Industry & Trade Summary

Dairy Products

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UNITED STATES INTERNATIONAL TRADE COMMISSION

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PREFACE

In 1991 the United States International Trade Commission initiated its current ***Industry and Trade Summary*** series of informational reports on the thousands of products imported into, and exported from, the United States. Each summary addresses a different commodity/industry and contains information on product uses, U.S. and foreign producers, and customs treatment. Also included is an analysis of the basic factors affecting trends in consumption, production, and trade of the commodity, as well as those bearing on the competitiveness of U.S. industries in domestic and foreign markets.[1]

This report on dairy products covers the period 1992 through 1996. Listed below are the individual summary reports published to date on the agricultural and forest products sector.

USITC publication number	*Publication date*	*Title*
2459	November 1991 . .	Live Sheep and Meat of Sheep
2462	November 1991 . .	Cigarettes
2477	January 1992	Dairy Produce
2478	January 1992	Oilseeds
2511	March 1992	Live Swine and Fresh, Chilled, or Frozen Pork
2520	June 1992	Poultry
2524	August 1992	Fresh or Frozen Fish
2545	November 1992 . .	Natural Sweeteners
2551	November 1992 . .	Newsprint
2612	March 1993	Wood Pulp and Waste Paper
2615	March 1993	Citrus Fruit
2625	April 1993	Live Cattle and Fresh, Chilled, or Frozen Beef and Veal
2631	May 1993	Animal and Vegetable Fats and Oils
2635	June 1993	Cocoa, Chocolate, and Confectionery
2636	May 1993	Olives
2639	June 1993	Wine and Certain Fermented Beverages
2693	October 1993	Printing and Writing Paper
2702	November 1993 . .	Fur Goods
2726	January 1994	Furskins
2737	March 1994	Cut Flowers
2749	March 1994	Coffee and Tea
2762	April 1994	Paper Boxes and Bags

[1] The information and analysis provided in this report are for the purpose of this report only. Nothing in this report should be construed to indicate how the Commission would find in an investigation conducted under statutory authority covering the same or similar subject matter.

PREFACE—*Continued*

USITC publication number	*Publication date*	*Title*
2865	April 1995	Malt Beverages
2859	May 1995	Seeds
2875	May 1995	Certain Fresh Deciduous Fruits
2898	June 1995	Certain Miscellaneous Vegetable Substances
2917	October 1995	Lumber, Flooring, and Siding
2918	August 1995	Printed Matter
2928	November 1995	Processed Vegetables
3015	February 1997	Hides, Skins, and Leather
3020	March 1997	Nonalcoholic Beverages
3022	April 1997	Industrial Papers and Paperboards

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ABBREVIATIONS and ACRONYMS

AMS	Agricultural Marketing Service of the U.S. Department of Agriculture
APHIS	Animal and Plant Health Inspection Service of the U.S. Department of Agriculture
ATPA	Andean Trade Preference Act
BFP	Basic formula price
CBERA	Caribbean Basin Economic Recovery Act
CFTA	U.S.-Canada Free Trade Agreement
CCC	Commodity Credit Corporation
DEIP	Dairy Export Incentive Program
DMI	Dairy Management Inc.
EU	European Union
ERS	Economic Research Service of the U.S. Department of Agriculture
FAIR	Federal Agriculture Improvement and Reform Act of 1996
FAS	Foreign Agricultural Service of the U.S. Department of Agriculture
FMMO	Federal Milk Marketing Order
FSU	Former Soviet Union
GAO	General Accounting Office
GATT	General Agreement on Tariffs and Trade
GSP	Generalized System of Preferences
HTS	Harmonized Tariff Schedule of the United States
IFTA	U.S.-Israel Free Trade Area Implementation Act
MAP	Market Access Program
MIF	Milk Industry Foundation
M-W	Minnesota and Wisconsin price
NAFTA	North American Free Trade Agreement
NASS	National Agricultural Statistics Service
NZDB	New Zealand Dairy Board
NDM	Nonfat dry milk
RO	Reverse osmosis
STE	State trading enterprises
TRQs	Tariff-rate quotas
UF	Ultrafiltration
URA	Uruguay Round Agreement
USDA	U.S. Department of Agriculture
WTO	World Trade Organization

ABSTRACT

This report addresses trade and industry conditions for dairy products for the period 1992-96.

- The United States is a small, but increasingly important, participant in international dairy markets. Between 1992 and 1996, the United States increased its share of world dairy exports from 2 percent to almost 10 percent, a share that likely will increase in the future. Recent U.S. price reforms and world dairy market liberalization as a result of the Uruguay Round Agreements should make U.S. dairy products more competitive internationally. However, the United States faces stiff competition from dairy products produced in New Zealand, Australia and (to a lesser extent) Ireland and Argentina, because these countries have lower production costs than the United States.

- Between 1992 and 1996, the average annual value of all U.S. dairy products produced was about $62 billion, while employment was approximately 700,000 persons. International trade is relatively small in comparison to the domestic market. Imports, over 90 percent of which were cheese and casein, constitute only 2 percent of U.S. consumption of all dairy products. Major suppliers are the European Union, New Zealand, and Australia. Exports account for less than 1 percent of U.S. annual production of dairy products, with the principal markets being Mexico, Japan, and Canada.

- World trade in dairy products is highly restricted as a result of both tariff and nontariff measures. Under the Uruguay Round Agreement on Agriculture, the United States agreed to convert its section 22 quotas to minimum access guarantees and tariff-rate quotas. High foreign tariffs and nontariff barriers, such as sanitary certification, labeling, and shelf-life requirements and state trading enterprises, represent major obstacles for U.S. exports.

- The principal U.S. consumers for dairy products include households, restaurants, institutions, producers of foods (such as bakery products, pizzas, and ready-to-eat microwaveable packaged foods), and the U.S. Department of Agriculture. At the retail level, changes in consumer incomes and retail prices for dairy products relative to other foods are the principal factors influencing the demand for dairy products. Other factors affecting consumption include advertising, promotion, concern about health and nutrition, changes in demographics, and government donations.

INTRODUCTION

This summary covers all commonly known dairy products, including milk and cream, whether fluid, concentrated, or dried; buttermilk and curdled, fermented, or acidified milk and cream (e.g., yogurt); whey, in all forms, and whey protein concentrate; and articles of milk and cream. Also included are butter and other fats and oils derived from milk; cheese and curd of all kinds; ice cream; and the principal proteins of milk, namely casein, casein derivatives (caseinates), and milk albumin. All these dairy products are provided for in chapter 4 of the Harmonized Tariff Schedule of the United States (HTS), except ice cream (included in HTS chapter 21) and casein, caseinates, and milk protein (all included in HTS chapter 35). Information is presented in this report on the structure of the U.S. and foreign dairy industries, domestic and foreign tariff and nontariff measures, and the competitive conditions of the U.S. dairy industry in domestic and foreign markets. The analysis covers the period 1992-96.

Cows supply the great bulk of the world's output of milk and nearly all of the milk produced in the United States.[1] Cows specially bred for milk for human consumption are kept and milked on dairy farms throughout the United States and account for about 10 percent of all cattle raised. Milk production per cow has increased steadily since the end of World War II, particularly since the 1960s when new production technologies began to be used by dairy farmers.[2] Herd genetics have improved through the widespread use of artificial insemination, while feeding practices have changed as more has been understood about the correlation between forage quality and milk production.[3] Modern milk parlor and housing designs have also been introduced to improve cow movement and comfort and to allow better use of scarce labor resources. More recently, the use of bST, a genetically engineered milk-producing stimulant injected into cows, has further raised the productivity of dairy cows.

Milk is produced in a fairly uniform seasonal pattern in the United States.[4] Typically production peaks in May because most cows calve and begin a new lactation cycle in early spring (production is greatest during the early portion of a cow's lactation cycle), aided by spring weather, green pastures, and improved forage quality. Milk production then declines sharply during the summer when heat and humidity adversely affect forage quality and quantity consumed by cows. Less feed translates into lower milk production. Production begins to pick up again in the fall when other cows calve and temperatures begin to cool.[5]

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[1] Sheep and goat milk represents less than 1 percent of total milk supplies in the United States.

[2] Alden C. Manchester and Don P. Blayney, *The Structure of Dairy Markets: Past, Present, Future*, USDA, ERS, Agricultural Economic Report No. 757, Sept. 1997.

[3] Kenneth W. Bailey, *Marketing and Pricing of Milk and Dairy Products in the United States*, Iowa State University Press, Ames, IA, 1997, p. 9.

[4] Ibid., p. 11.

[5] Ibid., p. 12.

Milk is a bulky (about 87 percent is water), perishable product that is normally transported from the dairy farms to nearby processing plants where it is pasteurized, homogenized, and either packaged for the fluid market (i.e., drinking purposes, for which it sells at premium prices) or manufactured into products such as butter, concentrated and dried milk (including nonfat dry milk (NDM)), cheese, ice cream, and yogurt.[6] Milk for fluid consumption is often processed and distributed to retail stores less than 24 hours after it leaves the farm.[7]

Milk is the principal raw material from which dairy products are made (see appendix A). Dairy products such as concentrated and dried milk, butter, cheese, and casein can be more readily transported over longer distances than whole milk. Products such as concentrated and dried milk whey, whey protein concentrate, caseinates, milk albumin, and fats and oils derived from milk are used mostly as ingredients in other food products, including bakery, confectionery, ice cream mix, and certain cheeses.

The processes used to manufacture milk into dairy products vary considerably from product to product. For example, cream (the fatty liquid in milk) is separated from whole milk mostly to produce butter. The cream is then churned, a process that separates the butterfat (or milkfat) from the liquid. The liquid portion (fluid skim milk) is then drained off and usually dried into NDM. The butterfat is usually salted, pressed into blocks of butter or cut into sticks, and packaged.[8] Although the fluid skim milk is generally dried to make NDM, there has been a growing trend toward using larger amounts for drinking and processing into cottage cheese. In many countries, fluid skim milk is processed into casein as well as into NDM.

The production of most types of cheese involve coagulation of the milk; heating and stirring the resulting curd and whey (the liquid portion that remains after cheese is made from milk); draining off the whey (and subsequently drying it to make the product known as dried whey); and collecting, salting, and pressing the curd into loaves or other forms. Cheese is usually ripened (i.e., aged, cured, or both). Aging and curing the cheese is mainly a function of time in storage combined with controlled temperature and humidity that permit certain desired activities by bacteria or molds.[9]

Dried milk is often reconstituted and used for fluid consumption or for processing into cottage cheese. Sometimes it is used for animal feeds. Products such as yogurt and ice cream generally are consumed in the form that they are produced. Also, both butter and natural cheese (cheese first produced directly from milk) are used for consumption without further processing. However, significant quantities of butter are used by food processors in products

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[6] George M. Beal and Henry H. Bakken, *Fluid Milk Marketing*, Mimir Publishers, Inc., Madison, WI, 1956.

[7] Bailey, *Marketing and Pricing,* pp. 47-48.

[8] Interview with William C. King, manager, Manufacturing Division, Maryland and Virginia Milk Producers Cooperative Association, Inc., Laurel, MD, Sept. 1997.

[9] Byron H. Webb and Earle O. Whittier, *Byproducts from Milk*, The Avi Publishing Company, Inc., Westport, CT, 1970.

such as bakery and confectionery, and natural cheese is often processed or used as an ingredient in food such as pizza, crackers, and soups.[10]

U.S. shipments of dairy products amounted to $62 billion in 1996.[11] Fluid milk accounted for about 38 percent of such shipments, cheese for 35 percent, concentrated and dried milk for 15 percent, ice cream for 10 percent, and butter for 2 percent.[12] U.S. trade in dairy products is relatively small in comparison to the domestic market. In 1996 the total value of dairy imports was $1.2 billion, representing about 2 percent of the total value of dairy shipments, while dairy exports, valued at $506 million, represented less than 1 percent of such shipments.[13] In 1996, cheese accounted for one-half the value of dairy products imported, while casein and caseinates (which are not produced from milk in the United States) accounted for about 43 percent. The major dairy exports of the United States are whey and cheese.

Dairy is one of the most regulated and complicated agricultural industries in the United States.[14] A complex system of Federal, State, and local laws and regulations is used to price and market milk and dairy products, while several trade policies serve to protect domestic price-support programs from import interference and to assist sales of U.S. products in foreign markets.[15] However, recent legislation represents a move away from government regulation of the dairy industry.[16] Dairy provisions of the Federal Agriculture Improvement and Reform (FAIR) Act of 1996 provide for the price-support programs to be dismantled over time, as well as major reform of the Federal Milk Marketing Order (FMMO) system.[17] Meanwhile, as part of the Uruguay Round Agreement (URA) on Agriculture, the United States agreed to convert dairy quotas imposed under section 22 of the Agricultural Adjustment

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[10] Natural cheeses are those that require no further processing after being produced. Processed cheeses are made by grinding, heating, and mixing natural cheese. Typically a blend of one or more American-type cheeses (mostly Cheddar, Colby, and Monterey Jack) are used to produce processed cheese that has special melting properties and improved shelf life. For further details, see Bailey, *Marketing and Pricing,* p. 86.

[11] Estimate based on U.S. Department of Commerce, Bureau of Census, *1992 Census of Manufacturers. Industry Series: Dairy Products*, No. MC92-I-20B, Apr. 1995; Milk Industry Foundation, *Milk Facts: 1996 Edition*, Washington, DC, Sept. 1996; National Cheese Institute, *Cheese Facts*: *1996 Edition,* Washington, DC, Sept. 1996; and International Ice Cream Association, *The Latest Scoop: 1996 Edition*, Washington, DC, Dec. 1996.

[12] Milk Industry Foundation, *Milk Facts: 1996 Edition*; National Cheese Institute, *Cheese Facts*: *1996 Edition*; and International Ice Cream Association, *The Latest Scoop: 1996 Edition.*

[13] U.S. Department of Commerce official statistics.

[14] Bailey, *Marketing and Pricing*, p. ix.

[15] Don P. Blayney, James J. Miller, and Richard P. Stillman, *Dairy. Background for 1995 Farm Legislation,* USDA, ERS, Agricultural Economic Report No. 705, Apr. 1995, p. 11.

[16] For background, see report of the House Committee on Agriculture, H. Rept. No. 104-462 at 46-50, or H.R. 2854, Federal Agriculture Improvement and Reform (FAIR) Act of 1996.

[17] See Secs. 141-152 of the FAIR Act of 1996, 7 U.S.C. 7251, et seq.; Public Law 104-127, 110 Stat. 888, 914, et seq.

Act[18] to tariff-rate quotas (TRQs), effective January 1, 1995.[19] Also under the URA, governments agreed to limit export subsidies for exports of dairy products and other agricultural products (more details on U.S. commitments under the URA are given in the "U.S. trade" section of this summary).[20]

U.S. INDUSTRY PROFILE [21]

Industry Structure

The structure of the U.S. dairy industry is illustrated in figure 1. Raw milk is transported to fluid whole milk processing plants where it is processed into milk for fluid consumption or manufactured into dairy products such as dried or condensed milk, ice cream, yogurt, butter, whey, and cheese. After processing, dairy products are generally consumed by retail consumers or food processors, although some whey products are used in animal feed (appendix A). Casein, which has several food and manufacturing uses, has not been produced from milk in the United States since the early 1950s. After the U.S. Department of Agriculture (USDA) established a price-support program for milk, U.S. butter and powder producers realized greater returns from drying their skim milk into NDM and selling it to the government intervention agency, the Commodity Credit Corporation (CCC), than from processing it into casein. Therefore, domestic supplies of casein have since been furnished from imports.

Number, Concentration, Geographic Distribution of Firms

Milk is produced in every state in the United States. Traditionally, milk has been produced on small diversified crop/livestock farms primarily concentrated in the Upper Midwest and

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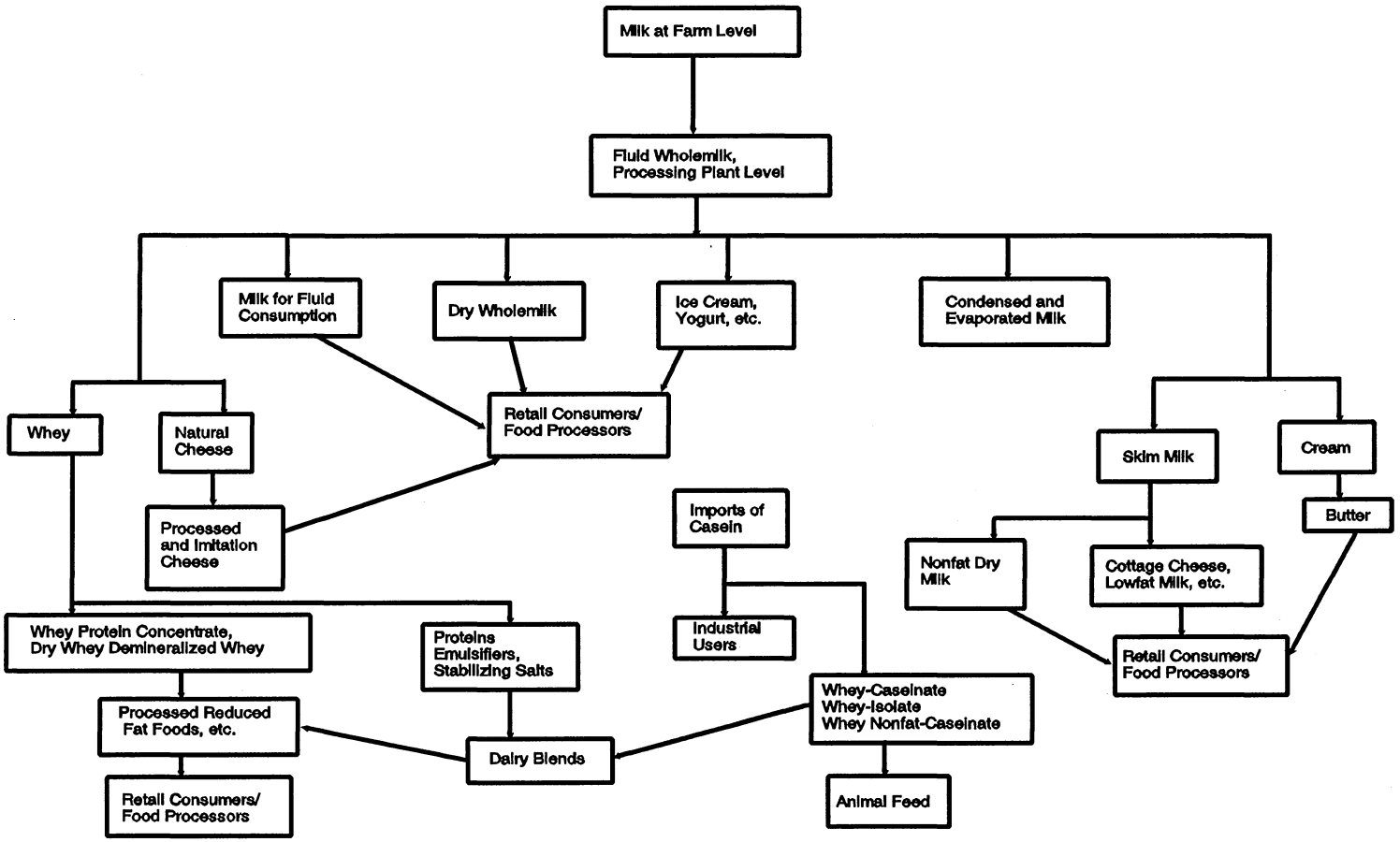
[18] Between mid-1953 and implementation of the URA, quotas were imposed under the provisions of section 22 of the Agricultural Adjustment Act, as amended, on virtually all imports of articles derived from cow's milk that normally enter international trade, except casein, caseinates, lactalbumin, and soft-ripened cow's-milk cheese. The quotas were imposed to protect the USDA price-support programs for milk and milk products from interference or threat of such interference.

[19] *Uruguay Round Agreement Act, Statement of Administrative Action*, published in H. Doc. 103-316, 103d Cong., 2d Sess., p. 728.

[20] Ibid., pp. 720-23.

[21] The Standard Industrial Classification categories applicable to the industry are: 2021, creamery butter; 2022, natural, processed, and imitation cheese; 2023, dry, condensed, and evaporated dairy products; 2024, ice cream and frozen desserts; and 2026, fluid milk.

Figure 1
U.S. Dairy industry: Principal raw materials, producer types, major products, and principal consumers



Source: Compiled from *The Manufacturing Confectioner,* October 1981, p. 54 and from other information available to the U.S. International Trade Commission.

Northeast.[22] Since the mid-1980s, a regional shift in production to the Southwest and West has taken place, where dairy operations are typically very large (1,000 cows or more) and specialized. Another trend has been the dramatic decrease in the number of U.S. dairy farms, while the average size has trended significantly upward.[23] During the past 20 years, structural changes in the U.S. dairy industry have created a more efficient industry that produces 30 percent more milk with 1.8 million fewer cows.[24]

Number

The number of U.S. dairy operations [25] fell from 169,280 in 1992 to 125,240 in 1996 (a decline of more than one-quarter) (table B-1). [26] While the number of operations fell in all regions of the country, some regions experienced sharper reductions than others. For instance, of the 44,000 decline in the number of dairy operations between 1992 and 1996, close to 15,000 were in the Central region (mainly Missouri, Texas, and Ohio), while the number of operations in the Upper Midwest decreased by 10,000 (4,000 of which were in Wisconsin). The drop in dairy operations was less in the Northeast and West, which each lost roughly 6,000 dairy operations between 1992 and 1996.

In addition to the decline in the number of dairy operations, the number of dairy processing facilities has also decreased over the past decade (table B-2).[27] The number of fluid processing plants fell from 774 in 1985 to 478 in 1995, a decline of about 38 percent. Most dramatic was the drop in the number of butter producing plants, which fell from 198 plants in 1985 to 109 in 1995. There were 237 fewer cheese processing plants in 1995 than in 1985 (432 plants in 1995 compared with 669 plants in 1985), while the number of ice cream plants declined from 865 in 1985 to 473 in 1995 (a drop of 392). In the NDM sector, the number of plants fell from 97 in 1985 to 59 in 1995.

Concentration

While the number of dairy operations decreased over 25 percent between 1992 and 1996, inventories of dairy cows fell by about 5 percent, from 9.8 million animals in 1992 to 9.3 million animals in 1996 (table B-1).[28] Thus the size distribution of dairy operations shows that herd sizes are increasing over time, particularly in the Upper Midwest and Central

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[22] Joe L. Outlaw and others,"Structure of the U.S. Dairy Farm Sector," paper M-4 in series *Dairy Markets and Policy—Issues and Options*, Cornell University's Program on Dairy Markets and Policy, Mar. 1996, p. 1.

[23] Manchester and Blayney, *Structure of Dairy Markets.*

[24] U.S. Dairy Export Council, "Impact of Twenty Years of Structural Change," *U.S. Dairy*, vol. 2, No. 4, Aug. 1997, p. 1.

[25] A dairy operation is defined as any place having one or more head of milk cows on hand at any time during the year (USDA, NASS, *Cattle*, Feb. 1997).

[26] USDA, AMS, *Dairy Market Statistics, Annual Summary,* 1992, 1994, and 1996.

[27] USDA, NASS, *Dairy Products*, various issues. Data for 1996 are not available.

[28] USDA, AMS, *Dairy Market Statistics, Annual Summary,* 1992, 1994, and 1996.

regions, with production becoming increasingly concentrated on large operations. For example, in 1993 about 50 percent of cow inventories were on dairy operations with more than 100 animals (4.9 million animals compared with the total U.S. inventory of 9.5 million animals). By 1996 operations with more than 100 animals made up 57 percent of all inventories (table B-3). Several regional differences in the size distribution of dairy farms can be observed. In 1996, for example, over 95 percent of dairy cows in California were on operations with 200 animals or more. By contrast, Wisconsin had only 7 percent of its dairy cows on such operations, with over one-third of cows being on operations with less than 50 animals (table B-3).

The trend toward larger volume operations can be associated with capital-intensive technological advances for milking and feeding that have generally increased the minimum economically feasible size of operation, raised production efficiency, and encouraged specialization.[29] Many Western and Southwestern milk producers typically purchase all their feed, use mostly hired labor, and devote their management skills and time solely to the dairy operation. In other regions, especially the Northeast and Upper Midwest, dairy farmers typically grow much of their own feed, use family labor, and divide their time between cropping and milk producing.[30]

Dairy processing is fast becoming a highly concentrated industry. Technological advances in transportation and manufacturing, as well as the large volume requirements of many retail accounts, have increased the minimum efficient plant size for milk, butter, and cheese processing/manufacturing and created an industry tending toward fewer and larger manufacturing plants.[31] For instance, in 1992 the share of national packaged fluid milk sales by the four largest dairy processors was 22 percent.[32] Continuous advances in cost-reducing technology (such as the continuous churn and soft butter printing technology) increased concentration in the butter processing industry, and in 1992 the four largest butter manufacturers produced about 49 percent of all U.S. butter.[33] Advances in new cheese-making technology, such as the automated cheddaring system, have sharply increased average plant size and reduced labor costs in the American cheese industry.[34] In 1992 the top four cheese manufacturing firms had a market share of about 42 percent.[35] A further indication of the increased concentration in dairy processing is seen from trends in production per plant

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[29] USDA, ERS, "Dairy Policy to Build on Market Orientation," *Agricultural Outlook*, July 1995, p. 14.

[30] Ibid.

[31] Bruce W. Marion, *The Organization and Performance of the U.S. Food System*, NC117 Committee, Lexington Books, D.C. Heath and Company, Lexington, MA, 1986, p. 117.

[32] U.S. Department of Commerce, *1992 Census of Manufactures. Industry Series: Dairy Products.* Since the Census is carried out every five years, 1992 data are the most recent available.

[33] Ibid.

[34] Interview with Larry Anderson, plant manager, Foremost Farms Cheddar Plant, Richland Center, WI, Sept. 1997.

[35] U.S. Department of Commerce, *1992 Census of Manufactures. Industry Series: Dairy Products.*

(table B-2). Between 1985 and 1995, output per butter and cheese plant nearly doubled, while output per ice cream plant increased by 66 percent.[36]

For butter and cheese, concentration is much higher at the intermediate handling stage than at the manufacturing stage. At the intermediate stage, companies such as Kraft buy cheese from other manufacturers; transform natural cheese into processed cheese products; and cut, package, and distribute both natural and processed cheese. In 1994 Kraft held a market share of over 50 percent of the U.S. processed and grated cheese market and a 30 percent share of the natural cheese market.[37] A similar situation exists for butter. Land O'Lakes produces butter; buys butter from other manufacturers; and cuts, packages, and distributes butter at the intermediate handling stage.

Geographical distribution of firms

The dairy sector is not concentrated in any one region—dairy farms and processors are located throughout the United States. However, in 1996 the Upper Midwest, Northeast, and West produced 75 percent of the nation's milk supply and held approximately the same percentage of dairy-cow inventories (table B-1), while the top five states—California, Wisconsin, New York, Pennsylvania, and Minnesota—combined to produce about one-half of the nation's milk supply and approximately the same percentage of its dairy products. In 1996 Wisconsin had the most dairy cows (about 1.5 million animals), followed by California (1.3 million animals) and New York (700,000 animals) (table B-3). However, because of regional differences in productivity, California was the largest milk producer in 1996, with almost 26 billion pounds, followed by Wisconsin, with 22 billion pounds. California became the nation's leading milk producing state in 1994, following rapid growth in productivity (production per cow increased by 7 percent between 1992 and 1996). Thus, there has been a slow trend in milk production away from the Upper Midwest and Northeast toward the West, particularly California.

Factors that have contributed to this geographical shift include population movements to the South and Southwest, as well as lower land and facilities costs, favorable climate, ample supplies of high-quality hay and forage, and availability of labor in the region.[38] Analysis of milk production values, costs, and returns shows that returns to management and risk per hundredweight are the highest in the Pacific, Southeast, and Southern Plains regions.[39]

Milk is a bulky and perishable product that is not conducive to long-distance shipment. Therefore, milk for fluid consumption, as well as most other dairy products that are more transportable than milk, is processed near the areas of fluid milk production. Thus the

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[36] USDA, NASS, *Dairy Products*, various issues.

[37] Manchester and Blayney, *Structure of Dairy Markets,* table 21, p. 29.

[38] USDA, ERS, "Dairy Policy to Build on Market Orientation," *Agricultural Outlook*, July 1995, p. 14.

[39] Outlaw and others, "Structure of the U.S. Dairy Farm Sector."

regional shift from the Upper Midwest and Northeast to the Southeast and West has also occurred in the dairy processing sector.

Employment, Productivity, and Wage Rates

Employment in the U.S. dairy industry fell from about 733,000 persons in 1992 to 650,000 in 1996.[40] This decline reflects the fact that dairy farms and processing plants are becoming increasingly automated as a result of technological advancements and extensive applications of research and development. These factors are expected to continue to reduce employment in the industry in the future. The overall decline in employment is largely due to a decline in employment at the farm level, where about 80 percent of the industry's employment is concentrated. Between 1992 and 1996 the number of dairy operations declined by about 44,000 (from 169,000 to 125,000) (table B-1); however, technology and economies of scale at the farm level have led to greater productivity and efficiency. For example, from 1992 to 1996 milk production per cow in the United States increased from 15,436 pounds to 16,523 pounds, or about 7 percent (table B-1). During the same period the average number of milk cows on U.S. farms declined from 9.8 million head to 9.3 million head, or 5 percent; however, total production of milk increased from about 151 billion pounds to 153 billion pounds, or 1 percent.

Employment in the processing segment of the dairy industry remained fairly constant between 1992 and 1996, in the range of 130,000-140,000 employees.[41] A small increase in the number of workers employed in cheese manufacturing was offset by a decline in workers employed in fluid milk processing (table B-4). Employment in the frozen dessert; butter; and dry, condensed, and evaporated dairy products industries was about the same for the period 1992-96. For fluid milk and cheese processing, wages represent about 4 percent of the total value of shipments, while wages represent about 8 percent of the value for frozen dairy products (table B-4). Hence, the dairy industry can be characterized as capital intensive.

Special Considerations in Relation to Production Costs

Like other producers of food, dairy-product producers are subject to strict health and sanitary regulations and have to contend with product liability.[42] In addition, the dairy industry is subject to various environmental regulations relating to waste disposal, ranging from manure disposal from dairy herds to whey disposal from cheese processing plants. Compliance with

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[40] Estimate based on U.S. Department of Commerce, *1992 Census of Manufactures. Industry Series: Dairy Products*; Milk Industry Foundation, *Milk Facts: 1996 Edition*; National Cheese Institute, *Cheese Facts*: *1996 Edition;* and International Ice Cream Association, *The Latest Scoop: 1996 Edition.*

[41] The main source of employment data for dairy processing is the Census of Manufactures. The most recent census data are for 1992. Results from the 1997 census are not yet available.

[42] Interview with George Walgrove, president, Maryland and Virginia Milk Producers Cooperative Association, Inc., Reston, VA, Sept. 1997.

these regulations adds to the costs of processing milk and manufacturing dairy products. Although data are not available on the expenditures by the dairy industry on environmental compliance, the totals are estimated to amount to hundreds of millions of dollars annually.

In recent years, regulation of farm-level dairy waste has been an important issue affecting dairy farming.[43] Runoff from dairy farms leading to increased concentrations of nitrites, phosphorus, and other pollutants in surface and ground water are of primary concern. In the late 1980s state regulatory agencies took legal action in Florida and Texas to regulate dairy farms as sources of pollution of streams, lakes, and reservoirs. Following these actions in Florida and Texas, the livestock industry nationwide became regulated as a point source polluting industry (as specified in the Federal Clean Water Act of 1972).[44] Compliance with the U.S. Environmental Protection Agency's regulations on a Confined Animal Feed Operation under the Clean Water Act imposes heavy costs on producers. For example, in 1993 compliance investment costs for dairies that had not previously invested in animal-waste containment facilities ranged from $7,000 for a 200-cow Texas dairy to $600,000 for a 1,500-cow Florida dairy.[45] Such investment costs are probably large enough to cause dairy owners to consider whether their operation is sufficiently profitable or of sufficient longevity to remain in dairying.[46]

The marketing of milk and dairy products in the United States is also subject to sanitary regulations of the U.S. Food and Drug Administration, U.S. Department of Health and Human Services, and the Animal and Plant Health Inspection Service (APHIS) of the U.S. Department of Agriculture. In addition, all states inspect milk production and processing of milk for fluid consumption and most of them inspect product processing. Some municipalities maintain health and sanitary regulations that are stricter than Federal or State requirements.

In the processing sector, profitability is highly dependent on the price of raw milk, which accounts for between one-half and three-quarters of production cost. So when the price of milk rises rapidly, as it did in the second and third quarters of 1996, processors spend additional millions of dollars to compete for their raw material (milk).

Vertical and Horizontal Integration

In the dairy sector, vertical links between various levels of the marketing system have been established. Firms vertically integrate in order to have access to ready supplies of products meeting required specifications. Integration is also a key method of price risk management, since price is typically written into contracts. Vertical integration in fluid milk is most significant between farmers and their cooperatives that bargain, perform services for

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[43] Joe L. Outlaw, Ronald D. Knutson, and Robert B. Schwart, Jr., "Dairy Waste Management Regulatory Policy," paper P-17 in series *Dairy Markets and Policy—Issues and Options*, Cornell University's Program on Dairy Markets and Policy, Sept. 1995, p. 1.

[44] Ibid.

[45] Ibid., p. 5.

[46] Ibid.

processors, and manufacture surplus fluid grade (Grade A) milk.[47] Supply contracts have also become prevalent between fluid milk processors and retailers of fluid milk, who require an assured supply of their private-label milk. There is also strong vertical integration between corporate food chains and their milk bottling facilities.[48] Many farmer-owned dairy cooperatives and independent processing plants market dairy products to grocery stores, producers of further processed foods (e.g., manufacturers of pizza), institutional users, and fast-food outlets. In addition, a small number of dairy farmers are completely vertically integrated and sell fluid milk, ice cream, and other dairy produce directly to retail consumers.

Vertical integration also characterizes the marketing systems for processed dairy products. These systems are similar except for an intermediate handling stage between manufacturing and retailing. For instance, many smaller butter and cheese manufacturers sell their output to intermediate handlers, who cut and package the products, brand and advertise in some cases, and supply retail outlets.[49] Larger companies, such as Kraft and Land O'Lakes, perform both the manufacturing and intermediate handling functions.[50] In addition, many cheese and butter cooperatives and investor-owned companies frequently vertically integrate manufacturing and the various intermediate functions such as packaging, branding, and physical distribution. Other examples of vertical integration include producer cooperatives that have vertically integrated into milk bottling, butter-powder manufacturing, and cheese manufacturing and food chains that have integrated backwards into fluid milk processing.

Many processing plants that purchase milk from farmer-owned cooperatives and from farmers that do not belong to cooperatives are owned by some of the world's largest multinational food processors. Typically these firms are highly horizontally integrated, producing or marketing (or both) a wide variety of dairy products and other foods, as well as a number of nonfood items.[51]

Marketing Methods and Distribution

The dairy sector processes and markets several major products, including fluid milk, cheese, butter, NDM, and ice cream, as well as many other minor products. In addition, cull cows and bulls from the dairy sector provide about 20 percent of all beef consumed.[52] Thus tracking the marketing system for all these products is highly complex.[53] About 80 percent of U.S. milk is produced by farmers that ship the milk to their farmer-owned cooperatives. About half the milk shipped to farmer-owned cooperatives is sold as raw milk to other

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[47] Grade A milk is produced under sanitary conditions that qualify it for fluid consumption.

[48] Interview with Brian Barth, plant manager, Fluid Dairy Division, Land O'Lakes, Woodbury, MN, Sept. 1997.

[49] Marion, *Organization and Performance of the U.S. Food System*, p. 118.

[50] Interviews with Paul Christ, vice president, Land O'Lakes, St. Paul, MN, Sept. 1997, and with Marcia Glenn, vice president, Kraft Foods, Glenview, IL, Sept. 1997.

[51] For example, Kraft Foods Inc. is part of the Philip Morris Company.

[52] USDA, NASS, *Livestock Slaughter, 1996 Summary*, Mar. 1997.

[53] Marion, *Organization and Performance of the U.S. Food System*, p. 118.

independent plants for processing; however, the remaining half is processed by the cooperatives into milk for fluid consumption or an array of other dairy products. Most of the remaining 20 percent of U.S. milk production is sold to independent processing plants by dairy farmers that do not belong to cooperatives. Once assembled from farms, milk is then processed into bottled milk and soft products (such as ice cream, yogurt, evaporated and condensed milk, and cottage cheese) by private dairy processors, food chains, or cooperatives and distributed to a variety of retail and food-service customers. A small amount of this milk is processed by the farmers into milk for fluid consumption or a number of other dairy foods, and marketed (often along with other farm-produced articles) through farmer-owned dairy stores.

Dairy marketing and distribution in the United States is dominated by cooperatives. Results of a USDA survey indicated that 264 dairy cooperatives handled 82 percent of the nation's milk at the first-handler level in 1992-93.[54] For 1997 that percentage is estimated to be above 85 percent.[55] The survey reported that the 18 percent of producer milk not sold through cooperatives was marketed by "independent" or "nonmember" dairy farmers. In terms of dairy-farm numbers, more than 100,000 of the 125,000 dairy farmers have a milk marketing cooperative affiliation. In 1993 dairy cooperatives' milk payments to farmers constituted 85 percent of the nation's cash receipts from milk production.[56] It is also estimated that 43 percent of processed dairy products were manufactured by cooperative-owned plants.[57]

Dairy cooperatives are for-profit corporations that operate at cost by allocating net margins back to their producer members on a patronage basis.[58] The structure of dairy cooperatives has reflected the same trends that have described dairy farms and processing plants in recent decades (i.e., fewer and larger). Between 1980 and 1995, the number of dairy cooperatives in the United States declined from 435 to 241.[59] Almost all the reduction in the number of dairy cooperatives is explained by merger-consolidation activities. At present, the top 25 U.S. dairy cooperatives (which are only 9 percent of the total number) market more than 60 percent of all producer milk.[60] Consolidation in the dairy industry continued in 1997 with the merger of 4 major dairy cooperatives (Mid-America Dairymen Inc., the southern region of Associated Milk Producers, Inc., Milk Marketing Inc., and Western Dairymen Cooperative Inc.) to form Dairy Farmers of America (DFA). DFA started operating in January 1998, and with 22,000

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[54] USDA, Cooperative Service, *Survey of Dairy Cooperatives*, 1993.

[55] Estimated by USITC staff from interviews with various industry and government sources.

[56] K. Charles Ling and Carolyn Betts Liebrand, "Vertical Integration Patterns of Dairy Cooperatives Reflect Changing Market," *Farmer Cooperatives*, Sept. 1996.

[57] Alden C. Manchester and Don P. Blayney, "The Structure of Dairy Markets—Effects of Deregulation," paper presented at first meeting of the NCR-188 Regional Information Exchange Group, Washington, DC, Apr. 1996, p. 2.

[58] Robert Jacobson and Robert Cropp, "Dairy Cooperatives and Their Role in the United States," paper M-9 in series *Dairy Markets and Policy—Issues and Options*, Cornell University's Program on Dairy Markets and Policy, Aug. 1995.

[59] Albert J. Ortego, Jr., "Market Implications of Changes in Dairy Cooperatives," presented at USDA's *Agricultural Outlook Forum, 1997*, Feb. 24-25, 1997.

[60] Jacobson and Cropp, "Dairy Cooperatives,"

members operating in 42 states produces 33 million pounds of milk annually—more than 21 percent of total U.S. milk production.

The 264 dairy cooperatives in the United States vary widely in size, marketing functions pursued, and impact in the market served. Several of the smallest dairy cooperatives have fewer than 50 members, while one large regional cooperative has over 16,000 producer members. Some cooperatives are essentially bargaining associations that maintain an office and may offer members field services. Others have extensive facilities for handling and manufacturing reserve milk through processing and marketing operations. Similarly, some dairy cooperatives do not have enough control over the supply of milk in their market to have any bargaining power. Others have substantial market power and are able to implement effective and coordinated marketing-bargaining programs.[61]

Dairy cooperatives are also significant producers of processed dairy products. Cooperatives produce about 13 percent of packaged fluid milk, 65 percent of butter, 81 percent of dry milk products, 43 percent of cheese, and 10 percent of ice cream. Cooperatives involved in processing some or all of their members' milk include both large and small cooperatives. However, the large cooperatives are very dominant in these activities. The largest 20 cooperatives produce about 97 percent of all butter, dry milk products, and natural cheeses produced by U.S. cooperatives.[62]

Dairy Pricing and U.S. Government Programs

Milk is marketed in the United States under a complex system of Federal, State, and local laws and regulations.[63] The two major Federal programs affecting the marketing of milk and dairy products are the dairy price-support program, established under the Agricultural Act of 1949,[64] as amended, and the Federal Milk Marketing Orders, provided for under the Agriculture Marketing Agreement Act of 1937,[65] as amended.

Price supports

The U.S. Government supports dairy-farm incomes through a system of price supports for milk and manufactured products. This support is achieved by having a government intervention agency, the CCC, purchase any domestic surpluses of butter, cheddar cheese, and

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[61] Ibid.

[62] K. Charles Ling and Carolyn Betts Liebrand, *Marketing Operations of Dairy Cooperatives*, ACS research report 133, USDA, ACS, 1994, p. 31.

[63] For a detailed history of U.S. dairy programs, see Don P. Blayney, James J. Miller, and Richard P. Stillman, *Dairy. Background for 1995 Farm Legislation*, USDA, ERS, Agricultural Economic Report No. 705, Apr. 1995, pp. 11-21.

[64] 63 Stat. 1051.

[65] 50 Stat. 246.

NDM at an agreed price.[66] Since the early 1980s, the level of price support has declined,[67] and the extent to which the Federal Government should continue supporting dairy prices was the subject of considerable debate leading up to the FAIR Act of 1996.[68]

Annual purchases and utilization of butter, cheese, and NDM by the CCC during 1992-96 are shown in table B-5. In recent years the purchases of butter and NDM have declined substantially, while the purchases of cheese have remained fairly stable. In 1996 there were no Federal Government purchases of butter, reflecting the increased demand for butter and stronger market prices. The dairy products acquired by the Government under the U.S. price-support programs, like the products purchased under dairy-support programs in several other countries, are disposed of predominantly through domestic welfare outlets and sales or donation abroad. Domestic disposal has been to welfare recipients, the school lunch program, military and veterans' hospitals, and penal and correctional institutions. Disposal abroad has mostly been through government-to-government sales at world prices, sales to the U.S. military overseas in place of supplies from foreign sources, and donations mostly under the Agricultural Trade Development and Assistance Act of 1954. In recent years CCC butter stocks went mainly to domestic donations and export sales, while cheese is mainly disposed of through domestic donations (table B-5). Disposal of NDM is largely through export sales.

Federal milk marketing orders (FMMOs)

The FMMOs represent an agreement between the Secretary of Agriculture, producers, and handlers of Grade A milk in a defined geographic region, with the objective of ensuring an adequate supply of milk for fluid use and establishing orderly marketing conditions.[69] The major provisions of such marketing orders are as follows: (1) classified pricing, whereby milk is priced according to its end use, and (2) marketwide pooling, whereby receipts from handlers are paid into a pool and an average price is paid back to producers. Classified prices represent minimum prices that handlers must pay for milk based on its use, although supply and demand factors often require handlers to pay above these minimum prices.

Under the system of classified pricing, Grade A milk for fluid consumption (beverage purposes) is designated as Class I milk, which has the first call on the nation's supply of milk and sells at a premium price. Grade A milk used for manufacturing semiperishable products such as ice cream, cottage cheese, and yogurt is designated as Class II milk and sells at a lower price than Grade I milk. Class III milk is Grade A milk used for manufacturing storable products (butter, cheese, and NDM). It has the lowest classified price because it represents

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[66] Blayney, Miller, and Stillman, *Dairy,* pp. 11-14.

[67] Ibid., p. 12.

[68] International Policy Council on Agriculture, Food, and Trade, *Dairy Policy in the Post-Uruguay Round Era,* position paper No. 2, Aug. 1996, p. 15.

[69] Grade A milk is produced under sanitary conditions that ensure its safety for fluid consumption. Only Grade A milk is regulated under Federal milk marketing orders.

a price for surplus milk (i.e., surplus to the bottling needs of a local market).[70] In some orders, there is a Class IIIa price for milk used in the manufacture of NDM, which is lower than Class III price for milk used for butter and cheese manufacturing. Grade B milk is manufacturing grade, which does not meet the fluid grade standards and less stringent standards generally apply.

Until June 1, 1995, the basis of the class prices in the Federal milk marketing orders was the Minnesota and Wisconsin price (commonly referred to as the M-W price), which was the average price paid for manufacturing-grade milk (Grade B milk) in the two-state area. The minimum Class III price was set equal to the M-W price and was generally the same in all orders. The minimum Class I price in each order was the M-W price for the second previous month plus a fixed Class I differential, which was different in each order and generally increased with distance from the Minnesota-Wisconsin production area. Class I differentials are meant to reflect the additional costs associated with producing and marketing milk for the fluid market, such as sanitary requirements, balancing, and transportation costs.[71]

On June 1, 1995, the M-W price was replaced by the basic formula price (BFP) as the price for manufacturing-grade milk under the all Federal marketing orders.[72] The BFP is computed each month in two parts.[73] In the first component, a base-month price is computed using reports from about 100 plants in Wisconsin and 70 plants in Minnesota during a month. These plants represent about 80 percent of all manufacturing-grade (Grade B) milk sold in these states. In the second component, because it takes a month to derive the base price from the survey results, a butter-powder and cheese product formula is used in the BFP to adjust the base-month survey price. Through the butter-powder and cheese product formula, the new BFP recognizes changes in the value of milk used to manufacture cheddar cheese, butter, and NDM that occurred between the survey (preceding) month and the current month. These changes are computed and then weighted by production. Since cheddar cheese production accounts for the bulk of the milk used in manufacturing in the two-state area, changes in cheddar cheese prices account for most of the adjustment factor in the BFP. The change in commodity price is then added to the base-month price calculated for the preceding month.[74] Since June 1, 1995, the Class II milk price has been equal to the BFP lagged 2 months plus a Class II differential equal to 30 cents per hundredweight (cwt).[75]

Inasmuch as the USDA establishes purchase prices for cheddar cheese, butter, and NDM, changes in the support levels for milk and the accompanying changes in the purchase price of the three products materially influence the price of milk in the area where the BFP price is set.

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[70] Bailey, *Marketing and Pricing*, p. 120.

[71] Blayney, Miller, and Stillman, *Dairy,* p. 18.

[72] "How Your Milk Price is Built," *Hoard's Dairyman*, Feb. 10, 1997, p. 79.

[73] Bailey, *Marketing and Pricing*, p. 122.

[74] A numerical example of these calculations can be found in "How Your Milk Price is Built," *Hoard's Dairyman*, Feb. 10, 1997, p. 79.

[75] Bailey, *Marketing and Pricing*, p. 126. Further details on dairy pricing programs can be found in the *Federal Register:* Department of Agriculture, Agricultural Marketing Service, *Milk in the New England and Other Market Areas; Decision on Proposed Amendments to Tentative Marketing Agreements and Orders; Proposed Rule*, Feb. 7, 1995.

As pointed out above, the BFP price is used as a base price for Class III Grade A milk. Changes in the price of Class II and Class I milk occur with changes in the price of Class III milk. Thus the purchase prices for the three products established under the dairy price-support program of the USDA, in effect, underlie the price of all milk produced in the United States.

Under Federal milk marketing orders, all handlers in an order are required to pay at least the minimum classified prices for milk into a marketwide pool. The order administrator then blends the proceeds of the pool according to use and pays out a uniform price to all producers who marketed their milk in the order. This price is referred to as the "uniform price," since all producers receive the same price (before hauling costs and zone charges are accounted for) regardless of the market. So even if farmer A's milk went to a cheese plant and farmer B's milk went to a fluid plant, both farmers would receive the same price. This is a critical concept, since it ensures that all producers equitably share in the benefits of the higher-valued fluid markets.[76]

Dairy trade programs

The Dairy Export Incentive Program (DEIP)[77] provides export incentives to U.S. exporters of dairy products, allowing them to meet prevailing world prices for targeted products and destinations.[78] Under the program, the USDA pays cash to exporters as bonuses, allowing them to sell certain U.S. dairy products at prices lower than the exporters' cost of acquiring them. The major objectives of the program are as follows: to develop export markets for dairy products where U.S. producers are not competitive because of the presence of subsidized products from other countries (particularly the European Union (EU)), to encourage serious negotiations on agricultural trade problems, and to expand U.S. exports.[79]

Under DEIP, domestic and foreign private firms qualify for export incentives by submitting bids to the USDA. These bids typically equal a large percentage of the difference between the U.S. price and the world price for milk powder, butterfat, and certain cheeses (Cheddar, mozzarella, Gouda, cream, and processed American cheese). The USDA awards the DEIP export incentives to qualified low bidders.[80]

DEIP was little-used in the late 1980s and early 1990s; however, it became an important supplement to the USDA's dairy price-support program beginning in 1992. The program was used to export dairy products in the amount of 155,487 tons in 1992, rising to 174,160 tons

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[76] Bailey, *Marketing and Pricing*, p. 127.

[77] 15 USC 713a-14.

[78] William D. Dobson and Heidi Knoop, "Economic Impacts of the Dairy Export Incentive Program During 1992-94 and Prospects for the Program Under the GATT Agreement," Babcock Institute Discussion Paper No. 94-3, University of Wisconsin, 1994.

[79] Bailey, *Marketing and Pricing*, p. 236.

[80] William D. Dobson, "Markets for U.S. Dairy Exports," paper M-11 in series *Dairy Markets and Policy—Issues and Options*, Cornell University's Program on Dairy Markets and Policy, Sept. 1995.

in 1994 and 163,005 tons in 1995. As domestic supplies tightened in 1996, shipments under the program dropped sharply to only 50,068 tons. Annual budget outlays for export assistance under the DEIP averaged $104 million during 1992-1996, with about 71 percent of expenditures supporting sales of NDM (table B-6).

Allocation of DEIP expenditures was concentrated among a few major firms during 1992-1996. For example, in 1996 the top five recipient firms received almost 80 percent of all DEIP expenditures. And, with a few exceptions, major recipients have been U.S. subsidiaries of foreign firms. For example, in 1996 the two largest recipients were Hoogwegt U.S., Inc. (Netherlands), which received 31 percent of DEIP expenditures, and M.E. Franks (owned by Ecoval of Belgium), which received 27 percent. Luxor California Exports Corporation is the largest U.S. recipient of DEIP funds, with a share of about 8 percent in 1996. DEIP exports increase U.S. milk and dairy product prices whether the exports are made by U.S. or foreign firms. However, a General Accounting Office (GAO) study reported that if foreign firms do most of the exporting under the DEIP, U.S. firms will get little exporting experience.[81]

Some industry groups have been calling for the use of the Food for Progress Program[82] to help move dairy products off the domestic market. Under the program, the USDA provides commodities on a grant or credit basis to foreign countries that implement democratic and economic policy reforms. In recent years, funds for this program have been used primarily to provide food aid to the republics of the Former Soviet Union (FSU). Because the Food for Progress Program focuses on private-sector agricultural development in countries that are more advanced than the very poor nations that are recipients under Title II of the Food for Peace Program,[83] the food assistance may be provided not only through foreign governments, private voluntary organizations, and cooperatives but also through agricultural associations and private entities. Funds under the Food for Progress Program are not earmarked in appropriations bills, but rather the Secretary of Agriculture may use either CCC commodities or funds to provide commodity grants or P.L. 480 Title I funds to provide concessional loans.[84]

The USDA administers export credit guarantee programs to help promote U.S. agricultural exports, including dairy exports. Through the Export Credit Guarantee Program (GSM-102) and the International Export Credit Guarantee Program (GSM-103),[85] the CCC guarantees credit extended by the U.S. private banking sector (or occasionally by the U.S. exporter) to approved foreign banks to pay for products sold to foreign buyers. The FAIR Act sets annual program levels for GSM-102 and GSM-103 at $5.5 billion through 2002 and allows flexibility in how much is available for each program. Exporters may apply for credit guarantees on a first-come, first-served basis to cover sales of several dairy products,

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[81] General Accounting Office, *Dairy Industry. Potential for and Barriers to Market Development*, report No. GAO/RCED-94-19, Dec. 1993.

[82] Public Law 101-624, 104 Stat. 3663.

[83] Public Law 89-808, Stat. 1526.

[84] Shipments under this program are not counted toward the export subsidy commitments in the URA.

[85] 7 U.S.C. 5622.

including cheese, whey powder and whey protein concentrate, lactose, butter, butteroil, ghee, anhydrous milkfat, NDM and wholemilk powder, fluid milk, and nonsweetened condensed milk.[86] In recent years, however, this program has not been widely used to assist exports of dairy products.

The USDA's Market Access Program (MAP)[87] uses funds from the CCC to help U.S. producers, exporters, private companies, and other trade organizations finance promotional activities for U.S. agricultural products. MAP encourages the development, maintenance, and expansion of commercial export markets for agricultural commodities. Activities financed include consumer promotions, market research, technical assistance, and trade servicing.[88] The U.S. Dairy Export Council is a recipient of MAP funds. The mission of this organization is to assist U.S. dairy product suppliers in increasing the volume and value of their exports.[89]

The Federal Agriculture Improvement and Reform (FAIR) Act of 1996

The FAIR Act of 1996, approved by Congress in late March 1996 and signed by President Clinton on April 4, 1996, made major changes to the U.S. dairy policy—the biggest changes since 1933.[90] This Act reduces, and eventually eliminates, the program for supporting the price of milk through the purchase of cheese, butter, and NDM at the rates per cwt for milk (containing 3.67 percent butterfat) as shown in the tabulation below.[91] At the end of 1999, there will be no provisions for Government purchases to support milk prices, and price-support authority will be eliminated until 2002 when permanent parity-priced provisions become effective.

Calendar year	Dollars/cwt
1996	10.35
1997	10.20
1998	10.05
1999	9.90
2000 and beyond	Not applicable

[86] *The Cheese Reporter*, October 19, 1997, p. 9.

[87] Public Law 104-127, 110 Stat. 888, 967; 7 U.S.C. 5623.

[88] Karen Z. Ackerman, Mark E. Smith, and Nydia R. Suarez, *Agricultural Export Programs. Background for 1995 Farm Legislation*, USDA, ERS, Agricultural Economic Report No. 716, June 1995.

[89] United States Dairy Export Council, "About USDEC," found at Internet address http://www.usdec.org, retrieved Nov. 20, 1997.

[90] Ronald D. Knutson, Robert Romain, and David P. Anderson, "Farm Level Consequences of Canadian and U.S. Dairy Policies," Agricultural and Food Policy Center (AFPC) Working Paper 97-8, AFPC, Department of Agricultural Economics, Texas A&M University, July 1997, p. 2.

[91] USDA, ERS, "Provisions of the Federal Agriculture Improvement and Reform Act of 1996," Agricultural Information Bulletin No. 729, p. 13.

The 1996 Act provides for the establishment, starting in year 2000, of a recourse loan program aimed at providing seasonal price stabilization, rather than price support. The legislation requires that recourse loans be made available to commercial processors to assist them in the management of inventories through temporary storage of eligible dairy products. The resource loan rate will be established at a milk equivalent value of $9.90 per cwt, and the eligible products will be cheddar cheese, butter, and NDM (the same as for the price support program).[92]

There are no formal controls on the volume of U.S. milk production; however, in recent years price-support levels have changed to discourage surplus milkfat production by reducing the CCC support price for butter, which was offset by an increase in NDM support prices.[93] These moves helped to bring the U.S. butter market back into closer balance. However, the higher NDM prices led to an increase in supplies relative to demand, and as a consequence, the United States increasingly targeted NDM for export under the DEIP. Previously, a levy (assessment) of $0.1125 per cwt was imposed on milk producers as an indirect means of restricting production increases. Assessments were refunded to producers who did not increase their milk marketing in a given year. However, under the FAIR Act, these assessments were eliminated.[94]

The FAIR Act also modifies the FMMO system used to set regional prices for fluid milk.[95] Under provisions of the 1996 FAIR Act, the USDA's Agricultural Marketing Service (AMS) is required to (1) consolidate the number of orders from the present 33 to not less than 10 and no more than 14, (2) allow the California order to enter the FMMO system as a separate order if the producers in California choose to enter the Federal system, (3) announce the specific proposed amendments to the FMMO system within 2 years of the enactment of the Act, (4) implement final amendments to the FMMO system within 3 years of the passage of the Act, and (5) submit a report to Congress by April 1997 on progress made and recommendations for change.[96]

In response to the desire of New England producers to be able to set their own prices, the FAIR Act set provisions for establishment of the Northeast Interstate Dairy Compact.[97] Under the legislation, if the Secretary of Agriculture finds a compelling public interest in the area, the New England region will be granted authority to enter into a Dairy Compact. The Compact will allow New England states to place an additional over-order charge on Class I

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[92] Ibid., p. 14.

[93] For example, in January 1990 the support prices for butter and NDM were 109.25 and 79 cents per pound, respectively. In July 1993 the support prices for butter and NDM were 65 and 103.4 cents per pound, respectively.

[94] USDA, "Provisions of the Federal Agriculture Improvement and Reform Act of 1996," p. 13.

[95] Ibid., p. 14.

[96] For discussion of how these changes might affect the U.S. dairy industry, see John Siebert, Mark Stephenson, and David Anderson, "Milk Marketing Without Federal Orders," *Choices*, third quarter, 1997, pp. 37-41.

[97] International Policy Council on Agriculture, Food, and Trade, *Dairy Policy,* p. 15.

milk marketed in the Compact region. The Compact would terminate with the completion of price and order reform authorized in the Act.

Legal challenges to the establishment of the Compact were brought by the Milk Industry Foundation (MIF) in an effort to stop the Compact from raising prices in New England. The MIF filed suit against the Secretary of Agriculture, arguing that there was no "compelling public interest" for the Compact's existence. On June 25, 1997, a U.S. district court judge ruled that the Compact could go forward with its plan to raise prices paid to New England farmers for Class I milk to $16.94 per hundredweight.[98]

Under the 1996 FAIR Act, DEIP is extended to 2002. In addition to requirements under the original provisions of the 1985 Act, the Secretary of Agriculture is now also required to operate the program to ensure the maximum amount of exports that are consistent with obligations of the United States under the URA.[99] Under the 1996 FAIR Act, the Secretary of Agriculture is required to assist the U.S. dairy industry in establishing and maintaining one or more export trading companies (ETCs) under the Export Trading Company Act of 1982. The purpose of this act is to facilitate export market development and the export of U.S. dairy products.[100] The Secretary is also directed to perform a study of the potential impact of additional access for cheese imports under the URA on U.S. milk prices, dairy producer income, and the cost of Federal dairy programs. These provisions represent significant reform of the U.S. dairy industry and move the dairy industry toward a more competitive international position over the course of the legislation.[101] Thus U.S. dairy policy is being modernized and appears to be moving in the direction of less government intervention.[102]

Research and Development

The rapid growth in industry productivity over the last 20 years has been largely the result of research and advances in technology development. In particular, improvements in breeding and genetics have taken place, as well as the development of modern milking parlors with such highly technical equipment as automatic take-off milking machines. Further, highly mechanized and computerized feeding and record-keeping equipment and advances in collecting and hauling milk have contributed to dairy farm efficiencies. In the dairy-processing sector, research and development is a requirement for firms to stay competitive. Several types of computerized and other highly automated and continuous processing equipment have been developed, including developments in automatic packaging, which have

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[98] Milk Industry Foundation, news release, June 25, 1997.

[99] USDA, "Provisions of the Federal Agriculture Improvement and Reform Act of 1996," p. 15.

[100] Comments of Christopher Goldthwait, general sales manager, USDA, FAS, at a speech to the American Dairy Products Institute, May 1997. Reported in *The Cheese Reporter*, vol. 121, No. 45, May 23, 1997.

[101] Knutson, Romain, and Anderson, "Farm Level Consequences of Canadian and U.S. Dairy Policy."

[102] Ibid.

increased productivities and efficiencies at the processing plant level. Expenditures on research and development (R&D) in the dairy sector are estimated to amount to hundreds of millions of dollars annually. The Monsanto Company is reported to have spent some $300 million in research and development alone on genetically modified bovine somatotropin (bST) (a milk-producing stimulant injected into dairy cows).

New filtration technologies such as ultra filtration (UF) and reverse osmosis (RO) likely will have a profound impact on pricing and marketing of dairy products in the future.[103] These techniques involve filtering milk through membranes to separate various milk components. For example, UF of skim milk can be used to remove milk proteins (both casein proteins and serum proteins) in much the same way that separation of wholemilk removes the butterfat. Once separated, the milk components can be used to produce other dairy products with enhanced nutritional characteristics. So for example, while today fluid milk can be purchased with different fat contents (whole, 2 percent, 1 percent, and skim), in the future milk will be available with different protein contents (for example, 10 percent protein, instead of the 7 percent in most milk products).

Reverse osmosis (RO) is a method to condense milk. It involves filtration of milk through a membrane with very small pore size so that only water can pass through and all milk solids remain behind. With this technology, milk can be concentrated (typically four times) without changing its chemical composition, while the concentrated milk can then be reconstituted to its original form by simply adding water. The significance of this technology is that concentrated milk can be shipped cheaply long distances and therefore producers are no longer reliant on local markets. This has the potential to increase competition among regions and result in a more efficient system of milk and dairy product pricing.

Another technology is called "Modified Atmosphere Processing." With this process, carbon dioxide is forced into dairy products, which inhibits the growth of harmful bacteria and thereby reduces perishability. This technology has begun to be used on some soft dairy products (for example, the shelf life of cottage cheese can be increased to 80 days with this technology) and is being developed for use in beverage milk products. Again, this technology likely will make transportation easier and cheaper. A steam injection system has also been developed that increases efficiency in producing ultra-high temperature milk and has been introduced by some large dairy companies.[104]

Research is also being conducted by food scientists to improve the versatility and quality of dairy products. For example, research is continuing on how to take the fat out of cheese and yet keep it tasty and functional as a food ingredient. Research is also taking place on how to expand the use of milkfat, including butter, as a value-added food ingredient and how to develop a base of technology for modification and fractionation of milkfat. Much research

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[103] Comments by David Barbano, Cornell University, at workshop, "Envisioning an Industry Without Federal Orders," Las Vegas, NV, October 23-24, 1997.

[104] "Long Live the Cream!," *Dairy Foods*, Sept. 1997, pp. 59-63.

is also going into utilization of whey, which (up until fairly recently) was considered a waste product of cheese making.[105]

The dairy industry continues to research and develop new products such as ultra-heat treated milk, lowfat yogurt, reduced-fat foods, various snack foods, and widely accepted ice cream novelties. Dairy products are also being used to produce imitation foods. For example, calcium caseinate—a milk protein and by-product of cheese production—is being combined with flavorings to produce imitation seafood, including crab, lobster, and shrimp.[106]

Extent of Globalization in Industry

U.S. dairy farms that produce milk and farmer-owned cooperatives are not integrated with foreign firms. However, some processing plants and operations that market dairy products are owned by some of the world's largest multinationals, a few of which have been involved with joint ventures in dairy products in other countries. Normally these multinationals limit marketing of foreign-produced dairy products to the countries or areas in which the products are produced in order to not jeopardize their domestic suppliers. Overall, however, the level of international investments in the U.S. dairy industry is minimal.

Nestlé, headquartered in Switzerland, made major inroads into the world dairy market with the purchase in 1985 of The Carnation Company, a major U.S. dairy products firm. Since that time, Nestlé, the largest food conglomerate in the world, has continued to increase its share of the world dairy market through acquisitions and restructuring. Nestlé is now the world's largest multinational firm that processes and markets dairy products.

Globalization of the dairy industry is evidenced by several dairy cooperatives and companies developing a network of overseas offices. For example, Land O'Lakes has an office in Warsaw, Poland, aimed at increasing sales to Central Europe. Also, the New Zealand Dairy Board (NZDB), the sole exporter of dairy products from New Zealand, has over 100 major subsidiaries throughout the world that are involved in either marketing, distribution, processing, or financing dairy products.[107] In 1996 the NZDB purchased Mexico's Noche Buena, a cheese manufacturer and marketer, while it formed a joint venture company in China to pack milk powder and to manufacture cheese. In the same year it also expanded its joint-venture operations in Venezuela and purchased the cut-and-wrap business of Manassen Foods in Australia.

Several changes in consumption patterns for dairy products are taking place in the market that are affecting the types of products available and the manner in which products are being marketed. The "globalization" of products through brands is an increasingly important facet

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[105] Wisconsin Center for Dairy Research, *Annual Report*, Madison, WI, 1996.
[106] *The Food Institute Report*, Oct. 13, 1997, p. 7.
[107] New Zealand Dairy Board, *Annual Report 1996*, Wellington, New Zealand.

of the world dairy marketplace.[108] Consumers are attracted to brands because they have known characteristics and represent a known quality. A feature of international brands is that through distinctive design and packaging, they are instantly recognizable, even to someone who does not speak the language of the country in which the products are being sold. Kraft's Philadelphia Cream Cheese and Yoplait yogurts are examples of internationally branded dairy products. In New Zealand, 25 percent of the value of its dairy exports come from branded products geared to a specific market or group of consumers. For example, the NZDB's Jental is a low-lactose milk powder developed for the large lactose-intolerant population in Southeast Asia.

U.S. MARKET

Consumer Characteristics and Factors Affecting Demand

Characteristics of Consumers

The principal U.S. purchasers of dairy products are households, restaurants, and other institutions; producers of foods such as bakery products, pizzas, and ready-to-eat microwaveable packaged foods; and the USDA. These purchasers are located throughout the United States. A 1997 survey by Dairy Management Inc. (DMI) provided several details on the characteristics of consumers of different dairy products.[109] For example, children under the age of 18 represent only 26 percent of the population but drink 46 percent of fluid milk volume. The study found that as children grow older, parental control over diet decreases, and they tend to consume other beverages, such as sodas and juices. Adults choose milk based primarily on routine habit. Cheese consumption is also concentrated among certain groups of consumers, with 44 percent of households purchasing 83 percent of in-home consumption (in-home consumption accounts for 69 percent of all cheese volume).[110] While milk and cheese are consumed by large portions of the population, butter users represent a much smaller group. The survey found that roughly 10 percent of the population consumes almost one-half of all butter.

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[108] Michael Griffin, "World Dairy Situation: Changes and Trends," Food and Agricultural Organization Report, Rome, Apr. 1997.

[109] The study involved a year-long study of 4,633 individuals and 1,476 households and is a highly comprehensive marketing study of dairy consumers. The results will be used by the dairy industry to identify which segments of the population are most likely to increase purchases of dairy products and how to motivate consumers to buy more. For further details, see "DMI Study Finds Key to Dairy Product Demand," *Hoard's Dairyman*, June 1997, p. 455.

[110] Ibid.

Food service organizations such as restaurant chains have an important role in the consumption of dairy products. In the United States, roughly one-half of all ice cream sales and one-third of cheese sales are made through the food service sector, compared to less than 10 percent for fluid milk.[111] In other countries, the main growth in food expenditures is in the area of food eaten outside the home, while for meals eaten in the home there is more emphasis on prepared dishes and snack foods. Dairy products are, however, adapting to these changes. For example, standard packaging of milk in liter and half-liter containers is well-adapted to home consumption.[112]

One highly visible manifestation of the growth in eating outside the home is the fast-food industry. Of these types of restaurants, those specializing in pizza are major consumers of dairy products. Hamburger chains are also important users of cheese, milk, and whey powder.[113] One effect of the growth of fast-food chains is that dairy products have been introduced, and enjoyed, in countries where they have not previously formed part of the national cuisine. The spread of fast-food chains in developing countries may have contributed to the increase in demand for cheese among consumers.[114] Recent statistics for many Southeast Asian countries show strong growth in imports of mozzarella and sliced cheese, products commonly consumed through fast-food chains.[115]

Another important trend in the dairy-foods industry is the increasing level of market segmentation and the need to meet a wide array of consumer demands. Manufacturers are increasingly identifying the demand characteristics of specific segments of the consuming population and tailoring products accordingly. For example, today milk can be purchased in a multitude of fat combinations, enriched or flavored in varying ways, with each product aimed at distinct sections of the market, such as pregnant women, toddlers, children, adolescents, dieters, active adults, and retirees. This segmentation and divergence of demands is also the case for other dairy products, including butter, yogurt, cheese, and desserts. [116]

Factors Affecting Demand

At the retail level, changes in consumer incomes and retail prices for dairy products relative to other foods are the principal factors influencing the demand for dairy products.[117] Other factors that may affect per-capita consumption include advertising, promotion, concern about health and nutrition, changes in demographics, and government donations. However, these

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[111] Unpublished International Dairy Foods Association estimates.

[112] Griffin, "World Dairy Situation."

[113] For example, McDonald's in Australia uses 1 kilogram of cheese for every 4 kilograms of beef.

[114] Griffin, "World Dairy Situation."

[115] For additional information, see U.S. Dairy Export Council, "Fast-food expected to speed exports," *Export Profile*, vol. 7, No. 1, Mar. 1997.

[116] Griffin, "World Dairy Situation."

[117] R.C. Haidacher, J.R. Blaylock, and L.H. Myers, *Consumer Demand for Dairy Products*, USDA, ERS, Agricultural Economic Report No. 586, Mar. 1988, p. 7.

factors are of lesser importance than the effects of changes in relative prices and incomes.[118] At the processing level, demand is influenced more by price, availability and consistency of adequate supply, and product quality.

An empirical study of demand for dairy products by the USDA found that increases in per-capita income led to increases in consumption for some products and decreases for others.[119] USDA estimated the income elasticity of demand for fluid milk at negative 0.22 (indicating for a 10 percent increase in income, demand for fluid milk declines 2.2 percent),[120] while the income elasticity for evaporated, condensed, and dry milk was negative 0.27. In contrast, income growth was found to have a positive impact on the demand for cheese, with an income elasticity of positive 0.59. The USDA study also found a negative relationship between changes in retail prices and changes in consumption. For example, a 10 percent increase in the price of fluid milk led to a 2.6 percent decline in demand, while a similar rise in the price of cheese led to a 3.3 percent drop in its demand. The study found that the demand for all dairy products was inelastic with respect to both price and income, indicating that consumers are fairly unresponsive to changes in these variables, perhaps because there are few substitutes for dairy products.[121] These results are consistent with those of a 1995 study by the National Milk Producers Federation.[122]

At the retail level, demand is influenced by consumer demographic factors, which include age, household size, race, and region.[123] As mentioned above, children and young adults are the highest per-capita consumers of milk, so that age distribution appears to be the primary change factor. The decreasing proportion of the U.S. population in the under-forty age group as the year 2000 approaches may indicate a decline in fluid milk consumption in the future. Region is becoming another factor in consumption patterns for milk and dairy products, particularly as the West and South are projected to have growing shares of the U.S. population compared with the Northeast and North Central regions. Other demographic factors influencing demand are increased preferences for certain nontraditional styles or kinds of foods, the number of two-income families, and the number of women in the labor force.[124]

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[118] Robert E. Jacobson and Joe L. Outlaw, "Dairy Product Consumption and Demand," paper M-3 in series *Dairy Markets and Policy—Issues and Options*, Cornell University's Program on Dairy Markets and Policy, May 1995.

[119] Haidacher, Blaylock, and Myers, *Consumer Demand for Dairy Products*, p. 7.

[120] According to Jacobson and Outlaw, the negative income elasticity for fluid milk may reflect changes in tastes and preferences over time.

[121] The demand for dairy products at the aggregate market level is inelastic. However, because of the strength of market competition at the retail level, demand for dairy products at the individual firm level is elastic. Comments by Paul Christ, Land O'Lakes, at workshop "Envisioning an Industry Without Federal Orders," Las Vegas, NV, October 23-24, 1997.

[122] National Milk Producers Federation, "Trends in U.S. Dairy Demand," *Dairy Market Report*, produced for Dairy Management Inc. by the National Milk Producers Federation, Feb. 1995.

[123] Jacobson and Outlaw, "Dairy Product Consumption and Demand."

[124] Ibid.

In recent years, consumer demand for dairy products has been increasingly influenced by concerns about health and nutrition (such as an increasing demand for low-fat products like yogurt). Mostly because of price and health concerns, dairy products have faced increasing competition from nondairy products in several uses. Notable shifts in U.S. demand for dairy products include the long-term substitution of margarine for butter. Also, vegetable oil-based coffee whiteners and whipped toppings have increasingly replaced cream, while vegetable oil-based imitation milk has made only slight inroads into the fluid milk market.[125]

Consumers are increasingly interested in the quality and health benefits of what they eat. Milk and milk products generally enjoy a positive image both in terms of quality and health benefits, while butter and dairy fat have fared less well.[126] There has been a trend toward adding additional elements, such as mineral- and vitamin-enriched milk, and the use of "organic" or "biological" fruit for yogurt flavoring. In spite of the increasing health consciousness of consumers, a counter trend toward full-tasting products is observed. For example, in the United States, production of full-fat ice cream began to increase in the early 1990s, after many years of decline, while the reverse trend has been seen for low-fat ice cream.[127]

In 1983 Congress passed the Dairy and Tobacco Adjustment Act, which authorized a national program for dairy product promotion, research, and nutrition education as part of a comprehensive strategy to increase human consumption of milk and dairy products and to reduce surpluses.[128] Under the law, a 15 cents per hundredweight check-off is required on all milk marketed in the United States. As of March 1994, research and promotion activities were undertaken by Dairy Management Inc. (DMI), an amalgamation of the former National Dairy Promotion and Research Board and the United Dairy Industry Association that is responsible for development and execution of all national marketing programs for milk, cheese, butter, and frozen desserts paid for by check-off dollars. DMI is also responsible for product research and development, nutrition education, public relations, market research, and development of export markets. In 1996 DMI's budget was about $78 million, of which $51 million was spent on advertising and promotion, $11 million on dairy foods and nutrition research, $7 million on public relations and nutrition education, $5 million on market and economic research, and $4 million on export enhancement.[129]

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[125] USDA, *Dairy Products*, various issues.

[126] Griffin, "World Dairy Situation."

[127] Ibid.

[128] Bailey, *Marketing and Pricing*, p. 56.

[129] USDA, *Report to Congress on the National Dairy Promotion and Research Program, and the National Fluid Milk Processor Promotion Program*, July 1997, p. 9.

Consumption

Consumption Trends

During the period 1992-96, there was steady growth in the consumption of most dairy products (table B-7). Factors affecting per-capita consumption in this period included declining real retail prices, growing disposable income and employment, and effective promotion programs. Domestic consumption of butter increased from 943 million pounds in 1992 to 1,138 million pounds in 1996 (an increase of more than 20 percent), in spite of reduced demand for full-fat formulations of dairy products.[130] On a per-capita basis, butter consumption increased from 3.7 pounds in 1992 to 4.3 pounds in 1996 (an increase of 16 percent) (table B-8). This represents a reverse of the trend away from butter experienced in the 1980s. The increase in per-capita consumption of more than 10 percent between 1992 and 1994 can be explained partly by the sharp decline in butter prices during these years.[131]

Cheese sales continued to be strong, growing 11 percent between 1992 and 1996. In 1996, consumption of American cheese was 3.2 billion pounds, or 12.1 pounds per-capita, while consumption of other-than-American cheese was 4.2 billion pounds, or 15.8 pounds per-capita (tables B-7 and B-8). This growth can be associated with higher per-capita incomes and declining real retail prices. Consumption of NDM increased to over 1 billion pounds in 1996, the highest level since the early 1970s, while consumption of evaporated and condensed milk dropped to 600 million pounds in 1996, 27 percent below its 1992 level.

Fluid milk and frozen dairy products have remained fairly stable in recent years. In 1996 per-capita consumption of milk was 224 pounds, while per-capita consumption of frozen dairy products was 29 pounds (table B-8). Domestic consumption of casein has been furnished from imports.[132] Total consumption of casein was 209 million pounds in 1996, a level that has not changed significantly over the last 5 years (table B-7).

Import Penetration Levels

Apparent consumption of all dairy products rose from $54.1 billion in 1992 to $62.1 billion in 1996.[133] The value of dairy imports for 1996 was $1,198 million, giving an import penetration level of about 2 percent (table B-9). Import penetration levels (as measured by the ratio of imports to consumption) for individual dairy products is infinitesimal (table B-

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[130] USDA, *Dairy Outlook*, various issues.

[131] Ibid.

[132] After the USDA price-support program for milk was established, butter and powder producers realized greater returns from drying their skim milk into NDM and selling it to the CCC than from processing it into casein.

[133] USITC estimates based on U.S. Department of Commerce, Census of Manufactures.

10)—less than 1 percent, with the exception of casein and other-than-American cheese. Casein is not produced in the United States, and in the case of other-than-American cheese, the import penetration level ranged between 7 and 8 percent. Explanations for import penetration levels are given in later sections of this summary.

Conditions of Competition Between Foreign and U.S. Dairy Products

The cost of milk is the most important factor affecting conditions of competition between foreign and U.S.-produced dairy products, as the cost of milk accounts for half to three-fourths of the cost of producing dairy products. Technology is believed to be sufficiently disseminated in dairy-product processing, so that it is not a significant factor affecting competition in the U.S. or world markets, except in a few selective product areas such as specialty cheese.

The diversity of production practices between countries results in significant differences in average milk yields and production costs. Efficient Southern Hemisphere producers, such as Australia, New Zealand, and Argentina, are able to use relatively low-cost, seasonally based pasture-feeding techniques.[134] Climatic factors in many Northern Hemisphere countries, however, require herds to be sheltered indoors for extended periods with considerable supplementary feeding needed to maintain output. One consequence of this reliance on supplementary feeding is that milk yields in the Northern Hemisphere average well above those of pasture-based producers. For example, average cow yields in the United States were 16,418 pounds per cow in 1995, more than double the yield of 7,348 pounds per cow achieved in New Zealand (table B-11). However, production costs are also much higher in the United States. In 1994/95, for example, total cash costs for milk production in Australia and New Zealand were $7.42 and $6.47 per hundredweight, respectively. In comparison, West Coast U.S. costs were estimated at $10.48.[135] The major difference was in feed costs, with New Zealand paying only $1.97 per hundredweight, compared with $6.74 in the United States.

Differences in international production costs are largely reflected in the producer prices paid for milk in various countries. The producer price in Japan was almost $45 per hundredweight in 1995, compared to less than $10 per hundredweight in Australia and New Zealand. In comparison, the price in the United States was almost $13 per hundredweight (table B-11).

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[134] Australian Dairy Corporation, *Dairy Compendium*, 1996, p. 34.

[135] U.S. Dairy Export Council, "Export Competition: A Profile of Australia and New Zealand," *World Dairy*, vol. 2, No. 4, Sept. 1997.

Production

The value of U.S. shipments of dairy products increased from $54 billion in 1992 to about $62 billion in 1996.[136] Steady growth in the production of fluid milk, cheese, and NDM was achieved over the period, in response to the growth in demand for these products (table B-12). Butter production dropped significantly over the 1992-96 period, partly because of the sharp decline in butter prices in the 1992-94 period. Beginning-year stocks for most dairy products remained fairly stable between 1992 and 1996. The exception is butter stocks, which declined from 550 million pounds in 1992 to only 19 million pounds in 1996. This reflects the decline in production combined with the resurgence in demand during the early and mid-1990s. American cheese stocks remained in the 300-350 million pound range, representing about 10 percent of annual production. Stocks of other-than-American cheese were lower, representing only 3 percent of annual production.

U.S. TRADE

Overview

The United States is a small, but increasingly important, participant in international dairy markets. The U.S. share of world exports has increased from 1.4 percent in 1990 to 10 percent in 1996.[137] This share likely will increase in the future as a result of domestic price reforms contained in the 1996 FAIR Act and increased global liberalization of dairy markets under the URA. U.S. trade in dairy products is relatively small in comparison to the domestic market. In 1996 the total value of U.S. shipments of dairy products amounted to $62 billion, compared to exports valued at $506 million and imports valued at $1.2 billion (table B-9).[138] Thus exports and imports represent about 1 and 2 percent, respectively, of the industry's total product value. U.S. dairy production contributed about 12 percent to total farm cash receipts in 1996; however, dairy exports accounted for only 1.2 percent of total agricultural exports, while dairy imports made up 3.8 percent of all agricultural imports.[139]

In Canada and the European Union (EU), international trade is also small compared with the domestic market. Only 6 percent of global milk production (520 million metric tons) is traded

[136] USITC estimates based on U.S. Department of Commerce, Census of Manufactures.

[137] International Policy Council on Agriculture, Food, and Trade, *Dairy Policy in the Post-Uruguay Round Era*, Position paper No. 2, Aug. 1996, p. 8.

[138] U.S. Department of Commerce.

[139] Compiled from official statistics reported in, USDA, ERS, *Agricultural Outlook*, June 1997.

on world markets. However, a greater proportion of manufactured milk products enter world markets (e.g., 11 percent of butter, 7 percent of cheese, 31 percent of NDM, and 47 percent of wholemilk powder). Thus most world trade in the dairy sector is in manufactured dairy products, not fluid milk.[140]

A major reason why international trade in dairy products by the United States is small compared to domestic sales relates to the nature of the product. Fluid milk and high value-added soft dairy products (such as yogurt and sour cream) are bulky, perishable commodities that are expensive to handle, store, and transport. This gives domestic suppliers a "natural monopoly" in the domestic market for these products, since imports are unable to compete because of the high costs of transportation. Furthermore, because of the structure of government pricing policy for dairy products, fluid milk and soft dairy products provide producers and processors with the highest returns. Thus milk is channeled into these uses before going into lower-valued products, such as butter, cheese, and milk powders, that are more economic to trade internationally. Also, in the United States the large and affluent population provides a robust and reliable market for the majority of domestically produced dairy products, and roughly 36 percent of U.S. milk supply is consumed as fluid. This contrasts with countries where the domestic market is relatively small in comparison to domestic production (e.g., New Zealand). For these countries, international markets are much more important.

During 1992-96, the U.S. trade deficit in dairy products widened irregularly from $252 million to $693 million (table B-9). The United States has been a net importer of dairy products for many years, largely because of economic and policy factors that have limited the ability of the United States to compete in international dairy markets.

U.S. dairy prices often exceed world prices. Consequently, U.S. exports are largely the outcome of government programs, such as assisted sales under DEIP and food aid programs, aimed at disposing of surplus NDM and butter stocks on international markets. Since exports account for less than one percent of annual U.S. production, they are of limited importance to U.S. producers. Consequently, there is a lack of expertise needed to expand export markets for both bulk and value-added products, while Federal policies have influenced the industry's mindset to center more on production than on marketing.[141] Successful dairy exporting countries such as New Zealand focus on marketing products to specific end users, branding, and developing niche markets in high-valued dairy products. The lack of focus on marketing products for export has limited U.S. dairy trade.[142]

Imports have grown from $845 million in 1992 to $1.2 billion in 1996, an increase of over 40 percent (table B-9). The increase was driven by strong demand for cheese imports because of income growth and changing consumer preferences toward high-valued specialty cheeses. In order to protect the U.S. price support programs for milk from import interference, imports of most products made from cow's milk were subject to quotas imposed under section 22 of

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[140] International Policy Council on Agriculture, Food, and Trade, *Dairy Policy,* p. 7.
[141] General Accounting Office, *Dairy Industry.*
[142] Ibid.

the Agricultural Adjustment Act, as amended.[143] As of January 1, 1995, the United States converted its section 22 import quotas to tariff-rate quotas (TRQs) pursuant to commitments made in the URA. The above-quota tariff rates are sufficiently high to prevent imports from exceeding levels agreed to under the URA. The TRQs reflect the tariff equivalent of the quotas in effect during the base period 1986-88.[144] Further, a significant proportion of U.S. dairy trade is transacted under direct bilateral TRQs, quota arrangements that place quantitative restrictions on bilateral trade flows. For example, in 1996 the U.S. TRQ for Cheddar cheese was 7,376 tons, of which Australia had a TRQ of 1,612 tons, New Zealand a TRQ of 4,800 tons, and the EU a TRQ of 596 tons.[145]

U.S. Imports

Principal Import Suppliers and Import Levels

Products imported

In 1996 U.S. imports of dairy products were valued at $1.2 billion (table B-13). These imports were concentrated in two main products—cheese (including many specialty cheeses) with an import share of 49 percent and casein and caseinates (articles not produced from milk in the United States) with a share of 43 percent. Roughly 5 percent of imports were whey. The remaining 3 percent consisted of fluid and powdered milk and cream, butter, and ice cream.

Import levels and trends

In 1996 the United States imported $1.2 billion of dairy products compared with $845 million in 1992, an increase of about 40 percent (table B-14). Between 1992 and 1996, the value of cheese imports increased from $434 million to $584 million, an increase of about one-third, while a similar percentage increase occurred in casein imports. Most of the increase in the value of casein reflected higher unit values ($3,960 per ton in 1992 compared with $4,930 per ton in 1996), rather than an increase in the volume of imports. For cheese, there were significant increases in both the volume and unit value of imports during 1992-96.

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[143] Imports of casein, caseinates, lactalbumin, and soft-ripened cow's-milk cheese were not subject to section 22 quotas.

[144] *Uruguay Round Agreement Act, Statement of Administrative Action*, p. 711. For additional background information, also see General Agreement on Tariffs and Trade, *Summary of The Results of the Uruguay Round in the Dairy Sector*, International Dairy Agreement Fifteenth Annual Report, Geneva, Nov. 1994; and Bailey, *Marketing and Pricing*, pp. 233-36.

[145] USDA, FAS, *Dairy Monthly Imports*, Jan. 1997.

Principal import suppliers

The EU is the largest broad-group supplier of dairy products to the United States, accounting for $714 million in 1996, more than one-half the U.S. imports (table B-9). In addition to being the largest supplier of casein and caseinates, the EU is also the largest supplier of cheese, most of which is consumed as natural cheese rather than as an ingredient in further processed foods (including processed cheese). New Zealand is the largest single country supplier of dairy products to the United States, accounting for roughly one-quarter of all U.S. dairy imports ($253 million in 1996). Most of the imports from New Zealand consist of products used for further processing, such as casein, caseinates, lactalbumin, frozen cream, and cheese. Australia shipped $35 million in 1996, while imports from Canada amounted to $32 million in the same year (table B-14).

The United States is a major import market, taking up to 111,000 tons of cheese annually under bilateral TRQ arrangements. A significant proportion of this access is restricted to subsidized exports from the EU (48,000 tons) and other Western European countries (25,000 tons). This quantity is to be gradually increased during the implementation period of the URA. By the year 2000, the Western European and North American quota markets will account for 250,000 tons of the world's cheese imports. The key nonquota export markets include Japan, the Middle East, and North Africa.[146]

There are no new, rapidly growing import suppliers of dairy products largely because of the TRQs under the URA, which were allocated to importers and supplying countries based on patterns of historical trade. In addition, most countries cannot compete in the U.S. market against government-assisted dairy exports from the EU, which, even though being reduced under the URA, are likely to remain dominant in the future.

U.S. importers

The principal types of U.S. importers of dairy products are general or wholesale importers, although a few of the importers are large processors of dairy products or other foods (or both). The general importers usually have long and well-established ties with foreign suppliers and with U.S. food distributors. The processors of dairy products or other foods (or both) that import dairy products invariably use the imported products as ingredients in their product mix.

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[146] Australian Dairy Corporation, *Dairy Compendium*, 1996, p. 53.

U.S. Trade Measures

Tariff measures

Appendix C shows the column 1 rates of duty, as of January 1, 1997, for articles in this summary and for U.S. exports and imports for 1996. An explanation of tariff and trade agreement terms is shown in appendix D. The aggregate trade-weighted average rate of duty for all products covered in this summary, based on 1996 imports, was 4.1 percent ad valorem equivalent; the average trade-weighted rate of duty for the dutiable products was 7.3 percent ad valorem equivalent. About 42 percent of the imports included here, mostly casein, albumin, and cheese made from sheep's milk, receive a rate of duty of "Free." Among the individual dairy products, duty rates were highest for ice cream (17 percent based on customs value) and cheese (8 percent based on customs value). Rates of duty on fluid and dried milk were in the 2-4 percent range (table B-15).

The criteria used to classify the commodities under consideration in this summary are set forth in the General Rules of Interpretation of the HTS. In addition, note 1 to chapter 4 of the HTS states that the expression "milk" means full-cream milk or partially or completely skimmed milk. Also, products obtained by the concentration of whey and with the addition of milk or milkfat are to be classified as cheese in HTS heading 0406, provided that they (1) have a milkfat content, by weight of the dry matter, of 5 percent or more; (2) have a dry matter content, by weight, of at least 70 percent but not exceeding 85 percent; and (3) are molded or capable of being molded. In addition, for purposes of HTS subheading 0404.90.10, the term "milk protein concentrates" means any complete milk protein (casein plus lactalbumin) concentrate that is 40 percent or more protein by weight; for subheading 3501.10.10, the term "milk protein concentrate" means any complete milk protein (casein plus lactalbumin) concentrate. In assessing the duty on cheese, no allowance in weight shall be made for inedible, not readily removable, protective coverings of cheese.

Under the URA, countries that had in the past controlled imports of dairy products through nontariff measures (such as quotas, embargoes, and licenses) were required to convert these barriers to tariff-rate equivalents. For the United States, this meant converting the system of section 22 import quotas to TRQs and establishing minimum access guarantees for certain trading partners.[147] For tariffied products, access is provided within quota limits at tariffs sufficiently low to enable commercial trade to take place. Where such trade had already been taking place, this "current access" was preserved within the tariff quota. Where "current access" was less than 3 percent of the market for each product (based on estimated consumption in the 1986-90 base period), countries were required to open up a minimum amount of 5 percent of the market by year 2000. "Minimum access" is usually provided in the form of tariff quotas at a tariff rate low enough to allow commercial trade to take place.[148]

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[147] *Uruguay Round Agreement Act, Statement of Administrative Action*, pp. 720-23.

[148] International Policy Council on Agriculture, Food, and Trade, *Dairy Policy*, p. 4.

Under the URA, out-of-quota tariff rates will be reduced by the minimum required 15 percent in equal installments over 6 years, beginning in 1995 (see tabulation below). The United States agreed to reduce its tariffs from 144.3 to 122.7 cents per kilogram for cheese, 181.3 to 154.1 cents per kilogram for butter, and 101.8 to 86.5 cents per kilogram for NDM. In-quota rates are bound at zero or nominal levels. As an approximation, the United States established tariff quotas totaling 150,000 metric tons of dairy products in the initial year, rising to 200,000 metric tons in the final year. The United States established TRQs that will grow to 141,991 metric tons for cheese (of which 5,550 metric tons is reserved for Mexico in accordance with the North American Free Trade Agreement (NAFTA)), 6,977 metric tons for butter, 6,857 metric tons for condensed and evaporated milk, and 5,261 metric tons of NDM by 2000.[149] As shown in appendix C, the TRQs have been effective in discouraging overquota imports, with almost no product shown under the HTS subheadings for overquota trade.

Selected dairy products: U.S. commitments on tariff-rate quotas and out-of-quota tariff bindings under the Uruguay Round Agreement

Product	Out-of-quota tariff rates		Quota quantity	
	Base rate of duty *(cents per kilogram)*	Bound rate of duty *(cents per kilogram)*	1995 *(metric tons)*	2000 *(metric tons)*
Nonfat dry milk	101.8	86.5	1,261	5,261
Butter	181.3	154.1	3,977	6,977
Cheese	144.3	122.7	110,999	141,991

Source: International Dairy Arrangement, *Summary of Results of the Uruguay Round in the Dairy Sector*, Fifteenth Annual Report, GATT, Geneva, Nov. 1994.

Nontariff measures

As mentioned above, upon implementation of the URA, the United States converted all section 22 quotas on dairy product imports to TRQs. Remaining U.S. nontariff measures relate to health and sanitary issues. U.S. imports of fluid milk products are prohibited unless they are accompanied by a valid permit issued by the U.S. Secretary of Health and Human Services under the provisions of the Import Milk Act of 1927.[150] Also, imports of certain dairy products, such as dried milk from countries or areas that have not been declared free of rinderpest and foot-and-mouth diseases by the U.S. Secretary of Agriculture, are subject to the regulations of the Animal and Plant Health Inspection Service (APHIS) of the U.S. Department of Agriculture. Imports from countries or areas not declared free of these diseases, as well as products made from such imports, are not to be used in animal feed in the United States, except under limited circumstances provided for in APHIS regulations. However, imports from such countries may be used in human foods in the United States because the virus is not injurious to human health. Such imports may also be used for industrial purposes.

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[149] International Dairy Arrangement, *Results of the Uruguay Round.*

[150] 44 Stat. 1101.

U.S. Exports

The principal factors affecting the demand for U.S.-produced dairy products in foreign markets are the government programs and policies that restrict imports of U.S. origin or result in such imports being unable to compete in terms of price (or both). For example, the ability of U.S. products to compete with the government-assisted dairy exports of the EU is limited. Also, U.S. products face stiff competition in international dairy markets from products produced in New Zealand and Australia, largely because these countries have lower production costs than the United States.[151]

Principal Markets and Export Levels

Products exported

U.S. dairy exports were valued at $506 million in 1996 and averaged almost $600 million annually during the period 1992-96 (table B-9). Exports account for less than 1 percent of the U.S. annual production of dairy products. Until 1995 about one-third of these exports were of milk powders exported under the DEIP (table B-16). These shipments declined sharply in 1996. In addition, the United States exported smaller amounts of cheese and whey, accounting for 21 and 25 percent, respectively, of the total value of dairy exports in 1996. The United States exports very little fresh milk and no casein (casein is not produced in significant quantities in the United States).

Export levels and trends

The United States has traditionally used the export market to dispose of much of its surplus stocks of NDM and butter through export assistance and food aid programs. However, policy changes under the 1990 and 1996 Farm Bills have promoted exports, and the United States now accounts for around 10 percent of world exports, more than double the share it held early in the decade.

Of the major dairy products exported, butter and NDM have been significant in comparison with domestic production. For example, during the period 1992-95 about one-third of U.S. NDM production was exported, while overseas sales of butter ranged between 11 and 24 percent of U.S. butter production over the same period (table B-10). Trade in these products dropped off considerably in 1996. In the case of butter, this drop was largely due to the

[151] William D. Dobson, "When Will U.S. Firms Become Major Dairy Exporters?" Marketing and Policy Briefing Paper No. 57, Department of Agricultural and Applied Economics, University of Wisconsin, May 1997; and U.S. Dairy Export Council, "Export Competition: A Profile of Australia and New Zealand," *World Dairy*, vol. 2, No. 4, Sept. 1997.

reduction in purchases by Russia following the introduction of free market policies and the abolition of long-standing subsidies that drastically reduced the capacity of Russia to commercially import product.[152] Less than 2 percent of U.S. cheese production is exported annually.

Principal export markets

The major world markets (outside the United States) for dairy products are the EU, followed by Russia, India, and Eastern Europe. Averaged over the period 1992-96, these four countries/regions accounted for 70 percent of the world's consumption of milk for fluid use, 81 percent of butter, 55 percent of cheese, and about 60 percent of NDM. Generally, the major consuming countries are not the major importing countries. Japan is the world's largest importer of dairy products, while Brazil has recently emerged as a major importer. Countries in North Africa such as Morocco, Algeria, and Egypt are also important importers, mostly benefiting from assisted exports from the EU and United States (table B-17). The principal U.S. export markets have been Mexico, Japan, and Canada (table B-18).

Mexico is the most important destination for U.S. dairy exports, which comprise mainly whey and NDM, although fresh milk and cheese sales are also significant. In 1996 about $97 million of dairy exports were shipped to Mexico (about 20 percent of all dairy exports) compared with $150 million in 1992 (table B-18)—a decline due mainly to large reductions in U.S. exports of NDM and butter. In 1996 whey was the most important dairy export to Mexico, valued at $24 million, up from $14 million in 1992.[153] The United States exported $9 million in NDM to Mexico in 1996, significantly below the 1992 level of $38 million, a decline that reflects changes in Government export assistance through the DEIP. The United States is Mexico's sole import supplier of fluid milk, with 1996 sales valued at $16 million, down from $24 million in 1992. In 1996 total Mexican cheese imports amounted to 25,000 tons, with the United States supplying about 4,700 tons valued at $13 million. In the same year Mexican butter consumption was around 30,000 tons, of which 12,000 tons were produced domestically and 18,000 were imported (3,000 tons from the United States, significantly below the 12,000 tons shipped by the United States in 1992). U.S. yogurt and ice cream exports to Mexico have been growing and likely will continue to find attractive marketing opportunities among Mexico's middle and upper income groups because of high quality. However, such products will face competition from investment from within Mexico and from investment in Mexico by foreign firms.[154]

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[152] Australian Dairy Corporation, *Dairy Compendium*, 1996, p. 32.

[153] USDA, FAS, *Dairy, Livestock, and Poultry: U.S. Trade and Prospects*, Mar. 1993 and June 1997 issues.

[154] USDA, FAS, *Dairy. Annual Report*, Mexico, AGR No. MX7044, May 15, 1997, p. 3.

The United States faces stiff competition in the Mexican dairy market from New Zealand, Australia, and the EU.[155] However, barriers to cheese imports are dropping significantly under NAFTA, and by the year 2003 U.S. cheese will enter Mexico duty-free, while a rate of 40 percent will apply to imports from Europe, Australia, and New Zealand.[156]

The demand for dairy products in Mexico is expected to rise substantially over the next few years. Strong income and population growth are expected, as well as a strong commitment by the Mexican Government through its social program (known as LICONSA) to supply subsidized rehydrated milk to low income classes. Mexico's state enterprise, CONASUPO, is virtually the only importer/supplier of milk powder in Mexico, reselling to the private sector via a quota system.[157] During the period 1992-96 between 70 and 80 percent of NDM imports were used by LICONSA for this social program.[158] A small additional amount is accounted for by manufacturers of infant formulas. Approximately 40 percent of all imported milk powder is reconstituted and sold at subsidized prices by LICONSA to primary schools and the poor through special sales outlets located in cities throughout the country.

Japan is a small, expanding market for U.S. dairy products and is the largest market for U.S. exports in East Asia.[159] Japan remains a significant net importer of certain dairy products, notably cheese, NDM for animal feed, and powder formulations for use in infant formulas and industrial food processing.[160] Japanese cheese consumption has shown significant growth in recent years, increasing over 20 percent between 1992 and 1996.[161]

In 1996 Japan was the largest market for U.S. ice cream, whey, and cheese exports and the second most important market overall (after Mexico). U.S. ice cream exports to Japan doubled between 1992 and 1996, reaching $35 million in 1996 (representing almost 40 percent of all U.S. ice cream exports), while in the same year Japan purchased $28 million of U.S. whey and whey products, an increase of two-thirds since 1992 (table B-18). U.S. sales

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[155] United States Dairy Export Council, "Trade Analysis of the Mexican Dairy Market," *World Dairy*, vol. 2, No. 3, July 1997.

[156] Joe L. Outlaw and others,"NAFTA and the U.S. Dairy Industry," paper P-14 in series *Dairy Markets and Policy—Issues and Options*, Cornell University's Program on Dairy Markets and Policy, Apr. 1994.

[157] Joe L. Outlaw and Charles F. Nicholson, "An Overview of the Mexican Dairy Sector," paper M-14 in series *Dairy Markets and Policy—Issues and Options*, Cornell University's Program on Dairy Markets and Policy, Apr. 1994.

[158] Charles F. Nicholson and others, "Trade Liberalization and Mexico's Dairy Sector: A Spatial Economic Analysis," paper presented at the 1997 Annual Meeting of the American Agricultural Economic Association, Toronto, Canada, July 27-30, 1997; and "Mexican SMP Needs—Same as Before?" *Foodnews*, July 18, 1997, p. 4.

[159] Testimony of the International Dairy Foods Association before the House Committee on Agriculture, Subcommittee on Livestock, Dairy, and Poultry, *Hearing Regarding the Current Status and Future Prospects for Trade Between the United States and East Asia in Dairy Products*, June 25, 1997.

[160] Australian Dairy Corporation, *Dairy Compendium*, 1996, p. 35.

[161] For further information, see USDA, FAS, *Dairy. Annual Report*, Japan, AGR No. JA6062, Dec. 26, 1996.

of cheese to Japan have also expanded significantly between 1992 and 1996, increasing from $8 million to $19 million over the five-year period.

Prospects for the United States to expand exports to the Japanese market are regarded as bright.[162] Under the minimum access requirements of the URA, TRQs for specific dairy products will be expanded over time, including a commitment by the Japanese to purchase a minimum of 137,202 tons of milk equivalent of designated products each year. Under the market conditions and policy setting of the late 1990s, this likely will be in the form of NDM and whey products.[163] Increased Japanese demand for NDM and whey products would potentially give the United States opportunities to expand its exports to this market.

Canada is an important market for U.S. dairy products, with exports valued at $58 million in 1996 (representing 11 percent of the value of all dairy exports) compared with $35 million in 1992 (table B-18). In 1996 roughly one-half of U.S. dairy exports to Canada were whey and whey products that are not subject to the same restrictive tariff measures applied to other products. Cheese is the other major dairy product exported to Canada, although the quantity is small at only $16 million in 1996, up from $10 million in 1992. Exports of fluid and powdered milk, butter, and soft manufactured dairy products are almost nonexistent. Prospects for export growth to this market are regarded as limited, with neither the URA, U.S.-Canada Free Trade Agreement (CFTA), nor NAFTA significantly affecting the import protection afforded the Canadian dairy industry.[164] Consequently, the Canadian market is unlikely to open to U.S. products at any time in the near future beyond the amounts specified in the agreements.

In recent years Asia has emerged as an important market for U.S. dairy products. In 1996 for example, U.S. exports to South Korea, Taiwan, Hong Kong, and the Philippines were valued at $81 million, representing 16 percent of all U.S. exports of dairy products. In comparison, in 1992 U.S. dairy exports to these countries amounted to $33 million, representing only 5 percent of U.S. dairy exports. Expansion in these markets is associated with rapid economic growth, and higher incomes in the future are expected to further boost demand for dairy products.[165] Higher incomes in Asia are likely to effect rapid development of Asia's infrastructure for the distribution and sales of food products. Features of this development include an increase in the number of restaurants and fast-food outlets, market penetration by supermarket chains and department stores, and a sharp increase in home and commercial refrigeration.[166]

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[162] Written testimony of the International Dairy Foods Association, *Current Status and Future Prospects—East Asia*, June 25, 1997.

[163] Australian Dairy Corporation, *Dairy Compendium*, 1996, p. 58.

[164] Agriculture and Agri-food Canada, "The Canadian Dairy Sector: Structure, Performance and Policies," *Understanding Canada/United States Dairy Disputes*, ed. R.M.A. Loyns, Karl Meilke, and Ronald D. Knutson, proceedings of the Second Canada-U.S. Agricultural and Food Policy Systems Information Workshop, University of Guelph, Dec. 1996.

[165] Testimony of the International Dairy Foods Association, *Current Status and Future Prospects—East Asia*, June 25, 1997.

[166] Michael Griffin, "World Dairy Situation: Changes and Trends," paper presented at

(continued...)

The FSU (in particular, Russia) has been the major buyer of butter on the world market, accounting for around 40 percent during the period 1992-96, and its purchases have been viewed as crucial to the balance between world supply and demand for butterfat.[167] During the early 1990s, policy reforms associated with economic restructuring led to the end of many subsidies that reduced the FSU's ability to import dairy products on a commercial basis. As a result, FSU purchases have declined, both in absolute volume terms and as a share of total imports, placing considerable pressure on the world butterfat market. For instance, between 1992 and 1996, the value of U.S. butter sales to Russia dropped from $61 million to only $12 million, a drop that contributed to the low butter prices in the United States during 1994 and 1995.[168]

Other major markets for U.S. dairy products include Algeria, which has traditionally been a major importer of U.S. dairy products under the DEIP. Exports to Brazil and other South and Central American countries, particularly of NDM, have also been important. DEIP is also used to assist shipments of dairy products to Africa and the Middle East.

U.S. exporters

Although export transactions for U.S.-produced dairy products are usually handled through commercial exporters, the exporters are invariably reimbursed by the USDA (through the CCC) for the difference between the selling price of the products exported to foreign markets and the cost of the products purchased in the U.S. market.[169] Most U.S. exports of dairy products have involved government-to-government sales, except for a short period during the late 1980s, when world production of NDM dropped and prices rose rapidly. During that time the United States, for the first time, exported NDM at commercial prices. Also, high international prices in 1995 led to commercial exports of U.S. butter during 1995 and the first half of 1996. A significant proportion of current dairy trade is transacted under global or bilateral quota arrangements, especially international trade in cheese. For example, access to the EU cheese market is being offered globally (104,000 tons by 2000), and importers from around the world must compete at quarterly tenders for access.

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[166] (...continued)
Teagasc National Dairy Conference, Fermoy, Ireland, Mar. 20, 1997.

[167] Australian Dairy Corporation, *Dairy Compendium*, 1996, p. 51.

[168] The largest interyear change was between 1993 and 1994, when U.S. butter exports to Russia fell from $83 million to $26 million (based on official statistics of the U.S. Department of Commerce). For further information on U.S. dairy export prospects in the Russian market, see U.S. Dairy Export Council, "U.S. Dairy Trade Prospects in Russia," *World Dairy*, vol. 2, No. 5, Nov. 1997.

[169] Interview with George Walgrove, president, Maryland and Virginia Milk Producers' Cooperative, Reston, Virginia, Sept. 1997.

Foreign Trade Measures

High tariffs and nontariff measures in major world markets represent major obstacles to trade for U.S. dairy manufacturers. In spite of tariff reductions under the URA, tariffs on dairy products, because of the high ceiling bindings, remain high in many countries and are not likely to be lowered to levels that would make trade feasible. In addition, industry groups argue that many countries impose expensive sanitary certification, excessive labeling and shelf-life requirements, and anticompetitive State trading procedures. These measures also impact U.S. dairy exports.[170]

Tariff measures

Mexico, Japan, Canada, and South Korea are the major world markets for dairy products exported from the United States (representing 53 percent of the total export value in 1996—table B-18). NAFTA has provided benefits to U.S. exporters by reducing tariffs. For example, under NAFTA Mexico agreed to eliminate its TRQs on most imports of dairy products from the United States (the two exceptions are NDM and unsweetened wholemilk powder). In 1997 Mexico had a tariff rate of "Free" on U.S. imports of 42,400 metric tons of milk powder with a fat content less than 1.5 percent and unsweetened milk powder with a fat content exceeding 1.5 percent. However, the over-quota tariff rate of 122.3 percent (or $1,020.80 per metric ton) applied to these milk powders has been prohibitively high.

Japanese in-quota rates on dairy products range between "Free" and 35 percent, while above-quota duties are set at very high levels.[171] In addition to the quotas, which are made available to maintain minimum access on specific dairy products, the Japanese Government purchasing agency is committed to purchase a minimum of 137,202 metric tons each year designated for general use. Although there are no TRQs on cheese imports, tariff rates range between 31 and 40 percent, which have been a major obstacle for U.S. exports to the Japanese market.

Canadian imports of dairy products have been strictly controlled to protect internal price structures. Under the URA, Canada established TRQs for dairy products totaling 96,065 metric tons in 1995, rising to 97,375 metric tons in 2000. Of this aggregate quantity, 64,500 metric tons represent the estimated annual quantity of U.S. liquid milk imported by Canadian consumers.[172] Most over-quota tariffs are fixed in ad valorem terms, subject to a minimum

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[170] U.S. Dairy Export Council, *1997 National Trade Estimate: Report on Foreign Trade Barriers*, Nov. 1997.

[171] International Dairy Arrangement, *Summary of the Results of the Uruguay Round in the Dairy Sector*, Fifteenth Annual Report, General Agreement on Tariffs and Trade, Geneva, Nov. 1994.

[172] This TRQ has not been open to commercial imports, and as a result, the U.S. dairy industry filed a section 301 petition with the U.S. Trade Representative in September 1997. The petition requests the United States to institute a World Trade Organization (WTO) dispute settlement proceeding against Canada's dairy policies, which, according to U.S. dairy industry representatives, circumvent Canada's WTO commitments.

specific duty, thus the applicable bound rate is the ad valorem tariff or the specific tariff, whichever is higher. Several over-quota rates on dairy product imports are more than 300 percent, and as a result, the Canadian market has been effectively closed to imports.[173] About one-half of Canadian imports from the United States is whey, which is not subject to TRQs.

NAFTA was implemented by the United States, Canada, and Mexico on January 1, 1994, and phases out tariffs on most qualifying agricultural products over a 10-year period, with some tariffs and nontariff barriers to be phased out over 15 years.[174] However, when Canada and the United States replaced import quotas on dairy products with TRQs to comply with the URA, it raised an apparent contradiction with U.S.-Canadian trade obligations under NAFTA.[175] In 1995 the United States invoked the NAFTA chapter 20 dispute procedures to challenge Canada's application of TRQs to imports from the United States, arguing that Canada's limits on dairy products were in violation of Canada's NAFTA commitment to eliminate all tariffs on U.S.-origin goods. The U.S. position was that under NAFTA neither country may impose higher tariffs on imports from the other country than the tariffs that were agreed to under the U.S.-Canada Free Trade Agreement (CFTA). The United States argued that prior to signing the URA, Canada signed NAFTA, in which it committed not to impose new tariffs on the United States. Yet Canada imposed 290 to 350 percent tariffs on over-quota dairy products originating in the United States.[176] The Canadian Department of Foreign Affairs and International Trade reported that Canada had a right to convert nontariff barriers to TRQs under the WTO and to apply those TRQs to all WTO members, including the United States.[177] In December 1996 the dispute settlement panel ruled in favor of Canada, with all five panelists (including those from the United States) supporting Canada's view that it could apply high tariff rates under the WTO tariff schedule to U.S. agricultural imports, notwithstanding preexisting obligations under NAFTA to eliminate all duties between the United States and Canada. There is no appeal process in NAFTA's dispute settlement mechanism.[178]

South Korea has long maintained tight border measures in order to protect its dairy industry. While South Korea has taken steps to liberalize its dairy imports under the URA, the pace of reform has been slow (e.g., South Korea claimed "developing country" status under the URA and therefore was required to reduce tariffs by only 10 percent and was given 10 years to

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[173] Official statistics of Canadian customs.

[174] NAFTA incorporated most of the provisions of CFTA and (in many instances) expanded on the earlier agreement.

[175] USDA, ERS, "Dairy Policies Are Limiting U.S.-Canada Trade," *Agricultural Outlook*, Jan.-Feb. 1997, pp. 19-23.

[176] For further details, see Final Report of Panel, North American Free Trade Agreement Arbitral Panel Established Pursuant to Article 2008 in the matter of Tariffs Applied by Canada to Certain U.S.-Origin Agricultural Products (Secretariat File No. CDA-95-2008-01), Dec. 2, 1996. Also see "U.S. Dairy Groups, Administration Rap NAFTA's Panel's Decision on Canada," *The Cheese Reporter*, Dec. 6, 1996, p. 15.

[177] Ibid.

[178] *North American Free Trade Agreement, Statement of Administrative Action*, published in H. Doc. 103-159, 103d Cong., 1st Sess., pp. 657-62.

phase in these reductions).[179] In 1996 South Korea had TRQs amounting to 29,277 tons, with over-quota rates ranging between 39 percent (fresh cheese) and 211 percent (milk powders). By 2004 the TRQ will be 56,390 tons, with over-quota rates ranging from zero to 176 percent.[180] In spite of these trade measures, South Korea is an important market for U.S. exports, with opportunities greatest for cheese and whey.

Under the URA, the EU established new TRQs of 69,000 metric tons for NDM, 10,000 metric tons for butter, and 104,000 metric tons for cheese and curd. These new TRQs are being implemented over 6 years. As a result of U.S.-EU bilateral negotiations, the EU will permit imports of 5,000 metric tons of pizza cheese and 15,000 metric tons of cheddar cheese at special low-duty rates similar to those applied by the United States.[181] However, the in-quota tariff rates remain high enough to effectively prohibit virtually all U.S. exports of butter, NDM, and cheese to the EU.[182] Thus the EU market remains highly protected from imports and is not regarded as a market with high potential for U.S. dairy exporters.

Nontariff measures

The Mexican government's state trading enterprise, CONASUPO, is the sole importer of NDM into Mexico, including products imported from the United States within a zero TRQ specifically negotiated for the United States in NAFTA.[183] CONASUPO buys NDM from the United States at low world prices through the DEIP (since the United States must compete with assisted exports from the EU) and then sells it to the Mexican processing industry at a higher price, close to the U.S. price. Since U.S. exports would not likely require assistance if they could be made directly to Mexican processors, U.S. industry officials consider this practice to be a nontariff trade measure that restricts trade and limits opportunities for U.S. exporters.[184]

According to U.S. industry groups, the EU cheese import licensing system, while seemingly very open to any interested party, has proved to be unworkable and serves as a de facto

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[179] United States Dairy Export Council, "Trade Prospects in Korea," *World Dairy*, vol. 1, No. 3, Sept. 1996.

[180] Ibid., table 3.

[181] Failure to enforce the product classification for pizza cheese and the brokering of licenses have kept U.S. exports of pizza cheese and cheddar cheese to negligible levels (see testimony of the National Milk Producers Federation before U.S. House Committee on Agriculture, Subcommittee on Livestock, Dairy, and Poultry, *Hearing Regarding Current Status and Future Prospects of Trade Between the United States and the European Union in Livestock, Dairy, and Poultry Products*, May 8, 1997).

[182] U.S. Dairy Export Council, *1997 National Trade Estimate: Report on Foreign Trade Barriers*, Nov. 1997.

[183] Testimony of the National Milk Producers Federation and U.S. Dairy Export Council to the United States International Trade Commission on the *Impact of the North American Free Trade Agreement on the U.S. Economy and Industries: A Three-Year Review*, May 22, 1997.

[184] Interview with officials at National Milk Producers Federation, July 1997.

nontariff barrier to imports, including those from the United States.[185] They claim that procedures are complex and burdensome, with potential U.S. exporters facing several requirements, including the need to file recurring applications for import licenses each calendar month, mandatory posting of a substantial performance security, and limiting the validity of licenses to the calendar quarter within which the application is filed. By allocating cheese import volumes and licenses on a quarterly basis, U.S. industry groups maintain that the EU has effectively blocked U.S. businesses from developing long-term supply relationships with European partners, since customers demand a continual, regular, and predictable supply of product from a cheese supplier.[186]

Recently, revised health and sanitary compliance requirements for dairy products have complicated efforts by U.S. firms to export dairy products to the EU. The EU compliance requirements for dairy products are outlined in Directive 92/46, which aims to harmonize health requirements for all EU countries and to require that third countries exporting to the EU meet these same requirements.[187] The United States has requirements for sanitary matters that differ from those of the EU pertaining to somatic cell count and bacterial count requirements in raw milk. The EU scientific veterinary committee ruled that differences in standards between the United States and the EU are a matter of public safety, while U.S. scientists argue that differences between the U.S. and EU standards for bacteria count levels represent differences in milk quality, but do not represent an impact on the safety of products in trade.[188] In response to the dispute over sanitary standards, the USDA, together with industry representatives, developed a system of voluntary self-certification for dairy products acceptable to the European Commission. In order to prove compliance, U.S. exporters must implement testing and recording procedures on raw milk used for products shipped overseas which imposes an added cost on U.S. companies that export dairy products to the EU.

Dairy products imported into South Korea are subject to strict inspection and testing.[189] In addition to documentation necessary to obtain an import license, U.S. exporters must file a declaration from the manufacturer detailing the product characteristics and the nature and extent of manufacturing. Similar types of licensing and product safety standard requirements are faced by U.S. dairy firms exporting to Russia.[190] Certificates of conformity are issued by the authorities, while testing of products by approved laboratories is also required. For these services, fees are charged that add substantially to the retail prices of imported dairy products. Another example of nontariff measures are shelf-life and labeling requirements for dairy products shipped to Saudi Arabia. Under this system, products imported into Saudi Arabia

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[185] Testimony of the National Milk Producers Federation, *Current Status and Future Prospects—EU*, May 8, 1997.

[186] Ibid.

[187] "EU Denying Entry of All Dairy Products from the United States," *The Cheese Reporter*, Apr. 11, 1997, p. 1.

[188] Testimony of the National Milk Producers Federation, *Current Status and Future Prospects—EU*, May 8, 1997.

[189] U.S. Dairy Export Council, *1997 National Trade Estimate.*

[190] Ibid.

are rejected at the port of entry if they have less than half of the expiration period for human consumption remaining (calculated from the date of production).[191]

FOREIGN INDUSTRY PROFILE

Overview of World Market

Milk and dairy products are produced and consumed in almost every country in the world. International dairy markets, however, are concentrated among a few participants, and, in general, the world's major dairy-producing countries are not the world's major exporting countries (table B-19). The exception is the EU, which produces about one-third of the world's milk and accounts for 47 percent of world dairy export sales. The United States, for example, produces about 15 percent of the world's milk but contributes only about 8 percent to global dairy exports. Following the EU and United States, Russia, India, and Ukraine are the world's third-, fourth-, and fifth-leading milk-producing countries.[192] Almost all the production of these countries is consumed domestically, and Russia and Ukraine have long been major world importers of dairy products. By contrast, New Zealand accounts for only 2 percent of world milk output but is the second largest supplier of manufactured dairy products to the world market (accounting for about one-quarter of export sales on a milk-equivalent basis). Similarly, Australia, with a slightly lower share of world milk output, accounts for about 10 percent of export sales (table B-19).

The remainder of the international market is supplied largely by subsidized exports from Canada, non-EU countries of Western Europe, and South American suppliers, particularly Argentina and Uruguay. Since the late 1980s East European countries have increased their share of world trade in milk powders, following the removal of longstanding consumer subsidies on dairy products. While the size of most of their exportable surplus has fallen in recent years, Poland, the Czech Republic, and the Baltic states remain active in world markets.[193]

The major trade flows for butter, cheese, and NDM in 1995 are shown in table B-20. Major trade flows for butter are EU shipments into the FSU, New Zealand product going to the EU (mainly the United Kingdom), and Australia and New Zealand supplying the Southeast Asian market. The United States supplies about 11 percent of world exports of butter, and is an important supplier to Africa, North and South America, and the FSU. For NDM in 1995, the largest volume of trade was EU exports to the Americas (table B-20). Southeast Asia is the largest market for NDM, which is supplied mainly from Australia, the EU, and New Zealand. The most important importer of U.S. NDM is Africa, followed by North and South

[191] Ibid.
[192] USDA, FAS, *Dairy: World Markets and Trade*, July 1997.
[193] Australian Dairy Corporation, *Dairy Compendium*, 1996, p. 52.

America. World cheese trade is dominated by the EU, shipping product mainly to Europe, the Americas, and the Middle East. A large portion of world trade is between Australia-New Zealand and Asia, particularly Southeast Asia (table B-20). The largest market for U.S. cheese exports are the Americas.

Country Profiles

European Union

The EU is the world's largest dairy-producing and -exporting region. Each year between 10 and 15 percent of its production is exported. Its share of the world export market has declined, however—from 56 percent in 1990 to 44 percent in 1996—a trend likely to continue with the URA commitments to reduce the volume of dairy export subsidies. Its dominance of the world market is largely the result of government intervention, which has kept EU prices about one-third higher than world prices, as well as export assistance programs.[194] As a result, EU milk production exceeds domestic commercial demand by 15-20 million tons annually during 1992-96.[195]

Over half of the EU dairy surplus is disposed of through Government-assisted domestic sales of butter and NDM (and liquid skim milk) to industrial food processors and calf-feed producers. Government-assisted butter sales to industrial users account for about one-third of EU production. While sales of NDM for feed purposes have steadily declined in recent years, they still account for around one-half of the EU's annual output. The remaining surpluses are disposed of either through assisted export sales or intervention stockpiling of butter and NDM. Assisted EU exports, on a milk-equivalent basis, account for more than 40 percent of the dairy products entering the international market.[196]

Even though the URA introduced mandatory reductions in these export subsidies, the EU will continue, for a long time to come, to be able to substantially subsidize dairy product exports.[197] Even by 2000, when the current phase-in of required URA export subsidy reductions is complete, the EU will still be permitted to subsidize the equivalent of about 12 percent of its entire milk production in the form of export sales and will be able to provide export subsidies representing 20 times as much as that available to the United States. U.S. dairy industry representatives argue that the EU's export assistance will continue to distort

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[194] William D. Dobson, "Impacts of Policy and Trade Developments in the European Union on the Dairy Industry," Babcock Institute Discussion Paper No. 96-1, University of Wisconsin, 1996.

[195] European Commission, *The Agricultural Situation in the European Union. 1995 Report*, Brussels, 1996, p. 97.

[196] Australian Dairy Corporation, *Dairy Compendium*, 1996, p. 34.

[197] See, for example, testimony of the National Milk Producers Federation, *Current Status and Future Prospects—EU*, May 8, 1997.

world dairy markets and undermine the opportunities for efficient suppliers such as the United States, Australia, and New Zealand.[198]

New Zealand

Although it accounts for only 2 percent of world milk output, New Zealand is the second largest supplier of manufactured milk products to the world market. It accounted for about one-quarter of export sales on a milk-equivalent basis in 1996. Most (over 80 percent) of New Zealand production is dedicated to export sales. In 1993 New Zealand overtook the EU as the leading supplier of butter to international markets. The EU is a major destination for New Zealand exports under bilateral quota arrangements between New Zealand and the United Kingdom. World casein exports are dominated by New Zealand, as well as by EU suppliers such as Ireland. Japan and the United States remain key end-user markets for this product. In 1997 Russia replaced Japan as New Zealand's biggest single-country buyer of dairy products, particularly butter and cheese.[199]

The New Zealand dairy industry has a very low level of government intervention, and it has continued to grow despite a high level of price variability and exposure to world markets. There is currently no direct government intervention in the New Zealand dairy industry—no direct income programs, no market price supports, and no import controls.[200] However, one significant area of government intervention is legislation that allows the NZDB to be the sole exporter of dairy products. The NZDB is becoming an increasing concern of U.S. dairy interests, who regard the lack of transparency and the need for improved disciplines on state trading enterprises (STEs) as areas requiring further attention in the WTO. There is a particular concern that STEs are being used to circumvent URA commitments or to engage in unfair trading practices (such as cross-subsidization among foreign markets).[201]

New Zealand is one of the world's lowest cost-producing countries of dairy products and has been highly effective at marketing products internationally through the NZDB.[202] As world demand for dairy products rises, especially in Latin America and Asia, New Zealand likely will be the most effective competitor of the United States for an increasing share of these growing markets.[203]

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[198] Ibid.

[199] USDA, FAS, *Dairy. Voluntary Report,* New Zealand, AGR No. NZ7037, Aug. 20, 1997.

[200] Organization for Economic Cooperation and Development, *Reforming Dairy Policy*, Paris, 1996.

[201] Comments by Christopher Goldthwait, general sales manager for USDA's FAS, as reported in *The Cheese Reporter*, May 23, 1997, p. 9; and Abel, Daft, Earley, and Ward International, *The New Zealand Dairy Board Monopoly: A Destabilizing Factor in the U.S. Dairy Product and Milk Markets*, prepared for The Dairy Trade Coalition, June 1995.

[202] William D. Dobson, "Positioning the Firm to Export Dairy Products in the 21st Century—Lessons from the Dairy Boards of Ireland and New Zealand," Babcock Institute Discussion Paper No. 96-3, University of Wisconsin, 1996.

[203] Dobson, "When Will U.S. Firms Become Major Dairy Exporters?" p. 13. Also see U.S.

(continued...)

Australia

Australia, with only a 2 percent share of world milk output, accounted for about 10 percent of export sales in 1996. Exports now account for just under one-half of the milk produced in Australia and more than 65 percent of manufactured dairy products.[204] Australia is the world's largest single-country exporter of NDM, with a world market share of almost 15 percent during the 1992-96 period (table B-19). It is also a major exporter of cheese and butter, with a share of the world market of about 10-12 percent. The vast majority of Australian dairy exports are shipped to Asia.

Like New Zealand, Australia is one of the world's lowest-cost producers of dairy products and is highly competitive in international markets.[205] On July 1, 1995, Australia terminated all Government export assistance on dairy products and is able to compete at world prices.[206] Australian dairy exports, especially to the Pacific Rim and Latin American countries, are expected to continue to grow and are in strong competition with U.S. exports for world market share.

Canada

Because of the strict controls on imports, most of Canada's domestic consumption is met by domestic production. In 1996 Canada's butter imports amounted to about 2,800 tons, compared with consumption of 100,000 tons (less than 3 percent).[207] These imports were supplied mainly by New Zealand, the EU, and the United States (465 tons in 1996). Butter is exported to North Africa, Russia, and the United States. Canada produced 275,000 tons of cheese in 1996, of which 15,000 tons were exported (mostly to the United States and United Kingdom) and 23,000 tons were imported. The majority of imports are from the EU (particularly Italy and France), as well as the United States (3,000 tons) and New Zealand. About 70 percent of Canada's NDM production is exported (45,000 tons), with Mexico and Algeria being major markets. Trade in fluid milk is highly restricted. However, Canadian exports of milk to the United States increased to 3,600 tons in 1996, compared with 102 tons in 1995. All milk exports were ultra-high-temperature milk from the province of Quebec to Puerto Rico.

Canada introduced several changes in its dairy policy that were sparked by the URA. The Canadian Dairy Commission maintains its target prices for industrial milk, which were

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[203] (...continued)
Dairy Export Council, "Dairy Trade Situation in Latin America," *World Dairy*, vol. 2, No. 1, Jan. 1997.

[204] Australian Dairy Corporation, *Dairy Compendium*, 1996, p. 54.

[205] Ibid., p. 32.

[206] For further information, see USDA, FAS, *Dairy. Annual Report*, Australia, AGR No. AS5095, Nov. 30, 1995; and USDA, FAS, *Dairy. Annual Report*, Australia, AGR No. AS6088, Dec. 1, 1996.

[207] USDA, FAS, *Dairy. Semiannual Report*, Canada, AGR No. CA7026, May 1997.

increased as of August 1, 1995. Government payments for industrial milk were reduced by 15 percent in August 1996. They will be gradually phased out over the next 5 years, beginning August 1997.[208] In line with the system of pricing milk according to its end use, a new class of milk (class 5) was also introduced on August 1, 1995.[209] This lower-priced milk will be used to manufacture dairy products for export and to provide milk ingredients for further processing for domestic or export markets. The milk provided under the new system is sold to processors by their respective provincial milk board or agency. Returns from these sales are pooled across all provinces so that producers share the gains.[210] Concern that this involves a hidden export subsidy has been raised by Canada's major competitors, including the United States.[211]

Yet another program implemented in August 1995 was the Optional Export Program for dairy. This program was implemented to allow the additional production of milk for new export market opportunities identified by exporters. To be eligible for the program, exports must constitute a new export initiative and add to the export activity of the dairy industry without disrupting milk suppliers for the domestic market.[212]

Poland

Poland is a major exporting country of butter and NDM. Over the period 1992-96, Poland was the world's fourth-largest exporter of butter, the majority of which was shipped to Russia and the EU. Poland sells NDM primarily to EU middlemen from the Netherlands, Germany, and Belgium for reexport to North African and Middle Eastern countries. However, since 1994 Vietnam has become a large customer for Polish exports.[213] Polish NDM is also sent to other Asian countries, including Japan, Thailand, and Indonesia, and therefore is a competitor of the United States in these markets. In 1996 the United States imported $30 million of Polish dairy products, split fairly equally between cheese and casein.

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[208] USDA, "Dairy Policies," p. 21.

[209] USDA, FAS, *Dairy. Annual Report*, Canada, AGR No. CA6076, Dec. 1996.

[210] International Dairy Commission, Second Annual Report, *The World Market for Dairy Products, 1996,* World Trade Organization, Jan. 1997, p. 30.

[211] "New Zealand Threatens Possible Challenge of Canadian Dairy Pricing," *Inside U.S. Trade*, July 4, 1997.

[212] International Dairy Commission, *The World Market for Dairy Products, 1996,* p. 30.

[213] USDA, FAS, *Dairy. Annual Report*, Poland, AGR No. PL6033, Nov. 1996.

Argentina

Within the next 10 years, Argentina could emerge as a major exporter of dairy products to international markets. By far the most important market for Argentine dairy products is Brazil, although Paraguay is an important market for fluid milk and cheese, while Russia has traditionally been a major purchaser of butter.[214] In 1995 the United States imported over $20 million in dairy products from Argentina, the majority of which was cheese.

Argentina has considerable potential to export because its costs of production are roughly one-half the average for the United States (costs of production in 1995-96 average about $6.80 per hundredweight, including land costs, while in the United States a comparable figure is about $10-$11 per hundredweight).[215] Argentina's grasslands provide a very cheap source of feed, and dairy herds have been growing by 100,000 cows annually since 1990. According to some industry experts, Argentina may compete in the future directly with the United States in the Latin American market (especially in Mexico, which is a very important importer of U.S. NDM and has the potential to import more cheese and fluid milk).[216]

Argentina's exports over the next few years are uncertain, however. Several unknown factors are important including (1) how much milk Brazil will import from Argentina (Brazil has a large population, it is only 90 percent self sufficient, and there are no tariffs between Argentina and Brazil because both countries are signatories to MERCOSUR); (2) to what extent dairy will displace beef in Argentina; (3) what happens with world oilseed markets (grazing lands can also be used for oilseeds and grains); and (4) what happens to international dairy prices (they should increase because of URA disciplines on export subsidies, which means that Argentina should be able to export very profitably).[217]

While Argentina may become a strong competitor of the United States in international markets, other South and Central American countries are emerging as significant markets for dairy exports and are therefore of major interest to U.S. dairy exporters.[218] Fueled by a growing population in the region and rising per-capita incomes, the demand for dairy products has grown. For example, total population in the five largest South American dairy-importing countries grew by 9 percent between 1990 and 1995. At the same time, total demand for dairy products increased from 221 pounds, milk-equivalent, per person in 1990 to 273 pounds five years later, an increase of almost one-quarter.

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[214] For further information, see USDA, FAS, *Dairy. Annual Report*, Argentina, AGR No. AR6083, Dec. 4, 1996.

[215] "Argentina's Growing Milk Production Seen As Threat to U.S. Dairy Exports," *The Cheese Reporter*, vol. 121, No. 47, June 6, 1997, p. 1.

[216] Ibid.

[217] Ibid.

[218] U.S. Dairy Export Council, "Dairy Trade Situation in Latin America," *World Dairy*, vol. 2, No. 1, Jan. 1997.

APPENDIX A
MAJOR DAIRY PRODUCTS AND THEIR APPLICATIONS

PRODUCTION OF MAJOR DAIRY PRODUCTS[1]

Cow's milk consists of water (representing about 87 percent of the milk) and solids (milkfat, protein, lactose, and a small amount of minerals). Wholemilk that is packaged for drinking has a milkfat content of about 3.5 percent. Reduced-fat products are standardized to other specifications and have varying milkfat, such as 2 percent or zero percent fat content. Milk for drinking purposes is also modified to other specifications of nonfat solids levels, such as fortified vitamins or reduced lactose. The cream removed during standardization can be bottled as table cream or manufactured into butter or other dairy products.

The milkfat and solids obtained in manufacturing milk can be used to produce a wide range of dairy products. There are four major production processes: The first two are butter-NDM and butter-casein, which are joint processes; wholemilk powder and cheese production are the other two. In each of these separate product lines, other dairy products can be made from residual milk components.

Butter-NDM

The first step in making butter is to separate wholemilk into cream and skim milk. The liquid skim milk is evaporated and spray-dried to produce NDM. The cream is churned until the fat globules form into solid butter, leaving a liquid by-product, buttermilk. This liquid is dried to make buttermilk powder.

Butter-Casein

There are several methods used to make casein, such as setting the NDM by mixing it with acid to produce curd. The curd is taken to remove large clumps. The remaining liquid whey by-product is removed, and the curd is repeatedly rinsed in water and then drained. Excess moisture is extracted by pressing the curd. It is then milled and dried. The curd is broken down to particle size by grinding it and passing it through a sieve.

[1] Information contained in this appendix was compiled from Kenneth W. Bailey, *Marketing and Pricing of Milk and Dairy Products in the United States*, Iowa State University Press, Ames, IA, 1997, chapters 3-5, and from Australian Dairy Corporation, *Dairy Compendium*, 1996, appendix 1.

Wholemilk Powder

Wholemilk powder is made by evaporating milk that has had some of the cream removed. The evaporated milk is concentrated and dried either by roller or spray process to form a powder. Spray drying is more commonly used and involves spraying a fine mist of concentrated milk into a current of hot air to form granules of powder. The granules can be treated with steam to "instantize" the powder and make it easier to reconstitute into milk.

Cheese

Cheese production techniques vary substantially. To make cheddar cheese, some of the cream is removed from the pasteurized milk. Starter culture is added to the milk to produce both acid and flavor. Then rennet is added to form curd and whey. The curd is cut, heated, and stirred to allow the whey to drain. A process called "cheddaring" then takes place, which involves the curd being allowed to mat together before it is milled, salted, pressed, and packed. The cheese is stored to develop the desired maturity and flavor (the longer it is stored, the stronger the flavor). Milk cheddar is matured for about 3 months, semimatured cheddar for 3 to 6 months, and mature cheddar for up to 1 year. The liquid whey extracted during cheese manufacture contains protein, lactose, and a little fat. It can be dried to make products for pharmaceutical purposes and as a useful supplement in stock feed and in the manufacture of ice cream. The cream for standardization of milk for wholemilk powder, casein, and cheddar production is used to make butter and buttermilk powder.

MAJOR APPLICATIONS OF DAIRY PRODUCTS

Milk powder (NDM and WMP)	**Food grade**: Recombined into liquid milk products (particularly in tropical climates where fresh milk supplies are not available); used in the bakery industry (improving volume and binding capacity of bread, crisper pastry, cookies), confectionary and milk chocolates, processed meats, ready-to-cook meals, baby foods, ice cream, yogurt, health foods, reduced fat milks. **Industrial grade**: Animal fodder.
Anhydrous milk fat (AMF)	Recombined milk products, bakery, ice cream, confectionery, ready-to-cook meals.
Cheese	Frozen pizzas, ready-to-cook meals, cookies, snack foods.
Whey powder	**Food grade**: Ice cream, bakery products (cakes, cookies), chocolate flavoring, infant formula, yogurt, beverages, processed meat. **Industrial grade**: Animal feed (pigs, horses, poultry), calf milk replacer, carrier for herbicide.
Whey protein concentrates	**Food grade**: Snack foods, juices, confectionery, ice cream, cookies, processed meats, milk, milk deserts, infant foods, diet products. **Industrial grade**: Cosmetics, skin creams, bath salts, detergents.
Lactose	**Food grade**: Pharmaceuticals, infant food production, fermentation medium, aroma absorbent (canned beans, peas, instant coffee, raw fish), food enricher (milk, cheese spreads, chocolate drinks, powdered coffee cream), food preparation (evaporated milk, ice cream, powdered soups), saccharose replacer, applied in the pastry industry to achieve golden brown crusts. **Industrial grade**: Silvering of mirrors, products to slow down combustion process in pyrotechnics, toothpaste, better nitrogen utilization in ruminant feeds.
Casein and caseinates	**Food grade**: Ingredient in noodles, chocolate, candies, mayonnaise, ice cream, cheese manufacture; binding ingredient, emulsifier, and milk substitute in processed foods. **Industrial grade**: Plastics (buttons, knitting needles), manufacture of synthetic fibers, chemical industry (paints, glues, glazed paper, putty, and cosmetics), reinforcing agent and stabilizer for rubber in automobile tires, nutritional supplement, and binder in calf milk replacers. Other technical applications include detergents, hair-setting products and cosmetics, lightweight concrete, wall boards, photo etching, computer circuits, electronic ignition components, water purification, insecticide sprays, and fertilizer.

APPENDIX B
STATISTICAL TABLES

Table B-1
Dairy cows: Number of dairy operations, dairy cattle inventories, milk production, and milk production per cow, by region, 1992-96

Year	Regions					
	Upper Midwest[1]	Northeast[2]	Central[3]	Southeast[4]	West[5]	U.S. total
	Number of dairy operations					
1992	55,500	32,850	45,030	18,200	17,700	169,280
1993	53,200	30,910	40,230	16,850	16,400	157,590
1994	50,600	29,900	37,230	15,100	15,300	148,130
1995	48,600	27,790	33,030	13,200	11,750	134,370
1996	45,700	26,510	30,230	11,500	11,300	125,240
	Dairy cattle inventories *(1,000 animals)*					
1992	2,852	1,830	1,921	1,047	2,114	9,764
1993	2,704	1,790	1,824	995	2,204	9,517
1994	2,619	1,765	1,792	953	2,303	9,431
1995	2,597	1,748	1,769	902	2,376	9,391
1996	2,541	1,738	1,733	858	2,418	9,287
	Milk production *(Million pounds)*					
1992	42,003	28,397	27,111	13,916	39,287	150,714
1993	40,711	28,028	26,708	13,732	40,864	150,043
1994	39,757	27,864	26,663	13,316	44,728	152,328
1995	40,345	28,524	26,554	12,903	45,862	154,188
1996	39,524	28,449	25,614	12,185	47,680	153,452
	Milk production *(Pounds per cow)*					
1992	14,728	15,518	14,115	13,291	18,585	15,436
1993	15,056	15,656	14,645	13,801	18,538	15,765
1994	15,180	15,785	14,881	13,973	19,426	16,151
1995	15,535	16,316	15,013	14,305	19,306	16,418
1996	15,555	16,373	14,782	14,202	19,719	16,523

[1] Michigan, Minnesota, North Dakota, South Dakota, Wisconsin.
[2] Connecticut, Delaware, Maine, Maryland, Massachusetts, New Hampshire, New Jersey, New York, Pennsylvania, Rhode Island, Vermont.
[3] Arkansas, Illinois, Indiana, Iowa, Kansas, Louisiana, Missouri, Nevada, Ohio, Oklahoma, Texas.
[4] Alabama, Florida, Georgia, Kentucky, Mississippi, North Carolina, South Carolina, Tennessee, Virginia, West Virginia.
[5] Arizona, California, Colorado, Idaho, Montana, Nevada, New Mexico, Oregon, Utah, Washington, Wyoming.

Source: Data compiled from USDA, AMS, *Dairy Market Statistics, Annual Summary*, 1992, 1994, and 1996 issues; and from USDA, NASS, *Cattle*, 1994, 1996, and 1997 issues.

Table B-2
Dairy processing: Number of plants producing manufactured dairy products and average output per plant, 1985, 1990, and 1995

Product	1985	1990	1995
		Number of plants	
Fluid	774	584	478
Butter	198	152	109
American cheese	452	298	233
All cheese	669	516	432
Canned milk	15	14	(1)
Cottage cheese curd	218	170	124
Ice cream	865	319	473
Nonfat dry milk	97	76	59
		Average production per plant *(1,000 pounds)*	
Fluid	71,500	98,800	122,300
Butter	6,302	8,567	11,566
American cheese	6,609	9,712	13,427
All cheese	7,595	11,747	16,065
Canned milk	42,353	43,046	(1)
Ice cream	[1]1,042	[2] 1,582	[2] 1,727

[1] Not available.
[2] Units are thousands of gallons.

Source: USDA, NASS, *Dairy Products*, various issues; USDA, AMS, *Federal Order Market Statistics*, various issues.

Table B-3
Dairy cows: Inventories by size of operation, by region, 1993 and 1996

(1,000 animals)

Region/State	Size of operation by herd size										Total inventory	
	1 - 29		30 - 49		50 - 99		100 - 199		200+			
	1993	1996	1993	1996	1993	1996	1993	1996	1993	1996	1993	1996
Upper Midwest[1]	189	139	702	583	1,092	983	503	558	217	278	2,704	2,541
Wisconsin	100	74	427	377	665	594	275	304	76	100	1,543	1,449
Minnesota	61	42	209	155	260	245	88	102	17	54	635	598
Northeast[2]	87	67	307	263	709	662	411	427	277	318	1,790	1,738
New York	25	19	97	79	284	260	190	197	131	147	727	702
Pennsylvania	45	39	161	148	271	264	115	129	48	64	640	644
Central[3]	135	114	253	183	606	539	411	427	418	471	1,824	1,733
Southeast[4]	44	29	84	57	233	207	263	228	371	337	995	858
West[5]	23	15	36	23	132	89	227	217	1,786	2,073	2,204	2,418
California	2	1	5	4	21	10	46	48	1,136	1,201	1,210	1,264
U.S. total	480	364	1,382	1,108	2,772	2,480	1,814	1,858	3,069	3,478	9,517	9,287

[1] Michigan, Minnesota, North Dakota, South Dakota, Wisconsin.
[2] Connecticut, Delaware, Maine, Maryland, Massachusetts, New Hampshire, New Jersey, New York, Pennsylvania, Rhode Island, Vermont.
[3] Arkansas, Illinois, Indiana, Iowa, Kansas, Louisiana, Missouri, Nevada, Ohio, Oklahoma, Texas.
[4] Alabama, Florida, Georgia, Kentucky, Mississippi, North Carolina, South Carolina, Tennessee, Virginia, West Virginia.
[5] Arizona, California, Colorado, Idaho, Montana, Nevada, New Mexico, Oregon, Utah, Washington, Wyoming.

Source: Data compiled from USDA, AMS, *Dairy Market Statistics, Annual Summary*, 1993 and 1996 issues; and from USDA, NASS, *Cattle*, 1994 and 1997 issues.

Table B-4
Dairy processing: Number of employees, payroll, number of workers, manhours, wages, and value of shipments for selected products, 1992-96

Product/year	All employees		Production workers			Value of production
	Number	Payroll	Number	Manhours	Wages	
	1,000 persons	*Million dollars*	*1,000 persons*	*Million manhours*	—— *Million dollars* ——	
Fluid milk:						
1992	63.0	1,844.0	32.6	71.1	897.0	21,952.0
1993	61.0	1,878.0	32.0	70.5	920.0	22,235.0
1994	60.0	1,914.0	31.0	69.9	944.0	22,521.0
1995	58.0	1,949.0	31.0	69.3	969.0	22,811.0
1996	56.0	(1)	30.5	(1)	(1)	23,104.0
Cheese:						
1992	36.2	879.2	29.1	61.2	654.2	18,154.7
1993	36.9	933.7	29.6	62.9	690.7	19,276.8
1994	37.6	991.6	30.1	64.7	729.3	20,468.3
1995	38.4	1,053.1	30.6	66.5	770.0	21,733.4
1996	39.0	(1)	31.0	(1)	(1)	23,037.0
Frozen desserts:						
1992	20.9	558.2	13.7	28.9	362.2	5,292.7
1993	21.0	585.6	13.6	29.3	384.3	5,511.9
1994	21.2	614.2	13.6	29.3	407.7	5,530.9
1995	21.3	644.3	13.4	29.7	432.6	5,759.9
1996	21.4	(1)	13.3	(1)	(1)	5,990.0

[1] Not available.

Source: Data compiled from International Dairy Foods Association, *Milk Facts, Cheese Facts, The Latest Scoop*, 1996 editions.

Table B-5
Dairy products: Government purchase and utilization of CCC stocks, 1992-96

(Million pounds)

Product	1992	1993	1994	1995	1996
Butter:					
Purchase	454	361	240	126	0
Utilization	516	535	424	250	1
Of which:					
Domestic sales	1	31	47	25	0
Domestic donations	171	171	159	118	1
Foreign donations	189	285	93	0	0
Export sales	154	49	124	107	0
Cheese:					
Purchase	65	74	61	74	74
Utilization	90	82	61	73	78
Of which:					
Domestic sales	0	0	0	0	0
Domestic donations	81	73	56	66	73
Foreign donations	0	0	0	0	0
Export sales	9	9	4	8	5
Nonfat dry milk:					
Purchase	132	431	303	502	106
Utilization	341	426	276	515	138
Of which:					
Domestic sales	2	1	0	0	9
Domestic donations	22	22	20	17	18
Foreign donations	113	28	30	23	11
Export sales	205	375	226	474	100

Source: USDA, FSA.

Table B-6
Dairy Export Incentive Program, quantity and bonus, by product, 1992-96, average

Product	1992	1993	1994	1995	1996	Average
			Quantity (*metric tons*)			
Anhydrous milkfat	82	472	0	15,242	0	3,159
Butter	2,685	6,948	23,678	0	0	6,662
Butteroil	20,650	9,163	15	2,239	0	6,413
Butteroil and/or anhydrous milkfat	0	3,831	14,238	0	0	3,614
Cream cheese	0	0	0	0	290	58
Cheddar cheese	2,892	2,500	2,030	517	0	1,588
Gouda cheese	0	0	19	0	0	4
Mozzarella cheese	300	491	1,164	1,339	1,334	926
Nonfat dry milk	113,141	117,147	118,616	128,788	45,127	104,564
Processed American cheese	0	65	198	505	831	320
Wholemilk powder	15,737	16,193	14,202	14,375	2,486	12,599
Total	155,487	156,810	174,160	163,005	50,068	139,906
			Value (*1,000 dollars*)			
Anhydrous milkfat	97	583	0	7,642	0	1,724
Butter	1,853	4,172	12,252	0	0	3,655
Butteroil	26,746	9,906	13	1,186	0	7,570
Butteroil and/or anhydrous milkfat	0	4,057	11,929	0	0	3,197
Cream cheese	0	0	0	0	109	22
Cheddar cheese	3,933	3,091	2,995	517	0	2,107
Gouda cheese	0	0	25	0	0	5
Mozzarella cheese	400	654	1,503	1,288	1,090	987
Nonfat dry milk	89,390	101,110	93,007	46,953	23,650	70,822
Processed American cheese	0	81	264	430	646	284
Wholemilk powder	17,881	19,347	17,144	10,844	2,013	13,446
Total	140,301	143,001	139,132	69,159	27,509	103,820

Source: USDA, FAS.

Table B-7
Dairy products: U.S. production, consumption, imports, and exports, 1992-96

(*Million pounds*)

Product	1992	1993	1994	1995	1996[1]
Butter:[2]					
Production	1,365	1,315	1,296	1,264	1,174
Domestic consumption	943	1,040	1,096	1,116	1,138
Imports	4	4	3	4	3
Exports[3]	308	321	208	143	44
Donated[4]	171	169	159	70	0
American cheese:					
Production	2,937	2,957	2,974	3,131	3,281
Domestic consumption	2,886	2,925	3,004	3,114	3,184
Imports	18	20	17	20	26
Exports[3]	31	24	33	40	50
Donated[4]	2	19	4	0	0
Other cheese:					
Production	3,552	3,571	3,760	3,786	3,937
Domestic consumption	3,749	3,830	3,985	4,060	4,179
Imports	267	300	315	317	308
Exports[3]	47	55	70	65	64
Nonfat dry milk:					
Production[5]	872	954	1,231	1,233	1,062
Domestic consumption	695	623	896	881	1,001
Imports	2	1	1	1	5
Exports[3]	265	306	272	376	359
Donated[4]	24	11	18	18	5
Evaporated & condensed milk:[6]					
Production	876	826	742	679	679
Domestic consumption	820	785	668	608	600
Imports	5	6	4	5	6
Exports[3]	52	58	65	91	90
Casein:					
Imports	201	171	197	199	209

[1] Preliminary.
[2] Includes butter equivalent of butteroil.
[3] Includes shipments to U.S. territories.
[4] Domestic disappearance from government sources.
[5] Human food only.
[6] Unskimmed, includes both bulk and case goods.

Source: USDA, ERS, *Dairy Outlook*, and *Livestock, Dairy, and Poultry Situation and Outlook*, various issues.

Table B-8
Dairy products: Per capita consumption, 1992-96

(*Pounds per capita*)

Product	1992	1993	1994	1995	1996[1]
Fluid milk and cream[2]	231.0	226.0	226.0	223.0	224.0
Butter	3.7	4.1	4.2	4.3	4.3
American cheese	11.4	11.4	11.6	11.9	12.1
Other cheese	14.8	14.9	15.4	15.5	15.8
Nonfat dry milk	2.7	2.4	3.5	3.4	3.8
Evaporated & condensed milk	3.2	3.1	2.6	2.3	2.3
Frozen products	29.0	29.3	30.0	29.4	28.7
Casein	0.8	0.7	0.8	0.8	0.8

[1] Preliminary.
[2] Product weight of beverage milk, fluid creams, egg nog, and yogurt sold or consumed on farms.

Source: USDA, ERS, *Dairy Outlook*, and *Livestock, Dairy, and Poultry Situation and Outlook*, various issues.

Table B-9
Dairy produce: U.S. exports of domestic merchandise, imports for consumption, and merchandise trade balance, by selected country and country group, 1992-96[1]

(*Million dollars*)

Item/country (group)	1992	1993	1994	1995	1996
U.S. exports of domestic merchandise:					
New Zealand	1	1	[2]0	[2]0	[2]0
Ireland	[2]0	[2]0	[2]0	1	[2]0
Italy	[2]0	[2]0	[2]0	[2]0	[2]0
France	2	9	8	3	3
Mexico	150	233	170	114	97
Canada	35	37	34	45	58
Japan	46	48	61	83	85
Netherlands	17	3	2	6	7
Denmark	[2]0	[2]0	[2]0	[2]0	[2]0
Germany	2	4	2	2	2
Total other	343	321	296	382	253
Total	593	655	572	636	506
EU-15	31	23	20	21	22
Latin America	208	281	215	193	144
Asian Pacific Rim	106	100	117	173	196
U.S. imports for consumption:					
New Zealand	150	154	201	193	253
Ireland	153	120	116	149	169
Italy	106	117	118	137	147
France	87	74	79	107	127
Mexico	[2]0	[2]0	2	10	9
Canada	9	13	14	22	32
Japan	[2]0	[2]0	[2]0	[2]0	[2]0
Netherlands	61	52	50	69	72
Denmark	53	53	56	60	66
Germany	22	25	31	27	46
Total other	204	228	255	277	277
Total	845	836	922	1,052	1,198
EU-15	552	525	546	624	714
Latin America	11	10	16	35	22
Asian Pacific Rim	169	181	229	227	289
U.S. merchandise trade balance:					
New Zealand	-149	-153	-200	-193	-253
Ireland	-153	-120	-116	-148	-169
Italy	-106	-117	-118	-137	-147
France	-86	-65	-72	-104	-124
Mexico	-150	-233	-168	104	88
Canada	26	24	20	23	26
Japan	46	48	61	83	85
Netherlands	-45	-49	-48	-64	-65
Denmark	-53	-53	-56	-60	-66
Germany	-22	-21	-29	-25	-44
Total other	140	92	41	106	-25
Total	-252	-182	-356	-416	-693
EU-15	-521	-502	-526	-603	-692
Latin America	198	270	199	157	132
Asian Pacific Rim	-64	-81	-112	-54	-93

[1] Import values are based on customs value; export values are based on f.a.s. value, U.S. port of export.
[2] Less than 500,000 dollars.

Source: Compiled from official statistics of the U.S. Department of Commerce.

Table B-10
Dairy products: Ratio of imports to consumption and exports to production, 1992-96

(Percent)

Product	1992	1993	1994	1995	1996[1]
Ratio of imports to consumption:					
Butter	0.4	0.4	0.3	0.4	0.3
American cheese	0.6	0.7	0.6	0.6	0.8
Other cheese	7.1	7.8	7.9	7.8	7.4
Nonfat dry milk	0.2	0.2	0.1	0.1	0.5
Evaporated & condensed milk	0.6	0.8	0.6	0.8	1.0
Ratio of exports to production:					
Butter	22.6	24.4	16.0	11.3	3.7
American cheese	1.1	0.8	1.1	1.3	1.5
Other cheese	1.3	1.5	1.9	1.7	1.6
Nonfat dry milk	30.4	32.1	22.1	30.5	33.8
Evaporated & condensed milk	5.9	7.0	8.8	13.4	13.3

[1] Preliminary.

Source: USDA, ERS, *Dairy Outlook*, and *Livestock, Dairy, and Poultry Situation and Outlook*, various issues.

Table B-11
Average annual milk production per cow and producer prices for selected countries, 1995

Country	Production per cow	Producer price
	Pounds	*Dollars per cwt*
United States	16,418	12.74
EU-12	12,037	17.37
Switzerland	11,310	33.44
Japan	15,223	44.91
Poland	7,017	7.78
Australia	10,421	9.80
New Zealand	7,348	9.17

Source: Complied from Australian Dairy Corporation, *Dairy Compendium*, 1996, tables 2.2 and 2.5.

Table B-12
Dairy products: U.S. production and beginning stocks, 1992-96

(Million pounds)

Product	1992	1993	1994	1995	1996[1]
Fluid milk:[2]					
Production	56,874	58,011	60,786	61,483	61,264
Butter:[3]					
Production	1,365	1,315	1,296	1,264	1,174
Beginning stocks	550	455	244	80	19
American cheese:					
Production	2,937	2,957	2,974	3,131	3,281
Beginning stocks	319	350	359	310	307
Other cheese:					
Production	3,552	3,571	3,760	3,786	3,937
Beginning stocks	98	121	107	127	105
Nonfat dry milk:[4]					
Production	872	954	1,231	1,233	1,062
Beginning stocks	215	81	90	131	85
Evaporated & condensed milk:[5]					
Production	876	826	742	679	679
Beginning stocks	36	45	34	47	31
Ice cream:[6]					
Production	([7])	([7])	([7])	[6]1,263	[6]1,286

[1] Preliminary.
[2] Total amount of milk marketed less milk used for production of dairy products.
[3] Includes butter equivalent of butteroil.
[4] Human food only.
[5] Unskimmed, includes both bulk and case goods.
[6] Million gallons, includes regular, lowfat, and nonfat.
[7] Not available.

Source: USDA, ERS, *Dairy Outlook*, and *Livestock, Dairy, and Poultry Situation and Outlook*, various issues; USDA, NASS, *Dairy Products, Annual Report*, various issues.

Table B-13
Dairy produce: Composition of U.S. imports, 1992-96

Product	1992	1993	1994	1995	1996
	Value (*million dollars*)				
Milk and cream, not concentrated or sweetened[1]	4	4	4	4	8
Milk and cream, concentrated or sweetened[2]	4	5	5	5	12
Buttermilk, yogurt, kephir, etc.[3]	[4]0	[4]0	1	[4]0	1
Whey[5]	11	17	32	26	60
Butter and other fats and oils derived from milk[6]	2	2	2	1	9
Cheese and curd[7]	434	464	491	549	584
Casein and caseinates[8]	389	342	386	463	520
Ice cream[9]	1	1	1	2	4
Total	845	836	922	1,052	1,198
	Percent				
Share of total:					
Cheese and curd[7]	51	56	53	52	49
Casein and caseinates[8]	46	41	42	44	43

[1] Includes Harmonized Tariff Schedule (HTS) heading 0401.
[2] 0402 of HTS.
[3] 0403 of HTS.
[4] Less than 500,000 dollars.
[5] 0404 of HTS.
[6] 0405 of HTS.
[7] 0406 of HTS.
[8] 35010100, 35010500, 35019060, 35022000, and 35029000 of HTS.
[9] 2105 of HTS.

Source: Compiled from official statistics of the U.S. Department of Commerce.

Table B-14
Cheese and curd, casein and caseinates, and all dairy products: U.S. imports for consumption, by selected country and country group, 1992-96[1]

(Million dollars)

Product/country (group)	1992	1993	1994	1995	1996
Cheese and curd:					
Italy	105	116	116	136	145
France	48	44	50	61	62
Denmark	41	43	45	49	53
New Zealand	32	35	35	37	50
Netherlands	30	26	25	33	33
United Kingdom	15	23	25	17	30
Switzerland	22	21	23	29	24
Germany	8	13	12	8	23
Norway	25	25	21	23	22
Finland	18	18	17	19	19
Total other	88	99	123	137	122
Total	434	464	491	549	584
EU-15	303	324	339	361	407
Latin America	11	10	14	24	12
Asian Pacific Rim	43	47	46	52	65
Casein and caseinates:					
New Zealand	113	113	155	142	172
Ireland	144	112	106	139	136
France	39	29	29	46	64
Netherlands	28	23	23	34	38
Russia	11	12	11	14	20
Germany	11	10	11	16	17
Australia	7	12	14	16	16
Poland	13	11	11	15	15
Denmark	10	10	11	11	13
India	0	0	0	0	7
Total other	12	10	15	30	25
Total	389	342	386	463	520
EU-15	236	184	182	249	270
Latin America	[2]0	[2]0	[2]0	8	6
Asian Pacific Rim	120	126	169	159	187
All dairy products:					
New Zealand	150	154	201	193	253
Ireland	153	120	116	149	169
Italy	106	117	118	137	147
France	87	74	79	107	127
Netherlands	61	52	50	69	72
Denmark	53	53	56	60	66
Germany	22	25	31	27	46
Australia	19	26	28	32	35
Canada	9	13	14	22	32
United Kingdom	18	24	26	19	31
Total other	167	186	203	237	220
Total	845	836	922	1,052	1,198
EU-15	552	525	545	624	714
Latin America	11	10	16	35	22
Asian Pacific Rim	169	181	229	227	289

[1] Import values are based on customs value.
[2] Less than 500,000 dollars.

Source: Compiled from official statistics of the U.S. Department of Commerce.

Table B-15
U.S. dairy imports. Ad valorem equivalent rates of duty based on customs value and dutiable value, average 1996

(Percent)

Product	Duty based on customs value	Duty based on dutiable value
Milk and cream, not concentrated or sweetened[1]	2.4	2.4
Milk and cream, concentrated or sweetened[2]	3.8	5.1
Buttermilk, yogurt, kephir, etc.[3]	2.9	3.2
Whey[4]	0.4	0.4
Butter and other fats and oils derived from milk[5]	8.5	9.1
Cheese and curd[6]	8.0	10.4
Casein and caseinates[7]	0.0	0.1
Ice cream[8]	17.0	19.1
Total	4.1	7.3

[1] Includes Harmonized Tariff Schedule (HTS) heading 0401.
[2] 0402 of HTS.
[3] 0403 of HTS.
[4] 0404 of HTS.
[5] 0405 of HTS.
[6] 0406 of HTS.
[7] 35019060, 35022000, and 35029000 of HTS.
[8] 2105 of HTS.

Source: Compiled from official statistics of the U.S. Department of Commerce.

Table B-16
Dairy produce: Composition of U.S. exports, 1992-96

Product	1992	1993	1994	1995	1996
	Value (*millions dollars*)				
Milk and cream, not concentrated or sweetened[1]	27	38	43	21	29
Milk and cream, concentrated or sweetened[2]	173	212	148	239	76
Buttermilk, yogurt, kephir, etc.[3]	20	20	22	15	9
Whey[4]	74	72	77	98	126
Butter and other fats and oils derived from milk[5]	158	170	108	63	42
Cheese and curd[6]	49	56	72	89	105
Casein and caseinates[7]	17	13	12	24	27
Ice cream[8]	74	74	90	87	94
Total	593	655	572	636	506
	Percent				
Share of total:					
Milk and cream, concentrated or sweetened[2]	29	32	26	38	15
Whey[4]	12	11	13	15	25
Cheese and curd[6]	8	8	12	14	21

[1] Includes Harmonized Tariff Schedule (HTS) heading 0401.
[2] 0402 of HTS.
[3] 0403 of HTS.
[4] 0404 of HTS.
[5] 0405 of HTS.
[6] 0406 of HTS.
[7] 35010100, 35010500, 35019060, 35022000, and 35029000 of HTS.
[8] 2105 of HTS.

Source: Compiled from official statistics of the U.S. Department of Commerce.

Table B-17
Dairy produce: Average consumption and imports of United States and top five foreign markets (excluding United States), 1992-96

	Average consumption 1992-96		Average imports 1992-96[1]	
Product	Country/region	Consumption	Country/region	Imports
		1,000 metric tons		*1,000 metric tons*
Fluid milk	United States	26,279		
	EU-15	34,322		
	India	28,530		
	Russia	14,450		
	Brazil	9,397		
	Japan	5,148		
	World total	(2)		
Butter	United States	540	United States	2
	EU-15	1,654	Russia	201
	India	1,216	EU-15	72
	Russia	751	Egypt	45
	Ukraine	264	Algeria	26
	Poland	164	Morocco	24
	World total	(2)	World total	680
Cheese	United States	3,190	United States	146
	EU-15	4,992	Japan	146
	Mexico	425	EU-15	117
	Brazil	373	Russia	52
	Argentina	352	Brazil	34
	Egypt	324	Australia	28
	World total	(2)	World total	974
Nonfat Dry Milk	United States	384	United States	0
	EU-15	997	Mexico	185
	Japan	283	Algeria	118
	Mexico	206	Japan	87
	Russia	199	Malaysia	83
	Algeria	121	Thailand	74
	World total	(2)	World total	1,082

[1] Imports totals do not equal total exports (table B-19) because of reexportation or reporting differences among nations (or both).
[2] World consumption not reported in any of the sources listed below.

Source: Compiled from U.S. Department of Agriculture, Foreign Agricultural Service, *Dairy: World Markets and Trade*, July 1997; Food and Agriculture Organization, *Dairy Situation and Outlook*, Feb. 1997; Food and Agricultural Policy Research Institute, *Industry Sponsored Dairy Outlook and Scenario Analysis*, July 1997; and World Trade Organization, *The World Market for Dairy Products 1996*, Jan. 1997.

Table B-18
Whey, cheese, and curd, and all dairy products: U.S. exports by selected country and country group, 1992-96[1]

(*Million dollars*)

Product/country (group)	1992	1993	1994	1995	1996
Whey:					
Japan	17	17	19	26	28
Canada	11	13	13	15	25
Mexico	15	15	16	12	24
Taiwan	2	4	5	7	8
Korea	2	3	3	5	6
Netherlands	1	0	0	4	5
Philippines	4	3	4	4	4
Hong Kong	3	1	2	4	4
China	1	0	1	4	3
Thailand	1	1	0	1	3
Total other	17	15	14	16	16
Total	74	72	77	98	126
EU-15	3	1	1	5	6
Latin America	20	20	22	19	33
Asian Pacific Rim	37	35	39	56	60
Cheese and curd:					
Japan	8	9	11	14	19
Canada	10	10	9	14	16
Korea	0	1	3	10	14
Mexico	15	20	27	13	13
Brazil	0	1	2	5	7
Argentina	0	1	2	4	3
Saudi Arabia	0	1	1	2	3
United Kingdom	0	0	0	2	2
Kuwait	0	0	1	1	2
United Arab Emirates	0	0	0	1	2
Total other	16	13	16	23	24
Total	49	56	72	89	105
EU-15	1	1	1	3	5
Latin America	20	27	37	31	36
Asian Pacific Rim	11	13	18	28	39
All dairy products:					
Mexico	150	234	171	114	97
Japan	47	49	62	83	85
Canada	35	37	34	45	58
Korea	4	7	9	22	32
Algeria	32	30	62	101	19
Hong Kong	10	12	14	18	19
Russia	88	103	35	37	18
Taiwan	9	11	13	17	18
Philippines	10	4	7	11	12
Brazil	4	1	3	17	9
Total other	210	173	169	171	139
Total	593	655	572	636	506
EU-15	31	23	21	21	22
Latin America	208	281	215	193	144
Asian Pacific Rim	106	100	117	173	196

[1] Export values are based on f.a.s. value, U.S. port of export.

Source: Compiled from official statistics of the U.S. Department of Commerce.

Table B-19
Dairy produce: Average production and exports of United States and top five foreign markets (excluding United States), 1992-96

	Average production 1992-96		Average exports 1992-96[1]	
Product	Country/region	Production	Country/region	Exports
		1,000 metric tons		*1,000 metric tons*
Fluid milk	United States	69,390		
	EU-15	120,940		
	Russia	42,075		
	India	31,400		
	Ukraine	17,902		
	Brazil	17,342		
	World total	460,000		
Butter	United States	582	United States	92
	EU-15	1,760	New Zealand	232
	India	1,214	EU-15	215
	Russia	550	Australia	78
	New Zealand	286	Poland	10
	Poland	170	Canada	9
	World total	6,852	World total	707
Cheese	United States	3,074	United States	24
	EU-15	5,467	EU-15	533
	Mexico	400	New Zealand	142
	Argentina	357	Australia	94
	Brazil	337	Switzerland	62
	Egypt	304	Canada	12
	World total	14,431	World total	1,001
Nonfat Dry Milk	United States	486	United States	116
	EU-15	1,209	EU-15	305
	Russia	211	Australia	157
	Japan	200	New Zealand	149
	Australia	200	Poland	108
	New Zealand	172	Canada	34
	World total	3,478	World total	1,068

[1] Export totals do not equal total imports (table B-17) because of reexportation or reporting differences among nations (or both).
[2] World consumption not reported in any of the sources listed below.

Source: Compiled from U.S. Department of Agriculture, Foreign Agricultural Service, *Dairy: World Markets and Trade*, July 1997; Food and Agriculture Organization, *Dairy Situation and Outlook*, Feb. 1997; Food and Agricultural Policy Research Institute, *Industry Sponsored Dairy Outlook and Scenario Analysis*, July 1997; and World Trade Organization, *The World Market for Dairy Products 1996*, Jan. 1997.

Table B-20
Butter, cheese and nonfat dry milk: World exports by supplier and market, 1995

(*Metric tons*)

Product/Market	United States	EU-15	Australia	New Zealand	Others	World Total
Butter:						
Africa	31,016	32,611	9,646	29,151	2,996	105,420
Americas	13,815	19,843	2,564	16,830	1,196	54,248
Southeast Asia	2,777	17,147	34,771	25,736	0	80,431
Other Asia	2,361	4,692	6,787	19,217	477	33,534
Middle East	1,421	44,073	6,212	26,044	1,159	78,909
Europe	360	12,975	977	76,257	9,028	99,597
FSU	16,308	80,342	426	29,513	11,600	138,189
Pacific	1,110	588	451	10,524	20	12,693
Other	0	17,406	0	0	21,675	39,081
Total	69,168	229,677	61,834	233,272	48,151	642,102
Cheese:						
Africa	2,226	42,676	2,128	3,460	811	51,301
Americas	15,788	140,613	10,758	46,692	36,616	250,467
Southeast Asia	446	3,481	12,911	11,867	247	28,955
Other Asia	8,767	45,962	62,243	52,899	10,994	180,865
Middle East	4,051	113,462	17,575	4,601	7,807	147,496
Europe	987	141,535	7,049	18,414	64,886	232,871
FSU	140	61,110	530	11,618	2,967	76,365
Pacific	75	9,620	2,010	19,241	1,544	32,490
Other	2	67	900	0	12	981
Total	32,485	558,526	116,104	168,792	125,884	1,001,791
Nonfat dry milk:						
Africa	80,806	68,086	275	376	14,853	164,396
Americas	60,173	126,607	3,372	18,528	46,018	254,698
Southeast Asia	16,802	88,758	107,501	48,596	30,837	292,494
Other Asia	3,848	71,989	12,097	27,095	41,026	156,055
Middle East	6,687	15,258	502	13,183	1,447	37,077
Europe	203	6,157	379	208	27,085	34,032
FSU	254	2,062	0	16	392	2,724
Pacific	0	844	903	2,992	0	4,739
Other	0	1,566	0	0	88,919	90,485
Total	168,773	381,327	125,029	110,994	250,577	1,036,700

Source: Australian Dairy Corporation, *Dairy Compendium, 1996.* Table 3.13.

APPENDIX C
DAIRY PRODUCTS: *HARMONIZED TARIFF SCHEDULE,* U.S. EXPORTS, 1996, AND U.S. IMPORTS, 1996

Table C-1
Dairy produts: *Harmonized Tariff Schedule* subheadings; description; U.S. col 1. rate of duty as of Jan. 1, 1997; U.S. exports, 1996; and U.S. imports, 1996

HTS subheading	Brief description	Col. 1 rate of duty as of Jan. 1, 1997		U.S. exports 1996	U.S. imports 1996
		General	Special[1]		
				— Value *(1,000 dollars)* —	
0401.10.00	Milk and cream, not concentrated or sweetened, fat content, by weight, not exceeding 1 percent	0.37¢/liter	Free (CA,E,IL,J,MX)	4,231	3
0401.20.20	Milk and cream, not concentrated or sweetened, fat content, by weight, exceeding 1 percent, but not exceeding 6 percent, for not over 11,356,236 liters entering in any calendar year	0.47¢/liter	Free (CA, E,IL,J,MX)	([3])	2,030
0401.20.40	Milk and cream, not concentrated or sweetened, fat content, by weight, not exceeding 1 percent, but not exceeding 6 percent, over 11,356,236 liters entering in any calendar year	1.6¢/liter	Free (IL,MX) 0.1¢/liter (CA)	([3])	0
0401.30.02	Milk and cream, not concentrated or sweetened, fat content, by weight, exceeding 6 percent, but not exceeding 45 percent, not counted towards tariff-rate quota	3.2¢/liter	Free (E,IL,J,MX) 0.3¢/liter (CA)	([4])	0
0401.30.05	Milk and cream, not concentrated or sweetened, fat content, by weight, exceeding 6 percent, but not exceeding 45 percent, under tariff-rate quota	3.2¢/liter	Free (E,IL,J) 0.3¢/liter (CA)	([4])	5,663
0401.30.25	Milk and cream, not concentrated or sweetened, fat content, by weight, exceeding 6 percent, but not exceeding 45 percent, entering over tariff-rate quota	84¢/liter	([2])	([4])	63
0401.30.42	Milk and cream, not concentrated or sweetened, fat content, by weight, exceeding 45 percent, not counted towards tariff-rate quota	12.3¢/kg	Free (E,IL,J,MX)1.2¢/kg (CA)	([4])	154
0401.30.50	Milk and cream, not concentrated or sweetened, fat content, by weight, exceeding 45 percent, under tariff-rate quota	12.3¢/kg	Free (E,IL,J) 1.2¢/kg (CA)	([4])	335
0401.30.75	Milk and cream, not concentrated or sweetened, fat content, by weight, exceeding 45 percent, entering outside tariff-rate quota	$1.791/kg		([4])	7

See footnotes at end of table

Table C-1—*Continued*
Dairy products: *Harmonized Tariff Schedule* subheadings; description; U.S. col. 1 rate of duty as of Jan. 1, 1997; U.S. exports, 1996; and U.S. imports, 1996

HTS subheading	Brief description	Col. 1 rate of duty as of Jan. 1, 1997		U.S. exports 1996	U.S. imports 1996
		General	Special[1]		
				Value *(1,000 dollars)*	
0402.10.05	Milk and cream, concentrated or sweetened, in powder, granules, or other solid form, fat content, by weight, not exceeding 1.5 percent, not counted towards tariff-rate quota	3.3¢/kg	Free (E,IL,J,MX) 0.3¢/kg (CA)	([5])	11
0402.10.10	Milk and cream, concentrated or sweetened, in powder, granules, or other solid form, fat content, by weight, not exceeding 1.5 percent, under tariff-rate quota	3.3¢/kg	Free (E,IL,J) 0.3¢/kg (CA)	([5])	3,428
0402.10.50	Milk and cream, concentrated or sweetened, in powder, granules, or other solid form, fat content, by weight, not exceeding 1.5 percent, over tariff-rate quota	94.2¢/kg	([2])	([5])	155
0402.21.02	Milk and cream, concentrated, not sweetened, in powder, granules, or other solid form, fat content, by weight, exceeding 1.5 percent, but not exceeding 3 percent, not counted towards tariff-rate quota	3.3¢/kg	Free (E,IL,J,MX) 0.3¢/kg (CA)	([6])	34
0402.21.05	Milk and cream, concentrated, not sweetened, in powder, granules, or other solid form, fat content, by weight, exceeding 1.5 percent, but not exceeding 3 percent, under tariff-rate quota	3.3¢/kg	Free (E,IL,J) 0.3¢/kg (CA)	([6])	709
0402.21.25	Milk and cream, concentrated, not sweetened, in powder, granules, or other solid form, fat content, by weight, exceeding 1.5 percent, but not exceeding 3 percent, over tariff-rate quota	94.2¢/kg	([2])	([6])	630
0402.21.27	Milk and cream, concentrated, not sweetened, in powder, granules, or other solid form, fat content, by weight, exceeding 3 percent, but not exceeding 35 percent, not counted towards tariff-rate quota	6.8¢/kg	Free (E,IL,J,MX) 0.6¢/kg (CA)	([6])	50
0402.21.30	Milk and cream, concentrated, not sweetened, in powder, granules, or other solid form, fat content, by weight, exceeding 3 percent, but not exceeding 35 percent, under tariff-rate quota	6.8¢/kg	Free (E,IL,J) 0.6¢/kg (CA)	([6])	1,500
0402.21.50	Milk and cream, concentrated, not sweetened, in powder, granules, or other solid form, fat content, by weight, exceeding 3 percent, but not exceeding 35 percent, over tariff-rate quota	$1.189/kg	([2])	([6])	432

See footnotes at end of table

Table C-1—*Continued*
Dairy products: *Harmonized Tariff Schedule* subheadings; description; U.S. col. 1 rate of duty as of Jan. 1, 1997; U.S. exports, 1996; and U.S. imports, 1996

HTS subheading	Brief description	Col. 1 rate of duty as of Jan. 1, 1997		U.S. exports 1996	U.S. imports 1996
		General	Special[1]	— Value *(1,000 dollars)* —	
0402.21.73	Milk and cream, concentrated, not sweetened, in powder, granules, or other solid form, fat content, by weight, exceeding 35 percent, not counted towards tariff-rate quota	13.7¢/kg	Free (E,IL.J) 1.3¢/kg (CA)	([6])	0
0402.21.75	Milk and cream, concentrated, not sweetened, in powder, granules, or other solid form, fat content, by weight, exceeding 35 percent, under tariff-rate quota	13.7¢/kg	Free (E,IL.J) 1.3¢/kg (CA)	([6])	0
0402.21.90	Milk and cream, concentrated, not sweetened, in powder, granules, or other solid form, fat content, by weight, exceeding 35 percent, over tariff-rate quota	$1.694/kg	([2])	([6])	0
0402.29.05	Milk and cream, concentrated or sweetened, in powder, granules, or other solid form, fat content, by weight, exceeding 1.5 percent, not counted towards tariff-rate quota	17.5%	Free (E,IL,J,MX) 1.7% (CA)	([7])	0
0402.29.10	Milk and cream, concentrated or sweetened, in powder, granules, or other solid form, fat content, by weight, exceeding 1.5 percent, under tariff-rate quota	17.5%	Free (E,IL,J) 1.7% (CA)	([7])	787
0402.29.50	Milk and cream, concentrated or sweetened, in powder, granules, or other solid form, fat content, by weight, exceeding 1.5 percent, over tariff-rate quota	$1.202/kg + 16.2%	([2])	([7])	322
0402.91.03	Milk and cream, concentrated, not sweetened, in other than powder, granules, or other solid form, in airtight containers, not counted towards tariff-rate quota	2.2¢/kg	Free (E,IL,J,MX) 0.2¢/kg (CA)	([8])	0
0402.91.06	Milk and cream, concentrated, not sweetened, in other than powder, granules, or other solid form, in other than airtight containers, not counted towards tariff-rate quota	3.3¢/kg	Free (E,IL,J,MX) 0.3¢/kg (CA)	([8])	0
0402.91.10	Milk and cream, concentrated, not sweetened, in other than powder, granules, or other solid form, in airtight containers, under tariff-rate quota	2.2¢/kg	Free (E,IL,J) 0.2¢/kg (CA)	([8])	978
0402.91.30	Milk and cream, concentrated, not sweetened, in other than powder, granules, or other solid form, in other than airtight containers, under tariff-rate quota	3.3¢/kg	Free (E,IL,J) 0.3¢/kg (CA)	([8])	238

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Table C-1—*Continued*
Dairy products: *Harmonized Tariff Schedule* subheadings; description; U.S. col. 1 rate of duty as of Jan. 1, 1997; U.S. exports, 1996; and U.S. imports, 1996

HTS subheading	Brief description	Col. 1 rate of duty as of Jan. 1, 1997		U.S. exports 1996	U.S. imports 1996
		General	Special[1]		
				— Value *(1,000 dollars)* —	
0402.91.70	Milk and cream, concentrated, not sweetened, in other than powder, granules, or other solid form, in airtight containers, over tariff-rate quota	34.1¢/kg	([2])	([8])	1
0402.91.90	Milk and cream, concentrated, not sweetened, in other than powder, granules, or other solid form, in other than airtight containers, over tariff-rate quota	34.1¢/kg	([2])	([8])	18
0402.99.03	Condensed milk, in airtight containers, not counted towards tariff-rate quota	3.9¢/kg	Free (E,IL,J,MX) 0.3¢/kg (CA)	([9])	0
0402.99.06	Condensed milk, in other than airtight containers, not counted towards tariff-rate quota	3.3¢/kg	Free (E,IL,J,MX) 0.3¢/kg (CA)	([9])	0
0401.99.10	Condensed milk, in airtight containers, under tariff-rate quota	3.9¢/kg	Free (E,IL,J) 0.3¢/kg (CA)	([9])	857
0401.99.30	Condensed milk, in other than airtight containers, under tariff-rate quota	3.3¢/kg	Free (E,IL,J) 0.3¢/kg (CA)	([9])	0
0402.99.45	Condensed milk, in airtight containers, over tariff-rate quota	54¢/kg	([2])	([9])	1,344
0402.99.55	Condensed milk, in other than airtight containers, over tariff-rate quota	54¢/kg	([2])	([9])	0
0402.99.68	Milk and cream, concentrated, or sweetened, not elsewhere specified or included, not counted towards tariff-rate quota	17.5%	Free (E,IL,J,MX) 1.7% (CA)	([9])	0
0402.99.70	Milk and cream, concentrated, or sweetened, not elsewhere specified or included, under tariff-rate quota	17.5%	Free (E,IL,J,) 1.7% (CA)	([9])	0
0402.99.90	Milk and cream, concentrated, or sweetened, not elsewhere specified or included, over tariff-rate quota	50.4¢/kg + 16.2%	([2])	([9])	286

See footnotes at end of table

Table C-1—*Continued*
Dairy products: *Harmonized Tariff Schedule* subheadings; description; U.S. col. 1 rate of duty as of Jan. 1, 1997; U.S. exports, 1996; and U.S. imports, 1996

HTS subheading	Brief description	Col. 1 rate of duty as of Jan. 1, 1997		U.S. exports 1996	U.S. imports 1996
		General	Special[1]	— Value *(1,000 dollars)* —	
0403.10.05	Yogurt, in dry form, not counted towards tariff-rate quota	20%	Free (E, IL, J, MX) 2% (CA)	([10])	0
0403.10.10	Yogurt, in dry form, under tariff-rate quota	20%	Free (E, IL, J) 2% (CA)	([10])	3
0403.10.50	Yogurt, in dry form, over tariff-rate quota	$1.126/kg +18.5%	([2])	([10])	0
0403.10.90	Yogurt, in other than dry form	18.5%	Free (E,IL,J,MX) 2% (CA)	([10])	71
0403.90.02	Fluid sour cream, containing not over 45 percent by weight of butterfat, not counted towards tariff-rate quota	3.2¢/liter	Free (E,IL,J,MX) 0.3¢/liter (CA)	([11])	0
0403.90.04	Fluid sour cream, containing not over 45 percent by weight of butterfat, under tariff-rate quota	3.2¢/liter	Free (E,IL,J) 0.3¢/liter (CA)	([11])	0
0403.90.16	Fluid sour cream, containing not over 45 percent by weight of butterfat, over tariff-rate quota	84¢/liter	([2])	([11])	0
0403.90.20	Fluid buttermilk	0.37¢/liter	Free (CA,E,IL,J,MX)	([11])	2
0403.90.37	Dried sour cream, containing not over 6 percent by weight of butterfat, not counted towards tariff-rate quota	3.3¢/kg	Free (E,IL,J,MX) 0.3¢/kg (CA)	([11])	0
0403.90.41	Dried sour cream, containing not over 6 percent by weight of butterfat, under tariff-rate quota	3.3¢/kg	Free (E,IL,J) 0.3¢/kg (CA)	([11])	518
0403.90.45	Dried sour cream, containing not over 6 percent by weight of butterfat, over tariff-rate quota	95.3¢/kg	([2])	([11])	0
0403.90.47	Dried sour cream, containing over 6 percent, but not over 35 percent by weight of butterfat, not counted towards tariff-rate quota	6.8¢/kg	Free (E,IL,J,MX) 0.6¢/kg (CA)	([11])	0
0403.90.51	Dried sour cream, containing over 6 percent, but not over 35 percent by weight of butterfat, under tariff-rate quota	6.8¢/kg	Free (E,IL,J) 0.6¢/kg (CA)	([11])	77
0403.90.55	Dried sour cream, containing over 6 percent, but not over 35 percent by weight of butterfat, over tariff-rate quota	$1.189/kg	([2])	([11])	0

See footnotes at end of table

Table C-1—*Continued*
Dairy products: *Harmonized Tariff Schedule* subheadings; description; U.S. col. 1 rate of duty as of Jan. 1, 1997; U.S. exports, 1996; and U.S. imports, 1996

HTS subheading	Brief description	Col. 1 rate of duty as of Jan. 1, 1997		U.S. exports 1996	U.S. imports 1996
		General	Special[1]	— Value *(1,000 dollars)* —	
0403.90.57	Dried sour cream, containing over 35 percent, but not over 45 percent by weight of butterfat, not counted towards tariff-rate quota	13.7¢/kg	Free (E,IL,J,MX) 1.3¢/kg (CA)	([11])	0
0403.90.61	Dried sour cream, containing over 35 percent, but not over 45 percent by weight of butterfat, under tariff-rate quota	13.7¢/kg	Free (E, IL, J) 1.3¢/kg (CA)	([11])	0
0403.90.65	Dried sour cream, containing over 35 percent, but not over 45 percent by weight of butterfat, over tariff-rate quota	$1.694/kg	([2])	([11])	0
0403.90.72	Sour cream, containing over 45 percent by weight of butterfat, not counted towards tariff-rate quota	12.3¢/kg	Free (E, IL, J, MX) 1.2¢/kg (CA)	([11])	0
0403.90.74	Sour cream, containing over 45 percent by weight of butterfat, under tariff-rate quota	12.3¢/kg	Free (E,IL,J) 1.2¢/kg (CA)	([11])	0
0403.90.78	Sour cream, containing over 45 percent by weight of butterfat, over tariff-rate quota	$1.791/kg	([2])	([11])	0
0403.90.85	Kephir and other fermented or acidified milk and cream, other than dried fermented milk, or other than dried milk with added lactic ferments	18.5%	Free (E,IL,J,MX) 2% (CA)	([11])	25
0403.90.87	Kephir and other fermented or acidified milk and cream, dried fermented milk, or dried milk with added lactic ferments, not counted in tariff-rate quota	20%	Free (E,IL,J,MX) 2% (CA)	([11])	0
0403.90.90	Kephir and other fermented or acidified milk and cream, dried fermented milk, or dried milk with added lactic ferments, under tariff-rate quota	20%	Free (E,IL,J) 2% (CA)	([11])	18
0403.90.95	Kephir and other fermented or acidified milk and cream, dried fermented milk, or dried milk with added lactic ferments, over tariff-rate quota	$1.126/kg +18.5%	([2])	([11])	6
0404.10.05	Whey protein concentrates	$9.2%	Free (A, E, IL, J, MX) 1% (CA)	8,591	2,616

See footnotes at end of table

Table C-1—*Continued*
Dairy products: *Harmonized Tariff Schedule* subheadings; description; U.S. col. 1 rate of duty as of Jan. 1, 1997; U.S. exports, 1996; and U.S. imports, 1996

HTS subheading	Brief description	Col. 1 rate of duty as of Jan. 1, 1997		U.S. exports 1996	U.S. imports 1996
		General	Special[1]	— Value *(1,000 dollars)* —	
0404.10.08	Modified whey, other than whey protein concentrates, whether or not concentrated or sweetened, not counted towards tariff-rate quota	13%	Free (E, IL, J, MX) 1% (CA)	([12])	0
0404.10.11	Modified whey, other than whey protein concentrates, whether or not concentrated or sweetened, under tariff-rate quota	13%	Free (E, IL, J) 1% (CA)	([12])	27
0404.10.15	Modified whey, other than whey protein concentrates, whether or not concentrated or sweetened, over tariff-rate quota	$1.126/kg + 9.2%	([2])	([12])	0
0404.10.20	Fluid whey, whether or not concentrated or sweetened	0.37¢/liter	Free (CA, E,IL,J, MX)	4,191	21
0404.10.48	Dried whey, whether or not concentrated or sweetened, not counted towards tariff-rate quota	3.3¢/kg	Free (E,IL,J,MX) 0.3¢/kg (CA)	([13])	0
0404.10.50	Dried whey, whether or not concentrated or sweetened, under tariff-rate quota	3.3¢/kg	Free (E,IL,J) 0.3¢/kg (CA)	([13])	1
0404.10.90	Dried whey, whether or not concentrated or sweetened, over tariff-rate quota	95.3¢/kg	([2])	([13])	1
0404.90.10	Milk protein concentrates	0.41¢/kg	Free (A, CA, E,IL,J,MX)	([14])	56,855
0404.90.28	Dairy products consisting of natural milk constituents, whether or not concentrated or sweetened, not elsewhere specified or included, containing over 5.5 percent by weight of butterfat and not packaged for retail sale, not counted towards tariff-rate quota	14.5%	Free (E,IL,J,MX) 1% (CA)	([14])	0
0404.90.30	Products consisting of natural milk constituents, whether or not concentrated or sweetened, not elsewhere specified or included, containing over 5.5 percent by weight of butterfat and not packaged for retail sale, under tariff-rate quota	14.5%	Free (E,IL,J) 1% (CA)	([14])	2
0404.90.50	Products consisting of natural milk constituents, whether or not concentrated or sweetened, not elsewhere specified or included, containing over 5.5 percent by weight of butterfat and not packaged for retail sale, over tariff-rate quota	$1.294/kg + 9.2%	([2])	([14])	0

See footnotes at end of table

Table C-1—*Continued*
Dairy products: *Harmonized Tariff Schedule* subheadings; description; U.S. col. 1 rate of duty as of Jan. 1, 1997; U.S. exports, 1996; and U.S. imports, 1996

HTS subheading	Brief description	Col. 1 rate of duty as of Jan. 1, 1997		U.S. exports 1996	U.S. imports 1996
		General	Special[1]		
				— Value *(1,000 dollars)* —	
0404.90.70	Products consisting of natural milk constituents, whether or not concentrated or sweetened, not elsewhere specified or included, containing not over 5.5 percent by weight of butterfat and not packaged for retail sale	9.2%	Free (E,IL,J) 1% (CA)	([14])	695
0405.10.05	Butter, not counted towards tariff-rate quota	12.3¢/kg	Free (E,IL,J,MX) 1.2¢/kg (CA)	([15])	111
0405.10.10	Butter, under tariff-rate quota	12.3¢/kg	Free (E,IL,J) 1.2¢/kg (CA)	([15])	3,191
0405.10.20	Butter, over tariff-rate quota	$1.677/kg	([2])	([15])	510
0405.20.10	Butter substitutes, whether or not in liquid or solid state, containing over 45 percent by weight of butterfat, not counted towards tariff-rate quota	15.4¢/kg	Free (E,IL,J,MX) 1.5¢/kg (CA)	([16])	0
0405.20.20	Butter substitutes, whether or not in liquid or solid state, containing over 45 percent by weight of butterfat, under tariff-rate quota	15.4¢/kg	Free (E,IL,J) 1.5¢/kg (CA)	([16])	0
0405.20.30	Butter substitutes, whether or not in liquid or solid state, containing over 45 percent by weight of butterfat, over tariff-rate quota	$2.172/kg	([2])	([16])	0
0405.20.40	Butter substitutes, whether or not in liquid or solid state, not containing over 45 percent by weight of butterfat	14.3¢/kg	Free (E,IL,J) 1.5¢/kg (CA) 9.2 ¢/kg (MX)	([16])	28
0405.20.50	Dairy spreads, other than butter substitutes, containing over 5.5 percent by weight of butterfat and not packaged for retail sale, not counted towards tariff-rate quota	10%	Free (E,IL,J,MX) 1% (CA)	([16])	0
0405.20.60	Dairy spreads, other than butter substitutes, containing over 5.5 percent by weight of butterfat and not packaged for retail sale, under tariff-rate quota	10%	Free (E,IL,J) 1% (CA)	([16])	0
0405.20.70	Dairy spreads, other than butter substitutes, containing over 5.5 percent by weight of butterfat and not packaged for retail sale, over tariff-rate quota	76.6¢/kg + 9.2%	([2])	([16])	0

See footnotes at end of table

Table C-1—*Continued*
Dairy products: *Harmonized Tariff Schedule* subheadings; description; U.S. col. 1 rate of duty as of Jan. 1, 1997; U.S. exports, 1996; and U.S. imports, 1996

HTS subheading	Brief description	Col. 1 rate of duty as of Jan. 1, 1997		U.S. exports 1996	U.S. imports 1996
		General	Special[1]	— Value *(1,000 dollars)* —	
0405.20.80	Dairy spreads, other than butter substitutes, not containing over 5.5 percent by weight of butterfat and not packaged for retail sale	8.2%	Free (A,E,IL,J,MX) 1% (CA)	([16])	2
0405.90.05	Fats and oils, derived from milk other than butter and dairy spreads, not counted towards tariff-rate quota	10%	Free (E,IL,J,MX) 1% (CA)	([17])	543
0405.90.10	Fats and oils, derived from milk other than butter and dairy spreads, under tariff-rate quota	10%	Free (E,IL,J,) 1% (CA)	([17])	4,681
0405.90.20	Fats and oils, derived from milk other than butter and dairy spreads, over tariff-rate quota	$2.03/kg + 9.2%	([2])	([17])	7
0406.10.02	Chongos, not counted towards tariff-rate quota	10%	Free (A, E,IL,J,MX) 1%(CA)	([18])	0
0406.10.04	Chongos, under tariff-rate quota	10%	Free (A, E,IL,J) 1% (CA)	([18])	0
0406.10.08	Chongos, over tariff-rate quota	$1.642/kg	([2])	([18])	72
0406.10.12	Other fresh (unripened or uncured) cheese, including whey cheese, and curd not counted towards tariff-rate quota	10%	Free (A, E,IL,J,MX) 1% (CA)	([18])	0
0406.10.14	Fresh blue-mold cheese and cheese and substitutes for cheese containing, or processed from, blue mold cheese, under tariff-rate quota	10%	Free (E,IL,J) 1% (CA)	([18])	0
0406.10.18	Fresh blue-mold cheese and cheese and substitutes for cheese containing, or processed from, blue mold cheese, over tariff-rate quota	$2.47/kg	([2])	([18])	0
0406.10.24	Fresh Cheddar cheese and cheese and substitutes for cheese containing, or processed from, Cheddar, under tariff-rate quota ...	10%	Free (E,IL,J) 1% (CA)	([18])	0
0406.10.28	Fresh Cheddar cheese and cheese and substitutes for cheese containing, or processed from, Cheddar, over tariff-rate quota	$1.335/kg	([2])	([18])	11

See footnotes at end of table

Table C-1—*Continued*
Dairy products: *Harmonized Tariff Schedule* subheadings; description; U.S. col. 1 rate of duty as of Jan. 1, 1997; U.S. exports, 1996; and U.S. imports, 1996

HTS subheading	Brief description	Col. 1 rate of duty as of Jan. 1, 1997		U.S. exports 1996	U.S. imports 1996
		General	Special[1]	— Value *(1,000 dollars)* —	
0406.10.34	Fresh American-type cheese, including Colby, washed curd, and granular cheese (but not including Cheddar cheese), and cheese and substitutes for cheese containing, or processed from, such American-type cheese, under tariff-rate quota	10%	Free (E,IL,J) 1% (CA)	([18])	97
0406.10.38	Fresh American-type cheese, including Colby, washed curd, and granular cheese (but not including Cheddar cheese), and cheese and substitutes for cheese containing, or processed from, such American-type cheese, over tariff-rate quota	$1.148/kg	([2])	([18])	0
0406.10.44	Fresh Edam and Gouda cheese and cheese and substitutes for cheese containing, or processed from, Edam and Gouda, under tariff-rate quota	10%	Free (E,IL,J) 1% (CA)	([18])	10
0406.10.48	Fresh Edam and Gouda cheese and cheese and substitutes for cheese containing, or processed from, Edam and Gouda, over tariff-rate quota	$1.962/kg	([2])	([18])	0
0406.10.54	Fresh Italian-type cheeses, made from cow's milk, in original loaves (Romano made from cow's milk, Reggiano, Parmesan, Provolone, Provoletti, and Sbrinz); Italian-type cheese, made from cow's milk, not in original loaves (Romano made from cow's milk, Reggiano, Parmesan, Provolone, Sbrinz, and Goya), and cheese and substitutes for cheese containing, or processed from, such Italian-type cheese, whether or not in original loaves, under tariff-rate quota	10%	Free (E,IL,J) 1% (CA)	([18])	9,130
0406.10.58	Fresh Italian-type cheeses, made from cow's milk, in original loaves (Romano made from cow's milk, Reggiano, Parmesan, Provolone, Provoletti, and Sbrinz); Italian-type cheese, made from cow's milk, not in original loaves (Romano made from cow's milk, Reggiano, Parmesan, Provolone, Sbrinz, and Goya), and cheese and substitutes for cheese containing, or processed from, such Italian-type cheese, whether or not in original loaves, over tariff-rate quota	$2.336/kg	([2])	([18])	2
0406.10.64	Fresh Swiss or Emmentaler cheese other than with eye formation, Gruyere-process cheese, and cheese and substitutes for cheese containing, or processed from, such cheeses, under tariff-rate quota	10%	Free (E,IL,J) 1% (CA)	([18])	0
0406.10.68	Fresh Swiss or Emmentaler cheese other than with eye formation, Gruyere-process cheese, and cheese and substitutes for cheese containing, or processed from, such cheeses, over tariff-rate quota	$1.509/kg	([2])	([18])	0

See footnotes at end of table

Table C-1—*Continued*
Dairy products: *Harmonized Tariff Schedule* subheadings; description; U.S. col. 1 rate of duty as of Jan. 1, 1997; U.S. exports, 1996; and U.S. imports, 1996

HTS subheading	Brief description	Col. 1 rate of duty as of Jan. 1, 1997		U.S. exports 1996	U.S. imports 1996
		General	Special[1]	— Value *(1,000 dollars)* —	
0406.10.74	Fresh other cheese and substitutes for cheese, containing 0.5 percent or less by weight of butterfat, under tariff-rate quota	10%	Free (E,IL,J) 1% (CA)	([18])	8,010
0406.10.78	Fresh other cheese and substitutes for cheese, containing 0.5 percent or less by weight of butterfat, over tariff-rate quota	$1.228/kg	([2])	([18])	0
0406.10.84	Fresh other cheese and substitutes for cheese (except cheese not containing cow's milk, and soft ripened cow's-milk cheese), containing more than 0.5 percent by weight of butterfat, under tariff-rate quota	10%	Free (E,IL,J) 1% (CA)	([18])	475
0406.10.88	Other cheese and substitutes for cheese (except cheese not containing cow's milk, and soft ripened cow's-milk cheese), containing more than 0.5 percent by weight of butterfat, over tariff-rate quota	$1.642/kg	([2])	([18])	8
0406.10.95	Fresh (unripened or uncured) cheese, including whey cheese, and curd, not elsewhere specified or included	9.2%	Free (E,IL,J,MX) 1% (CA)	([18])	324
0406.20.10	Roquefort cheese, grated or powdered	9%	Free (E,IL,J) 1% (CA) 6% (MX)	([19])	0
0406.20.15	Stilton, grated or powdered	18.5%		([19])	0
0406.20.22	Other blued-veined cheese, grated or powdered, not counted towards tariff-rate quota	20%	Free (E,IL,J,MX) 2% (CA)	([19])	0
0406.20.24	Other blued-veined cheese, grated or powdered, under tariff-rate quota	20%	Free (E,IL,J) 2% (CA)	([19])	0
0406.20.28	Other blued-veined cheese, grated or powdered, over tariff-rate quota	$2.47/kg	([2])	([19])	0
0406.20.29	Cheddar, grated or powdered, not counted towards tariff-rate quota	16%	Free (E,IL,J,MX) 1.6% (CA)	([19])	0
0406.20.31	Cheddar, grated or powdered, under tariff-rate quota	16%	Free (E,IL,J) 1.6% (CA)	([19])	183
0406.20.33	Cheddar, grated or powdered, over tariff-rate quota	$1.335	([2])	([19])	0
0406.20.34	Colby, grated or powdered, not counted towards tariff-rate quota	20%	Free (E,IL,J,MX) 2% (CA)	([19])	0

See footnotes at end of table

Table C-1—*Continued*
Dairy products: *Harmonized Tariff Schedule* subheadings; description; U.S. col. 1 rate of duty as of Jan. 1, 1997; U.S. exports, 1996; and U.S. imports, 1996

HTS subheading	Brief description	Col. 1 rate of duty as of Jan. 1, 1997		U.S. exports 1996	U.S. imports 1996
		General	Special[1]	— Value *(1,000 dollars)* —	
0406.20.36	Colby, grated or powdered, under tariff-rate quota	20%	Free (E,IL,J) 2% (CA)	([19])	0
0406.20.39	Colby, grated or powdered, over tariff-rate quota	$1.148/kg	([2])	([19])	0
0406.20.43	Edam and Gouda, grated or powdered, not counted towards tariff-rate quota	15%	Free (E,IL,J,MX) 1.5% (CA)	([19])	85
0406.20.44	Edam and Gouda, grated or powdered, under tariff-rate quota	15%	Free (E,IL,J) 1.5% (CA)	([19])	0
0406.20.48	Edam and Gouda, grated or powdered, over tariff-rate quota	$1.962/kg	([2])	([19])	0
0406.20.49	Romano made from cow's milk, Reggiano, Parmesan, Provolone, Provoletti, Sbrinz, and Goya cheese, grated or powdered, not counted towards tariff-rate quota	15%	Free (E,IL,J,MX) 1.5% (CA)	([19])	0
0406.20.51	Romano made from cow's milk, Reggiano, Parmesan, Provolone, Provoletti, Sbrinz, and Goya cheese, made from cow's milk, grated or powdered, under tariff-rate quota	15%	Free (E,IL,J) 1.5% (CA)	([19])	489
0406.20.53	Romano made from cow's milk Reggiano, Parmesan, Provolone, Provoletti, Sbrinz, and Goya cheese, made from cow's milk, grated or powdered, over tariff-rate quota	$2.336/kg	([2])	0	0
0406.20.54	Romano made from cow's milk, Reggiano, Parmesan, Provolone, Provoletti, Sbrinz, and Goya cheese not made of cow's milk, grated or powdered	12.3%	Free (E,IL,J) 1.5% (CA) 3% (MX)	([19])	0
0406.20.55	Cheese made from sheep's milk	12.3%	Free (E,IL,J) 1.5% (CA) 9% (MX)	([19])	0
0406.20.56	Other grated or powdered cheese, not counted towards tariff-rate quota	10%	Free (E,IL,J,MX) 1% (CA)	([19])	0
0406.20.57	Cheese, grated or powdered, including mixtures, containing or processed from Bryndza, Gjetost, Gammelost, Nokkelost or Roquefort cheese	9.2%	1% (CA) 2% (MX)	([19])	0

See footnotes at end of table

Table C-1—*Continued*
Dairy products: *Harmonized Tariff Schedule* subheadings; description; U.S. col. 1 rate of duty as of Jan. 1, 1997; U.S. exports, 1996; and U.S. imports, 1996

HTS subheading	Brief description	Col. 1 rate of duty as of Jan. 1, 1997		U.S. exports 1996	U.S. imports 1996
		General	Special[1]	— Value *(1,000 dollars)* —	
0406.20.61	Cheese, grated or powdered, including mixtures, containing or processed from blue-veined cheese (except Roquefort), under tariff-rate quota	10%	Free (E,IL,J) 1% (CA)	([19])	4
0406.20.63	Cheese, grated or powdered, including mixtures, containing or processed from blue-veined cheese (except Roquefort), over tariff-rate quota	$2.47/kg	([2])	([19])	0
0406.20.65	Cheese, grated or powdered, including mixtures, containing or processed from Cheddar cheese, under tariff-rate quota	10%	Free (E,IL,J) 1% (CA)	([19])	0
0406.20.67	Cheese, grated or powdered, including mixtures, containing or processed from Cheddar cheese, over tariff-rate quota	$1.335/kg	([2])	([19])	0
0406.20.69	Cheese, grated or powdered, including mixtures, containing or processed from American-type cheese (including Colby, washed curd, and granular cheese, but not including Cheddar), under tariff-rate quota	10%	Free (E,IL,J) 1% (CA)	([19])	414
0406.20.71	Cheese, grated or powdered, including mixtures, containing or processed from American-type cheese (including Colby, washed curd, and granular cheese, but not including Cheddar), over tariff-rate quota	$1.148/kg	([2])	([19])	0
0406.20.73	Cheese, grated or powdered, including mixtures, containing or processed from Edam and Gouda, under tariff-rate quota	10%	Free (E, IL, J) 1% (CA)	([19])	361
0406.20.75	Cheese, grated or powdered, including mixtures, containing or processed from Edam and Gouda, over tariff-rate quota	$1.962/kg	([2])	([19])	0
0406.20.77	Cheese, grated or powdered, including mixtures, containing or processed from Italian-type cheeses (Romano, Reggiano, Parmesan, Provolone, Provoletti, Sbrinz, and Goya) made from cow's milk, over tariff-rate quota	10%	Free (E, IL, J) 1% (CA)	([19])	2,901

See footnotes at end of table

Table C-1—*Continued*
Dairy products: *Harmonized Tariff Schedule* subheadings; description; U.S. col. 1 rate of duty as of Jan. 1, 1997; U.S. exports, 1996; and U.S. imports, 1996

HTS subheading	Brief description	Col. 1 rate of duty as of Jan. 1, 1997		U.S. exports 1996	U.S. imports 1996
		General	Special[1]	— Value *(1,000 dollars)* —	
0406.20.79	Cheese, grated or powdered, including mixtures, containing or processed from Italian-type cheeses (Romano, Reggiano, Parmesan, Provolone, Provoletti, Sbrinz, and Goya) made from cow's milk, over tariff-rate quota	$2.336/kg	([2])	([19])	0
0406.20.81	Cheese, grated or powdered, including mixtures, containing or processed from Swiss, Emmentaler, or Gruyere-process cheeses, under tariff-rate quota	10%	Free (E,IL,J) 1% (CA)	([19])	349
0406.20.83	Cheese, grated or powdered, including mixtures, containing or processed from Swiss, Emmentaler, or Gruyere-process cheeses, over tariff-rate quota	$1.509/kg	([2])	([19])	0
0406.20.85	Other cheese, grated or powdered, including mixtures, containing 0.5 percent or less by weight of butterfat, under tariff-rate quota	10%	Free (E,IL,J) 1% (CA)	([19])	0
0406.20.87	Other cheese, grated or powdered, including mixtures, containing 0.5 percent or less by weight of butterfat, over tariff-rate quota	$1.228/kg	([2])	([19])	0
0406.20.89	Other cheese, grated or powdered, including mixtures, containing more than 0.5 percent by weight of butterfat, containing cow's milk, under tariff-rate quota	10%	Free (E,IL,J) 1% (CA)	([19])	2,270
0406.20.91	Other cheese, grated or powdered, including mixtures, containing more than 0.5 percent by weight of butterfat, containing cow's milk, over tariff-rate quota	$1.642/kg	([2])	([19])	0
0406.20.95	Other cheese, grated or powdered, including mixtures, containing more than 0.5 percent by weight of butterfat, not containing cow's milk	9.2%	Free (E,IL,J) 1% (CA) 2% (MX)	([19])	27
0406.30.05	Stilton processed (process), not grated or powdered	18.5%		([20])	0
0406.30.12	Other blued-veined cheese (other than Roquefort), processed (process), not grated or powdered, not counted towards tariff-rate quota	20%	Free (E,IL,J,MX) 2% (CA)	([20])	0
0406.30.14	Other blued-veined cheese (other than Roquefort), processed (process), not grated or powdered, under tariff-rate quota	20%	Free (E,IL,J) 2% (CA)	([20])	21

See footnotes at end of table

Table C-1—*Continued*
Dairy products: *Harmonized Tariff Schedule* subheadings; description; U.S. col. 1 rate of duty as of Jan. 1, 1997; U.S. exports, 1996; and U.S. imports, 1996

HTS subheading	Brief description	Col. 1 rate of duty as of Jan. 1, 1997		U.S. exports 1996	U.S. imports 1996
		General	Special[1]	— Value *(1,000 dollars)* —	
0406.30.18	Other blued-veined cheese (other than Roquefort), processed (process), not grated or powdered, over tariff-rate quota	$2.47/kg	([2])	([20])	0
0406.30.22	Cheddar, processed (process), not grated or powdered, not counted towards tariff-rate quota	16%	Free (E, IL, J, MX) 1.6% (CA)	([20])	0
0406.30.24	Cheddar, processed (process), not grated or powdered, under tariff-rate quota	16%	Free (E,IL,J) 1.6% (CA)	([20])	564
0406.30.28	Cheddar, processed (process), not grated or powdered, over tariff-rate quota	$1.335/kg	([2])	([20])	0
0406.30.32	Colby, processed (process), not grated or powdered, not counted towards tariff-rate quota	20%	Free (E,IL,J,MX) 2% (CA)	([20])	0
0406.30.34	Colby, processed (process), not grated or powdered, under tariff-rate quota	20%	Free (E,IL,J) 2% (CA)	([20])	0
0406.30.38	Colby, processed (process), not grated or powdered, over tariff-rate quota	$1.148/kg	([2])	([20])	0
0406.30.42	Edam and Gouda, processed (process), not grated or powdered, not counted towards tariff-rate quota	15%	Free (E,IL,J,MX) 1.5% CA)	([20])	0
0406.30.44	Edam and Gouda, processed (process), not grated or powdered, under tariff-rate quota	15%	Free (E,IL,J) 1.5% (CA)	([20])	445
0406.30.48	Edam and Gouda, processed (process), not grated or powdered, over tariff-rate quota	$1.962/kg	([2])	([20])	0
0406.30.49	Gruyere-process cheese, processed (process), not grated or powdered, not counted towards tariff-rate quota	6.4%	Free (E,IL,J,MX) 0.6% (CA)	([20])	0
0406.30.51	Gruyere-process cheese, processed (process), not grated or powdered, under tariff-rate quota	6.4%	Free (E,IL,J) 0.6% (CA)	([20])	16,266

See footnotes at end of table

Table C-1—*Continued*
Dairy products: *Harmonized Tariff Schedule* subheadings; description; U.S. col. 1 rate of duty as of Jan. 1, 1997; U.S. exports, 1996; and U.S. imports, 1996

HTS subheading	Brief description	Col. 1 rate of duty as of Jan. 1, 1997		U.S. exports 1996	U.S. imports 1996
		General	Special[1]		
				— Value *(1,000 dollars)* —	
0406.30.53	Gruyere-process cheese, processed (process), not grated or powdered, over tariff-rate quota	$1.509/kg	([2])	([20])	0
0406.30.55	Processed (process) cheese, not grated or powdered, made from sheep's milk	12.3%	Free (E,IL,J) 1.5% (CA) 9% (MX)	([20])	853
0406.30.56	Other processed (process) cheese, not grated or powdered, not counted towards tariff-rate quota	10%	Free (E,IL,J,MX) 1% (CA)	([20])	0
0406.30.57	Cheese, processed (process), including mixtures, not grated or powdered, containing or processed from Bryndza, Gjetost, Gammelost, Nokkelost, or Roquefort cheese	9.2%	Free (E,IL, J) 1% (CA) 2% (MX)	([20])	0
0406.30.61	Cheese, processed (process), including mixtures, not grated or powdered, containing or processed from blue-veined cheese (except Roquefort), under tariff-rate quota	10%	Free (E,IL,J) 1% (CA)	([20])	0
0406.30.63	Cheese, processed (process), including mixtures, not grated or powdered, containing or processed from blue-veined cheese (except Roquefort), over tariff-rate quota	$2.47/kg	([2])	([20])	0
0406.30.65	Cheese, processed (process), including mixtures, not grated or powdered, containing or processed from Cheddar cheese, under tariff-rate quota	10%	Free (E,IL,J) 1% (CA)	([20])	583
0406.30.67	Cheese, processed (process), including mixtures, not grated or powdered, containing or processed from Cheddar cheese, over tariff-rate quota	$1.335/kg	([2])	([20])	0
0406.30.69	Cheese, processed (process), including mixtures, not grated or powdered, containing or processed from American-type cheese (including Colby, washed curd, and granular cheese, but not including Cheddar), under tariff-rate quota	10%	Free (E,IL,J) 1% (CA)	([20])	596
0406.30.71	Cheese, processed (process), including mixtures, not grated or powdered, containing or processed from American-type cheese (including Colby, washed curd, and granular cheese, but not including Cheddar), over tariff-rate quota	$1.148/kg	([2])	([20])	0

See footnotes at end of table

Table C-1—*Continued*
Dairy products: *Harmonized Tariff Schedule* subheadings; description; U.S. col. 1 rate of duty as of Jan. 1, 1997; U.S. exports, 1996; and U.S. imports, 1996

HTS subheading	Brief description	Col. 1 rate of duty as of Jan. 1, 1997		U.S. exports 1996	U.S. imports 1996
		General	Special[1]	— Value *(1,000 dollars)* —	
0406.30.73	Cheese, processed (process), including mixtures, not grated or powdered, containing or processed from Edam and Gouda, under tariff-rate quota	10%	Free (E,IL,J) 1% (CA)	([20])	0
0406.30.75	Cheese, processed (process), including mixtures, not grated or powdered, containing or processed from Edam and Gouda, over tariff-rate quota	$1.962/kg	([2])	([20])	0
0406.30.77	Cheese, processed (process), including mixtures, not grated or powdered, containing or processed from Italian-type cheeses (Romano, Reggiano, Parmesan, Provolone, Provoletti, Sbrinz, and Goya), under tariff-rate quota	10%	Free (E,IL,J) 1% (CA)	([20])	0
0406.30.79	Cheese, processed (process), including mixtures, not grated or powdered, containing or processed from Italian-type cheeses (Romano, Reggiano, Parmesan, Provolone, Provoletti, Sbrinz, and Goya), over tariff-rate quota	$2.336/kg	([2])	([20])	2
0406.30.81	Cheese, processed (process), including mixtures, not grated or powdered, containing or processed from Swiss, Emmentaler, or Gruyere-process cheeses, under tariff-rate quota	10%	Free (E,IL,J) 1% (CA)	([20])	362
0406.30.83	Cheese, processed (process), including mixtures, not grated or powdered, containing or processed from Swiss, Emmentaler, or Gruyere-process cheeses, over tariff-rate quota	$1.509/kg	([2])	([20])	0
0406.30.85	Other cheese, processed (process), including mixtures, not grated or powdered, containing 0.5 percent or less by weight of butterfat, under tariff-rate quota	10%	Free (E,IL,J) 1% (CA)	([20])	0
0406.30.87	Other cheese, processed (process), including mixtures, not grated or powdered, containing 0.5 percent or less by weight of butterfat, over tariff-rate quota	$1.228/kg	([2])	([20])	0
0406.30.89	Other cheese, processed (process), including mixtures, not grated or powdered, containing more than 0.5 percent by weight of butterfat, containing cow's milk, under tariff-rate quota	10%	Free (E,IL,J) 1% (CA)	([20])	69
0406.30.91	Other cheese, processed (process), including mixtures, not grated or powdered, containing more than 0.5 percent by weight of butterfat, containing cow's milk, over tariff-rate quota	$1.642/kg	([2])	([20])	0

See footnotes at end of table

Table C-1—*Continued*
Dairy products: *Harmonized Tariff Schedule* subheadings; description; U.S. col. 1 rate of duty as of Jan. 1, 1997; U.S. exports, 1996; and U.S. imports, 1996

HTS subheading	Brief description	Col. 1 rate of duty as of Jan. 1, 1997		U.S. exports 1996	U.S. imports 1996
		General	Special[1]	— Value *(1,000 dollars)* —	
0406.30.95	Other cheese, processed (process), including mixtures, not grated or powdered, containing more than 0.5 percent by weight of butterfat, not containing cow's milk	9.2%	Free (E,IL,J) 1% (CA) 2% (MX)	([20])	1
0406.40.20	Roquefort cheese, in original loaves, not fresh, not grated or powdered, not processed	4.4%	Free (E,IL,J) 0.6% (CA) 3.6% (MX)	([21])	4,073
0406.40.40	Roquefort cheese, not in original loaves, not fresh, not grated or powdered, not processed	7.3%	Free (E,IL,J) 1% (CA) 6% (MX)	([21])	330
0406.40.44	Stilton cheese, in original loaves, not fresh, not grated or powdered, not processed	13.9%		([21])	3,245
0406.40.48	Stilton cheese, not in original loaves, not fresh, not grated or powdered, not processed	18.5%		([21])	336
0406.40.51	Other blued-veined cheese, other than Roquefort and Stilton, in original loaves, not fresh, not grated or powdered, not processed, not counted towards tariff-rate quota	15%	Free (E,IL,J,MX) 1.5% (CA)	([21])	30
0406.40.52	Other blued-veined cheese, other than Roquefort and Stilton, not in original loaves, not fresh, not grated or powdered, not processed, not counted towards tariff-rate quota	20%	Free (E,IL,J,MX) 2% (CA)	([21])	0
0406.40.54	Other blued-veined cheese, other than Roquefort and Stilton, in original loaves, not fresh, not grated or powdered, not processed, under tariff-rate quota	15%	Free (E,IL,J) 1.5% (CA)	([21])	11,110
0406.40.58	Other blued-veined cheese, other than Roquefort and Stilton, not in original loaves, not fresh, not grated or powdered, not processed, under tariff-rate quota	20%	Free (E,IL,J) 2% (CA)	([21])	345
0406.40.70	Other blued-veined cheese, other than Roquefort and Stilton, not fresh, not grated or powdered, not processed, over tariff-rate quota	$2.47/kg	([2])	([21])	14
0406.90.05	Bryndza cheese, not fresh, not grated or powdered, not processed	7.9%	Free (E,IL,J) 0.8% (CA) 5.1% (MX)	([23])	57

See footnotes at end of table

Table C-1—*Continued*
Dairy products: *Harmonized Tariff Schedule* subheadings; description; U.S. col. 1 rate of duty as of Jan. 1, 1997; U.S. exports, 1996; and U.S. imports, 1996

HTS subheading	Brief description	Col. 1 rate of duty as of Jan. 1, 1997		U.S. exports 1996	U.S. imports 1996
		General	Special[1]	— Value *(1,000 dollars)* —	
0406.90.06	Cheddar cheese, not fresh, not grated or powdered, not processed, not counted towards tariff-rate quota	12%	Free (E,IL,J,MX) 1.2% (CA)	([22])	6
0406.90.08	Cheddar cheese, not fresh, not grated or powdered, not processed, under tariff-rate quota	12%	Free (E,IL,J) 1.2% (CA)	([22])	21,197
0406.90.12	Cheddar cheese, not fresh, not grated or powdered, not processed, over tariff-rate quota	$1.335/kg	([2])	([22])	323
0406.90.14	Edam and Gouda cheese, not fresh, not grated or powdered, not processed, not counted towards tariff-rate quota	15%	Free (E,IL,J) 1.5% (CA)	([23])	0
0406.90.16	Edam and Gouda cheese, not fresh, not grated or powdered, not processed, under tariff-rate quota	15%	Free (E,IL,J) 1.5% (CA)	([23])	19,265
0406.90.18	Edam and Gouda cheese, not fresh, not grated or powdered, not processed, over tariff-rate quota	$1.962/kg	([2])	([23])	0
0406.90.20	Gjetost cheese, not fresh, not grated or powdered, not processed, made from goat's milk whey, or from whey obtained from a mixture of goat's milk and not more than 20 percent by weight of cow's milk	5.4%	Free (E,IL,J) 0.6% (CA) 3.9% (MX)	([23])	289
0406.90.25	Gjetost cheese, not fresh, not grated or powdered, not processed, made from goat's milk whey, or from whey obtained from a mixture of goat's milk and more than 20 percent by weight of cow's milk	9.2%	Free (E,IL,J) 1% (CA) 6% (MX)	([23])	1,312
0406.90.28	Goya cheese, not fresh, not grated or powdered, not processed, not counted towards tariff-rate quota	25%	Free (E,IL,J,MX) 2.5% (CA)	([23])	0
0406.90.31	Goya cheese, made from cow's milk and not in original loaves, not fresh, not grated or powdered, not processed, under tariff-rate quota	25%	Free (E,IL,J,MX) 2.5% (CA)	([23])	0
0406.90.32	Goya cheese, made from cow's milk and not in original loaves, not fresh, not grated or powdered, not processed, over tariff-rate quota	$2.336/kg	([2])	([23])	0

See footnotes at end of table

Table C-1—*Continued*
Dairy products: *Harmonized Tariff Schedule* subheadings; description; U.S. col. 1 rate of duty as of Jan. 1, 1997; U.S. exports, 1996; and U.S. imports, 1996

HTS subheading	Brief description	Col. 1 rate of duty as of Jan. 1, 1997		U.S. exports 1996	U.S. imports 1996
		General	Special[1]		
				— Value *(1,000 dollars)* —	
0406.90.33	Goya cheese, not made from cow's milk and not in original loaves, not fresh, not grated or powdered, not processed	23.2%	Free (E,IL,J) 2.5% (CA) 15% (MX)	(23)	8,362
0406.90.34	Sbrinz cheese, not fresh, not grated or powdered, not processed, not counted towards tariff-rate quota	19%	Free (E,IL,J,MX) 1.9% (CA)	(20)	0
0406.90.36	Sbrinz cheese, made from cow's milk, not fresh, not grated or powdered, not processed, under tariff-rate quota	19%	Free (E,IL,J) 1.9% (CA)	(20)	0
0406.90.37	Sbrinz cheese, made from cow's milk, not fresh, not grated or powdered, not processed, over tariff-rate quota	$2.336/kg	(2)	(20)	722
0406.90.38	Sbrinz cheese, not made from cow's milk, not fresh, not grated or powdered, not processed	15.6%	Free (E,IL,J) 1.9% (CA)	(20)	0
0406.90.39	Romano made from cow's milk, Reggiano, Parmesan, Provolone, and Provoletti cheese, not fresh, not grated or powdered, not processed, not counted towards tariff-rate quota	15%	Free (E,IL,J,MX) 1.5% (CA)	(23)	0
0406.90.41	Romano made from cow's milk, Reggiano, Parmesan, Provolone, and Provoletti cheese, made from cow's milk, not fresh, not grated or powdered, not processed, under tariff-rate quota	15%	Free (E,IL,J) 1.5% (CA)	(23)	44,627
0406.90.42	Romano made from cow's milk, Reggiano, Parmesan, Provolone, and Provoletti cheese, made from cow's milk, not fresh, not grated or powdered, not processed, over tariff-rate quota	$2.336/kg	(2)	(23)	4,059
0406.90.43	Romano made from cow's milk, Reggiano, Parmesan, Provolone, and Provoletti cheese, not made from cow's milk, not fresh, not grated or powdered, not processed	12.3%	Free (E,IL,J) 1.5% (CA) 3% (MX)	(23)	0
0406.90.44	Swiss and Emmentaler cheese with eye formation, not fresh, not grated or powdered, not processed, not counted towards tariff-rate quota	6.4%	Free (E,IL,J,MX) 0.6% (CA)	(23)	56
0406.90.46	Swiss and Emmentaler cheese with eye formation, not fresh, not grated or powdered, not processed, under tariff-rate quota	6.4%	Free (E,IL,J) 0.6% (CA)	(23)	94,291

See footnotes at end of table

Table C-1—*Continued*
Dairy products: *Harmonized Tariff Schedule* subheadings; description; U.S. col. 1 rate of duty as of Jan. 1, 1997; U.S. exports, 1996; and U.S. imports, 1996

HTS subheading	Brief description	Col. 1 rate of duty as of Jan. 1, 1997		U.S. exports 1996	U.S. imports 1996
		General	Special[1]	— Value *(1,000 dollars)* —	
0406.90.48	Swiss and Emmentaler cheese with eye formation, not fresh, not grated or powdered, not processed, over tariff-rate quota	$2.043/kg	([2])	([23])	2
0406.90.49	Gammelost and Nokkelost cheeses, not fresh, not grated or powdered, not processed	5.9%	Free (E,IL,J) 0.6% (CA) 3.8% (MX)	([23])	97
0406.90.51	Colby cheese, not fresh, not grated or powdered, not processed, not counted towards tariff-rate quota	20%	Free (E,IL,J,MX) 2% (CA)	([23])	0
0406.90.52	Colby cheese, not fresh, not grated or powdered, not processed, under tariff-rate quota	20%	Free (E,IL,J) 2% (CA)	([23])	0
0406.90.54	Colby cheese, not fresh, not grated or powdered, not processed, over tariff-rate quota	$1.148/kg	([2])	([23])	0
0406.90.56	Cheese made from sheep's milk, in original loaves and suitable for grating, not fresh, not grated or powdered, not processed, and substitutes for such cheese, including mixtures	Free		([23])	103,942
0406.90.57	Perorino, in original loaves and suitable for grating, not fresh, not grated or powdered, not processed, and substitutes for such cheese, including mixtures	Free		([23])	26,969
0406.90.59	Cheese made from sheep's milk, not in original loaves and suitable for grating, not fresh, not grated or powdered, not processed, and substitutes for such cheese, including mixtures	12.3%	Free (E,IL,J) 1.5% (CA) 9% (MX)	([23])	102
0406.90.61	Other cheese, containing Romano, Reggiano, Parmesan, Provolone, Provoletti, Sbrinz, or Goya, all made from cow's milk and substitutes for cheese, including mixtures, not fresh, not grated or powdered, not processed, not counted towards tariff-rate quota	7.5%	Free (E,IL,J,MX) 0.7% (CA)	([23])	0
0406.90.63	Other cheese, not containing Romano, Reggiano, Parmesan, Provolone, Provoletti, Sbrinz, or Goya, all made from cow's milk and substitutes for cheese, including mixtures, not fresh, not grated or powdered, not processed, not counted towards tariff-rate quota	10%	Free (E,IL,J,MX) 1% (CA)	([23])	15

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Table C-1—*Continued*
Dairy products: *Harmonized Tariff Schedule* subheadings; description; U.S. col. 1 rate of duty as of Jan. 1, 1997; U.S. exports, 1996; and U.S. imports, 1996

HTS subheading	Brief description	Col. 1 rate of duty as of Jan. 1, 1997		U.S. exports 1996	U.S. imports 1996
		General	Special[1]	— Value *(1,000 dollars)* —	
0406.90.66	Other cheese, containing Romano, Reggiano, Parmesan, Provolone, Provoletti, Sbrinz, or Goya, all made from cow's milk and substitutes for cheese, including mixtures, not fresh, not grated or powdered, not processed, under tariff-rate quota	7.5%	Free (E,IL,J,MX) 0.7% (CA)	([23])	41
0406.90.68	Other cheese, containing Romano, Reggiano, Parmesan, Provolone, Provoletti, Sbrinz, or Goya, all made from cow's milk and substitutes for cheese, including mixtures, not fresh, not grated or powdered, not processed, over tariff-rate quota	$2.336/kg	([2])	([23])	0
0406.90.72	Other cheese, containing or processed from blued-veined cheese, and substitutes for cheese, including mixtures, not fresh, not grated or powdered, not processed, under tariff-rate quota	10%	Free (E,IL,J) 1% (CA)	([23])	61
0406.90.74	Other cheese, containing or processed from blued-veined cheese, and substitutes for cheese, including mixtures, not fresh, not grated or powdered, not processed, over tariff-rate quota	$2.47/kg	([2])	([23])	0
0406.90.76	Other cheese, containing or processed from Cheddar cheese, and substitutes for cheese, including mixtures, not fresh, not grated or powdered, not processed, under tariff-rate quota	10%	Free (E,IL,J) 1% (CA)	([23])	0
0406.90.78	Other cheese, containing or processed from Cheddar cheese, and substitutes for cheese, including mixtures, not fresh, not grated or powdered, not processed, over tariff-rate quota	$1.335/kg	([2])	([23])	0
0406.90.82	Other cheese, containing or processed from American-type cheese (including Colby, washed curd, and granular cheese, but not including Cheddar), and substitutes for cheese, including mixtures, not fresh, not grated or powdered, not processed, under tariff-rate quota	10%	Free (E,IL,J) 1% (CA)	([23])	8,512
0406.90.84	Other cheese, containing or processed from American-type cheese (including Colby, washed curd, and granular cheese, but not including Cheddar), and substitutes for cheese, including mixtures, not fresh, not grated or powdered, not processed, over tariff-rate quota	$1.148/kg	([2])	([23])	2,985
0406.90.86	Other cheese, containing or processed from Edam and Gouda cheese, and substitutes for cheese, including mixtures, not fresh, not grated or powdered, not processed, under tariff-rate quota	10%	Free (E,IL,J) 1% (CA)	([23])	146

See footnotes at end of table

Table C-1—*Continued*
Dairy products: *Harmonized Tariff Schedule* subheadings; description; U.S. col. 1 rate of duty as of Jan. 1, 1997; U.S. exports, 1996; and U.S. imports, 1996

HTS subheading	Brief description	Col. 1 rate of duty as of Jan. 1, 1997		U.S. exports 1996	U.S. imports 1996
		General	Special[1]	— Value *(1,000 dollars)* —	
0406.90.88	Other cheese, containing or processed from Edam and Gouda cheese, and substitutes for cheese, including mixtures, not fresh, not grated or powdered, not processed, over tariff-rate quota	$1.962/kg	([2])	([23])	13
0406.90.90	Other cheese, containing or processed from Swiss, Emmentaler, or Gruyere-process cheese, and substitutes for cheese, including, mixtures, not fresh, not grated or powdered, not processed, under tariff-rate quota	10%	Free (E,IL,J) 1% (CA)	([23])	1,754
0406.90.92	Other cheese, containing or processed from Swiss, Emmentaler, or Gruyere-process cheese, and substitutes for cheese, including, mixtures, not fresh, not grated or powdered, not processed, over tariff-rate quota	$1.509/kg	([2])	([23])	0
0406.90.93	Other cheese, containing 0.5 percent or less by weight of butterfat, and substitutes for cheese, including mixtures, not fresh, not grated or powdered, not processed, under tariff-rate quota	10%	Free (E,IL,J) 1% (CA)	([23])	4,901
0406.90.94	Other cheese, containing 0.5 percent or less by weight of butterfat, and substitutes for cheese, including mixtures, not fresh, not grated or powdered, not processed, over tariff-rate quota	$1.228/kg	([2])	([23])	0
0406.90.95	Other cheese, containing more than 0.5 percent by weight of butterfat, containing cow's milk (except soft-ripened cow's-milk cheese) and substitutes for cheese, including mixtures, not fresh, not grated or powdered, not processed, under tariff-rate quota	10%	Free (E,IL,J) 1% (CA)	([23])	138,548
0406.90.97	Other cheese, containing more than 0.5 percent by weight of butterfat, containing cow's milk (except soft-ripened cow's-milk cheese) and substitutes for cheese, including mixtures, not fresh, not grated or powdered, not processed, over tariff-rate quota	$1.642/kg	([2])	([23])	77
0406.90.99	Other cheese, containing more than 0.5 percent by weight of butterfat, not containing cow's milk (except soft-ripened cow's-milk cheese) and substitutes for cheese, including mixtures, not fresh, not grated or powdered, not processed	9.2%	Free (E,IL,J) 1% (CA) 2% (MX)	([23])	37,085
2105.00.05	Ice cream, whether or not containing cocoa, not counted towards tariff-rate quota	20%	Free (E,IL,J,MX) 2% (CA)	([24])	9

See footnotes at end of table

Table C-1—*Continued*
Dairy products: *Harmonized Tariff Schedule* subheadings; description; U.S. col. 1 rate of duty as of Jan. 1, 1997; U.S. exports, 1996; and U.S. imports, 1996

HTS subheading	Brief description	Col. 1 rate of duty as of Jan. 1, 1997		U.S. exports 1996	U.S. imports 1996
		General	Special[1]	— Value *(1,000 dollars)* —	
2105.00.10	Ice cream, whether or not containing cocoa, under tariff-rate quota	20%	Free (E,IL,J) 2% (CA)	([24])	0
2105.00.20	Ice cream, whether or not containing cocoa, over tariff-rate quota . .	54.6¢/kg+ 18.5%	([2])	([24])	0
2105.00.25	Edible ice, whether or not containing cocoa, not counted towards tariff-rate quota	20%	Free (E,IL,J,MX) 2% (CA)	([25])	0
2105.00.30	Edible ice, whether or not containing cocoa, under tariff-rate quota	20%	Free (E,IL,J,MX) 2% (CA)	([25])	0
2105.00.40	Edible ice, whether or not containing cocoa, over tariff-rate quota . .	54.6¢/kg+ 18.5%	([2])	([25])	49
2105.00.50	Other edible ice, whether or not containing cocoa	18.5%	Free (E,IL,J,MX) 2% (CA)	([25])	3,522
3501.10.10	Casein, milk protein concentrate	0.41¢/kg	Free (A*,CA,E,IL,J,MX)	([26])	14,366
3501.10.50	Casein, other than milk protein concentrate	Free		([26])	342,558
3501.90.60	Caseinates and casein derivatives, not elsewhere specified or included	0.41¢/kg	Free (A*,CA,E,IL,J,MX)	10,939	135,767
3502.20.00	Milk albumin, including concentrates of two or more whey proteins .	Free		406	521
3502.90.00	Milk albumin, other than including concentrates of two or more whey proteins	Free		8,663	27,293

[1] Programs under which special tariff treatment may be provided and the corresponding symbols for such programs as they are indicated in the "Special" subcolumn are as follows: North American Free Trade Agreement: Goods of Canada (CA); North American Free Trade Agreement, Goods of Mexico (MX); Caribbean Basin Economic Recovery Act (E); United States-Israel Free Trade Act (I); Andean Trade Preference Act (J); General System of Preferences (A*). For more information on these programs, see appendix D.

[2] Imports of this product from Mexico enter under this *HTS* subheading. Duties applying to imports from Mexico are given in subchapter VI of chapter 99 of the *HTS*.

[3] The value of U.S. exports is not available for this individual *HTS* subheading. However, exports of milk and cream, not concentrated or sweetened of fat content exceeding 1 percent but not exceeding 6 percent (schedule B subheading 0401.20.0000), was $17.5 million in 1996.

[4] The value of U.S. exports is not available for this individual *HTS* subheading. However, exports of milk and cream, not concentrated or sweetened of fat content exceeding 6 percent (schedule B subheading 0401.30.0000), was $6.9 million in 1996.

[5] The value of U.S. exports is not available for this individual *HTS* subheading. However, exports of milk and cream, concentrated or sweetened in powder, granules or other solid forms of fat content not exceeding 1.5 percent (schedule B subheading 0402.10.0000), was $34.9 million in 1996.

Table C-1—*Continued*
Dairy products: *Harmonized Tariff Schedule* subheadings; description; U.S. col. 1 rate of duty as of Jan. 1, 1997; U.S. exports, 1996; and U.S. imports, 1996

[6] The value of U.S. exports is not available for this individual *HTS* subheading. However, exports of milk and cream, concentrated or sweetened in powder, granules or other solid forms of fat content not exceeding 1.5 percent and not containing added sugar or other sweetening (schedule B subheading 0402.21.0000), was $5.7 million in 1996.

[7] The value of U.S. exports is not available for this individual *HTS* subheading. However, exports of milk and cream, concentrated or sweetened in powder, granules or other solid forms of fat content not exceeding 1.5 percent (schedule B subheading 0402.29.0000), was $13.1 million in 1996.

[8] The value of U.S. exports is not available for this individual *HTS* subheading. However, exports of milk and cream, concentrated or sweetened in powder, not in granules or other solid forms of fat content not exceeding 1.5 percent and not containing added sugar or other sweetening (schedule B subheading 0402.91.0000), was $2.4 million in 1996.

[9] The value of U.S. exports is not available for this individual *HTS* subheading. However, exports of milk and cream, concentrated or sweetened in powder, not in granules or other solid forms of fat content not exceeding 1.5 percent (schedule B subheading 0402.99.0000), was $19.5 million in 1996.

[10] The value of U.S. exports is not available for this individual *HTS* subheading. However, exports of yogurt (schedule B subheading 0403.10.0000), was $5.2 million in 1996.

[11] The value of U.S. exports is not available for this individual *HTS* subheading. However, exports of buttermilk, curdled milk and cream, kephir and other fermented or acidified milk and cream (schedule B subheading 0403.90.0000), was $3.7 million in 1996.

[12] The value of U.S. exports is not available for this individual *HTS* subheading. However, exports of modified whey other than whey protein concentrates (schedule B subheading 0404.10.0850), was $1.6 million in 1996.

[13] The value of U.S. exports is not available for this individual *HTS* subheading. However, exports of dried whey (schedule B subheading 0404.10.4000), was $105.8 million in 1996.

[14] The value of U.S. exports is not available for this individual *HTS* subheading. However, exports of milk protein concentrates and products consisting of natural milk constituents (schedule B subheading 0404.90.0000), was $5.7 million in 1996.

[15] The value of U.S. exports is not available for this individual *HTS* subheading. However, exports of butter (schedule B subheading 0405.10.5000), was $21.3 million in 1996.

[16] The value of U.S. exports is not available for this individual *HTS* subheading. However, exports of dairy spreads (schedule B subheading 0405.20.5550), was $9.5 million in 1996.

[17] The value of U.S. exports is not available for this individual *HTS* subheading. However, exports of fats and oils derived from milk other than butter and dairy spreads (schedule B subheading 0405.90.8040), was $10.7 million in 1996.

[18] The value of U.S. exports is not available for this individual *HTS* subheading. However, exports of fresh (unripened or uncured) cheese (schedule B subheading 0406.10.0000), was $6.5 million in 1996.

[19] The value of U.S. exports is not available for this individual *HTS* subheading. However, exports of grated or powdered cheese, of all kinds (schedule B subheading 0406.20.0000), was $32.4 million in 1996.

[20] The value of U.S. exports is not available for this individual *HTS* subheading. However, exports of processed cheese, not grated or powdered (schedule B subheading 0406.30.0000), was $29.1 million in 1996.

[21] The value of U.S. exports is not available for this individual *HTS* subheading. However, exports of blued-veined cheese (schedule B subheading 0406.40.0000), was $0.8 million in 1996.

[22] The value of U.S. exports is not available for this individual *HTS* subheading. However, exports of cheddar cheese (schedule B subheading 0406.90.1000), was $4.9 million in 1996.

[23] The value of U.S. exports is not available for this individual *HTS* subheading. However, exports of other cheese, including mixtures (schedule B subheading 0406.90.9550), was $28.9 million in 1996.

[24] The value of U.S. exports is not available for this individual *HTS* subheading. However, exports of ice cream (schedule B subheading 2105.00.0010), was $90.2 million in 1996.

[25] The value of U.S. exports is not available for this individual *HTS* subheading. However, exports of edible ice (schedule B subheading 2105.00.0060), was $3.6 million in 1996.

[26] The value of U.S. exports is not available for this individual *HTS* subheading. However, exports of casein (schedule B subheading 3501.10.0000), was $6.6 million in 1996.

Source: U.S. Department of Commerce.

APPENDIX D
TARIFF AND TRADE AGREEMENT TERMS

In the ***Harmonized Tariff Schedule of the United States*** (HTS), chapters 1 through 97 cover all goods in trade and incorporate in the tariff nomenclature the internationally adopted Harmonized Commodity Description and Coding System through the 6-digit level of product description. Subordinate 8-digit product subdivisions, either enacted by Congress or proclaimed by the President, allow more narrowly applicable duty rates; 10-digit administrative statistical reporting numbers provide data of national interest. Chapters 98 and 99 contain special U.S. classifications and temporary rate provisions, respectively. The HTS replaced the ***Tariff Schedules of the United States*** (TSUS), effective January 1, 1989.

Duty rates in the ***general*** subcolumn of HTS column 1 are most-favored-nation (MFN) rates, many of which have been eliminated or are being reduced as concessions resulting from the Uruguay Round of Multilateral Trade Negotiations. Column 1-general duty rates apply to all countries except those enumerated in HTS general note 3(b) (Afghanistan, Cuba, Laos, North Korea, and Vietnam), which are subject to the statutory rates set forth in ***column 2***. Specified goods from designated MFN-eligible countries may be eligible for reduced rates of duty or for duty-free entry under one or more preferential tariff programs. Such tariff treatment is set forth in the ***special*** subcolumn of HTS rate-of-duty column 1 or in the general notes. If eligibility for special tariff rates is not claimed or established, goods are dutiable at column 1-general rates. The HTS does not enumerate those countries to which a total or partial embargo has been declared.

The ***Generalized System of Preferences*** (GSP) affords nonreciprocal tariff preferences to developing countries to aid their economic development and to diversify and expand their production and exports. The U.S. GSP, enacted in title V of the Trade Act of 1974 for 10 years and extended several times thereafter, applies to merchandise imported on, or after, January 1, 1976, and before the close of June 30, 1998. Indicated by the symbol "A," "A*," or "A+" in the special subcolumn, the GSP provides duty-free entry to eligible articles that are the product of, and imported directly from, designated beneficiary developing countries, as set forth in general note 4 to the HTS.

The ***Caribbean Basin Economic Recovery Act*** (CBERA) affords nonreciprocal tariff preferences to developing countries in the Caribbean Basin area to aid their economic development and to diversify and expand their production and exports. The CBERA, enacted in title II of Public Law 98-67, implemented by Presidential Proclamation 5133 of November 30, 1983, and amended by the Customs and Trade Act of 1990, applies to merchandise entered, or withdrawn from warehouse for consumption, on, or after, January 1, 1984. Indicated by the symbol "E" or "E*" in the special subcolumn, the CBERA provides duty-free entry to eligible articles (and reduced-duty treatment to certain other articles), which are the product of, and imported directly from, designated countries, as set forth in general note 7 to the HTS.

Free rates of duty in the special subcolumn followed by the symbol "IL" are applicable to products of Israel under the ***United States-Israel Free Trade Area Implementation Act*** of 1985 (IFTA), as provided in general note 8 to the HTS.

Preferential nonreciprocal duty-free or reduced-duty treatment in the special subcolumn followed by the symbol "J" or "J*" is afforded to eligible articles that are the product of designated beneficiary countries under the ***Andean Trade Preference Act*** (ATPA), enacted as title II of Public Law 102-182 and implemented by Presidential Proclamation 6455 of July 2, 1992 (effective July 22, 1992), as set forth in general note 11 to the HTS.

Preferential or free rates of duty in the special subcolumn followed by the symbol "CA" are applicable to eligible goods of Canada, and rates followed by the symbol "MX" are applicable to eligible goods of Mexico, under the ***North American Free Trade Agreement***, as provided in general note 12 to the HTS and implemented effective January 1, 1994, by Presidential Proclamation 6641 of December 15, 1993. Goods must originate in the NAFTA region under rules set forth in general note 12(t) and meet other requirements of the note and applicable regulations.

Other special tariff treatment applies to particular ***products of insular possessions*** (general note 3(a)(iv)), ***products of the West Bank and Gaza Strip*** (general note 3(a)(v)), goods covered by the ***Automotive Products Trade Act*** (APTA) (general note 5) and the ***Agreement on Trade in Civil Aircraft*** (ATCA) (general note 6), ***articles imported from freely associated states*** (general note 10), ***pharmaceutical products*** (general note 13), and ***intermediate chemicals for dyes*** (general note 14).

The ***General Agreement on Tariffs and Trade 1994*** (GATT 1994), pursuant to the Agreement Establishing the World Trade Organization, is based upon the earlier GATT 1947 (61 Stat. (pt. 5) A58; 8 UST (pt. 2) 1786) as the primary multilateral system of disciplines and principles governing international trade. Signatories' obligations under both the 1994 and 1947 agreements focus upon most-favored-nation treatment, the maintenance of scheduled concession rates of duty, and national treatment for imported products; the GATT also provides the legal framework for customs valuation standards, "escape clause" (emergency) actions, antidumping and countervailing duties, dispute settlement, and other measures. The results of the Uruguay Round of multilateral tariff negotiations are set forth by way of separate schedules of concessions for each participating contracting party, with the U.S. schedule designated as Schedule XX.

Pursuant to the ***Agreement on Textiles and Clothing*** (ATC) of the GATT 1994, member countries are phasing out restrictions on imports under the prior "Arrangement Regarding International Trade in Textiles" (known as the ***Multifiber Arrangement*** (MFA)). Under the MFA, which was a departure from GATT 1947 provisions, importing and exporting countries negotiated bilateral agreements limiting textile and apparel shipments, and importing countries could take unilateral action in the absence or violation of an agreement. Quantitative limits had been established on imported textiles and apparel of cotton, other vegetable fibers, wool, man-made fibers, or silk blends in an effort to prevent or limit market disruption in the importing countries. The ATC establishes notification and safeguard procedures, along with other rules concerning the customs treatment of textile and apparel shipments, and calls for the eventual complete integration of this sector into the GATT 1994 over a ten-year period, or by Jan. 1, 2005.