	January	13.89[a]	15.52a	12.54[a]	12.00
	February	13.67[a]	15.30[a]	12.32[a]	12.02

[a]1988 Federal order prices are estimates.

Source: Agricultural Marketing Service, USDA; California Department of Food and Agriculture.

Table 3.3 shows that between January 1986 and February 1988, the California price for overbase milk (the lowest price paid for milk under the California marketing order) has been lower than the grade B price in Minnesota-Wisconsin. Federal orders usually require that the lowest price under that system be the same as the price paid to dairy operations in Minnesota and Wisconsin. In February 1988 the overbase price was $0.74 lower than the Minnesota-Wisconsin price.

Table 3.3: Minnesota-Wisconsin (M-W) and California Overbase Prices, January 1986-February 1988

Year	Month	M-W price	California overbase price	Difference
		(dollars per hundredweight)		
1986	January	$11.12	$10.66	$-0.46
	February	11.04	10.66	-.38
	March	11.02	10.66	-.36
	April	10.98	10.66	-.32
	May	10.98	10.66	-.32
	June	11.00	10.66	-.34
	July	11.06	10.65	-.41
	August	11.33	11.03	-.30
	September	11.55	11.03	-.52
	October	11.69	11.04	-.65
	November	11.91	11.05	-.86
	December	11.88	10.86	-1.02
1987	January	11.70	10.45	-1.25
	February	11.27	10.40	-.87
	March	11.03	10.40	-.63
	April	11.00	10.40	-.60
	May	11.00	10.40	-.60
	June	11.01	10.56	-.45
	July	11.17	10.78	-.39
	August	11.27	10.78	-.49
	September	11.42	10.75	-.67
	October	11.35	10.75	-.60
	November	11.34	10.23	-1.11
	December	11.12	10.23	-.89
1988	January	10.91	9.86	-1.05
	February	10.60	9.86	-.74

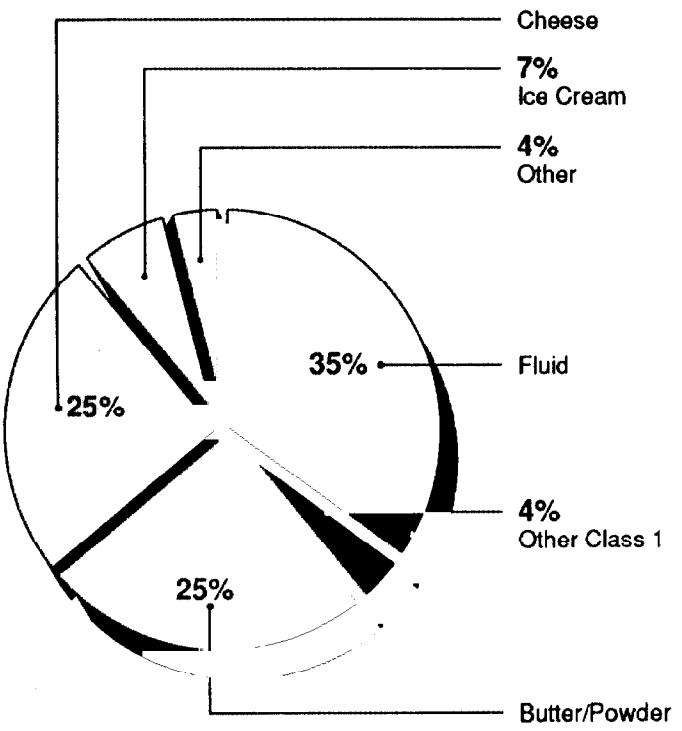
Source: Agricultural Marketing Service, USDA; California Department of Food and Agriculture.

SECTION 4

CALIFORNIA'S PRODUCTION AND DISPOSITION OF BUTTER, NONFAT DRY MILK, AND CHEESE

Figure 4.1 shows that less than 40 percent of California's milk goes for class I use, about the same proportion as in the United States as a whole. About 25 percent of California's milk is used for butter and 25 percent for cheese. Figures 4.3, 4.4, and 4.5 show California's dairy production and sales to USDA.

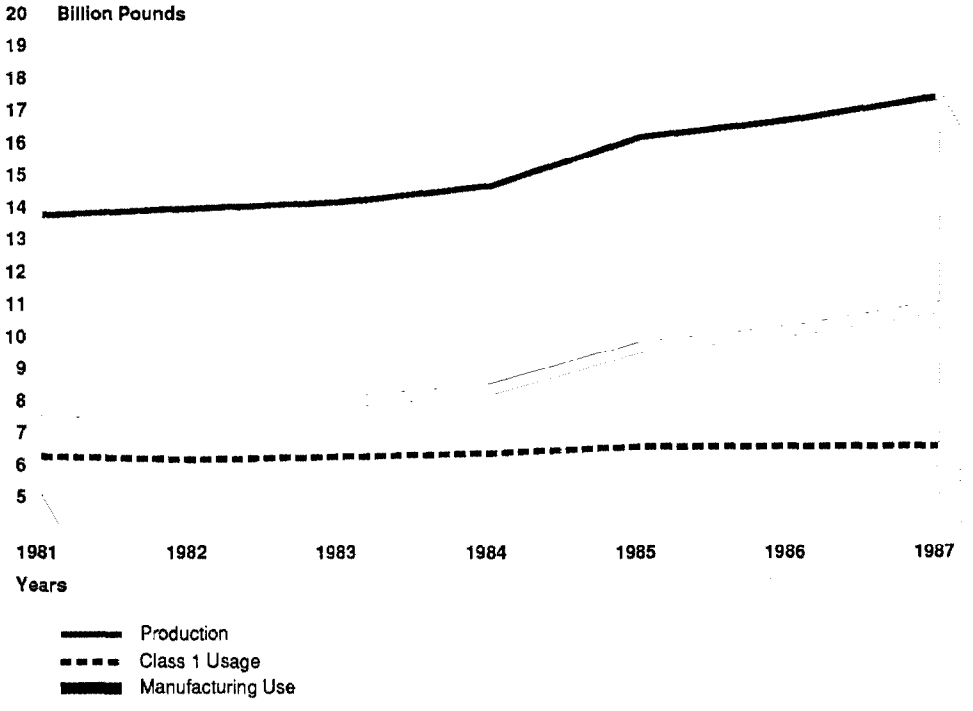
Figure 4.1: Fluid and Processed Product Disposition of California Milk, 1986



Source: Butler, "A Case Study: California Pricing."

As shown in figure 4.2, nearly all of the 3-billion pound increase in California milk production between 1982 and 1987 went to manufactured use, while class I use increased little from its level of slightly more than 6 billion pounds.

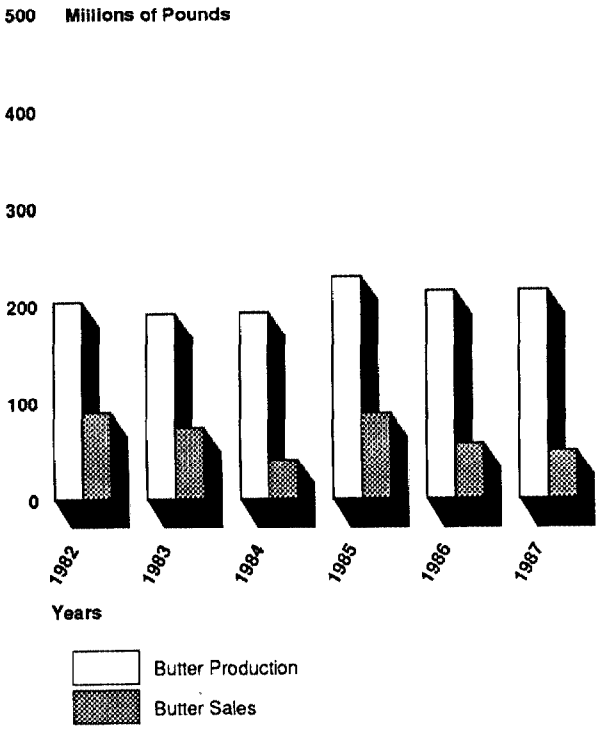
Figure 4.2: Class I and Manufacturing Use of California Milk, 1981-87



Source: California Dairy Information Bulletin, California Agricultural Statistics Service.

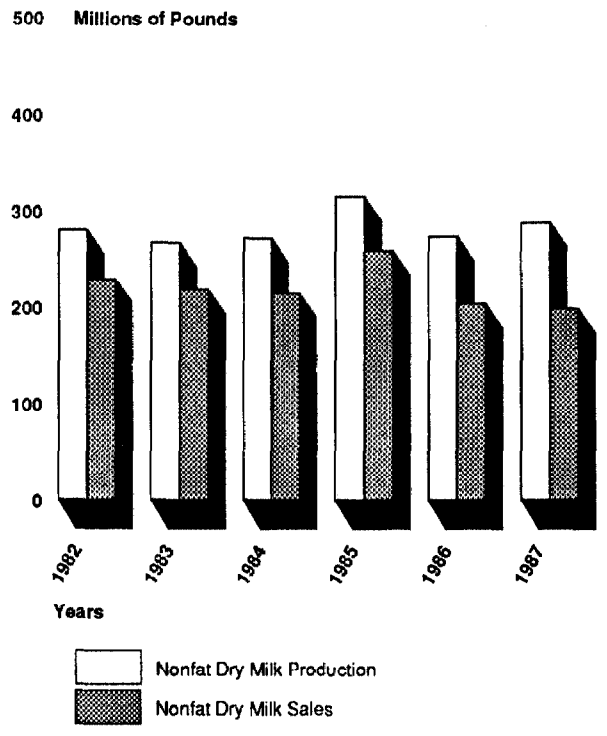
Figures 4.3, 4.4 and 4.5 show California butter, nonfat dry milk, and cheese production and sales to the federal government. As shown in figure 4.5, cheese manufacturing more than doubled between 1982 and 1987 when it rose to nearly 500 million pounds. Cheese sales to the federal government have fluctuated around 50 million pounds annually from 1982 to 1987.

Figure 4.3: California Butter Production and Sales to USDA, 1982-87



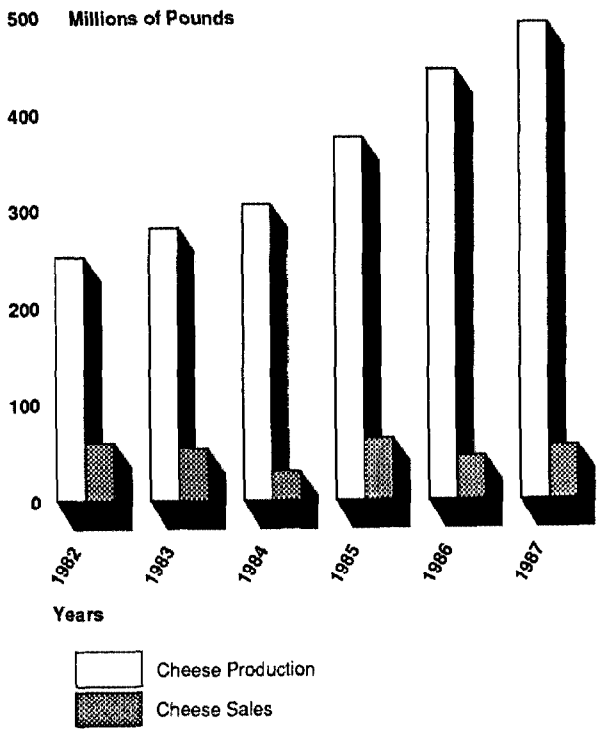
Source: California Dairy Information Bulletin, California Agricultural Statistics Service.

Figure 4.4: California Nonfat Dry Milk Production and Sales to USDA, 1982-87



Source: California Dairy Information Bulletin, California Agricultural Statistics Service.

Figure 4.5: California Cheese Production and Sales to USDA, 1982-87



Source: California Dairy Information Bulletin, California Agricultural Statistics Service.

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