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INTERREGIONAL AND INTERNATIONAL COMPETITION IN THE DAIRY INDUSTRY

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Milk is produced in every state in the United States, and likewise converted to consumer dairy products of some type in every state. These products range from the highly perishable packaged fluid milk products to the more stable manufactured hard products of butter, cheese and nonfat dry milk. Milk moves generally from producing farms to nearby processing locations. However, raw milk may move several hundred miles when market conditions warrant such movements. Thus, there is competition for farm supplies of milk among regions to meet fluid milk requirements.

Price supports for milk have been at levels that are above the cost of production in many areas and have provided the incentive to process fluid milk into butter, cheese and nonfat dry milk to sell to the Commodity Credit Corporation (CCC). This is milk in excess of commercial market requirements. Therefore, a market-policy environment exists for farm milk to be utilized in the market for fluid uses, in commercial markets for manufactured soft and hard products, or be stored by CCC as hard products.

The third general competitive situation involves selling milk products in international markets. Four major areas of the world produce most of the milk and milk products -- the United States and Canada, the western European Community (EC), the Soviet Union and the Oceanic countries of Australia and New Zealand. These countries produce the milk products that enter international markets. Thus, the U.S. competes with these areas in the world market.

Analysis of the competitive position for dairy products is developed within the framework of three major product markets for the milk produced on dairy farms in the U.S.: 1) the commercial packaged fluid milk product market including speciality products, 2) the commercial manufactured milk product market including the soft products of cottage cheese and ice cream and the hard products of butter, cheese, and nonfat dry milk, and 3) the federal government purchase program for the hard products -- primarily butter, cheddar cheese and nonfat dry milk. Furthermore, the international aspects of the hard product market from both the commercial and government perspective are evaluated. Competitive position will be defined in terms of relative price differences as opposed to market practice and product competition (1).

COMPETITION FOR FLUID MILK MARKETS

Even though milk is produced throughout the U.S., production is concentrated in some states and regions. About 29% of the milk is produced in the Great Lakes Region (Michigan, Minnesota and Wisconsin), 18% in the three states of Ohio, New York and Pennsylvania, and 12% in California. These seven states account for almost 60% of the total milk production in the 48 contiguous states.

Milk is converted into consumer products at a range of prices. Thus, in an economic sense, prices drive the system (2). The first claim for Grade A milk is the market for fluid products which is the highest priced market. The states with the highest milk production are heavily populated states or adjacent to heavily populated states. Therefore, a substantial part of the milk produced is sold as Class I milk (the fluid product market). However, less than 50% of the Grade A milk produced in the Northeast is sold as Class I milk, 50 to 55% in Ohio and Michigan, and only 15 to 25% in Wisconsin and Minnesota. Obviously then, a large reservoir of milk is available in these states for movement to other regions for the higher Class I price or to other product markets when the price is higher than the alternative price available in the butter-cheese market.

Based on cost of production, the Great Lakes Region and the Northeast have a substantial competitive advantage over the Southeast. U. S. Department of Agriculture (USDA) cost studies for 1984 showed an average cost of production of \$10.65 per 100 lbs in the Great Lakes Region, \$11.27 in the Northeast and \$14.23 in the Southeast (3). Southeast dairy farmers had a disadvantage of \$3.00 to \$3.50 per 100 lbs of milk. These differences at first glance indicate that milk would be produced in the regions to the north and move to markets in the south. However, it is price relationships that move milk rather than cost of production differences. Moreover, the cost of transportation offsets much of the cost of production advantage.

From a regional and national perspective, it is necessary to consider the relative price levels among regions and among products that move milk geographically and/or among products. Milk should be shipped from surplus production regions to deficit regions based on the price differences between the regions.

From a competitive buyer approach, a fluid milk handler in the short supply area has the choice of buying milk from local producers or from more distant sources.

In Miami, Florida for example, the milk handler may have purchased milk in September-October 1985 from a producer cooperative at the announced price of \$16.40 per 100 lbs or from a cooperative located in the Chicago area for \$13.59 per 100 lbs, or \$2.81 less. However, the Chicago seller will charge a handling and "give-up" charge to compensate for lost profit plus transportation to deliver the milk to Miami. Current transportation rates are \$0.34 per 100 lbs per 100 miles or about \$4.00 per cwt. plus other charges. Thus, the Miami handler would purchase the primary supply from local producers and any additional needs from a closer location than Chicago, given a surplus of milk is available.

Therefore, transportation plus other costs under the current pricing system for fluid milk determines the competitive position of milk for fluid milk products. Some milk moves from the surplus production areas to the deficit areas to the south, but only on basis of the need to fulfill Class I sales.

COMPETITION FOR MANUFACTURED PRODUCT MARKETS

Milk not used in Class I fluid products is processed into manufactured milk products. The price received by farmers for milk so utilized has been at or under the price support level for milk. In the price support program, the federal government announces purchase prices for butter, cheddar cheese and nonfat dry milk that should achieve an average price for manufacturing grade milk equal to or above the announced support level (4).

Thus, the purchase prices of the Commodity Credit Corporation to remove surplus milk from the market establishes the floor price for the hard product market. This price, when taking into account the make allowance versus actual cost of processing, has resulted in a price that is less than the support price. Processors of milk into hard products have the option of selling the products in the commercial market or to the CCC. When prices in the commercial market increase sufficiently above CCC purchase prices, products move more readily into the commercial market. However, when the milk surplus is large, as in the 1980s, milk products are sold to the CCC. Hard products moving into commercial sales are at price levels about equal to the CCC announced purchase price.

Most of the hard products are manufactured in the surplus milk production regions of the Great Lakes, the Northeast, and California. These products move into commercial markets throughout the U.S. One of the growing commercial markets is hard cheese -- especially Italian and other non-cheddar types. However, the CCC announced price for cheddar cheese establishes the competitive base price for all cheese.

COMPETITION IN INTERNATIONAL MARKETS

With a large surplus of hard manufactured milk products, both processors and the CCC as a buyer are faced with the problem of disposing of the large inventory of perishable products. One likely source of sales is other countries. However, U.S. exports of milk products in 1983 and 1984 were extremely small. Butter and cheese exports were about evenly divided between government donation programs and commercial sales. About two-thirds of nonfat dry milk exports were made under government concessional programs (table 1).

The location of milk production is considered first to gain a perspective of the world situation for trade in milk products. About two-thirds of the milk is produced in three locations; the European Community (EC), the Soviet Union and the United States (table 2). Another concentration of milk production, though small relative to the world production, is in Australia and New Zealand (Oceania).

It follows then, that about two-thirds of the world's 6 million plus metric tons of butter and 70% of the 8.5 million plus metric tons of cheese are produced in the same areas of concentrated milk production (table 3). Exports of butter and cheese, however, are primarily from the European and Oceania countries. The EC exported about 50% of its butter production and 35% of its cheese production in 1981 and 1982 (table 4). The two Oceania countries exported two-thirds of their butter production and more than one-half of their cheese production. By contrast, only 10% of the butter production and less than 1% of the cheese production in the U.S. was exported. In spite of its large production, the Soviet Union is a deficit country and has little exports.

Again, it is emphasized that price drives the market and moves milk products in world trade. Competition for export markets is intense. The industrialized nations of the world are producing more milk than they can consume under existing price supports. Thus, stocks of butter, nonfat dry milk and cheese increased during the 1980s exerting a downward pressure on world prices. Since the EC is one of the primary exporting areas, export prices from that area are used to show the general prices that U.S. exporters face. In the spring of 1983, prices FOB European ports averaged \$0.83 per lb for butter, \$0.75 per lb for cheese and \$0.37 per lb for nonfat dry milk. One year later butter and cheese prices were \$0.20 lower and nonfat dry milk was \$0.30 or less (table 5). In 1984 the CCC purchase prices for these three products were \$1.43 per lb for butter, \$0.91 for nonfat dry milk and \$1.35 for cheddar cheese. Thus, world prices were about 50% below U.S. support prices. The differences in prices do not reflect the difference in the cost of production but the difference in prices resulting from the various government programs in each of the areas.

Price support levels in the U.S. result in product prices well above world prices. Thus, import limitations are necessary to prevent or restrict products entering U.S. markets. Section 22 of the Agricultural Adjustment Act of 1933 provides for import limitations whenever imports of a product render ineffective or materially interfere with agricultural programs, or reduce substantially the amount of any product processed in the U.S. (8). Strict import restrictions are imposed on butter, cheese and nonfat dry milk.

Quotas on all types of cheese are 240 mil lbs annually. Other product quotas are quite small (table 6). Each year imports of products made under the quota are near the quota limits, indicating that other countries view the U.S. as an excellent market. Non-quota cheese imports reached 60 mil lbs in 1984, up from 36 mil lbs in 1980.

The largest volume product imported to the U.S. is casein which reached 192 mil lbs in 1984. Analyses have been made and hearings have been held on the issue of placing import restrictions on casein but quotas have not been established. On a product basis, casein is imported in a range of \$0.90 to \$1.00 per lb. At the price support level of \$0.80 per lb for nonfat dry milk, from which casein is made, casein would need to be priced at about \$2.25 per lb for U.S. processors to break even. Therefore, there is little chance that casein will be produced in the U.S. One USDA study of casein imports indicated that if quotas were placed on casein the increased cost of it from U.S. sources would result in many users substituting other protein products for casein (6).

The imports of milk products into the U.S. in 1984 amounted to about 2.7 billion lbs of milk equivalent on a fats solid basis. Of this amount about 2.2 billion lbs were for products under quota. Even with the U.S. milk surpluses during the 1980-84 period, imports of milk products in the U.S. increased with the increases in non-quota cheese and casein. With price supports at current levels, product prices in the U.S. are well above world prices so that the U.S. is viewed as an excellent market for any type of milk product. Prospects of exports of U.S. milk products remain almost nil under current price supports except for government programs that are for donations and concessionary sales.

The export picture is clouded also by the fact that some countries subsidize the sales of milk products. This is especially true for the Oceanic countries and was true for the EC. In 1984-85 the EC introduced a quota system on milk production as an effort to reduce burdensome supplies (7). Dairy farmers in the EC in 1985-86 will receive lower prices for their milk at the farm than will U.S. dairy farmers. Even with lower prices and penalties for producing milk over quota, milk production in the EC is expected to exceed effective demand. The adoption of new tech-

nology by dairymen in the industrialized countries will no doubt continue to exert pressures on farm prices for milk and cause changes in policies to adjust to changing conditions. The U.S. will remain in its current position of very little export prospects and a viable import market for milk products in spite of the large expected surplus supply.

In conclusion, in spite of government policies throughout the world that result in other than free market competitive prices, differential price levels move milk products and have resulted in milk production at the farm level well above effective demand. The U.S. will continue to have a small role in the export-import business for milk products. Even with the current lower support price levels, U.S. milk products remain at a price level double that of the world market.

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Table 1. Exports of butter, cheese and nonfat dry milk by the United States, 1983 and 1984.

Calendar year and product	Government programs ^a	Commercial sales	Total
	--- 1,000 metric tons ---		
1983			
Butter	12	15	27
Cheese	8	9	17
Nonfat dry milk	145	89	234
1984			
Butter	16	28	44
Cheese	8	9	17
Nonfat dry milk	216	50	266

a. Concessional government financed programs. Source: Foreign and Agricultural Trade of the United States, ERS, USDA, July-Aug. 1985.

Table 3. World production of dairy products, 1982 and 1983.

Continent and country	Butter		Cheese	
	1982	1983	1982	1983
--- 1,000 metric tons ---				
North America				
Canada	134	104	170	183
United States	570	589	2,060	2,186
Total	721	708	2,395	2,524
European				
Community	2,056	2,282	3,532	3,562
Other Western				
Europe	263	279	638	630
Eastern Europe	754	809	706	723
Soviet Union	1,403	1,563	699	750
Asia	714	744	18	21
Oceania	324	338	265	274
Other countries	138	133	543	511
Grand total	6,373	6,856	8,796	8,995

Source: Agricultural Statistics 1984, USDA.

Table 4. Production and exports of butter and cheese by principal exporting areas of the world and U.S., 1981 and 1982.

Area	1981			1982		
	Prod	Expt	% Expt	Prod	Expt	% Expt
1,000 metric tons						
BUTTER						
European Community	1,660	884	53	1,759	828	47
Oceania	326	219	67	324	207	64
Total	1,986	1,103	56	2,083	1,035	50
United States	557	54	10	589	63	11
CHEESE						
European Community	2,988	1,048	35	3,090	1,079	35
Other W. Eur.	197	99	50	200	98	49
Oceania	214	134	63	265	138	52
Total	3,399	1,281	38	3,555	1,315	37
United States	1,940	6	-	2,060	18	1

Source: Agricultural Statistics 1984, USDA.

Table 2. Milk production in specified continents of the world, 1982 and 1983.

Continent	1982	1983
	--- mil metric tons ---	
North America	76.8	78.1
United States	61.6	63.5
South America	19.1	19.2
European Community	108.2	112.3
Other Western European	22.9	23.0
Eastern European	39.2	41.3
Soviet Union	91.0	96.4
Africa	2.4	2.5
Asia	21.5	22.2
Oceania	12.2	12.6
Total	393.3	407.6

Source: Agricultural Statistics 1984, USDA.

Table 5. Prices for milk products, FOB North European ports, selected periods, 1983 and 1984.

Product	Spring 1983		Spring 1984	
	per metric ton	per lb ^a	per metric ton	per lb ^a
----- \$ -----				
Butter	1800-1850	.83	1300-1400	.61
Cheese	1600-1700	.75	1000-1450	.56
Nonfat dry milk	780-850	.37	640-740	.31

a. Average of the price ranges.

Source: Dairy, Livestock and Poultry, World Dairy Situation and Outlook, Foreign Agriculture Circular, FAS, USDA, FD-2-85.

Table 6. Dairy products: U.S. imports, quota and nonquota, selected years 1978, 1980, 1982 and 1984.

Product	1978 calendar	1978	1980-84 calendar	Imports		
	year quota	Imports	year quota	1980	1982	1984
	----- mil lbs -----					
Cheese						
All quota types	127.8	110.8	240.4	195.3	230.2	239.7
Non-quota types		131.4		35.8	39.1	60.2
Other quota products						
Butter	.7	.7	.7	.6	1.7	1.8
Butter oil	1.2	1.2	1.2	1.2	1.2	1.2
Butterfat mixes	2.6	2.8	2.6	2.7	2.3	3.1
Ice cream	3.4	4.4	3.4	1.2	0	.1
Frozen cream	12.5	14.6	12.5	9.8	15.1	11.8
Nonfat dry milk	1.8	2.4	1.8	4.9	1.9	2.1
Dried buttermilk	.5	.5	.5	.5	.4	.1
Evap. milk	1.3	-	1.3		4.0	5.8
Condensed milk	4.1	.9	4.1	.4	3.1	4.0
Chocolate crumb	21.7	10.2	26.1	16.4	18.6	13.4
Animal feed	16.3	14.6	16.3	14.5	15.9	14.8
Non-quota products						
Casein		137.1		151.2	176.8	192.3
Lactose		3.1		3.0	1.1	1.5
Milk equiv. fats solid basis						
Total all products	1,305.6	2,305.3	2,234.3	2,108.7	2,476.8	2,741.4

Sources: Dairy Situation, ESCS, USDA, DS-377, Oct. 1979 and Dairy Outlook and Situation Report, ERS, USDA, DS-400, Mar. 1985.