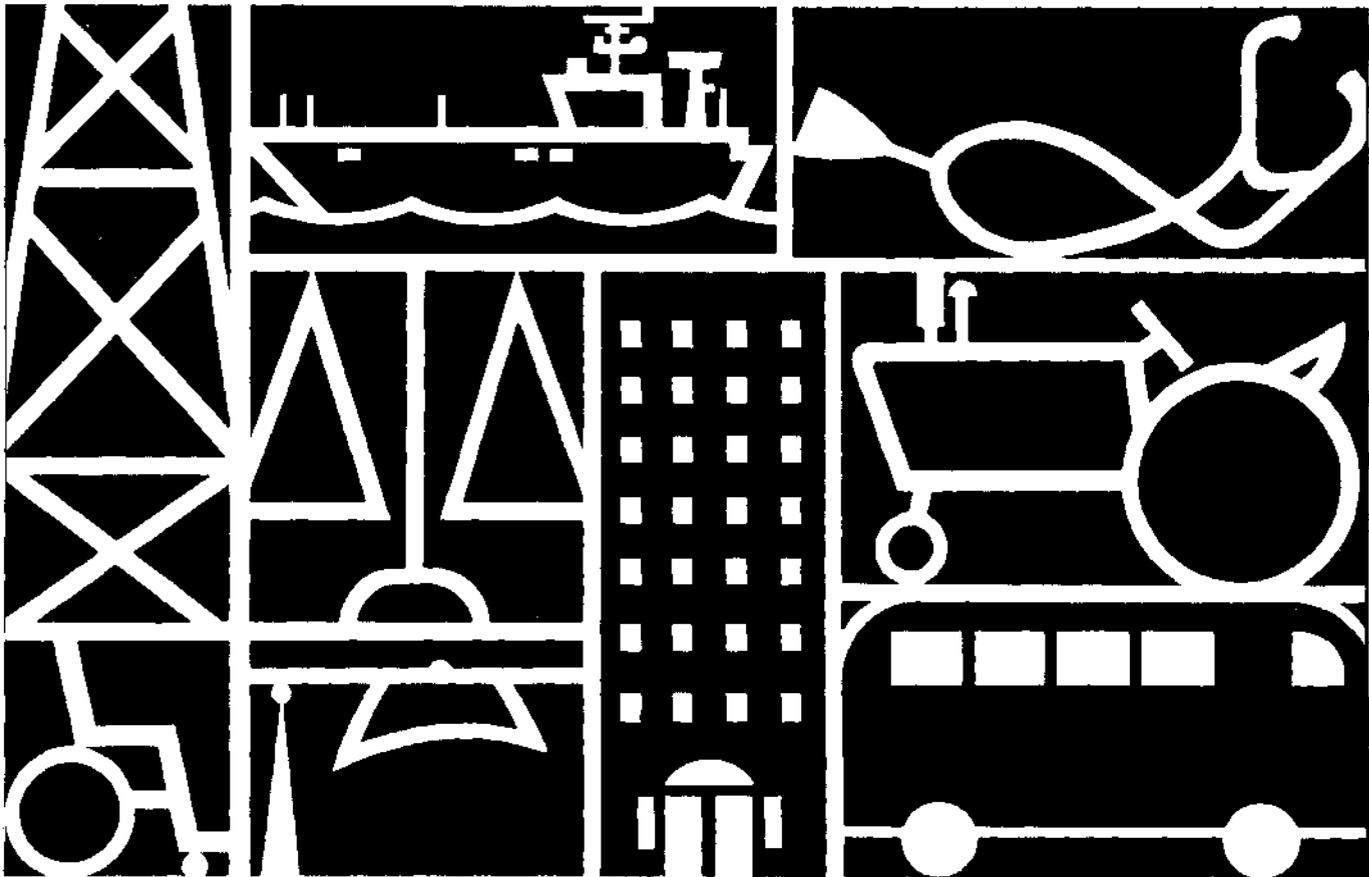


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Consequences of Dairy Price Support Policy

March
1979



CONSEQUENCES OF DAIRY PRICE SUPPORT POLICY

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Congressional Budget Office

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PREFACE

With passage of the Agricultural Act of 1949, the Congress **authorized** the Secretary of Agriculture to fix a nationwide support price for milk between 75 and 90 percent of its parity price. Federal dairy price supports, which are implemented through government purchases of manufactured dairy products, now **undergrid** the pricing of milk in the United States. The Food and Agriculture Act of 1977 temporarily increased the minimum level of price support from 75 to **80** percent of parity. On October 1, 1977, the minimum level of price support will revert to 75 percent of parity unless the Congress enacts new legislation.

At the request of the House Subcommittee on Dairy and Poultry, the Congressional Budget Office has prepared this Background Paper, Consequences of Dairy Price Support Policy. The study describes major government regulations that affect the pricing of milk, reviews some historical consequences of milk pricing policy, and examines alternative future levels of price support. Different levels of price support are shown to result in important trade-offs among dairy farmers, consumers, and taxpayers. In keeping with CBO's mandate to provide objective and **nonpartisan** analysis of issues before the Congress, no recommendations are **offered**.

The principal authors of this paper are James G. Vertrees and Peter M. Emerson. The paper was prepared in CBO's Natural Resources and Commerce Division under the direction of Raymond C. **Scheppach**. This paper has received extensive external **review**. The manuscript was edited by David D. Driscoll under the supervision of Robert L. Faherty. Angela Evans, **Misi Lenci**, **Lynne Zett**, and Phyllis Nations prepared it for publication.

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March 1979

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SUMMARY

The dairy price support program, authorized by the Agricultural Act of 1949, requires the Secretary of Agriculture to fix a nationwide support price for milk between 75 and 90 percent of its parity price to assure adequate current and future supplies of milk. The parity price of milk, in dollar-and-cents terms, is the price that a hundredweight of milk would have to sell for today to give dairy farmers the same purchasing power they received from the sale of a hundredweight of milk just prior to World War I. With passage of the Food and Agriculture Act of 1977, the Congress temporarily increased the minimum support level to 80 percent of parity. In the autumn of 1978, the Secretary of Agriculture set the support price at 80 percent, the minimum level under his discretion.

On October 1, 1979, the minimum support price of milk will revert to 75 percent of parity, unless the Congress adopts new legislation setting a higher minimum. If the Congress does not act, the Secretary of Agriculture will once again be allowed to choose a support price for milk between 75 and 90 percent of parity.

Whether or not to adopt legislation changing the minimum support level will be an important agricultural issue for the 96th Congress. Its importance derives from the volatility of federal spending to acquire and dispose of surplus dairy products—which climbed rapidly to \$710 million in fiscal year 1977 and then plunged to \$446 million in fiscal year 1978—and from the sensitivity of retail dairy prices to changes in farm milk prices. In examining alternative minimum levels of price support, the Congress will consider trade-offs between higher cash receipts to dairy farmers on the one hand, and lower consumer food prices and federal budget costs on the other. These trade-offs are especially sensitive in the current atmosphere of concern about inflation, federal spending, and the economic well-being of farmers.

MILK PRICING

The federal government influences milk prices through two major programs. First, the Secretary of Agriculture sets a support price of milk within a range of prices under his discretion. The Commodity Credit Corporation (CCC) stands ready to purchase manufactured dairy products—

nonfat dry milk, cheese, and ~~butter~~—to prevent market prices from falling below the support price. Second, federal milk marketing orders or state milk control laws set the price of nearly all milk designated for fluid consumption. Each federal milk marketing order, sets minimum prices for milk used in fluid consumption and in manufactured dairy products, and dairy farmers are paid a weighted average price based on the pooling of all milk revenues.

The price of milk sold under federal milk marketing orders and used in manufactured dairy products is set equal to, or slightly above, the price of manufacturing-grade milk in Minnesota and Wisconsin. Since Minnesota and Wisconsin produce a milk surplus, federal order prices are closely related to the support price of milk.

Through a pricing system that establishes a minimum price level, the dairy price support program influences milk prices received by all dairy farmers. For the 1950 to 1975 period, it is estimated that milk prices received by **farmers** increased an annual 7 percent on average, and consumer expenditure for dairy products was about \$400 million a year higher than it would have been without a dairy price support program. Since 1949, The CCC has purchased on the average 4 percent of annual milk production at a cost to the taxpayer of \$247 million a year. In return, the program has contributed to price and income stability in the dairy industry, while consumers have enjoyed an uninterrupted supply of dairy products.

ALTERNATIVE FUTURE LEVELS OF PRICE SUPPORT

Although major revisions of dairy pricing policy may be discussed, it is most likely that the Congress will focus on alternative minimum levels of price support. This study, therefore, examines four alternative levels of price **support—75, 80, 85, and 90 percent of parity—**for a five-year period beginning October 1, 1979. Each 5 percent increase in the parity level of price support results in the following trade-offs among dairy farmers, consumers, and taxpayers:

- o An annual increase of about \$1.0 billion in total cash receipts from the sale of milk because of higher farm prices and additional milk production;
- o An annual increase of about \$0.7 billion in consumer expenditure for dairy products as rising retail prices more than offset declining consumption; and

- An annual increase of about \$0.3 billion in taxpayer costs because of higher CCC acquisition prices and a larger surplus of manufactured dairy products.

Dairy Farmers. Increasing the level of price support from 75 to 90 percent of parity over the projection period increases average annual total cash receipts from the sale of milk from \$17.1 billion to \$20.1 billion, an increase of about 20 percent. Additional cash receipts resulting from higher support prices are distributed among dairy farms in direct proportion to the volume of milk produced and sold by each farm. Today, the 58,000 largest dairy farms, about 14 percent of all dairy farms, receive slightly more than 50 percent of total cash receipts from the sale of milk. Part of any increase in cash receipts to the most efficient dairy farms will be capitalized into the value of fixed factors of production, such as farmland. The amount of protection provided to inefficient dairy farms varies directly with the level of price support. Nevertheless, the substantial decline in the number of farms reporting milk cows—from 1.2 million to 0.4 million between 1964 and 1975—provides historical evidence that dairy price supports have not prevented resource adjustments over time.

Dairy price supports reduce the possibility of a cycle of heavy milk production and low farm prices followed by production shortfalls and high farm prices. The increased stability in farm prices and income encourages dairy farmers to adopt modern, capital-intensive technology and to establish large-scale, specialized dairy farms. Price stability also benefits, to some degree, dairy farms that generate low incomes and are vulnerable to downward fluctuations in milk prices. In the long run, price and income stability may result in a lower average cost of milk production and a more orderly transformation of dairy farming than would occur in a more fluctuating market.

Consumers. Although consumers benefit from a price level that helps to guarantee a reliable supply of fluid milk and manufactured dairy products, they do not benefit from higher prices. Higher support prices may raise retail prices. This tends to offset increases in demand attributable to population growth and rising incomes, and may encourage a shift in consumer tastes away from dairy products. Increasing the level of price support from 75 to 90 percent of parity for the projection period would result in an increase of 7 percent in retail prices, a decline of 2 percent in annual consumption of dairy products, and a rise of more than 5 percent, or about \$2.0 billion, in annual consumer expenditure. The relatively larger CCC purchases that will occur under 85 and 90 percent of parity provide a buffer stock that might be used to dampen retail prices in the event of an unexpected decline in milk production.

Taxpayers. Taxpayer costs and budget outlays are projected to rise to \$0.9 billion a year and \$1.3 billion a year, on average, at 85 and 90 percent of parity, respectively. This is a substantial increase in federal spending from \$0.4 billion in fiscal year 1978 and emphasizes the importance of allowing the Secretary of Agriculture discretionary authority to lower the level of price support to hold down budget outlays. Nevertheless, if the activities of dairy cooperatives or other factors cause prevailing milk prices to rise, increased milk production or a reduction in fluid milk consumption may cause CCC purchases of dairy products to rise, independent of the level of price support.

CHOOSING A MINIMUM SUPPORT LEVEL

The four options examined here have significantly different effects on the cash receipts and incomes of dairy **farmers**, consumer spending on dairy products, and federal expenditures. Raising the minimum level of price support results in larger CCC purchases of dairy products and may provide greater price stability. But raising the minimum support level also means higher retail prices and a reduction in the range of the Secretary of **Agriculture's** discretionary authority to set support prices. Choosing a minimum level of price support is essentially a question of achieving a balance among these factors.

90 Percent of Parity. If the support price is set at 90 percent of parity for the next five years, total cash receipts from the sale of milk and net incomes of dairy farmers are expected to rise about 15 percent above the level in 1977-1978, after taking into account the effect of inflation. Prices that consumers pay for dairy products would be about 6 percent higher, in constant dollars, than current prices, and CCC purchases would average 6 percent of annual milk production, a higher level than has generally prevailed in past years.

The 90 percent of parity option offers the highest income to dairy farmers, but also implies high retail prices and budget costs. It probably does not offer significantly more price stability than either the 80 or the 85 percent of parity options.

85 Percent of Parity. The 85 percent option has effects similar to those anticipated under 90 percent of parity, although the incomes of dairy **farmers** would rise less, retail prices would not increase as much, and budget costs would be lower. Annual CCC purchases would exceed somewhat the minimum level that has been associated in past years with low to moderate variability in milk prices. Thus, both the 85 and the 90 percent of parity options tend to **favor** dairy **farmers** relative to consumers and taxpayers.

80 Percent of Parity. If the support price is set at 80 percent of parity, the real incomes of dairy farmers and real prices of dairy products will continue at current levels. Annual CCC purchases are expected to average 3 percent of milk production, and government stocks will rise throughout the projection period, assuming that disposition of these stocks remains at historical levels. In short, this option offers price stability and will not cause any major changes in current conditions for dairy farmers, consumers, or taxpayers.

75 Percent of Parity. Returning the minimum support price to 75 percent of parity would place downward pressure on the incomes of dairy **farmers** and retail prices of dairy products, as compared with 1977-1978. CCC purchases are expected to average about 1 percent of annual milk production, and government stocks would be depleted rapidly, unless domestic and foreign donations of dairy products are reduced. Therefore, increased dependence on imported dairy products might be required to achieve the price stability of recent years. The 75 percent of parity option offers lower consumer prices and taxpayer costs, but the incomes of dairy farmers would fall and price instability is more likely to occur than under higher support prices.

In fiscal year 1977, the federal government spent \$710 million to acquire and dispose of manufactured dairy products, which was nearly a tenfold increase over the amount spent in 1976. This rapid rise in government spending attracted attention to the level of dairy price support, and the economic consequences of federal policies and programs affecting the production of milk and the marketing of dairy products.

Federal intervention in the dairy industry aims at assuring an adequate supply of pure and wholesome milk to meet current needs **and** to maintain future productive capacity. Six important federal activities directly influence the economics of milk production and dairy marketing. They are:

- o Setting a nationwide support price for **milk**--that is, the dairy price support program;
- o Fixing minimum prices (**differentiated** according to how the milk is used) that handlers are required to pay for milk, and pooling revenues from which farmers receive a weighted average **price**--that is, the federal milk **market** order program;
- o Restricting imports of dairy products primarily through the use of quotas;
- o Encouraging the growth and development of farmer-owned cooperatives;
- o Financing the Child Nutrition Programs, Special Milk Program, purchases of surplus products under Section 32 of the Agricultural Adjustment Act of 1935, the food stamp program, and foreign donations under Title n of the Agricultural Trade Development and Assistance Act of 1954 (Public Law 480);
- o Operating price and income support programs for grain farmers that affect the availability and cost of feed grains used in milk production.

PURPOSE OF STUDY

The Food and Agricultural Act of 1977 established a minimum support price for milk at 80 percent of its parity price through March 31, 1979. ^V But, because of a change in the milk marketing year (from April through March to October through September) and the requirement that the support price be adjusted six months after the start of the marketing year to reflect changes in prices paid by farmers, a minimum support price approximately equal to 80 percent of parity applies through September 30, 1979. The 96th Congress will either allow the minimum support price to revert to 75 percent of parity under permanent legislation on October 1, 1979, or adopt new legislation setting a higher minimum level.

It has been argued that the support price can be set at a minimal level to provide a degree of price stability to dairy farmers and consumers, or it can be set at a substantially higher level to provide higher incomes to dairy farmers. The primary purpose of this study is to contribute to the decision process by examining relationships between the support price of milk, farm receipts from the sale of milk, consumer expenditures for dairy products, and costs to the taxpayer. Four alternative levels of price **support—75, 80, 85, and 90 percent of parity—are** examined over a **five-year** time period, October 1, 1979, to September 30, 1984.

PROGRAM OBJECTIVES AND ISSUES

Explicit objectives of the dairy price support program set forth in the Agricultural Act of 1949, as amended, are:

The price of milk shall be supported at such level not in excess of 90 percentum nor less than 75 percentum of the parity price therefor as the Secretary determines necessary in order to assure an adequate supply of pure and wholesome milk to meet current needs, reflect changes in the cost of production, and assure a level of **farm** income adequate to maintain productive capacity sufficient to meet anticipated future needs. Z/

-
- 1/ The parity price of milk is the price, in current dollars, that gives milk the same purchasing power per unit in terms of goods and services bought by farmers as prevailed in the base period, January 1910 to December 1914.
 - 2/ Agricultural Handbook No. 476, U.S. Department of Agriculture, January 1975, pp. 180-81.

In brief, operating within a price range specified as a percentage of the parity price of milk, the Secretary of Agriculture must set a support price that assures adequate current and future supplies of milk. The term "adequate supply" is not, however, defined in the authorizing legislation.

Past experience indicates that the level of federal budget outlays for the purchase and disposition of manufactured dairy products is an important factor in determining the support price. It is likely that trade-offs between the level of price support and budget outlays will be a major issue in the upcoming Congressional debate. Furthermore, because of the sensitivity of retail dairy prices to changes in the dairy price support program and current concerns over the inflationary rise in food prices, the effect of the support level on consumer prices is also a crucial factor. In January 1976, higher taxpayer costs and consumer prices were the main reasons that President Ford vetoed a joint resolution increasing the support price of milk to 85 percent of parity. 3/

Today, economic conditions in the dairy industry are described as a combination of strong commercial demand, low commercial stocks of all manufactured dairy products, and strengthening milk production attributable to a favorable milk-feed price ratio. Production per cow is rising and will soon more than offset heavy culling ~~rates—that~~ is, the sale of low-producing cattle for slaughter. There are relatively large government stocks of nonfat dry milk and butter. During fiscal year 1978, federal spending to purchase dairy products dropped to \$446 million and government stocks declined slightly, **which** is in sharp contrast to fiscal year 1977 when government outlays and stocks rose dramatically.

ORGANIZATION OF STUDY

This analysis of the economic consequences of dairy price support policy is organized as follows:

- o Chapter n describes major government regulations that affect the pricing of milk.
- o Chapter **III** discusses the historical consequences of milk pricing policy relating to the level and stability of prices, farm income, consumer spending, and taxpayer costs.

3/ Veto Message from the President of the United Staes, January 30, 1976, Senate Document No. 94-154, 94th Congress, 2nd Session.

- o Chapter IV examines important trade-offs among dairy farmers, consumers, and taxpayers of four alternative levels of price support—75, 80, 85, and 90 percent of parity—over a five-year period beginning October 1, 1979.

This study also includes four appendixes. Appendix A surveys trends in milk production and consumption, foreign trade, and market structure within the U.S. dairy industry. Appendix B explains the methodology and assumptions used to obtain the projected values presented in Chapter IV. Appendix C presents the annual values for 75, 80, 85, and 90 percent of parity over the five-year projection period. Finally, Appendix D discusses several policy options that may be viewed as alternatives to the dairy price support program.

CHAPTER II. GOVERNMENT REGULATION OF MILK PRICING

Federal and state governments impose many regulations that influence the price of milk. In particular, the dairy price support program **undergirds** the entire pricing system, and nearly all fluid-grade milk is priced through federal marketing orders or state milk control laws. The purpose of this chapter is to describe major government regulations that affect the pricing of milk and explain how the regulations might interact to influence the budgetary costs of the dairy price support program.

A number of definitions are needed to understand government regulation of milk pricing. The necessary definitions are contained in the Glossary following Appendix D.

DAIRY PRICE SUPPORT PROGRAM

With passage of the Agricultural Act of 1949, the Congress created the dairy price support program requiring the Secretary of Agriculture to support the price of milk between 75 and 90 percent of its parity price. Within this range, the Secretary of Agriculture must set a support price that will elicit "an adequate supply" of milk to meet current and future needs of domestic consumers. Although the term is not specified in legislation, the argument has been made that "the fundamental consideration in deciding how much constitutes an '**adequate supply**' is the amount of surplus, if any, which the federal government has acquired as a result of the support program . . . and, more important, what amount **is** likely to be acquired with prices at various levels between 75 and 90 percent of parity." 1/

As a result of administrative decisions, the Agricultural Act of 1949 is implemented by supporting the price of milk used in manufactured dairy products. The support price of milk is set according to a complex calculation. The level of support (expressed as a percentage of parity) is

1/ Alden C. Manchester, Milk Pricing, U.S. Department of Agriculture, Agricultural Economic Report No. 315 (November 1975), p. 4.

multiplied by the parity price equivalent of manufacturing-grade milk. The parity price equivalent of manufacturing-grade milk is calculated by multiplying the parity price of all milk by a parity equivalent factor, according to the following formula: $Z/$

Average price for all milk sold by farmers for the prior 10¹ calendar years	X	Index of prices paid by farmers for the previous month, 1910 to 1914	X	0.856
Average index of prices received by farmers for all commodities for the prior 10 calendar years, 1910 to 1914 base period		base period		

Between 1970 and 1977, the parity price equivalent of manufacturing-grade milk approximately doubled, with 90 percent of this increase attributable to changes in the index of prices paid by **farmers**.

The parity price equivalent of manufacturing-grade milk expresses a purchasing power ratio per hundredweight of manufacturing-grade milk. It does not measure the net income of dairy **farmers**, since quantities of inputs purchased and products sold are not taken into account. Over a period of time, changes in productivity affect net income, but are not fully reflected in calculating parity prices.

Under the Food and Agriculture Act of 1977, the Secretary of Agriculture is required to keep the support price of milk at least equal to 80 percent of the parity price equivalent of manufacturing-grade milk through March 31, 1979. In the fall of 1978, the Secretary of Agriculture set the support price at \$9.87 per hundredweight for milk of **U.S.** average (3.67 percent) **milkfat** content, the minimum level of support under his discretion.

2/ The parity equivalent factor converts the parity price of all milk to a manufacturing-grade milk basis. The current parity equivalent factor is 0.856. It was obtained by dividing the average price for manufacturing-grade milk for the prior 10 calendar years by the average price for all milk sold for the prior 10 calendar years.

The 1977 act also specifies that the support price is to be adjusted ~~annually--six~~ months after the beginning of each marketing ~~year--to~~ account for changes in the index of prices paid by farmers. This adjustment is required through March 31, 1981. Because of this requirement, dairy farmers are guaranteed that the support price of milk will remain at approximately 80 percent of parity through September 30, 1979. Unless new legislation is enacted, however, the minimum level of price support will revert to 75 percent of the parity price beginning October 1, 1979. At that time, the discretionary authority of the Secretary of Agriculture in setting the support price will range from 75 to 90 percent of parity.

To assure dairy farmers a market price at least equal to the support price of milk, the Commodity Credit Corporation (CCC) purchases ~~milk~~ in the form of nonfat dry milk, cheese, and butter. 3/ CCC purchase prices reflect the basic price support level plus an allowance for processing costs. Since the introduction of dairy price supports, CCC purchases have averaged 4 percent of annual milk production, and the costs to the taxpayer to remove and dispose of manufactured dairy products have averaged \$247 million a year (see Table 1). 4/ In recent years, however, taxpayer costs have ~~risen--they~~ exceeded \$700 million in fiscal year 1977--to a large extent reflecting higher support prices.

Government-owned dairy products are disposed of by commercial sales to domestic and foreign customers at a level somewhat higher than current CCC purchase prices, by sales at competitive bid prices below CCC purchase prices for restricted use and to dispose of damaged or off-grade products, by noncommercial sales to foreign governments for restricted use at prices below CCC purchase prices, and by donations to domestic and

3/ Within a given year, the market price of manufacturing-grade milk may fall below the price support level, but on average it will be equal to or greater than the support price. Temporary movements in the market price below the support price may occur in surplus periods if processors are not willing to compete actively for milk supplies at CCC purchase prices.

4/ Taxpayer costs are estimated using net support outlays in Table 1. Net support outlays are equal to CCC purchases of manufactured dairy products and related costs less receipts from the sale of CCC-owned products. Support and related expenditures, also given in Table 1, are net support purchases less government transfers to the CCC for dairy products donated for domestic and foreign use.

TABLE 1. COMMODITY CREDIT CORPORATION PURCHASES AS A PERCENT OF ANNUAL MILK PRODUCTION, NET SUPPORT OUTLAYS, AND SUPPORT AND RELATED EXPENDITURES, 1950 TO 1978

Fiscal Year <u>a/</u>	CCC Purchases as a Percent of Annual Milk Production <u>b/</u>	Net Support Outlays <u>c/</u> (millions of dollars)	Support and Related Expenditures <u>d/</u> (millions of dollars)
1950	2.2	171	N.A.
1951	0.7	-49 <u>e/</u>	N.A.
1952	0.1	2	N.A.
1953	3.1	275	N.A.
1954	9.3	400	N.A.
1955	4.2	229	N.A.
1956	4.1	238	N.A.
1957	4.1	239	N.A.
1958	5.5	206	N.A.
1959	2.8	102	N.A.
1960	2.8	160	N.A.
1961	2.7	174	122
1962	8.9	539	459
1963	7.0	454	335
1964	5.9	312	123
1965	6.5	157	144
1966	2.4	26	-42 <u>e/</u>
1967	2.2	284	232
1968	5.9	357	271
1969	4.1	269	161
1970	3.8	169	87
1971	6.0	315	217
1972	5.5	267	174
1973	4.2	136	117
1974	0.6	31	46

(Continued)

TABLE 1. (Continued)

Fiscal Year <u>a/</u>	CCC Purchases as a Percent of Annual Milk Production <u>b/</u>	Net Support Outlays <u>c/</u> (millions of dollars)	Support and Related Expenditures <u>d/</u> (millions of dollars)
1975	2.1	486	424
1976	0.8	70	40
1977	5.6	710	469
1978	2.7	446	225

N.A. = Data not available.

SOURCES: U.S. Department of Agriculture, Dairy Situation (December 1978), pp. 22 and 23. U.S. Department of Agriculture, Dairy Commodity Fact Sheets (June 1975 and January 1979). U.S. Department of Agriculture, CCC History of Budgetary Expenditures (January 1975).

a/ From 1950 to 1976, the fiscal year is July 1 to June 30. For 1977 and 1978, the fiscal year is October 1 to September 30.

b/ Data expressed on a milk equivalent basis—that is, the amount of whole milk in terms of **milkfat** required to produce the manufactured dairy products purchased by the CCC.

c/ Net support outlays are equal to CCC purchases of dairy products and related costs (processing, packaging, transporting, and storing) less receipts from sales to buyers for domestic use and exports, military agencies, foreign governments, and Section 32 programs.

d/ Support and related expenditures are equal to net support purchases less transfers from the Food and Nutrition Services for products used in domestic feeding programs and from Title n of Public Law 480 for products donated abroad.

e/ Receipts or **transfers** exceed CCC purchases and related costs.

foreign feeding programs. As shown in Table 2, donations are the primary means of disposing of CCC stocks, but they have decreased in volume over time. This change reflects a diminishing level of CCC stocks (up to 1976), a movement away from domestic commodity donations in favor of food stamps and direct payments to schools, and budgetary constraints. Commercial and noncommercial sales, which account for less than 15 percent of the disposition of CCC stocks, have also declined over time.

FEDERAL MILK MARKETING ORDER PROGRAM

A federal milk **marketing** order is a legal instrument used to regulate the terms under which milk processors, selling milk in a specific geographic area, must purchase fluid-grade milk from farmers. The federal milk marketing order system grew out of the efforts of dairy farmers in the early 1930s to deal with fluctuations in price and income caused by the perishability of milk and seasonal shifts in production and consumption. Today's federal milk marketing orders are administered under the Agricultural Marketing Agreement Act of 1937, as amended. On January 1, 1978, there were 47 federal milk marketing orders in the United States, which directly regulate the pricing and handling of about 80 percent of all fluid-grade milk. 5/ Much of the remaining milk is priced under state regulation.

Federal milk marketing orders, like dairy price supports, are administered by the Secretary of Agriculture. They are primarily intended to assure consumers of adequate supplies of good quality milk at reasonable prices, to improve incomes of dairy farmers by establishing minimum prices, and to promote equality of bargaining between **farmers** and milk dealers. 6/

Classified pricing, by which fluid-grade milk is priced differentially according to its use, and the pooling of all revenues from the sale of regulated milk are integral parts of the federal marketing order system.

5/ B. Buxton, M. Christiansen, and J. Hammond, "Federal Milk Marketing Orders," Marketing Minnesota's Milk, (October 1978), p. 1.

6/ For a thorough discussion of objectives, administrative **procedures**, and other factors relating to federal milk orders see the Statement of Herbert L. Forest, Director, Dairy Division, Agricultural Marketing Service, U.S. Department of Agriculture, before the Subcommittee on Dairy and Poultry, Committee on Agriculture, House of Representatives, April 6, 1978.

TABLE 2. COMMODITY CREDIT CORPORATION PURCHASES, STOCKS, AND DISPOSITION OF DAIRY PRODUCTS, AVERAGES FOR 1962-1966, 1967-1971, 1972-1975, AND ANNUAL DATA FOR 1976 AND 1977: BY MARKETING YEARS, IN MILLIONS OF POUNDS OF PRODUCTS

	Annual Average			1976	1977
	1962 to 1966	1967 to 1971	1972 to 1975		
Purchases and Beginning Stocks	1,586	1,047	626	1,313	1,399
Ending Stocks	315	247	304	866	820
Disposition					
Commercial sales <u>a/</u>					
Domestic	37	4	29	57	70
Foreign	137	55	2	0	0
Noncommercial export sales <u>b/</u>	100	34	9	<u>c/</u>	69
Sales to U.S. Army	11	1	<u>c/</u>	<u>c/</u>	8
Donations					
Domestic <u>d/</u>	407	410	200	222	221
Foreign <u>e/</u>	<u>579</u>	<u>296</u>	<u>82</u>	<u>168</u>	<u>201</u>
Total	1,271	800	322	447	569

SOURCE: U.S. Department of Agriculture, Dairy Commodity Fact Sheets (June 1975 and January 1979).

- a/ Sales at a level somewhat higher than the current CCC purchase price and at competitive bid prices.
- b/ Sales to foreign governments and U.S. voluntary charitable agencies for school lunch and welfare uses.
- c/ Less than 1 million pounds.
- d/ Primarily for school lunch program and needy people, but also includes donations to the military, veterans hospitals, and prisons.
- e/ Primarily nonfat dry milk and the nonfat dry milk content of blended products.

Milk processors are required to return at least minimum specified prices for milk in Class I use (fluid milk products), Class n use (soft manufactured products), and Class III use (hard **manufactured** products).

Because of the relatively low cost of transporting manufactured dairy products, federal orders mandate a uniform price for fluid-grade milk used in manufactured dairy products. In all federal orders, the Class III price is set equal to the price for manufacturing-grade milk in the Minnesota-Wisconsin area (M-W price), and the Class n price is set about 10 cents higher. Since Minnesota and Wisconsin account for more than one-half of the total U.S. production of manufacturing-grade milk, the M-W price is viewed as a measure of national equilibrium between supply and demand. The M-W price is closely related to the support price of milk. Between 1962 and 1976, the annual M-W price exceeded the support price, on average, by 5.5 percent. Excluding periods of CCC purchases and sales, the M-W price is determined by market conditions of supply and demand for manufactured dairy products.

The price differential by which the minimum Class I **price--the** minimum price paid for milk for fluid **consumption--exceeds** the M-W price in each federal market is determined on the basis of evidence presented at public hearings. "At these hearings evidence is presented on the added cost of producing milk eligible for fluid use, transportation costs, cost of obtaining milk from alternative sources, consumption and supply in the market, prices in surrounding markets, competition for supplies and sales of fluid milk, and other economic factors." ^{7/} Because of these factors, the minimum Class I price is **different** in each federal marketing order.

In 1968, the federal order Class I price differential in Eau Claire, **Wisconsin--located** in the heart of the largest surplus producing region and called the "**base point**"--**was** set at \$0.90 a hundredweight, and minimum Class I prices in more distant markets east of the Rocky Mountains were allowed to increase about \$0.15 for each 100 miles from Eau Claire. Minimum Class I prices in some federal orders located in the far west were set lower than the Eau Claire price plus \$0.15 per 100 miles. Current federal order price differentials, which have not changed since 1968, range from \$0.90 a hundredweight in Eau Claire to \$3.15 a hundredweight in the Southeastern Florida marketing area. Despite stable order price differ-

^{7/} C.N. Shaw and S.G. Levine, Government's Role in Pricing Fluid Milk in the United States, U.S. Department of Agriculture, Agricultural Economic Report No. 397, (March 1978), p. 6.

entials, however, rising transportation costs, temporary variation in local supply and demand, and the success of some dairy cooperatives in negotiating over-order payments for their members often cause prevailing Class I prices to exceed federal order minimum Class I prices. For example, in 1977 the prevailing Class I price in the Chicago marketing area was \$10.25 per hundredweight exceeding the minimum Class I price by \$0.51; and in the Southeastern Florida marketing area the prevailing Class I price was \$12.27 per hundredweight exceeding the minimum Class I price by \$0.64. 8/

Revenues from the sale of milk in different use classes are pooled and a **marketwide** blend price (that is, a weighted average price) is calculated. 9/ Individual dairy farmers receive the blend price plus or minus adjustments for butterfat differentials, transportation, and services provided by dairy cooperatives. Classified pricing which diverts milk from fluid consumption to manufactured dairy products, enhances the blend price for a given quantity of milk because the market demand for fluid milk is somewhat less sensitive to changes in price than the market demand for **manufactured** dairy products. 10/

STATE MILK PRICE REGULATIONS

Eighteen states regulate prices paid to producers for fluid-grade milk sold in the United States. Pricing at the state level is similar to classified pricing in the federal milk marketing order system, and the possibility of

8/ An over-order payment is a premium in excess of the federal order minimum Class I price received by a dairy cooperative for supplying the exact needs of a processor or distributor. Some critics have argued that over-order payments reflect the market power of large cooperatives, rather than the value of services they provide.

9/ In a few orders, revenues are pooled on an individual handler basis.

10/ In essence, it is possible to divert milk from the fluid market to the manufactured products market by raising the minimum Class I price. Raising the Class I price increases total revenues to farmers because the decline in Class n or ffi prices required to absorb the diverted milk is less than the increase in the Class I price. Total revenues from the sale of fluid-grade milk are maximized at the point where marginal revenues from the fluid market and manufactured products market are equal.

trade flows between nearby markets keep all prices closely aligned. A few states, such as California, have base plans (or quotas) under which dairy farmers are paid a substantially lower price for milk sold in excess of their base allotment. Several states also regulate, or have authority to regulate, wholesale and retail prices, trade practices, and milk promotion. Gradually, the share of milk under federal regulation has increased, while the share under state regulation has declined.

IMPORT REGULATIONS

Import quotas were first introduced in 1951 and are now used to restrict imports of many types of cheese, butter, nonfat dry milk, ice cream, and other dairy **products**. ^{11/} They are imposed and adjusted by the President, based on recommendations of the International Trade Commission. Import quotas apply to about 55 percent of U.S. dairy imports and are considered the most effective barrier to an increase in imports. Nevertheless, in response to domestic shortages and rising consumer prices, President Nixon eased this barrier by temporarily increasing quota levels on cheese, butter, and nonfat dry milk in 1973 and 1974.

Certain types of foreign cheeses, such as Swiss cheese, imported in compliance with the U.S. system of "price breaks" (that is, the CCC purchase price of **cheddar** cheese plus 7¢ a pound) are viewed as meeting a specialized demand and are consequently not subject to quotas. In addition, the President must impose countervailing duties on products from countries that **subsidize** their exports, unless such duties are waived by the Congress. In the past, countervailing duties have been waived on certain specialty cheeses, but this waiver authority expired on January 3, 1979.

At this time, the future of U.S. dairy import policy is uncertain. Protection provided to the domestic dairy industry by import quotas and other trade barriers may be inconsistent with the U.S. policy of support for freer world trade. Furthermore, it has been suggested that the U.S. balance of payments could be improved by allowing more dairy imports in return for increased U.S. exports of grain and **nonagricultural** products.

^{11/} The Agricultural Adjustment Act of 1933 (Section 22) provides that quotas may be imposed whenever imports interfere with a price support program for an agricultural commodity.

The Administration has asked the Congress to extend the counter-vailing duty waiver authority, and will soon submit for approval a trade agreements package formulated at the Multilateral Trade Negotiations in Geneva, Switzerland. At this time, it is speculated that the trade package may propose approximately to double the import quota on cheese (back to 1974-1975 levels) and to eliminate "price breaks."

INTERACTION AMONG REGULATIONS AND THEIR IMPACT ON THE BUDGET

Dairy price supports, federal and state pricing of fluid-grade milk, and import regulations jointly influence the market price of milk. The dairy price support program **affects** the volume of CCC purchases and the costs to the taxpayer differently when the market price of milk is at the government support price and when it is above that price.

If the market price of manufacturing-grade milk is at the support level, an increase in the support price leads to a higher priced manufacturing-grade milk. An increase in the support price causes dairy farmers who produce manufacturing-grade milk to expand their output. Consumption of manufactured dairy products falls in response to their higher price and, if all other factors remain constant, federal budget outlays rise. Furthermore, since the price of Class I (fluid-grade) milk *is* tied to the price of manufacturing-grade milk by a set differential, if the differential remains constant, a higher price for manufacturing-grade milk will result in higher minimum Class I prices and higher blend prices in federal order markets. This may increase fluid-grade milk production, but it will lower fluid milk consumption and cause increased volumes of fluid-grade milk to be diverted to manufactured dairy products. In short, if the market price is at the support level, the acquisition of manufactured dairy products demands higher budget outlays.

Similarly, increasing Class I price differentials or raising over-order payments, with no change in the support price, encourages production of fluid-grade milk and discourages consumption of fluid milk products. If the market price of manufacturing-grade milk is at the support level, federal budget outlays rise. If the market price of manufacturing-grade milk is above the support level, prices received by producers of manufacturing-grade milk fall as fluid-grade milk is diverted into manufactured dairy products. The latter consequence tends to speed the decline in manufacturing-grade milk production.

Also, if the market price of manufacturing-grade milk is at the support price, budget outlays will rise if additional imported dairy products substitute for domestic dairy products. In the past, import quotas have been relaxed to stem a rise in consumer prices with little impact on federal spending. Some experts believe, however, that "price breaks" on imported cheese are easy to violate and, on some occasions, imported cheese has increased the budget costs of the dairy price support program.

CHAPTER III. HISTORICAL CONSEQUENCES OF MILK PRICING POLICY

In this chapter, the specific **effects** of the dairy price support program on farm prices and incomes, milk supply, consumer prices and use, and taxpayer costs are considered in the light of past experience. This information is useful in judging the success of the program in meeting its objectives, in formulating future policy options, and in interpreting the projected results and implications of alternative levels of price support presented in Chapter IV. 1/

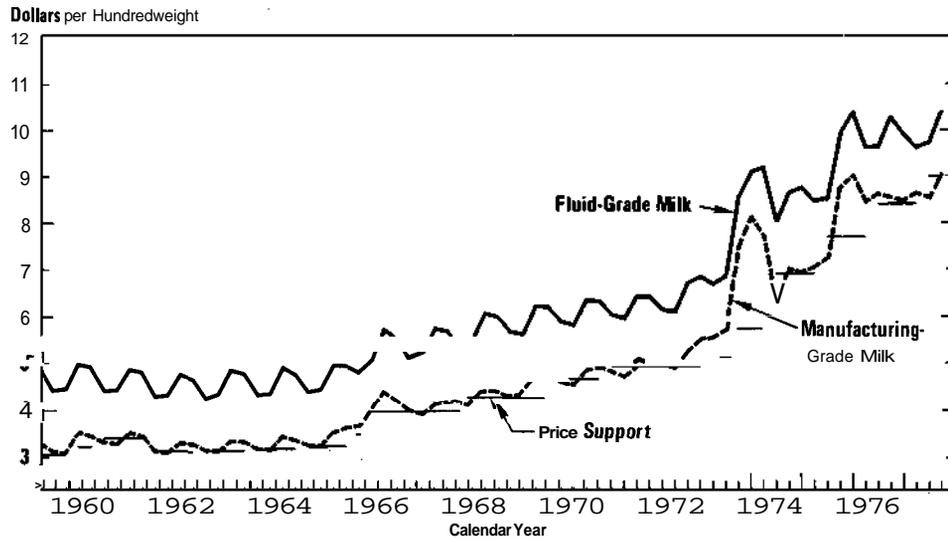
LEVEL AND STABILITY OF MILK PRICES

The support price of milk was increased from \$3.14 a hundredweight in 1949 to \$9.87 a hundredweight on October 1, 1978. In recent years, the rate of increase has accelerated (see Figure 1). Cumulative increases in the support price since 1972 are more than two times greater than the increases that occurred between 1949 and 1972.

Over the 28-year period from 1950 to 1977, the support price of milk was reduced 5 times and increased 16 times, ranging between 75 percent and 90 percent of the parity price. 2/ Three of the five years in which a reduction in price support occurred were immediately preceded by "high" CCC purchases (that is, a year in which CCC purchases as a percent of total milk production exceeded average annual CCC purchases during the period). Six of the 16 support price increases were required to maintain the support price at its minimum parity level. 3/ Six of the remaining 10 support price increases occurred in years immediately preceded by "low" CCC purchases (that is, a year in which CCC purchases as a percent of total milk

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- 1/ The objectives of the dairy price support program are discussed in Chapter I, pp. 2 and 3.
- 2/ These data are based on an examination of price support levels for each marketing year. For most of the period before 1970, the support price was changed only at the beginning of the marketing year. For years when changes were made during the year, the direction of change (relative to the prior year) was determined on the basis of the support price during the first half of the year.
- 3/ The specific years are: 1963, 1964, 1965, 1973, 1974, and 1977.

Figure 1.
 Support Price of Milk and Prices Received by Dairy Farmers,
 January, April, July, and October, 1960-1977



SOURCE: U.S. Department of Agriculture, Economics, Statistics, and Cooperatives Service.

production were less than the average annual CCC purchases during the period).

From these facts, a distinct pricing pattern emerges. If CCC purchases are "low" in year t , it is likely that the support price will be increased in year $t+1$. Although there is much less evidence, "high" CCC purchases in year t have been followed by reductions in the support price in year $t+1$. In four years following "high" CCC purchases--1963 through 1965 and 1977--the support price was at the minimum parity level and therefore could not be reduced.

As Figure 1 illustrates, the support price places an effective floor under average annual prices paid to farmers for their milk. Since 1960, the annual U.S. manufacturing-grade milk price has, on average, exceeded the support price by 4 percent a year. This calculation is strongly influenced, however, by the July 1973 to July 1974 period when, due to a sharp decline in milk production as dairy farmers responded to rising feed grain prices and high beef prices, the market price of manufacturing-grade milk was substantially above the support price. A comparison of monthly prices for January, April, July, and October from 1960 to 1978 reveals that the market price of manufacturing-grade milk actually fell below the support price on 18 different occasions. During these months, dairy farmers selling manufacturing-grade milk did not receive the minimum price specified by the dairy price support program.

Since 1960, the annual U.S. fluid-grade milk price has, on average, exceeded the **manufacturing-grade** milk price by 27 percent a year, or about \$1.34 a hundredweight. The difference between fluid-grade and manufacturing-grade prices reflects the higher value of milk in fluid products, the influence of classified pricing under federal and state marketing orders, over-order payments, and fluctuations in local conditions of supply and demand.

Three analyses suggest that the dairy price support program has resulted in enhanced prices at the farm level. 4/ First, the average price of all milk sold by farmers deflated by the index of prices paid by farmers (1967=100) has declined only 3 percent over the last 20 years. In comparison, farm prices of corn and wheat deflated by the index of prices paid have declined 40 to 50 percent during the same period. Second, CCC purchases of manufactured dairy products have averaged 4.0 percent of milk production a year since 1949. This suggests that CCC purchases have resulted in market prices higher than the equilibrium price that would otherwise have prevailed. Third, econometric analysis by James W. Gruebele shows that milk prices paid to farmers between 1950 and 1975 would have averaged 7 percent lower without a dairy price support program. 5/

Since the dairy price support program establishes a floor under the price of milk, it is highly probable that dairy farmers have experienced less price and income variability than they would have in the absence of a program. In short, CCC purchases of manufactured dairy products have prevented farm prices and incomes from dropping to low levels in the spring and early summer periods of high milk production. Furthermore, CCC stocks may be sold on the commercial market to dampen retail price increases at other times of the year. By reducing seasonal price and income variability, dairy price supports reduce the likelihood that production gluts and extremely low milk prices will induce production shortfalls and high milk prices at a later date. At this time, however, it is impossible to estimate the absolute magnitude of the reduction in price and income variability attributable to dairy price supports; or to separate out precisely the stabilizing (or destabilizing) influence of other government milk marketing regulations, commodity programs, and producer cooperatives.

4/ That is, a farm price greater than the long-run market equilibrium price without a dairy price support program.

5/ James W. Gruebele, "Effects of Removing the Dairy Price-Support Program," Illinois Agricultural Economics, July 1978, p. 32.

A review of monthly all-milk prices for the 1950 to 1977 period reveals 4 years of extremely high price variability and 24 years of low to moderate price variability. ^{6/} During the years of high price variability, CCC purchases accounted for less than 1 percent of annual milk production. In 10 years of low to moderate price variability, CCC purchases hovered between 2 and 4 percent of annual milk production. The remaining years of low to moderate price variability were characterized by annual CCC purchases in excess of 4 percent of annual milk production. In other words, a minimum level of CCC purchases--in the range of 2 to 4 percent of annual milk production--may contribute to price stability, but higher CCC purchases do not.

OTHER ECONOMIC CONSEQUENCES

Producers

For the 1950 to 1975 period, Gruebele estimates that milk prices paid to farmers were about 7 percent higher and milk production about 2 percent higher than would have occurred in the absence of a dairy price support program. Since the program enhances the market price of manufacturing-grade milk, it also enhances the federal market order minimum prices. But, since prevailing market prices of fluid-grade milk used in fluid products often exceed federal order minimum prices, it cannot be concluded a priori that the dairy price support program enhances prevailing market prices of fluid-grade milk. Nevertheless, it seems certain that dairy farmers receive a higher price for their milk diverted to manufactured products and therefore a higher blend price than would occur without a dairy price support program. The additional supply of fluid-grade milk attributable to a higher blend price is diverted to the production of manufactured dairy products and may contribute directly to higher CCC purchases.

Gruebele estimates that total cash receipts from the sale of milk in the 1950 to 1975 period were about 9 percent higher on average, because of the dairy price support program. ^{7/} While higher prices result in higher cash

^{6/} The all-milk price is the U.S. average price of all fluid-grade and manufacturing-grade milk sold to milk plants and dealers. Annual price variability is measured by finding the difference between the high and low monthly price and dividing by the annual average price.

^{7/} Gruebele, "Effects of Removing the Dairy Price-Support Program," p. 35.

receipts for all producers, the increase in cash receipts is allocated in direct proportion to the volume of production. In short, the greatest absolute benefits of price increases go to the largest dairy farms. A recent study by the Federal Trade Commission concluded that about 40 percent of the price enhancement benefits of federal milk marketing orders in 1969 went to 13 percent of all dairy farms (farms with annual gross sales of \$40,000 or more). ^{8/} Furthermore, the distribution of benefits becomes more concentrated as the share of production accounted for by the largest farms rises.

Data needed to estimate precisely changes in the total net income of dairy farmers and in the distribution of net income by farm size are not available. It seems likely, however, that the dairy price support program increased (at least temporarily) total net income to dairy farmers, and that increases in net income were distributed among farms in proportion to cash receipts. More than likely, increases in net income have been capitalized into the value of farmland, providing a windfall benefit to landowners and ultimately causing the cost of producing milk to rise.

Increases in farm level milk prices attributable to the dairy price support program tend to protect inefficient dairy farmers (those with a high cost of production) as well as the market share of inefficient producing regions. If farm prices had fallen 7 percent between 1950 and 1975, some inefficient producers would have been forced out of dairy farming and profits of the most efficient producers would have declined. In 1976, the average cost of producing milk ranged from \$8.94 a hundredweight in Southern Michigan to \$12.12 a hundredweight in Southwestern Mississippi. ^{9/} In the absence of a dairy price support program, the greatest decline in milk production would occur in the least efficient producing regions, and larger quantities of fluid milk and manufactured dairy products would be shipped from highly efficient producing regions, such as Minnesota and Wisconsin, to

^{8/} David R. Frank, Farm Size and Regional Distribution of the Benefit Under Federal Milk Market Regulation, staff report to the Federal Trade Commission (May 1978), p. 24.

^{9/} Cost of Producing Milk in the United States--Final 1976, Estimated 1977, and Projections for 1978, prepared by the U.S. Department of Agriculture for the U.S. Senate Committee on Agriculture, Nutrition, and Forestry (April 21, 1978), p. 12.

major consuming areas. ^{10/} The implicit assumption behind this argument suggests that the market power of dairy cooperatives or other **factors** would not prevent a decline in actual 1950 to 1975 prices, or would not be able to maintain interregional shipments at a fixed level.

It is likely that the dairy price support **program** has reduced price and income variability in dairy farming. **Gruebele's** research supports the argument that, in the absence of CCC purchases, farm prices would tend to fall much lower in periods of heavy production, and that these periods would be followed by production shortages and high prices. Over a period of time, extremely wide price fluctuations increase the degree of uncertainty in farmers' expectations of average prices and incomes. As a result, dairy farmers would probably reduce both the level of capital investment and current input expenditure, and consequently would slow the rate of adoption of new production technology. This could eventually result in higher production costs, lower farm incomes, and higher consumer prices. Scott C. **Matulich** has recently shown that under specific **conditions--such** as those existing in the **Chino Valley of California--specialized**, capital-intensive dairy farms using the latest technology in milking and feeding systems and maintaining a herd size up to 750 cows can obtain substantially lower average annual costs of production than smaller dairy **farms.** ^{11/}

In some regions, rural communities are highly dependent upon the prosperity of neighboring dairy farms. Employment opportunities and public services provided by these communities are likely to be more numerous and dependable under reasonably stable farm income than under "**boom-and-bust**" conditions.

Consumers

Increases in milk prices at the farm caused by the dairy price support program may be offset by increased efficiency in handling and processing, or

^{10/} A recent study concludes that Minnesota and Wisconsin should not be viewed as the sole surplus producing region in the United States; see **M. Hallberg, Impact of Alternative Federal Milk Marketing Order Pricing Policies in the United States Dairy Industry**, Pennsylvania State University, Agricultural Experiment Station Bulletin 818 (May 1978), pp. 21-22.

^{11/} Scott C. Matulich, "Efficiencies in **Large-Scale Dairying: Incentives for Future Structural Change**," American Journal of Agricultural Economics, November 1978, p. 645.

by reduced middleman profits, or they may be passed on to consumers. Between 1960 and 1977, prices for selected U.S. retail dairy products varied as follows: fluid milk, up 78 percent; butter, up 85 percent; processed American cheese, up 167 percent. During the same period, the average retail price for all dairy products was up 97 percent and the Consumer Price Index (CPI) for all food increased about 118 percent.

For 1950 to 1975, Gruebele estimates that removal of dairy price supports would have caused the following changes in annual retail dairy product prices and sales: 12/

<u>Product</u>	<u>Average Annual Percent Change</u>	
	<u>Prices</u>	<u>Sales</u>
Fluid milk	-2.8	0.8
Cheddar cheese	-5.1	3.6
Other cheese	-2.7	1.9
Butter	-5.8	5.0

Assuming the above price estimates are accurate, the dairy price support program increased the annual CPI for all food about 0.5 percent, on average, between 1950 and 1975. Dairy products had a weight of 11.7 percent in the CPI for all food before 1978, but currently their weight is 8.8 percent.

Gruebele concluded that between 1950 and 1975 the dairy price support program increased consumer expenditures for dairy products an average \$410 million a year. In an earlier study of the dairy price support program (1949 to 1974), Dale Heien found smaller price-quantity effects and concluded that the program increased consumer expenditures about \$130 million a year. 13/

Although undue price enhancement is harmful, consumers benefit when the stability induced in farm prices and production by the dairy price support program in turn stabilizes the retail market. During certain years--particularly 1964, 1965, 1972, and 1975--CCC-owned dairy products were sold for restricted use in commercial trade. The timing of CCC sales, which

12/ Gruebele, "Effects of Removing the Dairy Price-Support Program," p. 36.

13/ Dale Heien, "The Cost of the U.S. Dairy Price Support Program, 1949-1974," The Review of Economics and Statistics, February 1977, p. 3.

constituted a small percentage of the annual consumption of dairy products, helps restrict seasonal fluctuations in the flow of dairy products to the market and may restrain retail price increases. Consumers derive more satisfaction from fairly even consumption of a food product than from a cycle of shortages and gluts. Furthermore, the burden of sharp and unexpected increases in retail price falls especially hard on low-income consumers.

In summary, it appears that price supports have caused modest increases in retail dairy prices. Manufactured dairy products probably experience the greatest retail price increases which are followed by reductions in market demand, causing a reduced farm level demand for milk used in manufactured dairy products. In other words, as retail prices rise, processors need less milk to satisfy the retail demand for manufactured dairy products and the government may be forced to acquire a larger quantity of manufactured dairy products.

Taxpayers

Increasing the support price of milk above the market equilibrium level leads to higher CCC purchases because of (1) increases in the production of milk and in the quantity of fluid-grade milk diverted to manufactured dairy products and (2) a decrease in the quantity of manufactured dairy products demanded by commercial market buyers. CCC purchases as a percent of annual milk production and budget costs of the dairy price support program are presented in Table 1 above.

Federal budget outlays for the purchase of manufactured dairy products each year since the introduction of price supports suggest that farm and retail prices have been maintained above the minimum level needed to satisfy the dairy price support program's objective of providing an adequate supply of milk to meet current and future needs of consumers. Gruebele's research (presented above) corroborates this suggestion. In other words, available evidence implies that lower farm and retail prices would have eliminated (or reduced) budget outlays for CCC purchases, resulting in no (or less) price enhancement, without creating a shortage of milk. Several important facts must, however, be recognized in interpreting this evidence. First, Gruebele's research for 1950 to 1975 indicates that the magnitude of the price reduction needed to eliminate CCC purchases was, on average, not more than 7 percent at the farm level and about 3 percent at the retail level. Second, during four years--1951, 1952, 1974, and 1976--CCC purchases were negligible (less than 1 percent of annual milk production), and on one occasion it was necessary to increase import quotas to meet domestic consumer needs. Third, to ensure an adequate supply of milk

throughout the year, supplies in the peak production season must exceed commercial requirements at that time. Fourth, factors other than the level of price ~~support—such~~ as the pricing and marketing activities of producer ~~cooperatives—may~~ influence CCC purchases.

Taking all factors into consideration, it appears that a minimum level of CCC purchases over a period of years may contribute to price stability. Historical evidence also shows, however, that low CCC purchases tend to induce the Secretary of Agriculture to increase the support price of milk, which may cause CCC purchases and federal budget outlays to rise. When CCC purchases rise above 4 percent of annual milk production, there is no evidence that higher federal spending introduces greater price stability.

Additional Considerations

Additional considerations are pertinent to a discussion of the operation of the dairy price support program. As mentioned in Chapter n, high domestic dairy prices require the United States to impose quotas on imported dairy products. As U.S. negotiators bargain with major ~~customers—such~~ as the European Economic ~~Community—to~~ reduce trade barriers restricting U.S. exports, they may encounter the argument that trade barriers are justified because the United States excludes larger imports of dairy products. In this manner, the dairy price support program may be a factor preventing the expansion of U.S. exports of grain and other products.

It has also been suggested that current U.S. farm programs may be inequitable because dairy farmers receive a higher level of price support than do grain and cotton farmers. Between 1976 and 1978, domestic support prices (or loan rates) for wheat and cotton were 60 to 70 percent of their average production costs, while the support price (or loan rate) for corn was 70 to 80 percent of its average production costs. In recent years, the level of price support provided to grain and cotton farmers has been reduced to help keep U.S. exports competitive in world markets. In contrast, the support price of manufacturing-grade milk was 90 percent of its average production costs between 1976 and 1978, and most dairy farmers received higher prices under federal and state milk marketing orders.

The level of price support relative to average production costs is not, however, a precise indicator of the income assistance provided to **farmers** or of the cost to the taxpayer of various programs. If market prices fall below

target prices, participating grain and cotton farmers receive deficiency payments to supplement their farm income. 14/ Deficiency payments are not made to dairy farmers. CCC operations and producer payments for grain and cotton programs have cost the taxpayer far more than has the dairy price support program.

14/ Target prices are usually higher than support prices. If seasonal average market prices are below target prices, grain and cotton farmers receive deficiency payments based on the difference between the target price and the market price times their eligible production.

CHAPTER IV. ALTERNATIVE FUTURE LEVELS OF PRICE SUPPORT

Four alternative levels of price **support--75, 80, 85, and 90 percent of parity--have** been analyzed over a five-year period, October 1, 1979, to September 30, 1984. Before October 1, 1979, the Congress will decide either to allow the minimum support price of milk to revert to 75 percent of parity as authorized by the Agricultural Act of 1949, or to adopt new legislation setting a higher minimum. Different levels of price support result in important future trade-offs among dairy farmers, consumers, and taxpayers.

This chapter is divided into two parts: presentation of results of the analysis, and comparisons of trade-offs and implications of alternative levels of price support.

RESULTS OF ANALYSIS

The following projections are based on an econometric supply and demand model of the U.S. dairy industry (see Appendix B). It is assumed that the Secretary of Agriculture will **establishe** on October 1, 1979, a support price for milk (either 75, 80, 85, or 90 percent of parity) and that the support price, expressed as a percent of parity, will be held constant over the next five marketing years. ^{1/} It is therefore possible to compare the consequences of alternative levels of price support over a significant period of time, assuming that federal order Class I price differentials, over-order payments, imports and exports, state milk marketing regulations, and a host of other **factors** remain unchanged.

Annual projected values (for marketing years 1979 to 1983) of a particular price support **option--say, 80 percent of parity--have** been examined by comparing them with a historical base period (average values

^{1/} The dairy marketing year for 1979 begins on October 1, 1979, and ends on September 30, 1980. For each price support option, the support price at the start of the marketing year is adjusted six months later by an amount equal to the projected percentage change in the index of prices paid by farmers.

for marketing years 1976 and 1977) and with projected values for the remaining price support options. Table 3 provides a summary of average values for the base period and for the projection period assuming four alternative levels of price support. Annual projected values for the four price support options are given in Appendix C.

Producers. The support price of manufacturing-grade milk increases throughout the projection period and, in 1983, ranges from \$14.00 a hundredweight at 75 percent of parity to \$16.80 a hundredweight at 90 percent of parity. ^{2/} Between 1979 and 1983, annual average prices for all milk are projected to exceed the all-milk price during the base period by a minimum of \$3.82 a hundredweight at 75 percent of parity and a maximum of \$5.78 a hundredweight at 90 percent of parity. At 90 percent of parity the all-milk price averages 14 percent higher than at 75 percent of parity.

Annual milk production, on average, ranges from 3 to 6 percent greater between 1979 and 1983 than during the base period. In 1983, milk production is expected to reach 130 billion pounds at 75 percent of parity and nearly 135 billion pounds at 90 percent of parity. If output per cow increases to 13,400 pounds in 1983—a 3 percent annual rate of increase over 1977—approximately 9.7 to 10.1 million milk cows will be needed to produce 130 to 135 billion pounds of milk. This implies there would be about 11 percent fewer milk cows in 1983 than in 1977.

Higher farm prices and increased milk production raise total cash receipts from the sale of milk. Annual total cash receipts between 1979 and 1983, on average, reach \$17.1 billion at 75 percent of parity and \$20.1 billion at 90 percent of parity. As compared with the base period, this represents an annual increase of \$5.1 to \$8.1 billion. Assuming that total dairy production costs maintain the same relationship to total cash receipts that existed from 1975 to 1977, annual net income from the sale of milk between 1979 and 1983 increases \$0.5 to \$0.9 billion relative to the base

^{2/} The projected support price on October 1, 1979, at 75 percent of parity is set equal to the support price that must be maintained until the end of the 1978 marketing year. The parity price equivalent of manufacturing-grade milk is projected to rise at an average rate of 8.2 percent a year. The support price is a predetermined percentage of the parity price equivalent.

TABLE 3. AVERAGE VALUES FOR THE HISTORICAL BASE PERIOD AND PROJECTION PERIOD ASSUMING 75, 80, 85, AND 90 PERCENT OF PARITY

	Base Period: Average Values for 1976 and 1977	Projection Period: Average Values for 1979 to 1983 <u>a/</u>			
		75 percent of parity	80 percent of parity	85 percent of parity	90 percent of parity
Support Price (dollars per cwt.)	8.93 <u>b/</u>	11.97	12.77	13.57	14.37
Milk Production (billions of lbs.)	122.4	127.2	128.3	129.3	130.4
Farm Price, All Milk (dollars per cwt.) <u>c/</u>	9.94	13.76	14.29	14.97	15.72
Total Cash Receipts (billions of dollars) <u>d/</u>	12.0	17.1	18.0	19.0	20.1
Commercial Supply (billions of lbs.) <u>e/</u>	128.0	132.2	133.6	134.5	135.6
Commercial Disappearance (billions of lbs.) <u>f/</u>	117.2	124.8	124.0	123.2	122.5
Retail Fluid Milk Price (dollars per half gal.)	0.86	1.20	1.23	1.25	1.28
Retail Cheese Price (dollars per half lb.)	0.88	1.28	1.30	1.34	1.38
Consumer Expenditures (billions of dollars) <u>g/</u>	28.2	36.7	37.3	38.0	38.7
CCC Purchases (billions of lbs.) <u>h/</u>	5.1	1.6	3.6	5.3	7.1
Ending CCC Stocks (billions of lbs.) <u>i/</u>	4.6	1.1	5.8	10.4	14.5
Net Support Outlays (millions of dollars) <u>j/</u>	578.0	251.0	568.0	898.0	1,290.0

(Continued)

TABLE 3. (Continued)

NOTE: All data presented here are on a marketing year basis. The historical base period consists of the 1976 and 1977 marketing years, a two-year period beginning October 1, 1976, and ending September 30, 1978. The projection period consists of five marketing years beginning October 1, 1979, and ending September 30, 1984.

- a/ Annual projected values are given in Appendix C.
- b/ Equal to 81 percent of the parity price of manufacturing-grade milk.
- c/ The U.S. average price of all fluid-grade and manufacturing-grade milk sold to milk plants and dealers.
- d/ Obtained by multiplying the all milk price times milk marketings. Milk marketings are equal to milk production less milk used on **farms**.
- e/ Includes beginning commercial stocks, milk marketings and imports. Data expressed on whole milk equivalent basis.
- f/ Includes utilization in domestic and export markets. Data expressed on whole milk equivalent **basis**.
- g/ Obtained by multiplying retail product prices times commercial disappearance in the domestic **market**.
- h/ Data expressed on whole milk equivalent basis.
- i/ Equal to beginning CCC stocks plus CCC purchases minus CCC disposition. Data expressed on whole milk equivalent basis.
- j/ Equal to CCC purchases and related costs less receipts **from** the sale of CCC-owned products.

period. 3/ Comparing the projection period with the base period in constant dollars, annual net income falls slightly at 75 percent of parity and rises about 15 percent at 90 percent of parity.

Consumers. Higher support prices for milk lead to higher retail prices, reduced consumption (measured by commercial disappearance in Table 3), and higher consumer expenditures for fluid and manufactured dairy products. Retail dairy prices between 1979 and 1983 are projected to exceed retail dairy prices in the base period, on average, by 43 percent at 75 percent of parity and by 52 percent at 90 percent of parity. Adjusted for inflation and then compared with the base period, retail prices decline slightly at 75 percent of parity and rise about 6 percent at 90 percent of parity.

The effect of higher retail prices on consumption and consumer expenditures can be demonstrated by comparing the 75 and 90 percent of parity options. Between 1979 and 1983, the highest price support option causes annual commercial disappearance to decline 2.3 billion pounds (1.7 percent) and annual consumer expenditures to rise \$2.0 billion (5.4 percent). 4/ Most of the reduction in commercial disappearance, about 70 percent, occurs among manufactured dairy products. Assuming an average U.S. population of 224 million between 1979 and 1983, the added annual consumer cost of 90 percent of parity rather than 75 percent of parity is about \$9 per capita.

Taxpayers. As compared with the base period, projected CCC purchases, ending CCC stocks, and net support outlays between 1979 and

3/ Total dairy production costs (excluding charges for management, operator labor, and unpaid family labor) averaged 85 percent of total cash receipts from the sale of milk between 1975 and 1977. Cost of Producing Milk in the United States, 1975 and 1976, and Cost of Producing Milk in the United States, Final 1976, Estimated 1977, and Projections for 1978, prepared by the U.S. Department of Agriculture for the Committee on Agriculture, Nutrition, and Forestry, United States Senate, 1977 and 1978. U.S. Department of Agriculture, Dairy Situation, March 1978, p. 9.

4/ Consumer expenditure data cover fluid and manufactured dairy products in the domestic market. Exports of dairy products are assumed to be constant at 0.9 billion pounds a year.

1983 decline substantially at 75 percent of parity. In fact, if domestic and foreign donations continue at recent levels, ending CCC stocks will be completely eliminated in 1982. CCC purchases of 1.5 billion pounds of manufactured dairy products in 1983 would equal only 60 percent of annual donations. Projected results at 80 percent of parity are similar to the base period, but the higher price support **options--85** and 90 percent of **parity--** cause CCC purchases, ending CCC stocks, and net support outlays to rise. As the support price of manufacturing-grade milk is increased, milk supply rises and commercial disappearance declines, causing the market **residual--** the amount of manufactured dairy products held in ending commercial stocks or CCC **purchases--to** rise.

Comparing 75 and 90 percent of parity, average annual CCC purchases between 1979 and 1983 are 1.6 billion pounds and 7.1 billion pounds, respectively. This implies that the government is expected to acquire, on average, from 1 to 6 percent of annual milk production. Figure 2 shows that annual CCC purchases will remain about constant at 75 percent of parity, and will rise throughout the projection period at 80, 85, and 90 percent of parity. Annual net support outlays between 1979 and 1983 average \$0.3 billion at 75 percent of parity, \$0.6 billion at 80 percent of parity, \$0.9 billion at 85 percent of parity, and \$1.3 billion at 90 percent of parity. In 1983, annual net support outlays are projected to be \$1.8 billion lower at 75 percent of parity than at 90 percent of parity.

TRADE-OFFS AND OTHER IMPLICATIONS

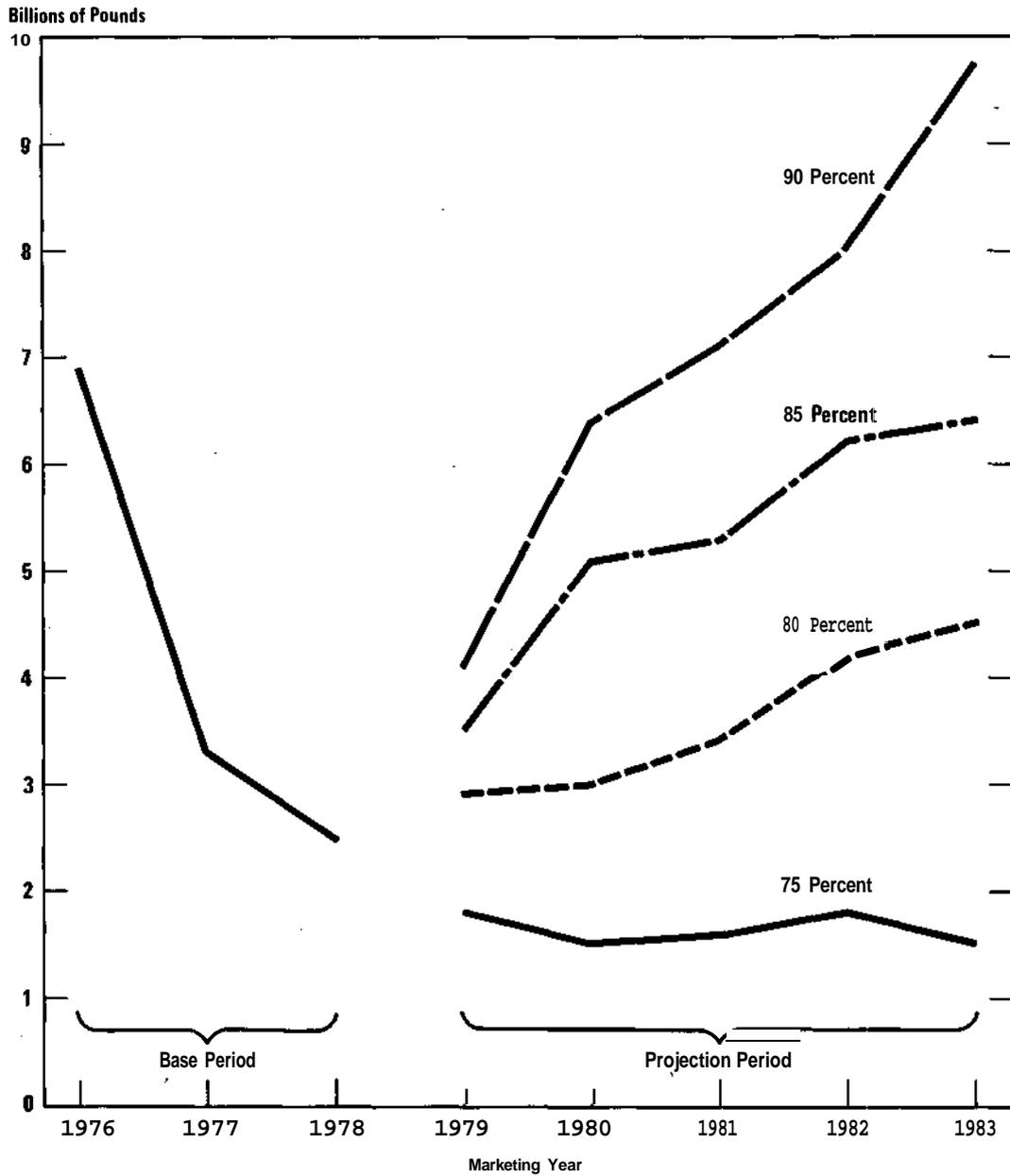
Projected results for 1979 to 1983 show that different levels of price support involve important trade-offs among dairy farmers, consumers, and taxpayers (Table 4). Between 75 and 90 percent of parity, incremental 5 percent increases in the parity level of price support cause annual total cash receipts from the sale of milk to rise \$0.9 to \$1.1 billion, reduce annual commercial disappearance of dairy products by 0.8 to 0.7 billion pounds, and increase annual consumer expenditures by \$0.6 to \$0.7 billion. Also, taxpayer costs as measured by net support outlays rise about \$0.3 to \$0.4 billion for each 5 percent increase in the parity level of price support.

In short, higher price supports provide additional cash receipts to dairy farmers, but only as a result of increased consumer spending and taxpayer costs. Appendix D contains a discussion of different policy **options--** alternatives to the dairy price support **program--that** could be used to provide income assistance to support dairy production capacity, hold down consumer prices, or reduce taxpayer costs.

TABLE 4. AVERAGE ANNUAL TRADE-OFFS AMONG DAIRY FARMERS, CONSUMERS, AND TAXPAYERS DURING THE PROJECTION PERIOD, 1979 TO 1983

	Change in the Level of Price Support		
	From 75 to 80 percent of parity	From 80 to 85 percent of parity	From 85 to 90 percent of parity
Dairy Farmers:			
Changes in total cash receipts	\$0.9 billion	\$1.0 billion	\$1.1 billion
Consumers:			
Change in commercial disappearance	-0.8 billion lbs.	-0.8 billion lbs.	-0.7 billion lbs.
Change in consumer expenditures	\$0.6 billion	\$0.7 billion	\$0.7 billion
Taxpayers:			
Change in net support purchases	\$0.3 billion	\$0.3 billion	\$0.4 billion

Figure 2.
 Annual CCC Purchases for the Historical Base Period (1976-1977)
 and the Projection Period (1979-1983) Assuming 75, 80, 85, and
 90 Percent of Parity



Price Enhancement. Price enhancement at different levels of price support can be approximated by examining trends in CCC purchases between 1979 and 1983. A steady increase in CCC purchases over a period of years indicates that the support price is holding the price of manufacturing-grade milk above the market clearing level. According to this criterion, some CCC purchases may be necessary because of seasonal peaks in production, but CCC purchases above a minimum level result in higher prices.

This criterion, applied to the projected results for 1979 to 1983, leads to the conclusion that no price enhancement occurs at 75 percent of parity, but it does occur at 80, 85, and 90 percent of parity (see Figure 2). With price supports fixed at 75 percent of parity, annual CCC purchases are constant over the projection period. At higher price support options, on the other hand, annual CCC purchases rise throughout the projection period.

Although higher support prices will result in higher milk prices for all dairy farmers, the benefits of price enhancement in the dairy price support program are unevenly distributed since they are allocated among dairy farms in direct proportion to the volume of milk production and sales. In 1975, there were about 403,000 dairy farms, but the largest 14 percent of these farms (with 50 or more dairy cows) received slightly more than 50 percent of total *cash* receipts from the sale of milk (see Appendix Table A-3). Thus, any increase in total cash receipts attributable to the dairy price support program will be distributed in favor of a relatively small number of large dairy farms. Assuming that 62,000 large dairy farms account for about 60 percent of total cash receipts from the sale of milk in 1983, large farms each receive annually about \$36,000 more in cash receipts at 90 percent of parity than they would receive at 75 percent. ^{5/} For a relatively small 30-cow dairy farm averaging 13,000 to 14,000 pounds of milk per cow and receiving the projected all-milk price, price supports fixed at 90 percent rather than 75 percent of parity increase annual cash receipts about \$9,000 in 1983. As discussed earlier, if higher total cash receipts cause net incomes to rise, the value of relatively fixed factors of production will be bid up and ultimately cause the cost of producing milk to rise.

Price Stability. To the extent that price supports for milk tend to stabilize milk prices and farm income, it is likely that dairy **farmers**, rural communities, and consumers benefit. Since it is not known how much price variation would occur, nor precisely how producer and consumer behavior

^{5/} Farm numbers and percent of total cash receipts in 1983 are based on extrapolations from data in Table A-3.

would change in the absence of a dairy price support program, these hypotheses have not been quantitatively evaluated.

Historical evidence shows that low to moderate price variability has occurred when CCC purchases range from 2 to 4 percent of annual milk production. It appears, therefore, that 80 percent of parity may result in low to moderate price variability, since CCC purchases are then expected to average 3 percent of annual milk production. At 85 and 90 percent of parity, CCC purchases are higher and society will have a large buffer stock of government-owned dairy products in the event of an unexpected decline in milk production. Nevertheless, there is no historical evidence that the higher price support options will result in less price variability than 80 percent of parity. At the 75 percent of parity option, CCC purchases average about 1 percent of annual milk production. In the past, high price variability has occurred when CCC purchases fell below 2 percent of annual milk production.

Farm Structure. The future impact of the dairy price support program on the structure of farms and the use of resources is expected to be mixed. On the one hand, growth-oriented farmers can, through the benefits of price enhancement and price stability, become innovative and increase the level of capital investment in dairy farming. In this respect, the dairy price support program complements the impact of technological change and will speed the trend toward fewer and still larger dairy farms. Nevertheless, as the level of price support is increased, some protection is extended to dairy farms that generate low net incomes and may be highly vulnerable to downward fluctuations in milk prices. These farms are likely to be relatively small-scale units and some would not continue operating if the dairy price support program were eliminated.

A reduced level of price support will impose the greatest adjustment burden on relatively inefficient farms in regions where there are few alternative opportunities for employment in farming or in local communities. Therefore, dairy price supports providing some protection, but allowing the farm sector to adjust to changing economic conditions, may reduce the long-run costs of structural change as smaller farms are consolidated between generations and some younger people seek alternative employment. In this manner, the adverse effect of structural change on farm people, local businesses, and community services may be minimized. On the other hand, high price supports that attract too many resources into dairy farming merely postpone and even increase the burden of adjustment at a later date.

Donations. Recipients of donated CCC dairy products benefit from large CCC purchases and ending stocks. Unfortunately, these benefits are

not readily measurable. For example, schools may substitute donated dairy products for current purchases and thereby increase discretionary operating revenues. The manner in which these additional revenues are used helps determine the level and distribution of benefits from donated dairy products. At 75 percent of parity, donations from CCC stocks will decline to 1.5 billion pounds in 1983. The federal government, however, has the option of donating dairy products purchased under other legislative authorities, donating other commodities, or making cash grants. The costs to the taxpayer of these program options as compared with higher dairy price supports are uncertain. It *is* possible, however, that alternative programs could provide, at less cost to the taxpayer, benefits equal to the value of donated CCC dairy products.

APPENDIXES

APPENDIX A. AN OVERVIEW OF THE DAIRY INDUSTRY

Some economic characteristics of the dairy industry are considered in this appendix. This background information reveals the direction of major changes in the dairy industry and helps to explain why it is changing. Specific topics considered here include milk production, consumption of milk and other dairy products, foreign trade, and market structure. These topics were selected because they are relevant to understanding the consequences of dairy price support policy.

Milk Production

Many factors influence the milk production decisions of U.S. dairy farmers. These decisions ultimately play a major role in determining the level of farm income, consumer prices, and CCC purchases. The following six items summarize important trends in annual milk production, productivity, the steady shift of production capacity to fluid-grade milk, regional differences in production, and aggregate supply response.

- o Annual milk production generally increased from the early 1900s until 1964, when the largest production to date of 127 billion pounds was reached. Since that time annual milk production gradually declined to about 115 billion pounds in 1973 through 1975, but increased to 123 billion pounds in 1977.
- o From 1950 to 1977, milk production per cow (productivity) increased from 5,300 pounds to 11,194 pounds, or more than 100 percent. During the same time period, the number of milk cows on farms declined from 22 million to 11 million. The tremendous increase in productivity is attributed to improvements in breeding and animal husbandry, new technology (milking parlors, housing, feeders, and the like), culling of low-producing cows, higher rates of concentrate feeding, and price and income stability. The dairy price support program and, up until 1973, large CCC stocks of feed grains are major factors responsible for price and income stability.
- o Table A-1 shows that the percentage of annual milk production marketed as fluid-grade milk increased from 61 percent in 1950 to 82 percent in 1977. The relative increase in fluid-grade milk (or decline in manufacturing-grade milk) reflects higher prices for

TABLE A-1. MILK PRODUCTION, COMPOSITION OF MILK MARKETING,
AND DISTRIBUTION BY REGIONS FOR 1950, 1970, AND
1977: IN PERCENTS

	1950	1970	1977
Milk Sold to Plants and Dealers			
Fluid-grade	61	74	82
Manufacturing-grade	39	26	18
Total	100	100	100
Regional Data <u>a/</u>			
Northeast			
Share of production	18	21	20
Fluid-grade milk <u>b/</u>	N.A.	99	99
Lake States			
Share of production	24	28	29
Fluid-grade milk	N.A.	51	65
Corn Belt			
Share of production	21	15	13
Fluid-grade milk	N.A.	66	76
Northern Plains			
Share of production	7	5	4
Fluid-grade milk	N.A.	46	50
Appalachian			
Share of production	3	7	7
Fluid-grade milk	N.A.	97	100
Southeast			
Share of production	3	4	4
Fluid-grade milk	N.A.	97	100

(Continued)

TABLE A-1. (Continued)

	1950	1970	1977
Delta States			
Share of production	3	2	2
Fluid-grade milk	N.A.	88	92
Southern Plains			
Share of production	4	4	4
Fluid-grade milk	N.A.	95	98
Mountain			
Share of production	4	4	4
Fluid-grade milk	N.A.	66	73
Pacific			
Share of production	8	11	13
Fluid-grade milk	N.A.	91	96
Total Milk Production (billions of pounds)	117	117	123

N.A. = Not available.

SOURCE: U.S. Department of Agriculture, Milk Production, Disposition, Income, (May 1978, April 1971; and Robert A. Milligan, General Characteristics of the U.S. Dairy Industry, Cornell Agricultural Economics Staff Paper No. 77-21 (July 1977).

a/ Northeast: Maine, Vermont, New Hampshire, Connecticut, Rhode Island, **Masachusetts**, New York, Pennsylvania, Maryland, and New Jersey. Lake states: Michigan, Minnesota, and Wisconsin. Corn Belt: Ohio, Indiana, Illinois, Missouri, and Iowa. Northern Plains: North Dakota, South Dakota, Nebraska, and Kansas. Appalachian: North Carolina, Virginia, West Virginia, Tennessee, and Kentucky. Southeast: Florida, Alabama, Georgia, and South Carolina. Delta States: Louisiana, Mississippi, and Arkansas. Southern Plains: Texas and Oklahoma. Mountain: Montana, Idaho, Wyoming, Colorado, Nevada, Utah, Arizona, and New Mexico. Pacific: Oregon, Washington, and California.

b/ Percent of milk sold to plants and dealers; does not include milk used on **farms**.

fluid-grade milk are \$0.20 to \$0.25 a hundredweight higher than for manufacturing-grade milk. 1/

- o Trends in milk production in ten regions are also given in Table A-1. The leading producing **regions--the** Lake States and the Northeast **--account** for 29 percent and 20 percent of U.S. milk production, respectively. Minnesota and Wisconsin in the Lake States appear to enjoy a comparative advantage in milk production. Other major producing regions are the Corn Belt, where production has been declining rapidly, and the Pacific Region (particularly California, the consistent leader in production per cow), where production has been increasing rapidly. As a group, the remaining six regions have been producing a steadily declining share of U.S. production.
- o The proportion of milk eligible for fluid consumption varies by region. Virtually all milk in the Northeast, Appalachian, Southeast, Southern Plains, and Pacific Regions is fluid grade. A large proportion of manufacturing-grade milk is produced in the Lake States, Corn Belt, and Northern Plains. The leading manufacturing-grade milk producing states are Minnesota and Wisconsin. These two states account for about one-half the butter and cheese produced in the United States.
- o Most researchers believe that the short-run supply response to a change in the farm price of milk is small because of the large fixed investments on dairy farms, but that supply response increases as the length of the adjustment period is extended. The long-run price elasticity of milk supply is reported to range from 0.2 to 0.9. 2/

Other variables affecting milk supply include beef cattle prices, feed grain prices, wage rates, and off-farm employment opportunities. A biological time **lag--from** the date of breeding to

1/ Alden C. Manchester, Dairy Price Policy: Setting, Problems, Alternatives, U.S. Department of Agriculture, Agricultural Economics Report No. 402 (April 1978), pp. 3-9.

2/ A 1 percent increase in the farm price of milk is expected to cause a 0.2 to 0.9 percent increase in the quantity of milk supplied, if other factors remain constant. B. Buxton and J. Hammond, "Social Cost of Alternative Dairy Price Support Levels," American Journal of Agricultural Economics, May 1974, p. 289. R. Ippolito and R. Masson, "The Social Cost of Government Regulation of Milk," The Journal of Law and Economics, April 1978, p.63.

milking **age--constrains** the rate of increase in dairy cow numbers, herd size, and milk production. Nevertheless, some dairy farmers quickly adjust the quantity of feed, feed rations, and their culling rate as economic conditions change.

Consumption of Milk and Other Dairy Products

Consumer preference for milk and other dairy products is changing particularly away from fluid-grade milk products containing large quantities of **milkfat**. Yet, per capita consumption of **cheese--which** is 25 percent or more **milkfat--has** more than doubled over the past ZO years. These changes may have a marked influence on milk pricing, the degree of consumer satisfaction, structural **organization** of the industry, and the level of CCC purchases. The following three items summarize important trends in milk use, per capita consumption, and the demand for milk and other dairy products.

- o Table A-2 reveals trends in the use of milk over the past ZO years. Today, about 43 percent of all milk is used in fluid products, reflecting a slight decline since the mid-1960s. The proportion of milk used to make butter has declined steadily, while cheese has more than doubled, and frozen dairy products increased slightly. The share of milk used on farms is now much smaller than it was in 1956. Since more than 80 percent of annual milk production is fluid-grade milk, increasing amounts of higher cost fluid-grade milk are being used to produce manufactured dairy products. It is reported, however, that sanitary regulations are being revised to require the use of fluid-grade milk in ice cream and cottage cheese.
- o Between 1955 and 1977, per capita consumption of milk and other dairy products dropped from 433 pounds to 338 pounds. Sixty percent of the reduction is attributable to a sharp decline in milk used on farms and 37 percent is attributable to a steady decline in the consumption of fluid products. There has also been a substantial shift from whole milk to lowfat and skim milk. The trends in fluid milk consumption reflect the passing of the "baby boom" generation from their peak milk-consuming years, increased competition from soft drinks and alcoholic beverages, widely publicized health concerns, and lower retail prices of **lowfat** milk. The rapid increase in per capita cheese consumption is attributed to rising consumer incomes, and changing life styles and eating habits. The substitution of vegetable **fat for** milk fat in manufactured dairy products is most

TABLE A-2. UTILIZATION OF MILK SUPPLY FOR 1956, 1966, AND 1976: IN PERCENTS

	1956	1966	1976
Fluid Use	39.5	45.7	42.5
Manufactured Dairy Products			
Butter	22.2	19.5	16.6
Cheese	11.0	13.8	23.8
Frozen dairy products	6.7	8.7	9.5
Others	<u>6.8</u>	<u>5.7</u>	<u>3.6</u>
Total products	46.7	47.7	53.5
Used on Farms	12.9	4.5	2.6
Residual <u>a/</u>	1.0	2.1	1.4

SOURCE: U.S. Department of Agriculture, Agricultural Statistics, selected years.

NOTE: Data expressed on a milk equivalent basis (that is, the amount of whole milk in terms of milkfat required to produce the manufactured dairy products purchased by the CCC).

a/ Minor miscellaneous uses and inaccuracies in production and utilization estimates.

apparent as margarine replaces butter. Reduced government donations to domestic feeding programs account for about 2 percent of the decline in per capita consumption between 1955 and 1977.

- o Most research studies have concluded that the retail demand for milk and other dairy products is both price and income inelastic. Retail price elasticities for fluid milk products have generally been in the range of -0.2 to -0.6; and most income elasticities are 0.5 or less. ^{3/} The retail demand for manufactured dairy products is generally believed to be slightly more price and income elastic than the demand for fluid milk products, but, at least one manufactured dairy ~~product--nonfat milk--is~~ thought to have a negative income elasticity of demand. Price elasticities of demand for fluid-grade and manufacturing-grade milk at the farm level are perhaps one half of the respective price elasticities for fluid milk and manufactured dairy products at retail.

The demand for milk in future years will be determined by the demand for products that utilize the skim milk component, especially fluid milk and cheese. Demand will increase slowly, but probably will not substantially exceed the rate of population growth. ^{4/}

Foreign Trade

Measured both in physical quantity and in dollar value, dairy products are a small part of the U.S. trade flow. Between 1965 and 1977, annual imports and exports of dairy products averaged 1.8 percent and 1.3 percent of domestic milk production, respectively. Today, cheese and casein (the

^{3/} A 1 percent decline in the retail price of fluid milk is expected to cause a 0.2 to 0.6 percent increase in the quantity demanded of fluid milk products. With respect to income, a 1 percent rise in consumer income causes a 0.5 percent or less increase in the quantity demanded of fluid milk if other factors remain constant. Robert A. Milligan, *General Characteristics of the U.S. Dairy Industry*, Cornell Agricultural Economics Staff Paper No. 77-21 (July 1977), p. 26.

^{4/} James J. Miller, "Changing Utilization of Milk and Components of Milk: Implications For The Future," Dairy Situation, U.S. Department of Agriculture (July 1978), p. 30.

principal protein in milk) account for 80 to 90 percent of U.S. dairy imports. **Nonfat** dry milk donated under Title n of Public 480 typically accounts for more than one-half of U.S. dairy exports. 5/

Dairy products are a trade issue because the dairy price support program pushes **domestic** prices above the world market price in an industry in which trade is heavily subsidized by exporting countries. Import quotas, "price breaks" on certain foreign cheeses, and the threat of countervailing duties on subsidized shipments are used to protect domestic prices. 6/ Otherwise, larger quantities of dairy products from the European Economic Community (EEC), New Zealand, and Australia would be shipped to U.S. markets. 7/

Commercial exports of U.S. dairy products are limited. First, without export subsidies, domestic dairy products are generally priced too high to compete in world markets. In the past, high domestic prices were offset by **payments-in-kind** on exports from private stocks (that is, exporters received payments in certificates redeemable in CCC-owned grain, at a rate approximately equal to the difference between the domestic price and the price in international markets), and by sales from CCC stocks at reduced prices to commercial exporters and foreign governments. Today, export subsidies run counter to the Administration's effort to remove barriers to freer world trade. 8/ Second, farm price policies in many other countries create dairy

5/ Title n of Public Law 480 provides for donations of food commodities in excess of domestic requirements and commercial exports to non-profit voluntary agencies, foreign governments, and intergovernmental organizations.

6/ If the purchase price of the foreign cheese exceeds a "price **break**"--the CCC purchase price of **cheddar** cheese plus **7¢** per **pound**--it is not subject to a quota.

7/ Members of the European Economic Community are: France, West Germany, Italy, the Netherlands, Belgium, Luxembourg, the United Kingdom, Ireland, and Denmark.

8/ Nevertheless, in March 1978, the U.S. government agreed to sell 30,000 metric tons of CCC-owned nonfat dry milk to the Mexican government for charitable feeding programs at a price below the support price. According to U.S. Department of Agriculture officials, this sale did not displace normal commercial sales.

surpluses that keep world prices low and limit U.S. commercial exports. For example, current world stocks of nonfat dry milk, butter, and cheese are 47, 15, and 9 percent of annual world consumption, respectively. The EEC holds a major portion of these stocks.

Market Structure

The dairy industry consists of four structural **elements--dairy** farms, producer cooperatives, processors of fluid milk and manufactured dairy products, and retailers. In some cases, these elements overlap. For example, some producer cooperatives have vertically integrated forward into processing and retailing, while some chain stores have integrated backward into processing. Important trends are occurring in each structural element.

Dairy Farms. The number of farms reporting milk cows declined from 1.2 million in 1974 to 0.4 million in 1975 (Table A-3). Farms with fewer than 20 cows accounted for 91 percent of the decline in farm numbers. In 1975, farms with fewer than 20 cows made up 49 percent of all farms reporting milk cows, but they accounted for only 9.8 percent of all cows and 7.3 percent of milk production. Between 1964 and 1975, farms with 20 to 49 cows declined from 229,000 to 147,000 farms, their share of all cows remained fairly constant at slightly more than 40 percent, and their share of milk production declined from 47 percent to 42 percent. Only farms with 50 or more cows increased in **number--from** 50,000 farms in 1964 to 58,000 farms in 1975. These farms now account for about 48 percent of all cows and 51 percent of all milk production.

In 1975, as compared with 1964, about 9 percent less milk was produced by 28 percent fewer milk cows on 67 percent fewer farms. These data reflect increased productivity per cow, consolidation and expansion of dairy farms, and the decision of farmers to drop their dairy enterprise or to exit completely from farming. Labor-saving **technology--such** as milking parlors and automatic **feeders--and** the availability of **nonfarm** employment are key factors contributing to the trend toward fewer and larger **farms.**The vast majority of dairy farms are family-owned and operated businesses that rely heavily on family labor with, at most, one or two hired workers. 9/ Nevertheless, in a few **regions--Southern** California, Southern Florida, Arizona, and **Hawaii--very** large dairy farms (most of which are thought to be family-owned) do exist. In 1974, 0.2 percent of all farms reporting dairy

9/ Manchester, Dairy Price Policy; Setting, Problems, Alternatives, p. 5.

TABLE A-3. U.S. FARMS REPORTING MILK COWS, NUMBER OF COWS, AND MILK PRODUCTION: BY HERD SIZE IN 1964, 1969, AND 1975

	1964	1969	1975
Farms Reporting Milk Cows (number of farms)			
1-19 cows	947,236	402,022	197,461
Percent	77.2	64.1	49.0
20-49 cows	228,911	171,996	147,413
Percent	18.7	27.4	36.6
50 cows and more	50,171	53,485	57,822
Percent	4.1	8.6	14.4
Total	1,226,318	627,503	402,696
Milk Cow Numbers (thousand cows):			
1-19 cows	4,489	2,165	1,096
Percent	28.7	17.6	9.8
20-49 cows	6,832	5,315	4,721
Percent	43.6	43.2	42.4
50 cows and more	4,339	4,812	5,322
Percent	27.7	39.2	47.8
Total	15,660	12,292	11,134
Milk Production (million pounds of milk):			
1-19 cows	28,766	15,733	8,445
Percent	22.7	13.6	7.3
20-49 cows	59,710	51,834	48,302
Percent	47.0	44.7	41.9
50 cows and more	38,335	48,390	58,548
Percent	30.3	41.7	50.8
Total	126,811	115,957	115,295

SOURCE: U.S. Department of Agriculture, The Impact of Dairy Imports on the U.S. Dairy Industry, AER No. 278, January 1975, pp. 8-9. Unpublished data for 1975 provided by David E. Cummins, U.S. Department of Agriculture, August 1978.

cows had 500 or more cows and accounted for 6 percent of milk production. Of these largest dairy farms, 51 percent, 20 percent, and 5 percent were in California, Florida, and Arizona, respectively.

Dairy Cooperatives. Nearly 75 percent of all milk marketed is controlled by producer-owned dairy cooperatives. The most recent data available show that dairy cooperatives market more fluid-grade milk (81 percent) than manufacturing-grade milk (55 percent). 10/ Furthermore, although the number of dairy cooperatives decreased more than 50 percent between 1964 and 1973, the volume of milk they received annually from farmers increased 10 percent.

Cooperatives have steadily increased their market power through mergers and vertical integration into fluid processing and manufacturing. There have been mergers of local cooperatives within single markets, regional mergers across markets, and the development of bargaining federations representing several individual cooperatives in large geographical areas. As cooperatives have grown in size, they have developed a variety of **tools--such** as full supply contracts, over-order payments, and standby **pools--to** assist their milk marketing operation. Under a full supply contract the cooperative agrees to supply the exact needs of a processor, and thereby assumes responsibility for variations in market supply and quality control. In return for providing these services, some cooperatives receive over-order payments from processors. 11/ Establishment of a standby **pool--a** supply of milk from which shipments are made only upon **request--** in a surplus producing **midwestern** market, financed by over-order payments received in a deficit producing southern market, has been used by southern producers to reduce the amount of fluid-grade milk shipped to southern markets by midwestern producers. 12/ But proponents of the

10/ Marketing Operations of Dairy Cooperatives, U.S. Department of Agriculture, FCS Research Report 38 (June 1977), p. ii.

11/ Over-order payments are premium payments in excess of federal order minimum Class I prices, negotiated by producer cooperatives and paid directly to them by milk processors and distributors.

12/ For further discussion of the conduct of dairy cooperatives see Paul W. MacAvoy, Federal Milk Marketing Orders and Price Supports (Washington, D.C.: American Enterprise Institute, 1977), pp. 50-60. Also, see Susan L. Schjelderup and Leo V. Mayer, The Dairy Price Support Program: Operations and Complications, Library of Congress, Congressional Research Service (March 1978), pp. 18-22.

standby pool concept argue that shipments from the pool during periods of seasonally low production to regions where production costs are high discourages these regions from attempting to become self-sufficient through the development of local manufacturing facilities.

Largely because of merger activities and other marketing practices, some dairy cooperatives have been accused of establishing excessive market power. ^{13/} Since cooperatives may influence prices and the allocation of milk among markets, federal budget outlays under the dairy price support program may be affected. If over-order payments, for example, result in higher Class I milk prices, fluid milk consumption may fall, and quantities of fluid-grade milk will be diverted to manufactured dairy products. Consequent higher blend prices may also cause an increase in milk supply. If a surplus of manufactured dairy products exists, the cooperative's ability to negotiate over-order payments will drive up federal budget outlays.

Nevertheless, dairy cooperatives do not control the total volume of milk production. Full control rests solely with individual dairy farmers. Cooperatives have helped to offset the imbalance of market power between farmers and large businesses who process milk, and they have contributed to orderly marketing. Besides, Section 2 of the Capper-Volsted Act provides **safeguards** to prevent abuse of monopoly power by the cooperatives.

Processing. The milk processing industry has become more concentrated, in both its fluid bottling and its manufactured dairy products operations. Over the past 20 years, the number of fluid milk plants has declined over **three-fourths**, while manufactured products plants are down by two-thirds. ^{14/} Technological developments in milk processing, refrigeration, and transportation are thought to be the major factors responsible for the trend toward fewer and larger processing plants. It is probable that market stability due to the dairy price support program has increased the rate of adoption of new processing technology. For example, to the extent that price and income stability at the farm level has reduced fluctuations in milk supply, processors have avoided some of the costs of supply variability. During periods of surplus production the government acquires manufactured dairy products, relieving processors of the costs of holding unusually large inventories.

^{13/} U.S. Department of Justice, Anti-Trust Division, Report on Milk Marketing (January 1977).

^{14/} Manchester, Dairy Price Policy; Setting, Problems, Alternatives, p. 4.

Through vertical integration producer cooperatives have increased their market share of cheese production to 21 percent. ^{15/} They have long been dominant in butter and nonfat dry milk **production.** Since about 1960, some large retail grocery chains have moved into fluid milk processing. This has provided additional competition for large independent processors who were often suppliers of integrated retail chains, and has made more difficult entry into processing without a guaranteed retail outlet.

Retailing. The retailing of milk and dairy products has shifted to large supermarkets and convenience stores. The drastic decline in home delivery of fluid milk is one of the most striking changes in retail market structure.

^{15/} Fluid milk estimate from Manchester, Dairy Price Policy: Setting, Problems, Alternatives, p. 7; and cheese estimate from Hugh L. Cook and others, The Dairy Subsector of American Agriculture: Organization and Vertical Coordination, University of Wisconsin draft manuscript (November 1977).

APPENDIX B. METHODOLOGY USED TO OBTAIN PROJECTIONS

This appendix explains the methodology, procedures, assumptions, and exogenous variables used to obtain the projected values presented in Chapter IV and in Appendix C.

Methodology

An econometric supply and demand model of the U.S. dairy industry was used to quantify the consequences of four alternative levels of price support over the period from October 1, 1979, to September 30, 1984. ^{1/} In the model, it is assumed that dairy farmers base current production decisions on their past experiences. The assumption is that current milk supply depends on historical (or lagged) farm level milk prices, prices paid for mixed dairy feeds, and prices received for steers and heifers. A variety of ~~factors--such~~ as biological time lags and the tendency of buildings and equipment committed to milk production to have few alternative opportunities--~~are~~ reflected in the supply equations.

The model includes retail demand equations for 5 fluid milk products and 12 manufactured dairy products in the United States. The retail demand for each product depends on the real price of the product, the prices of competing products, real disposable personal income, and the age and family size distribution of the population. Changing consumer tastes and preferences--~~in~~ favor of cheese and away from whole fluid milk, for ~~example--are~~ reflected in time trend variables. Inventory demand equations for five products that can be ~~stored--butter~~, cheese, evaporated milk, dry whole milk, and nonfat dry ~~milk--are~~ also included in the model. Other market demands such as commercial exports, the school lunch program, and donations by the federal government are assumed to be exogenous. ^{2/}

^{1/} M.C. Hallberg and R.F. Fallert, Policy Simulation Model for the United States Dairy Industry, The Pennsylvania State University, Pennsylvania Experiment Station Bulletin 805 (January 1976). For this analysis, all equations were reestimated using 1955-1976 data.

^{2/} These demands are predetermined according to historical patterns independent of the econometric model.

Retail prices of dairy products are derived from current farm prices of milk and a series of marketing margin relations that reflect the costs incurred in transforming raw milk into finished retail products. Current farm prices of milk are based on the support price of milk established by the Secretary of Agriculture, recent supply and demand conditions in Minnesota and Wisconsin, federal market order price differentials, transportation costs, and over-order payments.

Finally, several equations are required to insure that the supply of milk, expressed in terms of milkfat and solids-not-fat, balances with the **aggregate** demand for milk. If supply exceeds demand, CCC purchases are made; if supply is less than demand, CCC stocks are utilized.

Use of an econometric model to examine the future consequences of alternative policy options involves at least two important assumptions. First, it is assumed that the behavioral rules, estimated parameters, and equations that represent the structure of the model are relevant to the projection period. The model is reliable during the projection period, if there are no significant (and unaccounted for) changes in consumer attitudes, producer expectations, production technologies, or institutional arrangements. Second, it is assumed that the predetermined values of the exogenous variables are reliable. The exogenous variable used in this analysis are described in the following section. If there is a major disruption in an exogenous **variable--say**, the price of dairy feed doubles because of an unexpected increase in world demand for feed grains in **1980--then** the projected results are likely to **differ** from actual market outcomes.

Exogenous Variables

Exogenous variables were predetermined outside the model based on discussions with U.S. Department of Agriculture (USDA) analysts and others. Cattle prices were derived from long-term projections provided by Chase Econometrics. Dairy products were converted to a milk equivalent basis by the following conversion factors: butter, 21.702; American cheese, 9.88; nonfat dry milk, 0.216; other cheese, 8.0; evaporated milk, 2.15; and dry whole milk, 7.36.

Milk Supply

Parity equivalent of manufacturing-grade milk on October 1 —	\$12.31 a hundredweight in 1978 and projected by USDA at \$13.30, \$14.40, \$15.64, \$16.97, and \$18.81 a hundredweight over 1979-1983.
Index of prices paid by farmers —	Projected by USDA to increase at an annual average rate of 5.7 percent over 1979-1983.
Price paid by farmers for steers and heifers —	Price of 16 percent protein mixed dairy feed: \$138 a ton in 1978 and projected to increase 3.0 percent yearly.
Price received by farmers for steers and heifers —	\$51.00 a hundredweight in 1978 and projected to change 14.0, 11.0, 4.0, 1.0, 0.0, and 4.0 percent respectively over 1979-1984.
Imports and dairy products —	Imports of manufactured dairy products on a milk equivalent basis: 2.1 billion pounds in 1977 and assumed at 2.0 billion pounds yearly over 1979-1984.

Marketing Margin Relationships

Manufacturing costs —	Hourly earnings of ice cream and frozen products production workers: projected to increase at an annual average rate of 7.5 percent over 1979-1984.
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Transportation costs —

Wholesale price index of motor vehicles and equipment (1967=100): projected to increase at an annual average rate of 5.0 percent over 1979-1984.

Demand

General price level —

Consumer price index for all commodities (1957-1959=100): estimated from January 1979 CBO projection of the CPI (1967=100) to increase at an annual average rate of 7.3 percent over 1979-1984.

Disposal personal income —

Disposable personal income per capita deflated by the CPI (1957-1959=100): estimated from January 1979 CBO projection of disposable personal income (in 1972 dollars) to increase at an annual average rate of 3.7 percent over 1979-1984.

Prices of competing products —

Retail price of margarine projected to increase at an annual average rate of 8.2 percent over 1979-1984.

Consumer price index for meat (1957-1959=100) projected to increase 14.0 percent in 1979 and at an annual average rate of 4.5 percent over 1980-1984.

Retail price (1957-1959=100) of frozen concentrate orange juice to decline by 1.25 percent annually over 1979-1984.

Retail price index for beverages (1957-1959=100) projected to increase at an annual average rate of 2.7 percent over 1979-1984.

Commercial exports and shipments to U.S. Trust Territories—

Commercial exports and shipments on a milk equivalent basis: 986 million pounds in 1977 and assumed at 900 million pounds yearly over 1979-1984.

CCC domestic donations —

CCC donations to schools, individuals, and institutions on a milk equivalent basis: 3.2 billion pounds in 1977 and assumed at 2.6 billion pounds yearly over 1979-1984.

CCC foreign donations —

Public Law 480 Title II exports of nonfat dry milk on a milk equivalent basis: 43 million pounds in 1977 and assumed at 43 million pounds yearly over 1979-1984.



APPENDIX C. ANNUAL PROJECTED VALUES FOR 75, 80, 85, AND
90 PERCENT OF PARITY

TABLE C-1. 75 PERCENT OF PARITY OPTION-SUPPORT PRICE, MILK PRODUCTION AND MARKETINGS, FARM PRICES, AND TOTAL CASH RECEIPTS FROM SALE OF MILK, 1979-1983

	Marketing Year					Five-Year Average
	1979	1980	1981	1982	1983	
Support Price (dollars per cwt.)	10.11	10.95	11.88	12.91	14.00	11.97
Milk Production (billions of lbs.)	124.9	125.4	127.0	128.9	130.0	127.2
Milk Marketings (billions of lbs.) <u>a/</u>	121.9	122.5	124.2	126.2	127.4	124.4
Farm Prices (dollars per cwt.)						
Manufacturing-grade milk	10.64	11.70	12.68	13.71	14.80	12.71
All milk <u>b/</u>	11.69	12.75	13.73	14.76	15.85	13.76
Total Cash Receipts (billions of dollars) <u>c/</u>	14.3	15.6	17.0	18.6	20.2	17.1

a/ Equal to milk production less milk used on farms.

b/ The U.S. average price of all fluid-grade and manufacturing-grade milk sold to milk plants and dealers.

c/ Obtained by multiplying the farm price for all milk times milk marketings.

TABLE C-2. 75 PERCENT OF PARITY OPTION—COMMERCIAL SUPPLY AND DISAPPEARANCE, COMMODITY CREDIT CORPORATION PURCHASES, RETAIL PRICES, AND CONSUMER EXPENDITURES, 1979-1983

	Marketing Year					Five-Year Average
	1979	1980	1981	1982	1983	
Commercial Supply (billions of lbs.)						
Beginning stocks <u>a/</u>	5.9	5.9	5.8	5.7	5.8	5.8
Milk marketings	121.9	122.5	124.2	126.2	127.2	124.4
Imports <u>b/</u>	2.0	2.0	2.0	2.0	2.0	2.0
Total	129.8	130.4	132.0	133.9	135.0	132.2
Commercial Disappearance (billions of lbs.) <u>c/</u>						
Domestic	121.2	122.2	123.8	125.4	127.0	123.9
Exports	0.9	0.9	0.9	0.9	0.9	0.9
Total	122.1	123.1	124.7	126.3	127.9	124.8
Market Residual (billions of lbs.) <u>d/</u>						
Ending stocks <u>a/</u>	5.9	5.8	5.7	5.8	5.8	5.8
CCC purchases <u>b/</u>	1.8	1.5	1.6	1.8	1.5	1.6
Retail Prices						
Fluid milk (dollars per half gal.)	1.04	1.13	1.21	1.28	1.36	1.20
Cheese (dollars per half lb.)	1.08	1.18	1.28	1.37	1.48	1.28
Butter (dollars per lb.)	1.29	1.37	1.43	1.50	1.58	1.43
Consumer Expenditures (billions of dollars) <u>e/</u>						
	30.9	34.1	36.7	39.3	42.2	36.7

a/ Whole milk equivalent (milkfat basis) of manufactured dairy products held by the commercial trade.

b/ Whole milk equivalent (milkfat basis) of manufactured dairy products.

c/ Whole milk equivalent (milkfat basis) of fluid and manufactured dairy products.

d/ Equal to commercial supply minus commercial disappearance.

e/ Obtained by multiplying retail product prices times commercial disappearance in the domestic market.

TABLE C-3. 75 PERCENT OF PARITY OPTION—COMMODITY CREDIT CORPORATION PURCHASES, DISPOSITION, STOCKS, AND DOLLAR OUTLAYS, 1979-1983

	Marketing Year					Five-Year Average
	1979	1980	1981	1982	1983	
Government Supply (billions of lbs.) <u>a/</u>						
Beginning CCC stocks	3.7	2.9	1.8	0.8	0.0	1.8
CCC purchases	<u>1.8</u>	<u>1.5</u>	<u>1.6</u>	<u>1.8</u>	<u>1.5</u>	<u>1.6</u>
Total	<u>5.5</u>	<u>4.4</u>	<u>3.4</u>	<u>2.6</u>	<u>1.5</u>	<u>3.4</u>
Government Utilization (billions of lbs.) <u>a/</u>						
CCC disposition <u>b/</u>	2.6	2.6	2.6	2.6	1.5	2.4
Ending CCC stocks	<u>2.9</u>	<u>1.8</u>	<u>0.8</u>	<u>0.0</u>	<u>0.0</u>	<u>1.1</u>
Total	<u>5.5</u>	<u>4.4</u>	<u>3.4</u>	<u>2.6</u>	<u>1.5</u>	<u>3.5</u>
Net Support Outlays (millions of dollars) <u>c/</u>	230	220	240	300	265	251
Support and Related Expenditures (millions of dollars) <u>d/</u>	30	20	40	1.00	65	51

a/ Whole milk equivalent (milkfat basis) of manufactured dairy products.

b/ Domestic and foreign donations and noncommercial export sales.

c/ Net support outlays are equal to CCC purchases of dairy products and related costs (processing, packaging, transporting, and storing) less receipts from sales to buyers for domestic use and exports, military agencies, foreign governments, and Section 32 programs.

d/ Support and related expenditures are equal to net support outlays less transfers from the Food and Nutrition Service for products used in domestic feeding programs and from Title n of Public Law 480 for products donated abroad.

TABLE C-4. 80 PERCENT OF PARITY OPTION-SUPPORT PRICE, MILK PRODUCTION AND MARKETINGS, FARM PRICES, AND TOTAL CASH RECEIPTS FROM SALE OF MILK, 1979-1983

	Marketing Year					Five-Year Average
	1979	1980	1981	1982	1983	
Support Price (dollars per cwt.)	10.79	11.68	12.68	13.77	14.94	12.77
Milk Production (billions of lbs.)	125.2	126.3	128.4	130.1	131.8	128.3
Milk Marketings (billions of lbs.) <u>a/</u>	122.2	123.4	125.6	127.5	129.3	125.6
Farm Prices (dollars per cwt.)						
Manufacturing-grade milk	11.31	12.19	13.08	14.22	15.39	13.24
All milk <u>b/</u>	12.36	13.24	14.13	15.27	16.44	14.29
Total Cash Receipts (billions of dollars) <u>c/</u>	15.1	16.3	17.7	19.5	21.3	18.0

a/ Equal to milk production less milk used on **farms**.

b/ The U.S. average price of all fluid-grade and manufacturing-grade milk sold to milk plants and dealers.

c/ Obtained by multiplying the farm price for all milk times milk marketings.

TABLE C-5. 80 PERCENT OF PARITY OPTION—COMMERCIAL SUPPLY AND DISAPPEARANCE, COMMODITY CREDIT CORPORATION PURCHASES, RETAIL PRICES, AND CONSUMER EXPENDITURES, 1979-1983

	Marketing Year					Five-Year Average
	1979	1980	1981	1982	1983	
Commercial Supply (billions of lbs.)						
Beginning stocks <u>a/</u>	5.9	6.0	6.0	6.0	6.0	6.0
Milk marketings	122.2	123.4	125.6	127.5	129.3	125.6
Imports <u>b/</u>	2.0	2.0	2.0	2.0	2.0	2.0
Total	130.1	131.4	133.6	135.5	137.3	133.6
Commercial Disappearance (billions of lbs.) <u>c/</u>						
Domestic	120.3	121.5	123.3	124.4	125.9	123.1
Exports	0.9	0.9	0.9	0.9	0.9	0.9
Total	121.2	122.4	124.2	125.3	126.8	124.0
Market Residual (billions of lbs.) <u>d/</u>						
Ending stocks <u>a/</u>	6.0	6.0	6.0	6.0	6.0	6.0
CCC purchases <u>b/</u>	2.9	3.0	3.4	4.2	4.5	3.6
Retail Prices						
Fluid milk (dollars per half gal.)	1.08	1.16	1.23	1.30	1.38	1.23
Cheese (dollars per half lb.)	1.12	1.21	1.29	1.39	1.49	1.30
Butter (dollars per lb.)	1.32	1.38	1.44	1.51	1.59	1.45
Consumer Expenditures (billions of dollars) <u>e/</u>						
	32.1	34.5	37.2	39.9	42.9	37.3

a/ Whole milk equivalent (milkfat basis) of manufactured dairy products held by the commercial trade.

b/ Whole milk equivalent (milkfat basis) of manufactured dairy products.

c/ Whole milk equivalent (milkfat basis) of fluid and manufactured dairy products.

d/ Equal to commercial supply minus commercial disappearance.

e/ Obtained by multiplying retail product prices times commercial disappearance in the domestic market.

TABLE C-6. 80 PERCENT OF PARITY OPTION—COMMODITY CREDIT CORPORATION PURCHASES, DISPOSITION, STOCKS, AND DOLLAR OUTLAYS, 1979-1983

	Marketing Year					Five-Year Average
	1979	1980	1981	1982	1983	
Government Supply (billions of lbs.) <u>a/</u>						
Beginning CCC stocks	3.7	4.0	4.4	5.2	6.8	4.8
CCC purchases	<u>2.9</u>	<u>3.0</u>	<u>3.4</u>	<u>4.2</u>	<u>4.5</u>	<u>3.6</u>
Total	<u>6.6</u>	<u>7.0</u>	<u>7.8</u>	<u>9.4</u>	<u>11.3</u>	<u>8.4</u>
Government Utilization (billions of lbs.) <u>a/</u>						
CCC disposition <u>b/</u>	2.6	2.6	2.6	2.6	2.6	2.6
Ending CCC stocks	<u>4.0</u>	<u>4.4</u>	<u>5.2</u>	<u>6.8</u>	<u>8.7</u>	<u>5.8</u>
Total	<u>6.6</u>	<u>7.0</u>	<u>7.8</u>	<u>9.4</u>	<u>11.3</u>	<u>8.4</u>
Net Support Outlays (millions of dollars) <u>c/</u>	375	420	520	700	825	568
Support and Related Expenditures (millions of dollars) <u>d/</u>	175	220	320	500	625	368

a/ Whole milk equivalent (milkfat basis) of **manufactured dairy products**.

b/ Domestic and foreign donations and noncommercial export sales.

c/ Net support outlays are equal to CCC purchases of dairy products and related costs (processing, packaging, transporting, and storing) less receipts from sales to buyers for domestic use and exports, military agencies, foreign governments, and Section 32 programs.

d/ Support and related expenditures are equal to net support outlays less transfers from the Food and Nutrition Service for products used in domestic feeding programs and from Title n of Public Law 480 for products donated abroad.

TABLE C-7. 85 PERCENT OF PARITY OPTION—SUPPORT PRICE, MILK PRODUCTION AND MARKETINGS, FARM PRICES, AND TOTAL CASH RECEIPTS FROM SALE OF MILK, 1979-1983

	Marketing Year					Five-Year Average
	1979	1980	1981	1982	1983	
Support Price (dollars per cwt.)	11.46	12.41	13.47	14.63	15.87	13.57
Milk Production (billions of lbs.)	125.3	127.7	129.4	131.3	133.0	129.3
Milk Marketings (billions of lbs.) <u>a/</u>	122.3	124.8	126.6	128.6	130.4	126.5
Farm Prices (dollars per cwt.)						
Manufacturing-grade milk	11.88	12.79	13.82	14.96	16.17	13.92
All milk <u>b/</u>	12.93	13.84	14.87	16.01	17.22	14.97
Total Cash Receipts (billions of dollars) <u>c/</u>	15.8	17.3	18.8	20.6	22.5	19.0

a/ Equal to milk production less milk used on farms.

b/ The U.S. average price of all fluid-grade and manufacturing-grade milk sold to milk plants and dealers.

c/ Obtained by multiplying the farm price for all milk times milk marketings.

TABLE C-8. 85 PERCENT OF PARITY OPTION—COMMERCIAL SUPPLY AND DISAPPEARANCE, COMMODITY CREDIT CORPORATION PURCHASES, RETAIL PRICES, AND CONSUMER EXPENDITURES, 1979-1983

	Marketing Year					Five-Year Average
	1979	1980	1981	1982	1983	
Commercial Supply (billions of lbs.)						
Beginning stocks <u>a/</u>	5.9	6.0	6.0	6.0	6.0	6.0
Milk marketings	122.3	124.8	126.6	128.6	130.4	126.5
Imports <u>b/</u>	2.0	2.0	2.0	2.0	2.0	2.0
Total	<u>130.2</u>	<u>132.8</u>	<u>134.6</u>	<u>136.6</u>	<u>138.4</u>	<u>134.5</u>
Commercial Disappearance (billions of lbs.) <u>c/</u>						
Domestic	119.8	120.8	122.4	123.5	125.1	122.3
Exports	0.9	0.9	0.9	0.9	0.9	0.9
Total	<u>120.7</u>	<u>121.7</u>	<u>123.3</u>	<u>124.4</u>	<u>126.0</u>	<u>123.2</u>
Market Residual (billions of lbs.) <u>d/</u>						
Ending stocks <u>a/</u>	6.0	6.0	6.0	6.0	6.0	6.0
CCC purchases <u>b/</u>	3.5	5.1	5.3	6.2	6.4	5.3
Retail Prices						
Fluid milk (dollars per half gal.)	1.10	1.18	1.25	1.33	1.41	1.25
Cheese (dollars per half lb.)	1.16	1.24	1.33	1.43	1.54	1.34
Butter (dollars per lb.)	1.34	1.40	1.46	1.54	1.62	1.47
Consumer Expenditures (billions of dollars) <u>e/</u>	32.6	34.8	38.0	40.8	43.9	38.0

a/ Whole milk equivalent (milkfat basis) of manufactured dairy products held by the commercial trade.

b/ Whole milk equivalent (milkfat basis) of manufactured dairy products.

c/ Whole milk equivalent (milkfat basis) of fluid and manufactured dairy products.

d/ Equal to commercial supply minus commercial disappearance.

e/ Obtained by multiplying retail product prices times commercial disappearance in the domestic market.

TABLE C-9. 85 PERCENT OF PARITY OPTION—COMMODITY CREDIT CORPORATION PURCHASES, DISPOSITION, STOCKS, AND DOLLAR OUTLAYS, 1979-1983

	Marketing Year					Five-Year Average
	1979	1980	1981	1982	1983	
Government Supply (billions of lbs.) <u>a/</u>						
Beginning CCC stocks	3.7	4.6	7.1	9.8	13.4	7.7
CCC purchases	3.5	5.1	5.3	6.2	6.4	5.3
Total	<u>7.2</u>	<u>9.7</u>	<u>12.4</u>	<u>16.0</u>	<u>19.8</u>	<u>13.0</u>
Government Utilization (billions of lbs.) <u>a/</u>						
CCC disposition <u>b/</u>	2.6	2.6	2.6	2.6	2.6	2.6
Ending CCC stocks	4.6	7.1	9.8	13.4	17.2	10.4
Total	<u>7.2</u>	<u>9.7</u>	<u>12.4</u>	<u>16.0</u>	<u>19.8</u>	<u>13.0</u>
Net Support Outlays (millions of dollars) <u>c/</u>	470	775	875	1,120	1,250	898
Support and Related Expenditures (millions of dollars) <u>d/</u>	270	575	675	920	1,050	698

a/ Whole milk equivalent (milkfat basis) of manufactured dairy products.

b/ Domestic and foreign donations and noncommercial export sales.

c/ Net support outlays are equal to CCC purchases of dairy products and related costs (processing, packaging, transporting, and storing) less receipts from sales to buyers for domestic use and exports, military agencies, foreign governments, and Section 32 programs.

d/ Support and related expenditures are equal to net support outlays less transfers from the Food and Nutrition Service for products used in domestic feeding programs and from Title II of Public Law 480 for products donated abroad.

TABLE C-10. 90 PERCENT OF PARITY OPTION—SUPPORT PRICE, MILK PRODUCTION AND MARKETINGS, FARM PRICES, AND TOTAL CASH RECEIPTS FROM SALE OF MILK, 1979-1983

	Marketing Year					Five-Year Average
	1979	1980	1981	1982	1983	
Support Price (dollars per cwt.)	12.14	13.14	14.26	15.49	16.80	14.37
Milk Production (billions of lbs.)	125.5	128.5	130.5	132.6	135.0	130.4
Milk Marketings (billions of lbs.) <u>a/</u>	122.5	125.6	127.7	129.9	132.4	127.6
Farm Prices (dollars per cwt.)						
Manufacturing-grade milk	12.54	13.49	14.56	15.74	17.02	14.67
All milk <u>b/</u>	13.59	14.54	15.61	16.79	18.07	15.72
Total Cash Receipts (billions of dollars) <u>c/</u>	16.6	18.3	19.9	21.8	23.9	20.1

a/ Equal to milk production less milk used on farms.

b/ The U.S. average price of all fluid-grade and manufacturing-grade milk sold to milk plants and dealers.

c/ Obtained by multiplying the farm price for all milk times milk marketings.

TABLE C-11. 90 PERCENT OF PARITY OPTION—COMMERCIAL SUPPLY AND DISAPPEARANCE, COMMODITY CREDIT CORPORATION PURCHASES, RETAIL PRICES, AND CONSUMER EXPENDITURES, 1979-1983

	Marketing Year					Five-Year Average
	1979	1980	1981	1982	1983	
Commercial Supply (billions of lbs.)						
Beginning stocks <u>a/</u>	5.9	6.0	6.0	6.0	6.0	6.0
Milk marketings	122.5	125.6	127.7	129.9	132.4	127.6
Imports <u>b/</u>	2.0	2.0	2.0	2.0	2.0	2.0
Total	<u>130.4</u>	<u>133.6</u>	<u>135.7</u>	<u>137.9</u>	<u>140.4</u>	<u>135.6</u>
Commercial Disappearance (billions of lbs.) <u>c/</u>						
Domestic	119.4	120.3	121.7	123.0	123.8	121.6
Exports	0.9	0.9	0.9	0.9	0.9	0.9
Total	<u>120.3</u>	<u>121.2</u>	<u>122.6</u>	<u>123.9</u>	<u>124.7</u>	<u>122.5</u>
Market Residual (billions of lbs.) <u>d/</u>						
Ending stocks <u>a/</u>	6.0	6.0	6.0	6.0	6.0	6.0
CCC purchases <u>b/</u>	4.1	6.4	7.1	8.0	9.7	7.1
Retail Prices						
Fluid milk (dollars per half gal.)	1.14	1.20	1.28	1.36	1.44	1.28
Cheese (dollars per half lb.)	1.20	1.28	1.37	1.48	1.59	1.38
Butter (dollars per lb.)	1.38	1.42	1.49	1.56	1.65	1.50
Consumer Expenditures (billions of dollars) <u>e/</u>						
	34.4	36.0	38.0	40.8	44.1	38.7

a/ Whole milk equivalent (milkfat basis) of manufactured dairy products held by the commercial trade.

b/ Whole milk equivalent (milkfat basis) of manufactured dairy products.

c/ Whole milk equivalent (milkfat basis) of fluid and manufactured dairy products.

d/ Equal to commercial supply minus commercial disappearance.

e/ Obtained by multiplying retail product prices times commercial disappearance in the domestic market.

TABLE C-12. 90 PERCENT OF PARITY OPTION—COMMODITY CREDIT CORPORATION PURCHASES, DISPOSITION, STOCKS, AND DOLLAR OUTLAYS, 1979-1983

	Marketing Year					Five-Year Average
	1979	1980	1981	1982	1983	
Government Supply (billions of lbs.) <u>a/</u>						
Beginning CCC stocks	3.7	5.2	9.0	13.5	18.9	10.1
CCC purchases	4.1	6.4	7.1	8.0	9.7	7.1
Total	<u>7.8</u>	<u>11.6</u>	<u>16.1</u>	<u>21.5</u>	<u>28.6</u>	<u>17.2</u>
Government Utilization (billions of lbs.) <u>a/</u>						
CCC disposition <u>b/</u>	2.6	2.6	2.6	2.6	2.6	2.6
Ending CCC stocks	5.2	9.0	13.5	18.9	26.0	14.5
Total	<u>7.8</u>	<u>11.6</u>	<u>16.1</u>	<u>21.5</u>	<u>28.6</u>	<u>17.1</u>
Net Support Outlays (millions of dollars) <u>c/</u>	615	1,035	1,250	1,530	2,020	1,290
Support and Related Expenditures (millions of dollars) <u>d/</u>	41.5	835	1,050	1,330	1,820	1,090

a/ Whole milk equivalent (milkfat basis) of manufactured dairy products.

b/ Domestic and foreign donations and noncommercial export sales.

c/ Net support outlays are equal to CCC purchases of dairy products and related costs (processing, packaging, transporting, and storing) less receipts from sales to buyers for domestic use and exports, military agencies, foreign governments, and Section 32 programs.

d/ Support and related expenditures are equal to net support outlays less transfers from the Food and Nutrition Service for products used in domestic feeding programs and from Title II of Public Law 480 for products donated abroad.

APPENDIX D. OTHER POLICY OPTIONS

The results presented in Chapter IV show that increases in the support price of manufacturing-grade milk can be used to increase total cash receipts from the sale of milk only at the expense of higher consumer prices and rising taxpayer costs. If higher total cash receipts (and net farm incomes) are needed to assure an adequate supply of milk to meet current and future needs of consumers, the Congress may wish to consider alternatives to the present dairy price support program. In this case, interest would focus on alternative policy options that provide income assistance to support dairy production capacity, hold down consumer prices, or reduce taxpayer costs.

The following **paragraphs** outline several general policy options. Developing programs to implement any of these options would be a complicated task. Major factors to be taken into consideration include the perishability of raw milk, seasonal fluctuations in milk production and consumption, and the role of producer cooperatives in pricing and marketing.

Direct Payments. One option is a direct payment program under which dairy farmers would receive an income supplement if the market price of milk falls below a **pre-determined** target price. The level of the target price and the amount of eligible production must be accurately selected so that the direct income supplement to dairy farmers insures adequate milk production capacity. If the support price of milk were set at, or below, the market equilibrium price, the government would be required to purchase manufactured dairy products only in extreme situations. As compared with a high level price support of 90 percent of parity under the present program, this option has the advantage of keeping consumer prices lower and allowing a larger volume of dairy products to move directly into consumption without being held in government storage. A major disadvantage of this option is the high taxpayer costs that could result from unrestricted direct payments. To **avoid** this problem, supply controls or payment limitations could be introduced. Under this option, government regulation would involve setting target prices, allocating eligible production, and controlling the level and distribution of payments.

Quotas. A second policy option is to impose control on supply through production and marketing quotas. The quotas would be allocated to farmers or processors so that the quantity of milk and dairy products available for consumption results in a level of market prices and farm income sufficient to provide adequate milk production. A major advantage of this option is that taxpayer costs for the removal of surplus dairy products are nil. There are, however, several potential disadvantages. If production quotas restrict output, consumer prices for dairy products rise. Furthermore, as in the case of a direct payment program, the process of allocating and administering a quota scheme would involve government regulation. Quotas might lock the dairy industry into a fixed mold and make it difficult for individual farmers to adopt new technology to increase output. Finally, high domestic prices would require tight import regulations to exclude from the United States dairy products manufactured abroad out of the United States.

Combination. A third policy option is to create a "hybrid" **program--a combination of direct payments and supply control.** It is likely that a program could be devised that would include the advantages of lower consumer prices under direct payments and reduced taxpayer costs under supply control. This program would, however, involve government regulation of the dairy industry and, as in the first two options, the program benefits would be distributed to farmers in direct proportion to the volume of milk production.

Income Maintenance. A fourth policy **option--which** represents a movement away from traditional farm **programs--is** to introduce an income maintenance program. The program would establish a minimum income floor for all farm families who wish to participate. The minimum income floor would be aimed at insuring a minimum standard of living and could be scaled by family size, location, and other factors. An income maintenance program should contain carefully structured provisions so as not to destroy the individual's incentive to work, nor encourage the break-up of families. A work requirement test could insure that able-bodied participants remain actively employed, or register to accept employment. An income maintenance program would protect individuals and families from drastic declines in farm and **nonfarm** income. There is no guarantee that a minimum income floor will keep people in dairy farming, as they might switch to alternative farm enterprises or to nonfarm employment. As compared with high price supports under the existing program, an income maintenance program would probably result in lower consumer prices for

dairy products, while market prices would serve to allocate resources between dairy farming and other activities. It is certainly possible under this option that farm prices and incomes might become more variable, and disruptions in milk production capacity might ensue. Depending on the level of the income floor, the number of participants, and other program details, the cost to the taxpayer of an income maintenance program could be high. Furthermore, participating families would be directly dependent on the government for income assistance.

GLOSSARY OF TERMS

General:

Fluid-grade **milk--includes** all milk produced under health, sanitary, and other inspection standards that make it eligible for use in fluid milk products. USDA reports average prices received by farmers for milk eligible for fluid use.

Manufacturing-grade **milk--include** all other milk produced under less stringent standards, and can be used only in manufactured dairy products. USDA reports two price series for manufacturing-grade milk: a Minnesota-Wisconsin (MW) price, and average prices received by farmers.

Dairy Price Support Program:

Support price of **milk--calculated** by multiplying the level of support (expressed in percentage terms) times the parity price **equivalent of** manufacturing-grade milk.

Parity price equivalent of manufacturing-grade **milk--the** parity price of milk converted to a manufacturing-grade milk basis.

Parity price of **milk--the** price, in current dollars, that gives **milk** the same purchasing power per hundredweight for goods and services bought by farmers and their families as prevailed in the base period, January 1910 to December 1914.

Federal Milk Market Order Program:

Class I **milk--fluid-grade** milk used in fluid milk products such as whole milk, skim milk, low-fat milk, and milk drinks.

Minimum Class I **price--the** minimum price established in each federal order that processors must pay for Class I milk.

Prevailing Class I **price**--the actual price processors pay for Class I milk. It often exceeds the minimum Class I price because of rising transportation costs, temporary variations in local supply and demand, and the success of dairy cooperatives in negotiating over-order payments.

Over-order **payment**--a premium payment in excess of the federal order minimum Class I price negotiated by dairy cooperatives, and paid directly to them by processors and distributors.

Dairy **cooperative**--a farmer-owned business organized to market milk. About 75 percent of all milk marketed is controlled by dairy cooperatives.

Class n **milk--fluid-grade** milk used in **soft** manufactured products such as fluid cream products, cottage cheese, ice cream, and frozen desserts.

Class n **price**--the minimum price established in each federal order that processors must pay for Class n milk. It is usually set slightly above the Minnesota-Wisconsin price.

Class **III milk--fluid-grade** milk used in hard **manufactured** products such as cheese, butter, dry milk, and nonfat dry milk.

Class **III price**--the minimum price established in each federal order the processors must pay farmers for Class **III** milk. It is usually equal to the Minnesota-Wisconsin price.

Class I **differential**--the amount by which the minimum Class I price in each federal order exceeds the Minnesota-Wisconsin price.

Blend **price**--a weighted average price based on the pooling of revenues from the sale of milk in **different** classes.