THE DAIRY SUBSECTOR OF AMERICAN AGRICULTURE: ORGANIZATION AND VERTICAL COORDINATION

By

Hugh L. Cook (Chairman) - University of Wisconsin
Leo Blakley - Oklahoma State University
Robert Jacobson - Ohio State University
Ronald Knutson - Texas A&M University
Robert Milligan - Cornell University
Robert Strain - University of Florida

ACKNOWLEDGEMENTS

The authors are grateful for help from a number of colleagues. They are especially conscious of suggestions from Emerson Babb, Purdue University, Alden Manchester, Economic Research Service, USDA, and Bruce Marion, University of Wisconsin. Errors of fact or interpretation are the sole responsibility of the authors.

FOREWORD

During the last decade, the topics of subsector organization and vertical coordination have become increasingly recognized as important factors in the organization and performance of the U.S. food system. However, little research has been conducted on these topics, in part because the methodology and conceptual framework for subsector analysis is not fully developed.

The North Central Regional Research Project NC 117 is examining the organization, coordination and performance of several commodity subsectors. Monograph 5 provides a comprehensive analysis of the U.S. dairy subsector. Future monographs will analyze the egg, beef and selected fruit and vegetable subsectors.

The individuals and organizations participating in NC 117 are listed below.

Elmer R. Kiehl
Administrative Advisor

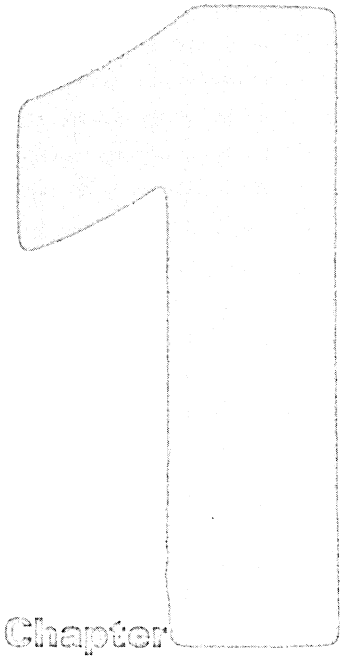
Agricultural Experiment Station Representatives:

California, Leon Garoyan
Cornell, Olan D. Forker
Florida, Richard L. Kilmer
Ronald W. Ward
Illinois, Raymond M. Leuthold
Daniel I. Padberg
Iowa, Ronald E. Raikes
Kansas, Milton L. Manuel
Kentucky, Loys L. Mather
Michigan, James D. Shaffer
Ronald W. Cotterill
Minnesota, Dale C. Dahl
Missouri, Stephen F. Matthews
Nebraska, Lynn H. Lutgen
New Mexico State, Thomas S. Clevenger
North Dakota, Donald F. Scott
Ohio, Dennis R. Henderson
Purdue, Paul L. Farris
Mahlon G. Lang
Lee C. Schrader
South Dakota, Robert Olson
Texas, Ronald D. Knutsen
Wisconsin, Willard F. Mueller
Gerald R. Campbell
Hugh L. Cook

U.S. Department of Agriculture Representatives:

Cooperative State Research Service, Lloyd C. Halvorson
Economics, Statistics, and Cooperatives Service, John Lee
Robert Frye
John Connor (WI)
Kenneth Farrell
Jack H. Armstrong
Randall Torgerson
Farm Foundation Representative: James Hildreth
Executive Director: Bruce W. Marion
Administrative Advisor: Elmer R. Kiehl (Missouri)

General Characteristics



This section sets the stage for the analysis of the dairy subsector, by examining the general characteristics of that subsector. This examination begins with a review of milk production and utilization, follows with summaries of supply and demand elasticities, and government regulations and institutions affecting the dairy industry. A discussion of pricing in the subsector concludes Chapter 1.

Production of Milk

Certain characteristics of milk production, its location and its nature as a commodity are critical to the organization of the subsector. Replacement heifers are bred 15-21 months after birth, so they are 24-30 months old when freshened. Cows produce 6,000-30,000 pounds per lactation (usually one year); 12,000-16,000 pound averages are common in reasonably well-managed herds. Culling rates are usually 25-30% per annum, which results in a three- to four-year cycle. In the short run the producer can feed more or less heavily (or change composition of the feed) and cull more or less closely.

Some milk is produced in every state and at all times. Production peaks around May to June and troughs around October to November.

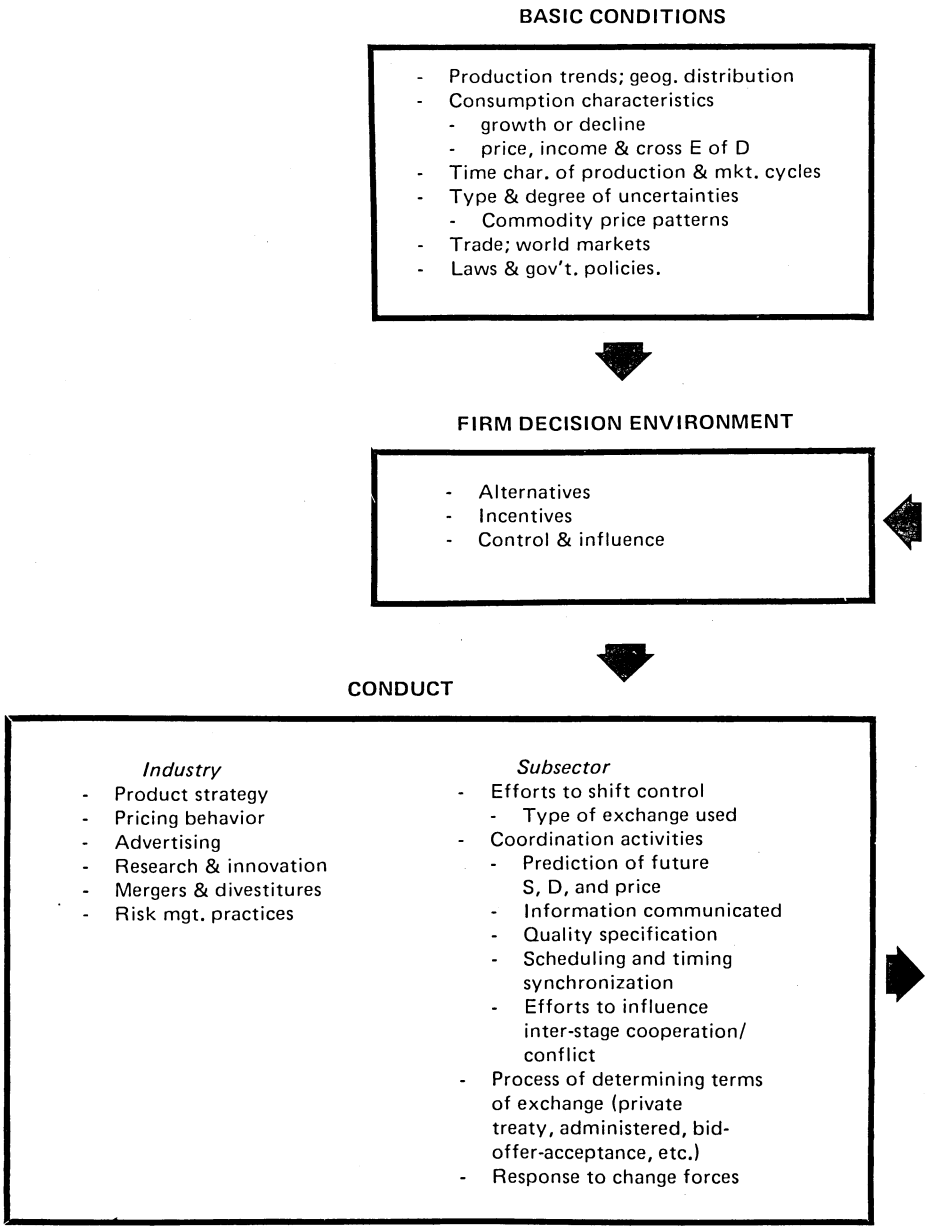
Milk of drinking quality is highly perishable and must be carefully inspected at all levels of production and handling and moved through channels to end users very rapidly. The products of milk are storable in varying degrees. Temporal and spatial surpluses must be made into storable products.

Figure 1-2 illustrates the trends in total annual milk production, cow numbers, and production per cow from 1924 through 1976 for the United States. Total production generally increased from 1924 until 1964 when the largest production to date of 126,967 million pounds was recorded. Total production generally fell after that time up to 1976, when it again turned upward. Since World War II production per cow has increased rapidly while the number of cows has correspondingly declined rapidly.

An increasing percentage of the milk marketed in the United States is marketed as Grade A milk. This percentage has increased from 61 in 1950 to 80 in 1975. Figure 1-3 shows the quantities of Grade A and B from 1950 through 1976. The quantity of Grade B milk marketed has steadily declined since the early 1960's while Grade A milk marketings have generally increased.

Although milk is produced in all regions of the country, an increasingly large proportion of the milk is produced in the Northeast, the Lake States, and California. As Figure 1-4 indicates, nearly one-half of the U.S. production is currently produced in the Lake States and the Northeast. Other major producing regions are the Corn

Figure 1-1 Subsector Structure, Conduct, Performance Paradigm



STRUCTURE

Industry Structure

- Nr. & size of buyers & sellers
- Entry & exit conditions
- Product characteristics
  - perishability
  - quality requirements
  - differentiation
- Technol. char./cost functions
  - Capital intensity; minimum efficient firm size
  - Rate of change
- Capacity
- Specialization/diversification
- Vertical integration
- Financing & credit characterist.
- Collective organizations
  - Cooperatives
  - Trade assoc.
- Business objectives, attitudes and capabilities
- Frequency of purchases and sales

Subsector Organization

- Functional structure
  - Location, timing and clustering of functions
- Nr. of stages
- Nr. of parallel channels
- Information system
  - type of information (grades, mkt. conditions, etc.)
  - distribution
  - cost
- Structure of authority, rights & control
  - Decision anatomy
- Exchange institutions (auctions, buying stations, etc.)
- Types of exchange (spot, contracts, tying agreements, etc.)
- Risk sharing institutions & arrangements
- Inter-stage differences (location, size of enterprise, seasonality, prod. char.)
  - Nature of assembly, sorting and synchronizing tasks

PERFORMANCE

Industry

- Technical & operational efficiency
- Pricing efficiency (profit & output levels)
- Product characteristics
  - quality/wholesomeness
  - variety
- Progressiveness (process & product)
- Selling activities
  - Expense
  - Influence on consumption pattern & social values
- Market access and/or foreclosure

Subsector

- Allocative accuracy
  - Extent to which S offerings match D preferences re: quantity, quality, timing, & location
- Stability of output, prices & profits
- Technical & operational efficiency
  - at each stage and in linking stages (transaction costs)
- Equity re: distribution
  - Returns vs: investments and risks
  - Rights and control vs. investments and risk
- Accuracy, adequacy & equity of information distributed
- Subsector adaptability
- Level & type of employment
- Waste & spoliation
  - Product waste
  - Resource conservation
  - Capacity utilization

Figure 1-2. Number of Milk Cows on Farms, Production Per Cow and Annual Milk Production in the United States, 1924 - 1975.[a]

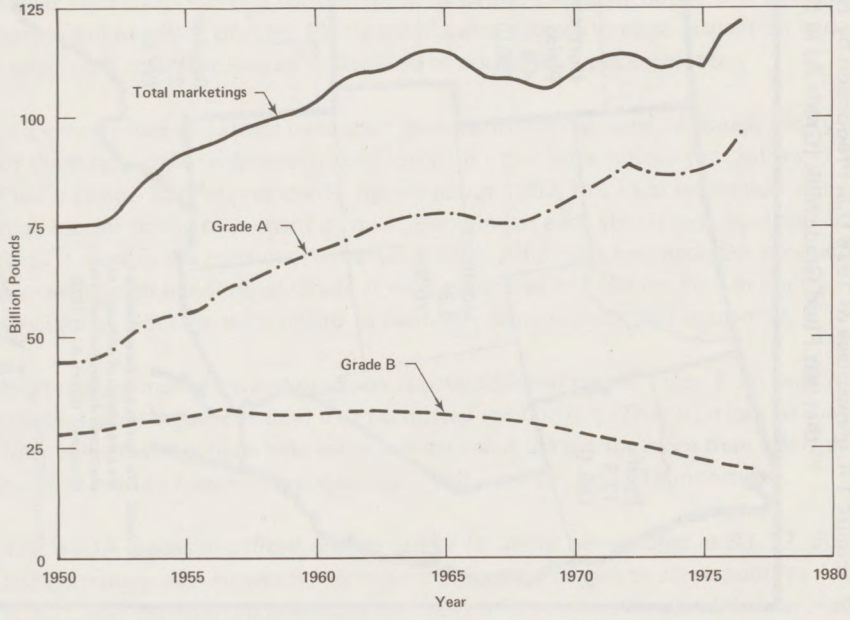
Belt where production has been declining and the Pacific region (particularly California) where production has been increasing.

Figure 1-4 indicates the proportion of production eligible for the fluid market (Grade A) varies by region. A large proportion of the Grade B milk is produced in the Lake States, Corn Belt, and Northern Plains, particularly Wisconsin, Minnesota, and Iowa. Virtually all milk in the Northeast and Southeast is fluid grade.

In 1976, production per cow varied from an average of 7,877 pounds in the Delta States region to 13,891 pounds per cow in the Pacific region. The two major production regions, the Lake States and the Northeast, have maintained production levels per cow somewhat near the national average. Production per cow in the Corn Belt has been less than the national average; a factor which may have contributed to the production decline in the region. Production per cow more than doubled between 1940 and 1976 in most regions.

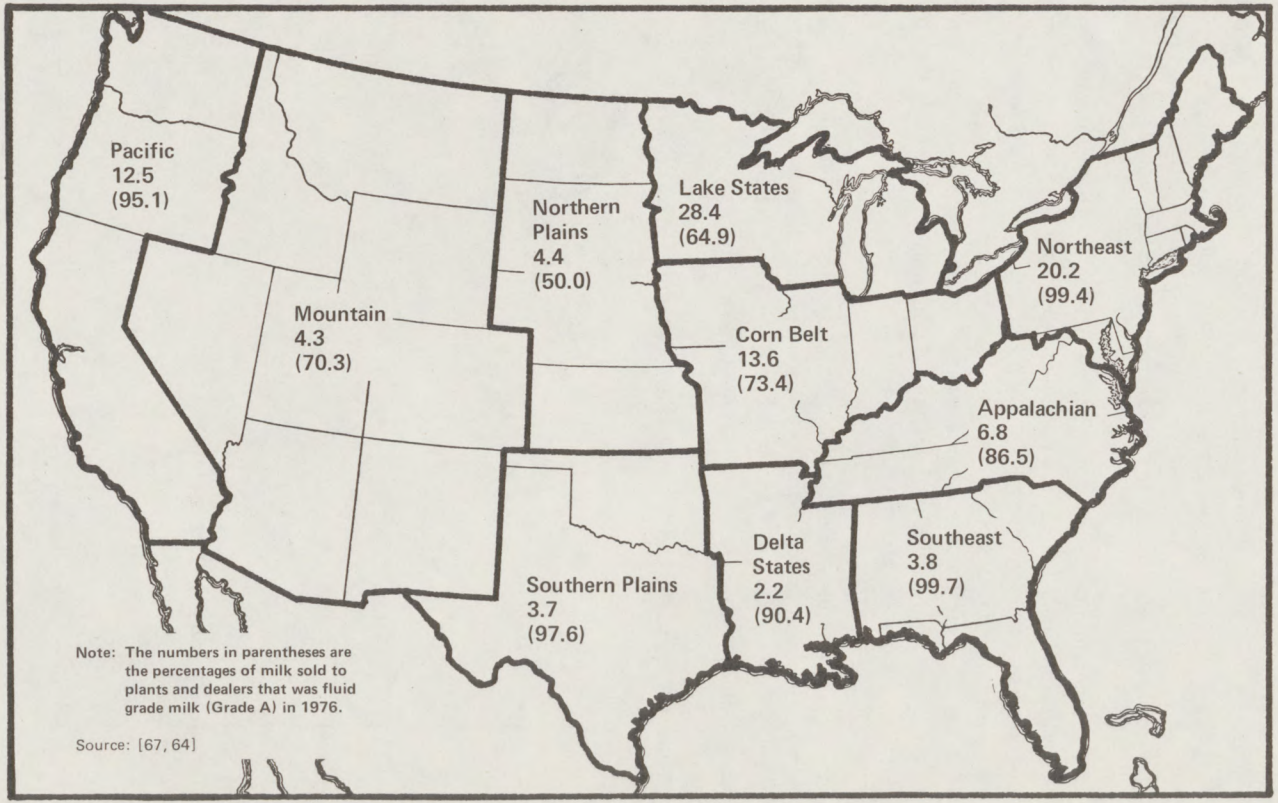
Wisconsin continues to be the leading milk producing state with almost twice as much production as any other state. Other leading states in order of total production are California, New York, Minnesota, and Pennsylvania. Producers in California continue to have the highest production per cow.

Figure 1-3. Grade A and Grade B Milk Marketings*, 1950 - 1975.



*Grade A is eligible for the fluid market, Grade B is manufacturing grade.
Source: [63]

Figure 1-4. Percentage of 1976 U.S. Production by Region and Percentage of Milk Sold to Plants and Dealers that was Fluid Grade Milk (Grade A) in Each Region.



Note: The numbers in parentheses are the percentages of milk sold to plants and dealers that was fluid grade milk (Grade A) in 1976.

Source: [67, 64]

Consumption and Utilization

This section summarizes the utilization of milk and the consumption of the numerous dairy products, and concludes with a description of some product characteristics and a discussion of substitutes for dairy products. Figure 1-5 traces the product milk from its production on the farm to its ultimate usage by the consumer. Utilization and consumption of dairy products will be summarized by reference to this flow diagram.

GENERAL PRODUCT CHARACTERISTICS

Grade A milk is one of the most perishable of all food products. This perishability has a very profound effect on the economics of farm production and on every stage of processing and marketing thereafter.

Some cities require that milk must be packaged within 72 hours of the time it is produced and many say that it must be sold in three or four days. Ice cream, even though it is frozen and can be kept much longer will become "icy" in a fairly short time. Milk for drinking, just as nearly all diary products in the fluid line and the manufactured lines, have definitions and standards of identity as established by the Food and Drug Administration (HEW) and sometimes by the state.

Individual farms producing Grade A milk for drinking are inspected and must meet rather rigid specifications for the health of cattle, the construction and upkeep of barns, and handling of milk. Plants are likewise subject to close inspection and rather rigid specifications as to the kind of equipment, packages, etc.

Individual cities and states have their own inspection systems, although nearly all of them now have reciprocal inspection with other jurisdictions that follow U.S. Public Health (USPH) standards. Before about 1950, this local inspection was a high barrier to the movement of milk. Handling at each step is regulated carefully until it reaches the consumer's market basket. All of this has made the production, processing and handling of Grade A milk expensive and has resulted in highly specialized industry with regard to facilities, farmers and other personnel.

High quality manufactured products (butter, cheese) can be made from milk of greater bacteria content than that permitted for bottling. That is, it can be made from milk that has been held longer. Butter that is kept for more than a few days must be held in freezer storage where it will keep for 12 to 18 months.

The USDA grades in official use for butter formerly were scored as 93, 92, 90, 89 and cooking grade. However, these were recently changed to correspond to AA, A, B, C and cooking grade which the trade prefers to use. Nearly all butter made from whole milk will score AA or A, while butter from farm separated cream and whey cream (separated from whey in cheese manufacturing) usually falls in the

lower grades. The Commodity Credit Corporation buys only AA and A butter, two grades that the wholesale market shows little or no difference in price. Storability is important to some buyers, so some handlers such as Land O'Lakes furnish a storability index.

The general top grade for nonfat dry milk solids is U.S. Extra Grade. This grade has limited usefulness because nearly all the spray dried powder will make this grade. Since most commercial sales are direct, most of the product is sold on specification. Some important characteristics are: (a) whether the product is spray (now over 96% of the total) or roller dried; (b) whether it is made by high heat or low heat process; (c) whether it is "instant" powder or not, the instant being preferred for packaged household sales; (d) whether it is "Grade A" powder, made from Grade A milk and inspected so as to be suitable for use in dairy products that require Grade A; and (e) solubility. In temperate zones, nonfat dry milk solids can be held in dry storage (not refrigerated).

Wisconsin grades for American cheese are State Brand, Juniors, Grinders, and "No Grade." Federal grades tend to correspond closely. Junior grade is for cheese exceeding 39% moisture content, but otherwise corresponding to State Brand. The significance of cheese grades is probably less than it was at one time, because so much of it is processed, and in the various processing formulas a proportion of the lower grades of cheese may be used. The rindless block technology affected, among other things, aging characteristics of cheese.

Cheese is kept in "cooler" storage while it is being aged. Some cheese can be successfully aged up to about 24 months, but there is not much demand for cheese aged above about six months and most of it is held no more than three. The cost of storing cheese is said to be around 1.1¢ to 1.3¢ per pound per month, and most markets will not return the cost of aging for more than three to six months.

PRODUCT FLOW IN DAIRY SUBSECTOR

Milk production in 1975 was 115,458 million pounds; Grade A milk accounted for 79.3% of the total (Figure 1-5). About 4.5% of all milk produced did not reach the wholesale market because it was either fed to calves (1,580 million pounds), consumed on farms where it was produced (1,654 million pounds), separated to produce farm gathered cream (387 million pounds), or retailed direct to consumers (1,519 million pounds). This left 110,318 million pounds of milk marketed wholesale.

About 59,976 million pounds of Grade A milk (57% of the Grade A and 45% of all milk marketed) was processed into fluid milk products. National firms processed about 23%, regional firms 7.5%, local firms 37.5%, cooperatives 11.5%, and integrated retailers about 20%.

All manufacturing grade milk plus the remaining (surplus) 37.5 billion pounds of Grade A go into manufactured milk products. This represents about 55% of all milk marketed wholesale. It is used for cheese, frozen products, butter, and skim milk products such as cottage cheese and nonfat dry milk.

Distribution of manufactured milk products is more complex than indicated by the flow chart. For instance, some butter, skim milk, and evaporated and condensed milk is used in the manufacture of ice cream. However, the more predominant flows are indicated.

Most exports of U.S. dairy products are implemented by the government for products received through the operation of the price support program. Government purchases may also be distributed to military bases and school lunch operations. These may be price support purchases or open market purchases. Most imports are handled through national dairy companies although some are handled through cooperative sales agencies.

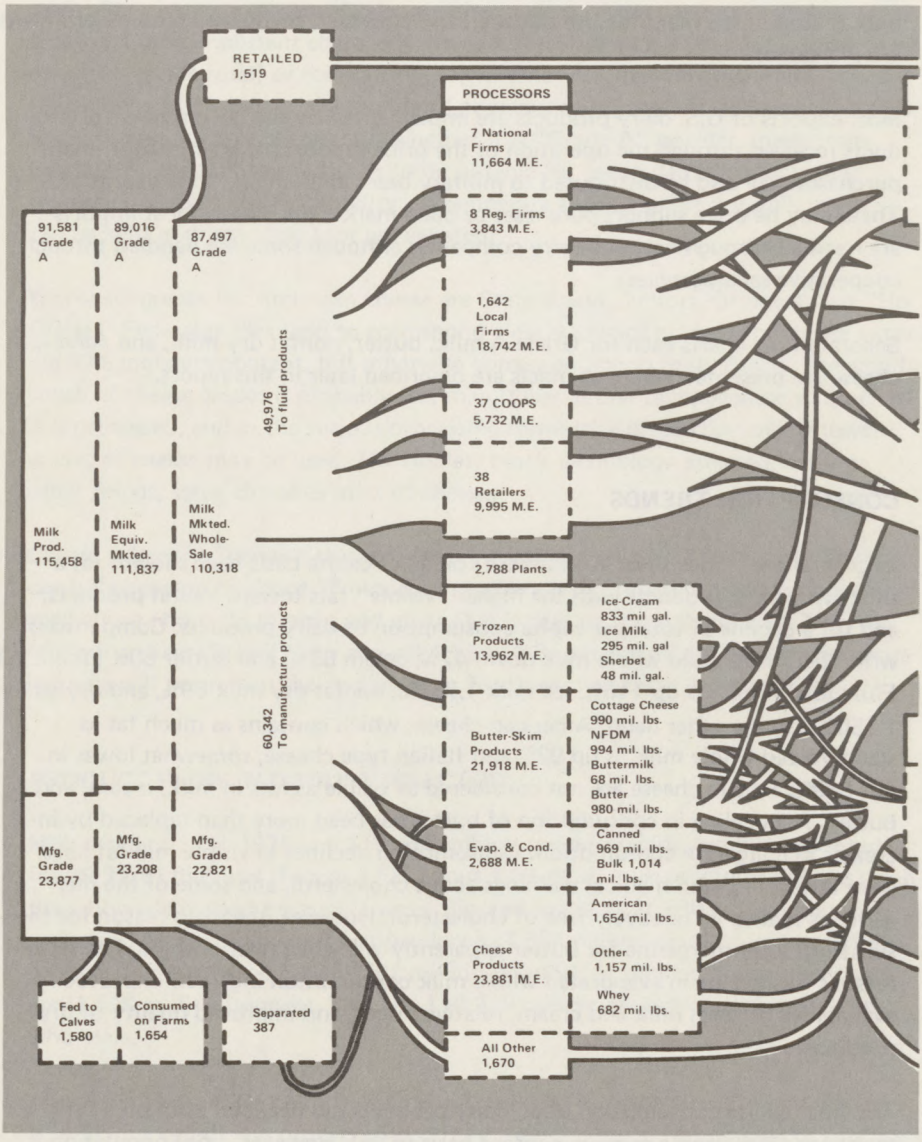
Separate flow charts each for Grade A milk, butter, nonfat dry milk, and American cheese are presented where channels are described later in this report.

CONSUMPTION TRENDS

In general the trends since World War II on a per capita basis have shown: (a) a shift away from products with the higher "visible" fats toward lowfat products; and (b) a decline in total per capita consumption of dairy products. Comparisons with 1945 show fluid whole milk down 42%, cream 53%, and butter 60% (Table 1-1). Fluid lowfat milk is up 116%, ice milk 1,750%, nonfat dry milk 89%, and dry whey 1,150%. On the other hand, American cheese, which contains as much fat as standardized whole milk, is up 92% and Italian type cheese, somewhat lower in fat, 589%. Fats in cheese are not considered as visible as fats in milk, cream, and butter. The decline in consumption of butter has been more than replaced by increases in margarine consumption. Consumption declines in visible milkfat have been associated with medical warnings about cholesterol, and some of the margarine is said to be relatively free of cholesterol. However, the main reason for the substitution of margarine for butter apparently was price relationships. The several reasons for decline in evaporated whole milk consumption included improved availability of fresh milk and cream, relative prices, and improved quality of dry products.

Total per capita consumption of all dairy products has declined both on a fat content basis (30%) and a calcium content basis (61%). However, since population is up by 54%, the grand total consumption of dairy products has increased substantially since 1945.

Figure 1-5. Flow chart for Grade A and manufacturing grade milk through processing and manufacturing of major product groups, and handling at principle stages to consumers, United States, 1975.



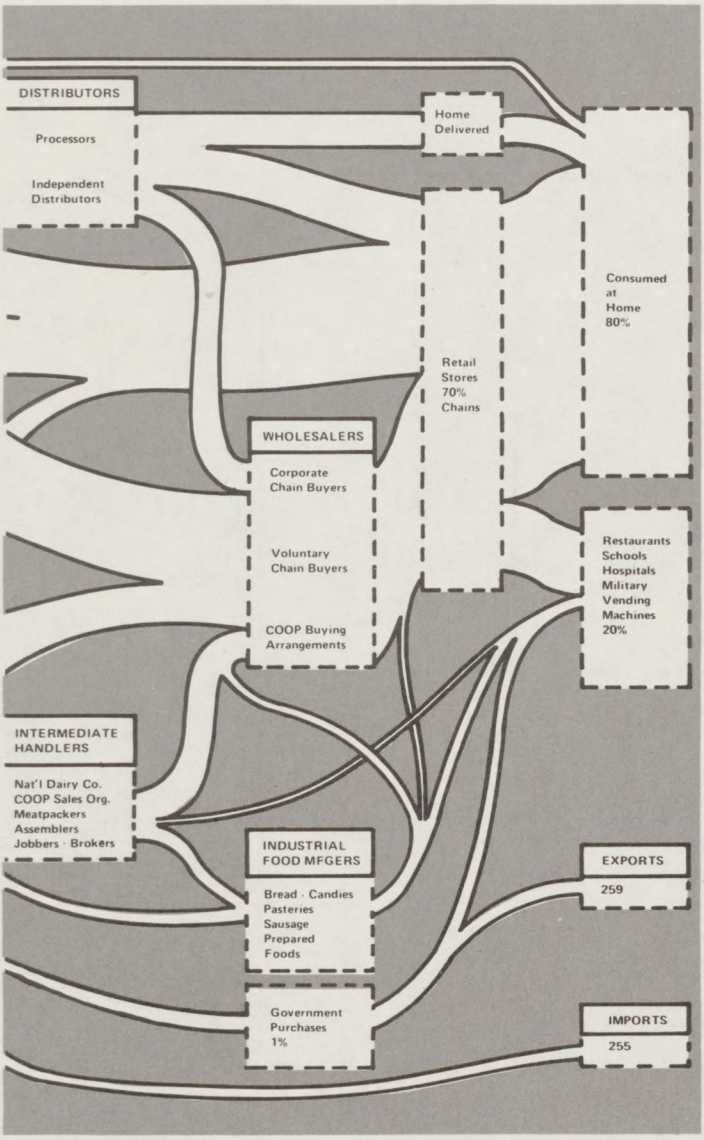

DISTRIBUTORS
Processors
Independent Distributors
Home Delivered
Consumed at Home 80%
Retail Stores 70% Chains
WHOLESALERS
Corporate Chain Buyers
Voluntary Chain Buyers
COOP Buying Arrangements
Restaurants Schools Hospitals Military Vending Machines 20%
INTERMEDIATE HANDLERS
Nat'l Dairy Co. COOP Sales Org. Meatpackers Assemblers Jobbers · Brokers
INDUSTRIAL FOOD MFGERS
Bread · Candies Pasteries Sausage Prepared Foods
EXPORTS
259
Government Purchases 1%
IMPORTS
255

Table 1-1. Per Capita Civilian Consumption of Selected Dairy Products and Margarine, 1945-1976.

Product	1945 (lbs.)	1950 (lbs.)	1955 (lbs.)	1960 (lbs.)	1965 (lbs.)	1970 (lbs.)	1975 (lbs.)	1976 (lbs.)	Percent Change 1945 to 1976
Fluid Whole Milk	335.0	296.0	306.0	285.0	269.0	233.0	200.0	195.0	- 42%
Lowfat Milk[a]	41.7	33.6	28.5	27.1	34.7	57.5	84.5	90.2	+ 116%
Cream	12.8	11.8	9.9	9.1	7.5	5.7	5.8	6.0	- 53%
Butter[b]	10.9	10.7	9.0	7.5	6.4	5.3	4.8	4.4	- 60%
Margarine	4.1	6.1	8.2	9.4	9.9	11.0	11.2	12.5	+ 205%
American Cheese	4.8	5.5	5.4	5.4	6.2	7.1	8.3	9.2	+ 92%
Italian Type Cheese	0.53	0.54	0.66	1.00	1.40	2.09	3.31	3.65	+ 589%
Evaporated Whole Milk	16.3	18.1	14.2	11.3	8.6	5.9	3.9	3.6	- 78%
Ice Cream	15.7	17.2	18.0	18.3	18.5	17.7	18.7	18.1	+ 15%
Ice Milk	0.4	1.2	2.9	4.5	6.6	7.8	7.8	7.4	+1,750%
Nonfat Dry Milk[b]	1.9	3.7	5.5	6.2	5.6	5.4	3.3	3.6	+ 89%
Dry Whey	0.2	0.2	0.2	0.3	0.6	1.5	2.3	2.5	+1,150%
All Dairy Products:									
Fat Content Basis	788.0	740.0	706.0	653.0	620.0	561.0	546.0	548.0	- 30%
Calcium Content Basis[c]	535.0	507.0	525.0	512.0	505.0	486.0	464.0	477.0	- 11%

a Includes buttermilk and all lowfat fluid items, including quantities used in flavored drinks.
b Includes quantities used in other dairy products.
c Excludes butter. The inclusion of butter would add 1 to 3.5 pounds.
Source: [62, 63]

SUBSTITUTES

From a nutritional viewpoint, there are few food substitutes for fluid milk. But from an economic perspective, there are many nonfood substitutes to milk and other dairy products.

When the substitutability of fluid milk is discussed, milk should be considered a beverage with potential substitutes including coffee, tea, soft drinks, fruit drinks and alcoholic beverages. This is particularly true for away-from-home consumption. Since 1945 as per capita consumption of fluid milk declined, per capita consumption of soft drinks and alcoholic beverages has been increasing rapidly. Another substitute, which has been of great concern to the dairy industry, is imitation milk. Various products using vegetable fat have been marketed as substitutes for fluid milk. To date the impact has been minimal. The impact of the substitutability of vegetable and milk fat has been most profound in manufactured dairy products, particularly butter.

In general, there is no collection of data to show quantities of substitutes and imitations except for margarine and mellorine (an ice cream substitute in which vegetable fat is used). Though margarine has taken three-fourths of the pre-World War II butter market, mellorine consumption, on the other hand, appears to be a net addition to ice cream of which per capita consumption has actually increased somewhat. Filled milk (with vegetable fat) consumption reached 7% of the total in one market and 1% or 2% in some others several years ago, but has since declined to negligible amounts. Coffee whiteners are sold in substantial volume. Imitation cheeses, especially pizza types, are said to be posing a substantial threat, since they are reported to sell for 40% of the price of the regular product. However, sales data are lacking.

Elasticities of Supply and Demand

In general, the dairy subsector is characterized by inelastic supply and demand responses. The milk supply response to price is usually found to be very inelastic in the short run and more elastic but still inelastic in the long run. It has been generally accepted that the demand for dairy products is more price and income elastic than the demand for fluid products. Table 1-2 indicates ranges of elasticity estimates from comprehensive attempts to measure elasticities. A more detailed summary of the elasticities derived from these comprehensive studies is included as Appendix A.

Although there is considerable variation in supply elasticity estimates, it can be concluded that the short-run response to price is very inelastic due to the large fixed investment on dairy farms and the long production cycle of cows, and that the long-run response is more elastic but still inelastic. It is generally concluded that production response is more inelastic in the large producing regions, Northeast and

Lake States, due to the predominance of dairy and the relative lack of alternative enterprises. Other variables affecting supply response are beef price and input prices, particularly for feed.

Most studies have concluded that the demand for dairy products, like that for most food items, is both price and income inelastic. Much of the work in this area has been with fluid products as indicated in the table. The resulting income elasticities have generally been in the range of 0.0 to 0.4. Most authors have found short-run demand elasticities in the range of -0.2 to -0.6. The recent work by Boehm and Babb [6] using data from the Market Research Corporation of America National Consumer Panel found the long-run demand for fluid milk to be price elastic. Most authors have concluded that the demand for most manufactured dairy products is more price and income elastic than the demand for fluid milk. The cheeses particularly tend to be more income elastic; butter particularly is more price elastic.

Table 1-2. Supply and Demand Elasticity Estimates[a]

A. Supply Elasticities

Milk Production in	Short-Run Price	Long-Run Price
United States	0.05 to 0.50	0.2 to 1.0
Northeast & Lakes States	0.05 to 0.25	0.2 to 0.8
Pacific Region	0.0 to 0.80	0.8 to 1.5

B. Demand Elasticities

Product	Price	Income
Fluid Milk	-0.2 to -1.0	0.0 to 0.4
Frozen Dairy Products	-0.4 to -0.7	0.1 to 0.4
Cheese	-0.5 to -0.8	0.2 to 0.5
Butter	-0.6 to -1.0	0.2 to 0.3

[a] This is a summary of many elasticity studies. See Appendix A for more detail from several of the more comprehensive elasticity studies.

Basic Price Patterns

Annual average prices received by farmers have increased steadily since the early 1960's both for fluid (Grade A) milk and for manufacturing milk (Figure 1-6). By 1976 the price for fluid milk was around $10.00 per cwt., or over twice the price in 1963. By then the price of manufacturing milk was around $8.50, or over 2.5 times the price in 1963. The differential between the two grades of milk remained fairly constant over the period. The annual rate of increase for both grades was highest after 1972, at which time feed prices inflated rapidly.

Seasonal prices are highest in November and December for fluid milk and in December for manufacturing milk (Figure 1-7). They are lowest in June for both grades of

milk. In January, February, and March they are near the annual average. Price seasonality shows an inverse relationship to production seasonality.

Government Regulation and Participation in Markets[1]

From the producer to the consumer, government regulation plays an important if not dominant role in the dairy industry, probably greater than in any other subsector of agriculture. The importance of these regulations has often been attributed to the perishability of milk and to the small producer-large processor relationship at the producer level. Sanitary and environmental regulations affect all sectors of the dairy industry. International trade regulations and welfare policy affect supply and consumption and consequently the price at all levels of the industry. Government price policies for the industry play an obvious role, and international trade regulations result directly from the price policies.

INSPECTION

Milk is produced, processed, and sold under sanitary regulations designed to insure a quality product to the consumer. These were mentioned under product characteristics. At the producer level, sanitary regulations have been more stringent for milk eligible for fluid use although sanitary regulations have recently received more emphasis for manufacturing grade milk. Sanitary regulation of processing and retailing is in general stricter for the more perishable products.

In recent years, environmental regulations have become important and have focused on the odor and runoff associated with manure at the farm level and with the disposition of by-products, such as whey, resulting from the production of manufactured dairy products.

WELFARE POLICY AND PROGRAMS

The consumption of dairy products is dramatically affected by welfare legislation such as the Food Stamp Program and the School Lunch Program. It has been estimated that 7% of the fluid consumption in the United States is a result of the School Lunch and Special Milk Programs, and that as much as 15% of the consumption of fluid dairy products is a result of welfare programs. Manufactured products used in these programs as a rule are surpluses originally bought for price support.

PRICE POLICIES

The most obvious forms of government regulation are those dealing with the pricing mechanism. These are: (1) the price support program which places a floor under

[1] Vial [78] and Williams [79].

Figure 1-6. Annual Average Prices Received per Hundredweight by Farmers for Milk Sold to Plants, By Grade United States 1960-1976

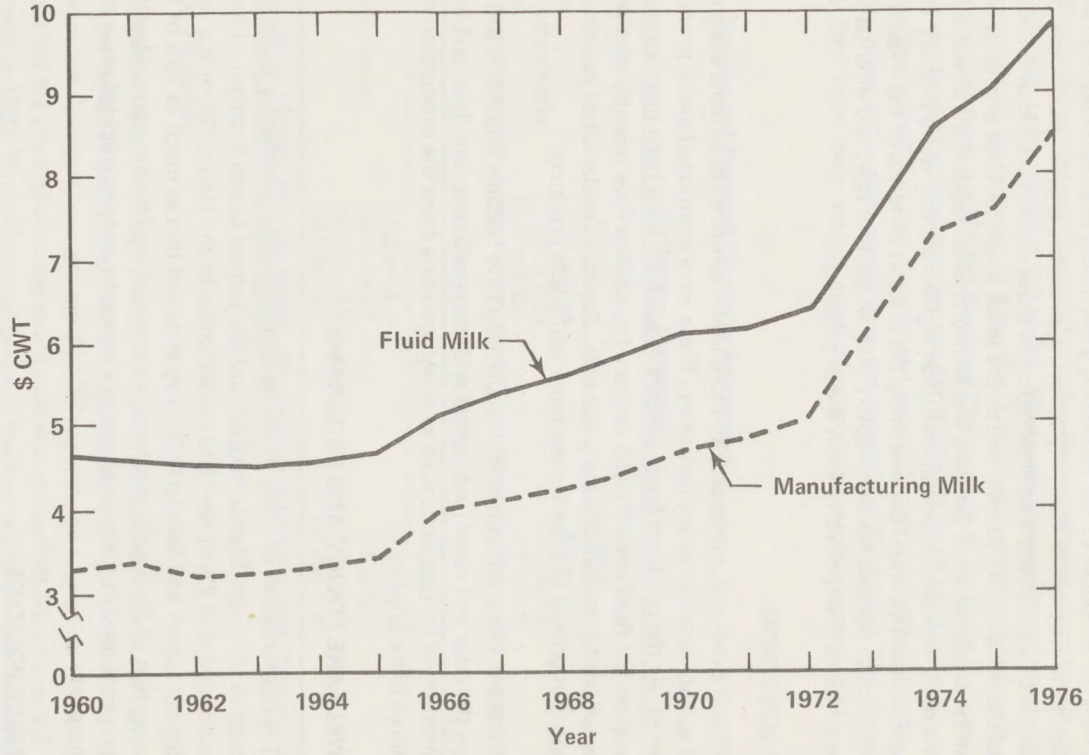
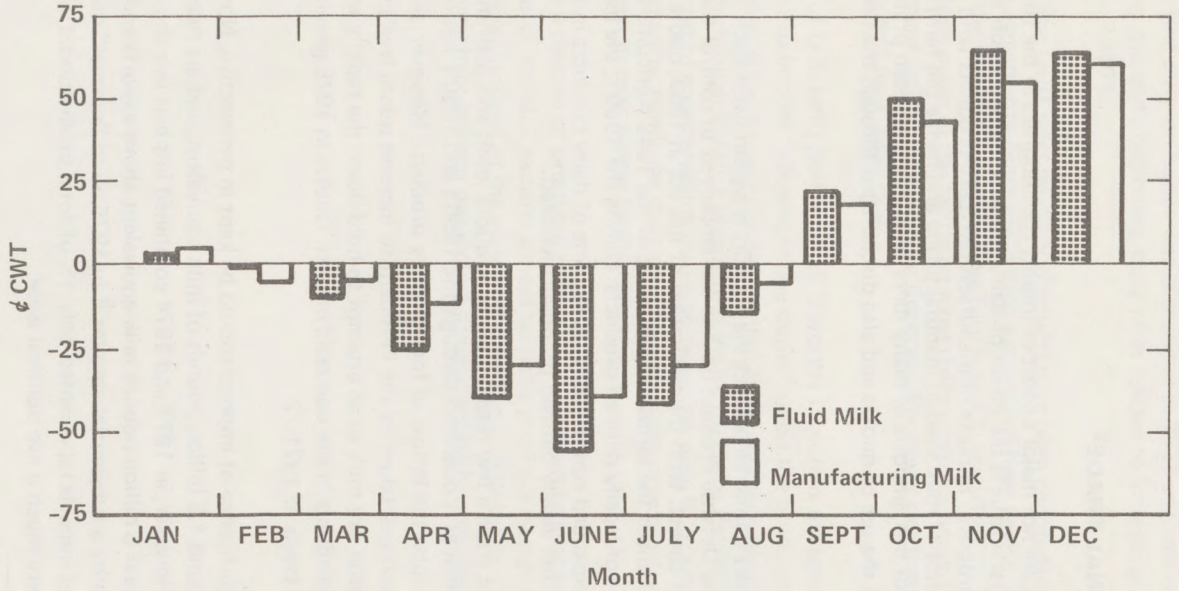


Figure 1-7. Monthly Differences in Prices Received per Hundredweight by Farmers, Expressed as Differences from the Annual Average by Grade for the Period 1971-1976, U.S.[a]



[a] All prices are at average fat test. For both fluid and manufacturing grade milk 1971-76 monthly average tests ranged from 3.52% in July to 3.82% in December.

farm prices of manufacturing milk; and (2) the marketing agreement and order program which establishes minimum pay prices which handlers must pay farmers depending partly on the use-value of milk and related to costs of production and marketing. This price structure rests on manufacturing milk prices, which are upheld by the price support floor. These programs will be described at a later point in this report.

INTERNATIONAL TRADE[2]

Dairy products are not major export or import commodities in the United States. The principal trade issue is the effect of dairy product imports upon the domestic price support program. Imports of manufactured dairy products tend to depress the domestic price of milk used in manufacturing and hence the farm milk price. In recognition of this, imports of many dairy products have been primarily controlled through the use of quotas and also discouraged through the use of tariffs.

Quotas

The use of import quotas to protect the support program dates back to the early 1950's when the Defense Production Act was employed to control the inflow of certain types of cheese. With the expiration of this act in 1953, quota limitations were continued under the terms of Section 22 of the 1948 Agricultural Act, usually in terms of legally defined products. During the 1950's, the list of quota products was expanded considerably, as imports of dairy products in forms designed to be exempt from legally defined products increased.

Generally, apart from a few readjustments to quota levels and their mode of application, the system as it operated through the 1950's and 1960's was one of increasing restriction upon the inflow of foreign dairy products. However, during 1972-73, emergency action was taken by the President to increase quota levels on cheese, butter, and nonfat dry milk in an attempt to hold down the rapidly escalating price of dairy products in the domestic market. Quotas in 1975 generally reflected a return to the levels of 1971-72.

The relative significance of imports should be kept in perspective. Normally, imports are around 1.5 billion pounds of milk equivalent, and are nearly balanced with exports. However, in 1973 and 1974 combined imports in a short period of time came to over 5 billion pounds milk equivalent above exports and drove down producer prices by a substantial amount.[3] In 1975, with "normal" quotas fully in effect again, net imports represented only 1% of total production. Dairy import policy is still very much a live political issue.

---

2 The assistance of Dr. David Blandford of Cornell University in writing this section is acknowledged. For additional trade statistics see Blandford, and Kramer [5].

3 According to a recent ERS estimate, in the short run for every 500 million pounds of product milk equivalent imported, producer returns would be reduced about 9 cents per hundredweight. [66]

Tariffs

From early in its history, the U.S. has levied duties on dairy product imports. The first tariff (on cheese) was authorized by Congress in 1790 at a rate of 4 cents per pound. The first duty on butter was authorized in 1824 at a rate of 5 cents per pound. From this early beginning, duty rates tended to increase gradually, reaching a peak in the 1930's.

Since that time tariff rates on dairy products have been negotiated under international trade agreements. Since 1948 such agreements have been sought under the auspices of the General Agreement on Tariffs and Trade (GATT). Substantial reductions have been made in the tariffs on most dairy products under GATT through trade agreement legislation passed by Congress. For many products, tariffs today are less than half their 1930 rate.

One aspect of U.S. tariff policy which is worthy of note is the power available to the President to impose "countervailing duties" upon the products of specific countries when there is reason to believe that these are being heavily subsidized. During 1974 through the first several months of 1976, the President successfully used the threat of countervailing duties to negotiate with EC countries and some others to reduce or eliminate their subsidies especially on exports of cheese and, to a lesser extent, butter to the U.S.

Although as a percent of production exports are frequently near imports (on a nonfat solids basis), the U.S. exports almost no dairy products except under the food for peace program. Most of the exports is nonfat dry milk solids. Our price support minimums help to keep our export prices essentially noncompetitive.