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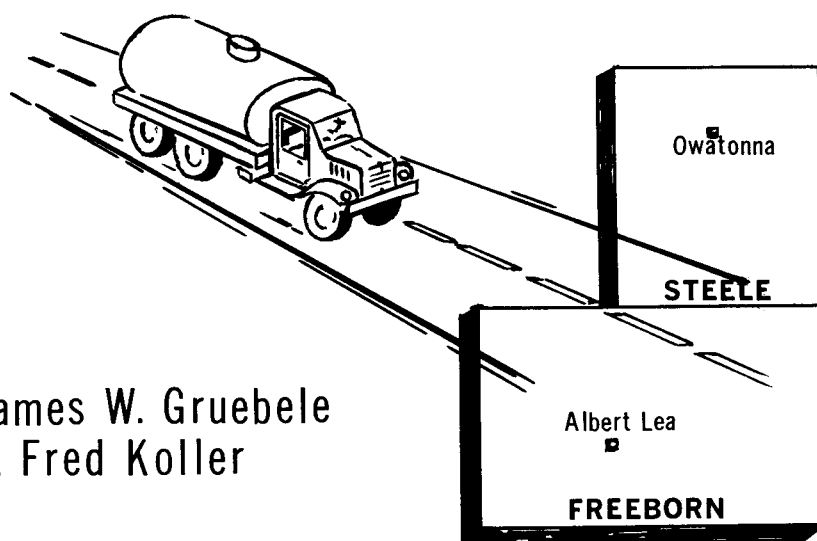
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# **MARKET ORGANIZATION and COMPETITION..... .....in the CREAMERY INDUSTRY in FREEBORN and STEELE COUNTIES, MINNESOTA**



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MARKET ORGANIZATION AND COMPETITION  
IN THE CREAMERY INDUSTRY  
IN FREEBORN AND STEELE COUNTIES, MINNESOTA

by James W. Gruebele and E. Fred Koller 1/

INTRODUCTION

In recent years the dairy manufacturing industry in Minnesota has undergone significant changes. One purpose of this study is to observe changes in the market structure of the industry in this state and find how these changes may affect the competitive conduct of creameries and their market performance. This report deals mainly with the market structure and conduct aspects of the study.

Market structure refers to characteristics which appear to influence strategically the nature of market competition. Some structural characteristics are: size and number of firms, ease with which firms enter or leave the market, and degree of difference between the products (or services) of firms in the market.

Firm conduct refers to the patterns of behavior that firms follow in adapting themselves to competitive market conditions. This includes price and nonprice competitive practices.

Market performance refers to the economic results achieved by firms comprising the industry. Some of the important aspects of performance includes the efficiency of the industry in terms of existing scales of plants and firms, technological efficiency and progressiveness, the ratio of profits to investment and to assets, and the height of the pay price relative to average cost of production.

One change that has taken place is increased concentration, that is, fewer and larger plants. From the standpoint of technology this is generally considered desirable because greater economics of scale are achieved by the larger plants.

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Nevertheless the increased concentration may not be desirable from the standpoint of efficient competition. The question arises as to whether milk will flow more efficiently from the producer to the consumer. There is also the question as to who will gain from increased economics of scale, the producer, consumer, or processor?

The study is part of a broader statewide study now underway. Freeborn and Steele Counties were selected for study because (1) they are located in Minnesota's principal dairy belt, and (2) the problems in the area are typical of the state in general. These two counties are located approximately 80 miles south of the Twin Cities. Owatonna in Steele and Albert Lea in Freeborn County are the largest cities and county seats in the respective counties.

Only plants that processed manufacturing milk in these counties and received milk directly from farmers were included in the analysis. These included 21 cooperative creameries and 1 cooperative cheese manufacturing plant. Two of the plants manufactured both butter and dry milk. Of the remaining 20 cooperatives 16 manufactured butter, 1 manufactured cheese and 3 were milk receiving stations (see figure 1). In addition, two large milk drying plants located in the 2-county area did not procure milk directly from producers and so were not included in the analysis. Complete data were obtained from 19 of the 22 plants; in most cases the tables include data for 21 plants.

The two-county area of Freeborn and Steele Counties does not constitute a market in itself; it is a segment of a statewide or even national manufacturing milk market.

## MARKET ORGANIZATION

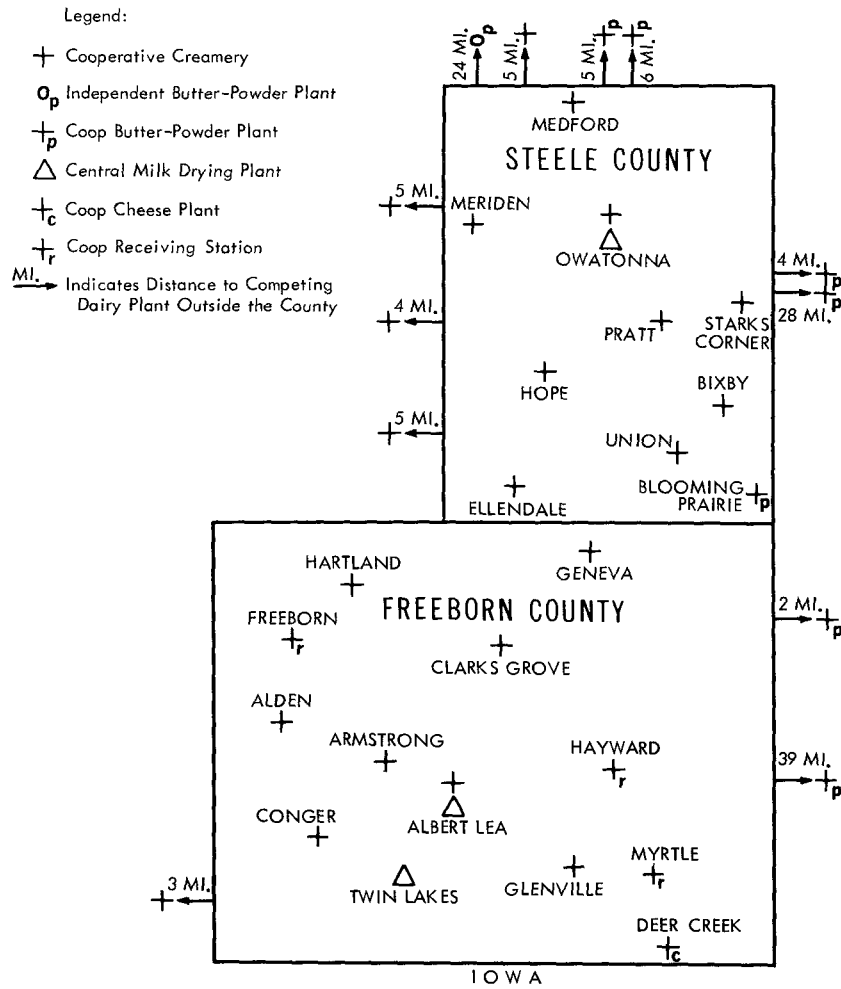
### Description of the Buyers

#### Number and Size of Creameries

Table 1 shows the trend towards fewer and larger creameries in Freeborn and Steele Counties. The number of creameries has decreased by almost one-half during the last 13 years while the average size has more than doubled. This growth rate was not true for all creameries. The average of the three largest creameries more than doubled during the 13 year period. In contrast, the average size of the three smallest creameries only increased from 137,000 pounds in 1950 to 213,000 pounds in 1963. Although the small creameries did increase in absolute volume, they did not grow at nearly the rate of the large creameries.

The increased importance of the large creameries is exemplified in their share of total butterfat processed in the two

Figure 1. Location of Dairy Plants in Freeborn and Steele Counties, 1962



counties. In 1950, the three largest cooperative creameries processed approximately 30 percent of the total butterfat purchased by cooperative creameries in Freeborn and Steele Counties. In 1963, the three largest creameries processed more than 40 percent of this total. In summary, then, the trend has been towards fewer and larger creameries with the larger creameries growing at a faster rate than the smaller ones.

Table 1. Changes in number and size of creameries in Freeborn and Steele Counties, 1935, 1950, 1963

	1935	1950	1963	Percent change	
				1935-50	1950-63
Total no. of creameries*	48	36	22	-25.0	-38.9
No. of coop creameries	43	34	22	-20.9	-35.3
No. of independent creameries	5	2	-	-60.0	-
Ave. annual butterfat volume of coops (1,000 lbs.)**	245	361	738	+47.3	+104.4
Ave. butterfat volume of 3 smallest coops (1,000 lbs.)	83	137	213	+65.1	+55.5
Ave. butterfat volume of 3 largest coops (1,000 lbs.)	521	801	2,107	+53.7	+163.1

\* Includes one cheese plant.

\*\* Range in size (thousand pounds of butterfat) -- 40 to 580 in 1935, 115 to 890 in 1950, 199 to 2,203 in 1963.

Fifteen creameries in Freeborn and Steele Counties discontinued operation from 1950 to 1963. Five of the creameries merged to form a cooperative making 14 the net number that discontinued operation, as shown in Table 1. Only one of the 15 creameries that closed was in the medium size classification; the rest fell into the small size category. It appears, therefore, that the smallest creameries are closing at a rapid rate while the larger creameries are growing rapidly.

Ten creameries located outside of this two-county area purchased milk there. This provided dairymen more alternative outlets for their milk and increased the competition in the area. Two large cooperatives from outside the area covered a greater part of Steele and smaller part of Freeborn Counties with their milk pickup routes, and were a significant factor in the manufacturing milk market of the area. All of those coming in from outside were creameries, except for one large cheese plant.

#### Dry Milk Plants

Two large dairy manufacturing plants that manufacture dry milk are located in these two counties at Owatonna and at Albert Lea; they are not included in the tabulations and analysis of this report. The reason is that these plants did not receive milk directly from farmers but received skim milk and buttermilk from local creameries. Thus, these plants did not enter into



competition for milk supplies at the farm level as did the local creameries discussed in this study.

The 2 plants combined served 16 creameries in the 2-county area and 12 additional creameries in adjacent counties, or a total of 28 plants. The only products processed by these plants were nonfat dried milk solids and dried buttermilk. These plants are not farmer owned or controlled. One is owned by a large-scale national dairy company and the other by a smaller independent corporation.

#### Comparison of Size of Plant Increases

Table 2 shows a comparison of the proportion of butter manufactured by the largest plants in Minnesota and in Freeborn and Steele Counties. The table indicates that the larger plants throughout the state are growing more rapidly than those in Freeborn and Steele Counties. For the largest 5 percent of the plants in the entire state, the proportion of butter manufactured increased from 21.2 in 1938 to 27.8 percent in 1962, or an increase of 6.6 percentage points. For the largest 5 percent of the plants in Freeborn and Steele Counties, the proportion of butter manufactured increased from 11.4 percent in 1938 to 15.0 percent in 1962, or a 3.6 percentage point increase. Plants in the entire state showed greater increases for the largest 10 and 20 percent of the plants also.

Table 2. Proportion of total butter manufactured by 5, 10 and 20 percent of the largest plants in the entire state and Freeborn and Steele Counties, 1938 and 1962

Percent of plants	1938		1962	
	Entire state	Freeborn and Steele Co.	Entire state	Freeborn and Steele Co.
	percent of total			
Largest 5%	21.2	11.4	27.8	15.0
Largest 10%	32.1	21.2	42.2	27.3
Largest 20%	46.7	38.0	59.2	46.3

Another difference may be noted between the figures for the entire state and those for Freeborn and Steele Counties. It is that the largest 5 percent of the plants in the entire state controlled a larger proportion of the market. For instance, in 1962 the largest 5 percent of the plants manufactured 27.8 percent of the total butter in the state. In contrast, in 1962 the largest 5 percent of the plants in Freeborn and Steele Counties manufactured only 15 percent of the total butter manufactured

in the two-county area. The average volume figures indicate that the largest 5 percent of the plants in the entire state were more than double the size of the largest 5 percent of the plants in Freeborn and Steele Counties.

#### Growth Methods

The larger creameries in Freeborn and Steele Counties experienced rapid growth over the past 13 years. By what method did these plants grow? One growth method consisted in receiving milk through local receiving stations. In some cases creameries negotiated with some small creameries to close down their processing operation and become a receiving station for the larger plant. Over time some of these receiving stations closed down completely and a larger creamery in the area now picks up the milk directly from the closed creamery's patrons.

A second growth method was the direct purchase of skim and whole milk from other plants seasonally or whenever possible. Still another growth method was by the gradual increase in milk production by the regular patrons of the creamery. The difference in growth, however, between a small and a large plant was due primarily to the larger plants receiving milk from other plants or receiving stations.

A fourth growth method was by merger or consolidation. Growth in this way was of some importance in Freeborn and Steele Counties. In 1944 five Owatonna creameries merged into a milk separating cooperative. The merger was successful because it resulted in a large and efficient low-cost operation in one central plant. It eliminated five smaller plants with relatively high unit costs. Only 3 of the 19 managers interviewed favored a consolidation with 1 or more creameries. The principal reason given for the desire to consolidate was the saving in costs obtainable through greater efficiency in procurement and processing.

In 1950 all butterfat receipts came directly from farmers. However, in 1963 the three largest plants received 84 percent of their butterfat directly from farmers, with 16 percent being received as whole milk from other plants or receiving stations.

The purchase of milk from receiving stations represents a significant change in the manufacturing milk industry in Minnesota. By gaining this additional volume greater economies of scale are achieved; that is, costs per unit are lowered for these larger creameries. Because of high per unit costs small creameries often find it profitable to shut down their processing operations and become a receiving station for a larger creamery. In the case of cooperatives this gain is distributed to farmer patrons in proportion to the volume of milk they have delivered to the creamery.

Greater gains might be achieved by closing down the receiving station entirely and hauling milk directly to the large creamery. If this is so then receiving stations represent only an intermediate step between a small creamery operation and a closed one.

When a creamery closes it has been a tendency for the patrons to shift to a larger creamery in the area. Therefore whether a small creamery closes or becomes a receiving station, the end result is the same; that is, the larger creameries tend to increase volume by adding a group of patrons at a time when a dairy plant change occurs in the area. On the other hand, smaller creameries usually have to rely on the increased production of their existing patrons in order to increase volume.

#### Type of Ownership

All of the dairy manufacturing plants in Freeborn and Steele Counties, with the exception of the two central milk drying plants, were organized on the cooperative plan. This has been the situation over a long period of years.

#### Products Purchased and Sold

Table 3 indicates the increased importance of whole milk as a source of butterfat for creameries. Farm separated cream has declined to a negligible amount. Manufacturing whole milk in 1963 represented about 87 percent of the source of butterfat while in 1949 it represented only 16.5 percent of total butterfat. Grade A milk increased from 2.4 percent in 1949 to 9.1 percent in 1963, but it still represents a minor proportion of the total. Only 6 plants received manufacturing milk from farmers in 1949 while in 1963, 21 creameries received manufacturing milk.

Table 3. Total butterfat purchased from farmers by 21 cooperative creameries, Freeborn and Steele Counties, 1949 and 1963

Product	1949		1963	
	Butterfat received	Percent of total butterfat	Butterfat received	Percent of total butterfat
	(1,000 lbs.)	(percent)	(1,000 lbs.)	(percent)
Manufacturing whole milk	1,248	16.5	11,503	86.8
Farm separated cream	6,141	81.1	549	4.1
Grade A milk	186	2.4	1,202	9.1
Total butterfat received	7,575	100.0	13,254	100.0

Table 4 shows the composition of the total receipts of the creameries for 1949 and 1963. Butter returns made up 63.2 percent of the sales in 1949 and 59.6 percent of the sales in 1963. Although the proportion of butter sales decreased they still represent the largest single item. Only three of the local creameries manufactured dry milk that accounted for 12.7 percent of the total returns in the two-county area. Other dairy products include such things as receipts from cream, whole milk, and buttermilk sales and represented 12 percent of total receipts. Receipts from other sales and services includes such items as feed, seed, fertilizer, and dairy supplies.

Table 4. Receipts from products sold by 21 creameries in Freeborn and Steele Counties, 1949 and 1963

Receipts item	1949*		1963	
	Dollar sales	As a percent of total sales	Dollar sales	As a percent of total sales
	(1,000 dollars)	(percent)	(1,000 dollars)	(percent)
Butter sales	3,485	63.2	9,010	59.6
Dry milk sales	-	-	1,925	12.7
Fluid skim milk sales	84	1.5	2,034	13.5
Other dairy products	<u>1,854</u>	<u>33.7</u>	<u>1,820</u>	<u>12.0</u>
Total dairy products	5,423	98.4	14,789	97.8
Receipts from other sales & services	88	1.6	295	2.0
Patronage refunds received	-	-	<u>24</u>	<u>.2</u>
Total receipts	5,511	100.0	15,108	100.0

\* One small plant was not included in 1949 because data were unavailable.

#### Financial Characteristics

The financial condition of these dairy plants may be tested by observing the relationship between various balance sheet items. The balance sheet is a statement of the assets, liabilities, and owner's equity of an enterprise at a given date. Table 5 is an average balance sheet of 20 cooperative creameries in Freeborn and Steele Counties by size groups for 1949 and for 21 creameries in 1963. The size groups as used in this report are as follows:

Small -- Less than 300,000 pounds of butterfat annually  
Medium -- 300,000 to 599,000 pounds of butterfat annually  
Large -- Over 600,000 pounds of butterfat annually

Current assets are cash and other assets that reasonably can be expected to be converted into cash or used in the operation of the business in a short time (a year or less).

Table 5. Average balance sheet of 21 cooperative creameries in Freeborn and Steele Counties  
by size group, 1949 and 1963

Items	1949						1963					
	Large			Medium			Large			Medium		
	Dollars	Percent		Dollars	Percent		Dollars	Percent		Dollars	Percent	
Current Assets:												
Cash	93,257	15.9		52,015	21.9		120,361	5.4		112,426	21.2	
Receivables	102,467	17.4		40,196	16.9		440,117	19.7		84,633	16.0	
Inventories	28,991	4.9		9,211	3.9		191,783	8.6		21,121	4.0	
Total Current	224,715	38.2		101,422	42.7		752,261	33.7		218,180	41.2	
Investments	21,466	3.7		228	.1		107,625	4.8		72,831	13.8	
Fixed assets	314,128	53.5		130,741	54.9		1,363,832	61.0		235,194	44.4	
Other assets	27,280	4.6		5,549	2.3		11,208	.5		2,948	.6	
Total assets	587,589	100.0		237,940	100.0		2,234,926	100.0		529,153	100.0	
Liabilities:												
Current liab's	210,193	35.8		93,122	39.1		1,111,249	49.7		226,908	42.9	
Long term liab's	47,948	8.2		-	-		209,426	9.4		14,623	2.7	
Total liabilities	258,141	44.0		93,122	39.1		1,320,675	59.1		241,531	45.6	
Net worth	329,448	56.0		144,818	60.9		914,251	40.9		287,622	54.4	
Total liabilities and net worth	587,589	100.0		237,940	100.0		2,234,926	100.0		529,153	100.0	
No. of creameries	(8)			(6)			(8)			(6)		
												(7)

\* Excludes one plant because data were unavailable.

The "investment" item in a cooperative creamery's balance sheet reflects mainly the amount that the association has invested in other cooperatives. These cooperatives usually are either large regional marketing associations or purchasing associations through which supplies and equipment were purchased.

Liabilities are the claims of creditors against the firms. There are two types of liabilities; current and long term. Current liabilities are obligations which will fall due in a relatively short time usually within a year. Long term debts are obligations with a maturity date usually more than a year from the date of the balance sheet. Net worth (owner's equity) represents the proprietary interest of the owners in the assets of the enterprise and is measured by the excess of assets over liabilities.

The financial condition of a firm may be tested by observing various relationships between various balance sheet items. The worth to debt ratio is determined by dividing the net worth by total liabilities. This ratio shows to what extent the association has been financed by the members or represents the degree of ownership. A ratio of about 2 to 1 is favorable since it indicates that the association is financed primarily by the members and the debt burden is low. Table 6 indicates that that average worth-to debt ratio of all creameries in Freeborn and Steele Counties was at an unsatisfactory level of .80 to 1.00 in 1963. In 1949 the average was 1.40, so this important ratio worsened between 1949 and 1963.

Table 6. Balance sheet ratios by size groups, 21 cooperative creameries, 1949 and 1963

Size Group	Number of Creameries	Worth-to-debt ratios		Current ratios	
		1949	1963	1949	1963
Small	7*	1.64	1.07	1.14	1.11
Medium	6	1.56	1.19	1.09	0.96
Large	8	1.28	0.69	1.07	0.68
Avg. all groups	21	1.40	0.80	1.09	0.76

\* Includes 6 plants in 1949.

The current solvency or current debt-paying ability of an association may be tested by comparing the current assets with current liabilities. This ratio indicates the capability of the business to pay current debts when they are due. A ratio of 2 to 1 is desired in this case. Table 6 indicates that for plants in Freeborn and Steele Counties the ratio currently was 0.76 to 1 in 1963. Firms with a current ratio under 1 to 1 are considered to be in a weak financial condition. Table 6 also indicates that

the smaller firms have a more favorable ratio than the larger firms.

The Wright County study<sup>2/</sup> showed very favorable financial ratios, both worth to debt and current, for the local creameries there. The question arises whether competition is keener in Freeborn and Steele Counties or whether it is due to less effective financial management or both. A complete analysis of the difference in the two county areas would be a test of the hypothesis that financial standings are poorer in areas where price competition is stronger. Where price competition is keen a cooperative may choose to pay as much as it can in order to meet competitive prices rather than maintain a larger net margin which could be retained in the business at the end of the year.

#### Cost and Efficiency

Creamery manufacturing costs per pound are affected significantly by the structure of the industry in an area. In an area of numerous small plants unit costs are likely to be higher than in areas of fewer and larger plants.

Table 7 shows the average operating costs per pound of butterfat for 15 plants manufacturing only butter in Freeborn and Steele Counties and for 25 butter plants located in west central Minnesota. These costs include plant expenses, administrative expenses and general expenses. They do not include the cost of assembling milk or selling expenses. The table presents a comparison of typical creameries engaged in processing only butter. The creameries which manufacture both butter and dry milk are not included in the analysis.

The table shows that the average cost per pound of butterfat received was higher for Freeborn and Steele Counties than for the 25 west central butter plants. The average costs per pound for Freeborn-Steele and the west-central butter plants were 7.66 and 7.23 cents respectively. The average annual volume per plant in 1961 for the 15 butter plants in Freeborn and Steele Counties was 415,803 pounds while the average for the 25 west-central Minnesota butter plants was 586,776 pounds.

Study of the component manufacturing costs shows that the major difference between the Freeborn-Steele and the west-central butter plants was in labor costs. The average labor

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<sup>2/</sup> Peterson, Willis L. and E. Fred Koller, Market Organization and Competition in the Creamery Industry in Wright County, Minnesota. Report No. 525, June 1963.

cost per pound of butterfat received was 2.60 cents for Freeborn-Steele plants and 2.12 cents for the 25 west-central butter plants. Much of the difference in labor costs can be attributed to the difference in the average volume of butterfat received. Available labor can be utilized more effectively in the larger organizations.

Table 7. Average operating costs per pound of butterfat for 25 west-central Minnesota butter plants and for 15 butter plants in Freeborn-Steele Counties, 1961

	Freeborn-Steele Counties	West-central butter plants
Number of plants	15	25
Average pounds of butterfat received	415,803	586,776
<u>Plant Expenses</u>		
Creamery labor	<del>\$2.60</del>	<del>\$2.12</del>
Packing supplies	.47	.46
General supplies and salt	.70	.70
Fuel	.54	.51
Power, light, water	.43	.53
Unclassified	.54	.04
Total	5.28	4.35
<u>Administrative Expense</u>		
Directors fee	.10	.05
Office salaries	.17	.38
Office supplies	.05	.07
Telephone and telegraph	.04	.03
Auditing	.04	.06
Total	.40	.59
<u>General Expense</u>		
Local taxes	.19	.29
Payroll taxes	.10	.10
Insurance	.15	.13
Repairs	.31	.32
Depreciation on building and equip.	.88	.92
Interest on loans	.09	.05
Quality improvement	.05	.12
Advertising	.05	.07
Unclassified	.16	.29
Total	1.98	2.29
Total cost per pound	7.66	7.23

A comparison of the three largest plants and the three smallest plants in Freeborn and Steele Counties shows a substantial difference in costs. The average cost per pound of butterfat received for the three largest plants in Freeborn and



Steele Counties was 6.3 cents per pound, while the average cost in the three smallest plants in these counties was 12.9 cents. One of the important cost differences between the three largest and three smallest plants was creamery labor. The average labor cost of the three largest plants was 2.13 cents per pound of butterfat received, while the average in the three smallest plants was 3.87 cents per pound of butterfat. The average volume of butterfat received by the three largest plants in Freeborn and Steele Counties was 902,077 pounds, while it was only 176,658 pounds in the three smallest plants. The above figures support the contention that larger plants are likely to be more efficient and have lower costs per pound.

One of the ways in which greater economies of scale could be achieved would be through carefully planned mergers of creameries in the area. This move would be desirable in that it would probably result in achieving lower unit plant costs and larger net returns to producers.

#### Seasonality of Milk Receipts

Seasonality of milk receipts is an important factor affecting structure because it influences the cost of operation. A plant that can maintain an even flow of milk can eliminate, or at least reduce, excess capacity and thus be able to keep costs of production lower. The plants with low production costs can more effectively compete by being able to pay top prices for milk. One measure of the degree of seasonal fluctuation in milk intake is the percentage that the lowest monthly volume is of the highest monthly volume. A larger percentage indicates less variation between the low and the high months than a smaller percentage.

Table 8. Indexes of seasonal variations--percent lowest monthly volume is of highest monthly volume and percent of plant capacity utilized in the flush season, 21 Freeborn and Steele County creameries, 1963

Size group	Number of creameries	Percent lowest month is of highest month	Percent of plant capacity utilized in flush season
Small	7	48.0	74
Medium	6	44.9	71
Large	8	53.4	83

Table 8 shows that medium-sized creameries had the greatest variation in monthly receipts. The small plants had slightly less variation and the largest plants had even less variation. If the butterfat received from other creameries is

excluded in the large creamery group, the percent the lowest month is of the highest is slightly less (50.7 percent). This is because these creameries try to obtain greater amounts of milk during the slack season to stay as close to full capacity as possible. Thus the practice of receiving milk from other plants and receiving stations did serve to reduce variations in intake between the low and high months.

The percent of plant capacity utilized in the flush season ranged from 50 to 100 percent for the 20 creameries.<sup>3/</sup> Table 8 also indicates that larger creameries utilize a greater proportion of plant capacity in the flush season than the smaller creameries.

#### Marketing Manufactured Products

The price received for products manufactured by a creamery has a great influence on the price it can pay to producers and thus influences its ability to compete for milk in the market. Table 9 shows that there is little difference between the size categories as to price received for butter.

Table 9. Average price received per pound of butter by size group and market outlet, cooperative creameries, Freeborn and Steele Counties, 1963

Size group	Number of creameries	Price (cents)	Market outlet	Number of creameries	Price (cents)
Small	5	57.39	Meat packer	4	57.66
Medium	6	57.44	Wholesaler	14	57.81
Large	7	57.90			

Fourteen of the creameries in Freeborn and Steele Counties sold their butter through two dairy wholesale concerns. Four of the 18 plants marketed their butter through meat packing organization. None of the creameries in Freeborn and Steele Counties were affiliated with the large central cooperative dairy marketing associations located in the Midwest dairy area.

#### Description of the Sellers (Farmers)

The trend of decreasing dairy farm numbers has been going on for some time. U. S. Census data show that farms are becoming less numerous and somewhat larger. Some of the changes

<sup>3/</sup> No attempt was made to define or measure capacity. The percent capacity utilized was given as an estimate by each manager.

that have taken place on the selling side of the market during the past 10 years are shown in Table 10.

Table 10. Changes in numbers of farms, size, and related characteristics, Freeborn and Steele Counties, 1950 and 1959

	1950	1959
Number of commercial farms	4,644	4,019
Number of milk cows	44,668	41,465
Number of farms reporting milk or cream sold	3,769	2,576
Average number of milk cows per farm with any milk sold	11.9	16.1
Average size of farms (acres)	149.0	165.2
Percentage of farms located on:		
Hard-surfaced roads	11.6	16.0
Gravel or shale	84.7	82.0
Dirt or improved	3.7	2.0

The number of milk cows decreased over the 10 year period. The number of farms reporting milk or cream sold decreased from 3,769 in 1950 to 2,576 in 1959. An item of importance is the increasing percentage of farms located on improved roads. This has enhanced the procurement of milk by creameries from longer distances and thus has served to increase competition for milk. Competition in some areas may be even greater today with fewer creameries than it was some years ago when there were more creameries.

Another item of significance is the decline of the producers with just a few cows as a source of regular cash income. Today it is not uncommon to find dairy farmers specializing in the dairy business and keeping 50 to 60 or more milk cows and selling over a ton of whole milk each day. Creameries compete strongly for these producers because it adds a substantial amount to total volume which can be handled at lower unit costs than a small producer in terms of administrative expense and field work, cost savings in hauling obtainable through larger volume pickups and for other reasons. In view of this, it is likely that creameries will adopt policies which show preferential treatment to larger producers, as is already the case in hauling rates.

#### Description of Procurement Areas

##### Overlapping of Milk Procurement Areas

Overlapping of milk procurement areas probably has always existed among dairy plants in the state. Even though there are fewer creameries now than there were several years ago

Figure 2. Extent of Milk Procurement Area Overlapping in Freeborn County, 1962

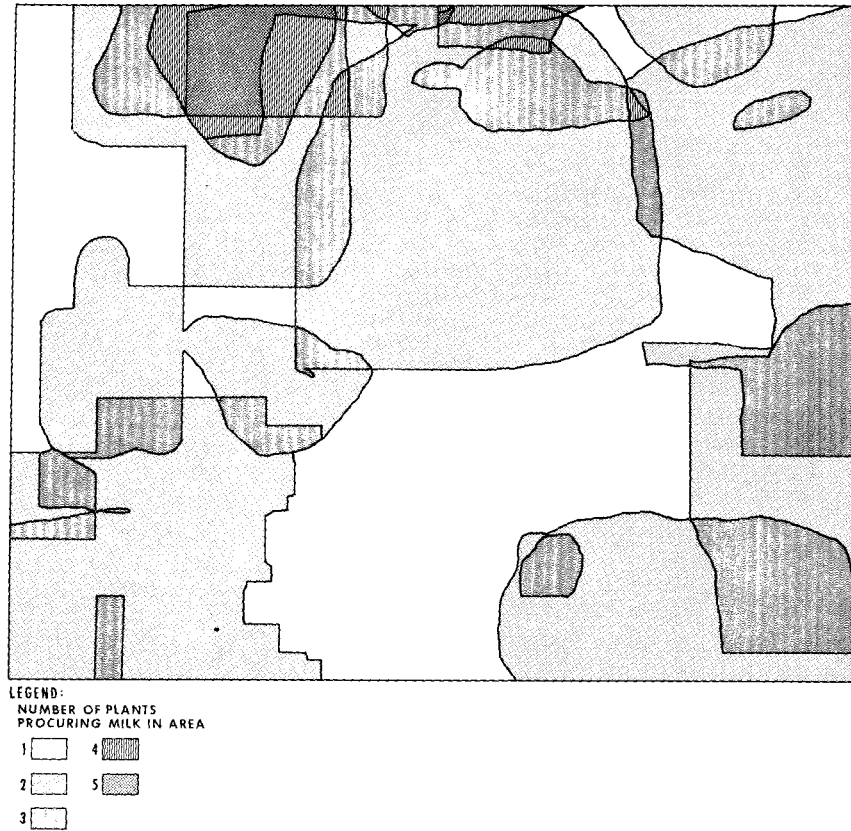
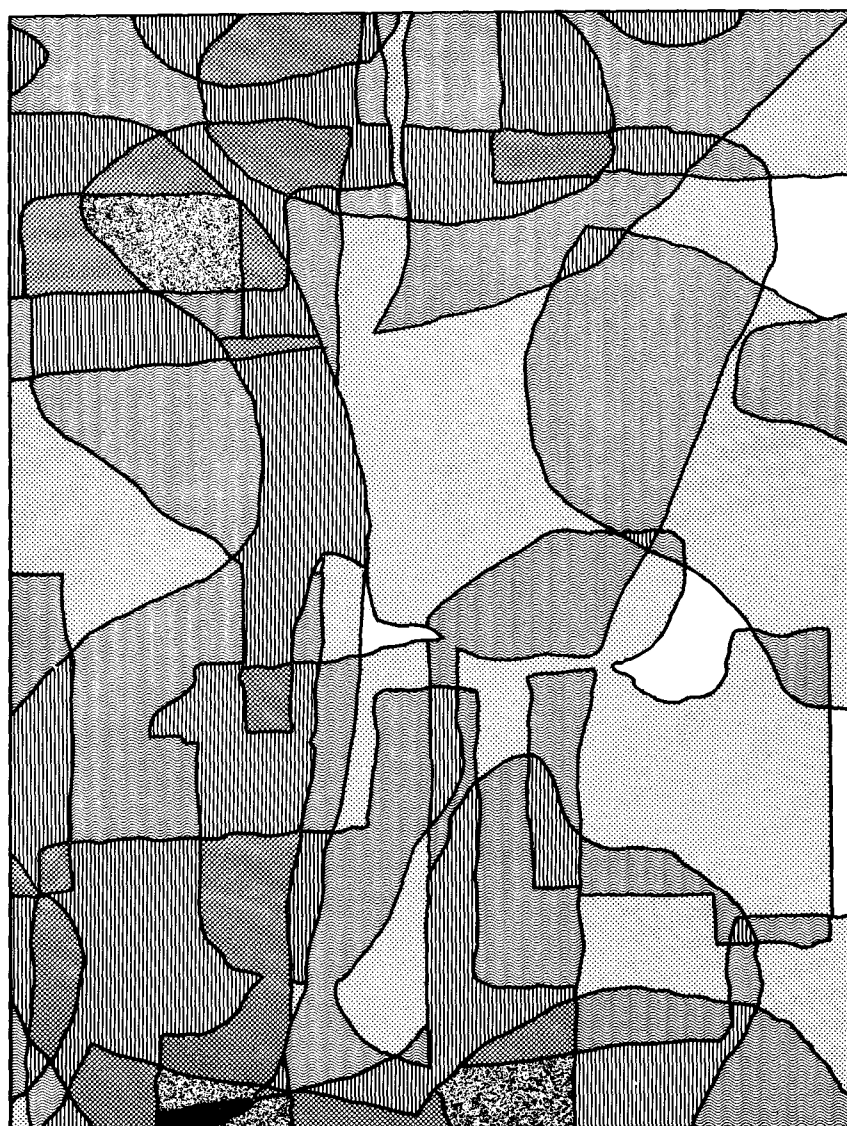
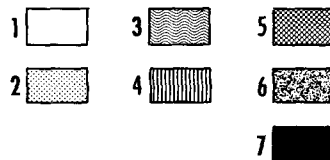


Figure 3. Extent of Milk Procurement Area Overlapping in Steele County, 1962



LEGEND:

NUMBER OF PLANTS  
PROCURING MILK IN AREA



the problem has not been alleviated. With improved roads the milk pickup trucks from more distant creameries often come in and overlap the supply area of a given creamery. Consequently, an excessive amount of cross hauling and duplication of collection routes still occurs. This results in a direct loss to farmers because the cost of procuring milk is higher than it need be.

The extent of overlapping of procurement areas in Freeborn and Steele Counties is shown in figures 2 and 3. The procurement areas of plants within the counties are shown as well as the areas of plants outside plants which procure some of their milk in either or both counties. The number of plants procuring milk in any one area varied from one to seven collection routes.

#### Differences in Overlapping

The amount of overlap in milk collection routes was large in a number of areas in Freeborn County. As may be seen in figure 2, as many as five creameries picked up milk in some areas of the county. However, Steele County had even more overlapping; there were up to 7 creameries procuring milk in some areas. The main reason for the greater amount of overlap was partly because two large milk manufacturing plants outside the county procured milk over a major portion of Steele County.

Table 11 indicates the amount of overlap by size of creamery; for large creameries the average overlap is 11.

Table 11. Extent of overlapping in immediate supply area by size of creamery in Freeborn and Steele Counties, 1962

Size of creamery	Number of creameries	Average number of creameries overlapping
Large	6	11
Medium	6	5 1/3
Small	7	4 1/3

Larger creameries have a larger procurement area and as a result a larger number of creameries will be overlapping their areas.

#### Location of Competing Creameries

The patronage and volume of business of all creameries are limited by the presence of competing butterfat buyers in their territories. According to table 12 almost all of the competitors in the Freeborn and Steele area are other cooperative

creameries. In 3 of the 21 plants in Freeborn and Steele Counties, one or two other cooperative creameries were located within a 5-mile radius of the plant. When each creamery's supply area is extended to 15 miles, the presence of 11 or 12 other cooperative creameries is frequent. The last column of the table shows the number of competing butterfat buyers of all types located within specified distances.

Table 12. Classification of 21 dairy manufacturing plants in Freeborn and Steele Counties according to the number of competing butterfat buyers located within specified distances, 1962

Number of competing buyers and their location	Types of competing buyers		
	Other cooperative creameries	Cheese factories	All types of buyers combined
(number of plants)			
In same town:			
None	21	21	21
1	-	-	-
2	-	-	-
Total	21	21	21
Within a 5-mile radius:			
None	18	20	17
1-2	3	1	4
3-4	-	-	-
Total	21	21	21
Within a 10-mile radius:			
None	-	19	-
1-2	6	2	6
3-4	10	-	10
5-6	5	-	5
Total	21	21	21
Within a 15-mile radius:			
None	-	17	-
1-2	-	4	-
3-4	-	-	-
5-6	1	-	1
7-8	4	-	3
9-10	5	-	6
11-12	9	-	9
13 and over	2	-	2
Total	21	21	21

#### Milk Pickup Truck Routes of Competing Creameries

Table 13 shows how close procurement areas (milk pickup truck routes) of competing creameries come to creameries in Freeborn and Steele Counties. In 8 of 20 plants, 3 or 4 other cooperative creameries were procuring milk with a 5-mile radius of a given plant. When the supply area was extended to 10 miles, in 7 of the 20 creameries 11 or 12 other cooperative creameries were procuring milk in this area.

Table 13. Classification of 20 dairy manufacturing plants in Freeborn and Steele Counties according to the number of competing butterfat buyers whose milk truck routes operate within specified distances from their location, 1962\*

Number of competing buyers and their location	Types of competing buyers		
	Other cooperative creameries	Cheese factories	All types of buyers combined
(number of plants)			
In same town:			
None	1	19	1
1	8	1	8
2	9	-	9
3	2	-	2
4 and over	-	-	-
Total	20	20	20
Within a 5-mile radius:			
None	-	18	-
1-2	2	2	2
3-4	8	-	8
5-6	6	-	6
7-8	4	-	4
Total	20	20	20
Within a 10-mile radius:			
None	-	17	-
1-2	-	3	-
3-4	-	-	-
5-6	2	-	2
7-8	5	-	5
9-10	5	-	5
11-12	7	-	7
13-14	1	-	1
Total	20	20	20
Within a 15-mile radius:			
None	-	15	-
1-2	-	5	-
3-4	-	-	-
5-6	-	-	-
7-8	-	-	-
9-10	1	-	1
11-12	2	-	2
13-14	3	-	3
15-16	6	-	6
17-18	6	-	6
19-20	2	-	2
Total	20	20	20

\* Only 20 plants are included in this table because 2 of the plants are under the same management and thus have one procurement area.

When considering location of competing creameries 3 of the 21 plants in Freeborn and Steele Counties, 1 or 2 other cooperative creameries were located within a 5-mile radius of the plant. When considering the pickup truck routes of competing creameries it was found that in the case of 4 of 20 plants there were 7 to 8 other cooperative creameries procuring milk within a 5-mile radius. The results show, that when the milk truck pickup of competing plants are considered, that all 20 creameries show at least 1 to 2 competing plants within a 5-mile radius.



The milk pickup truck routes of competing creameries probably is the more important criterion of determining the amount of overlap and crosshauling that takes place in this two-county area. The reason is that with modern truck equipment and better roads that plants reach out further for procurement of milk than in the past. Two creameries located 20 to 25 miles apart might be still competing for milk. If the amount of crosshauling and overlap could be reduced in the two-county area, great efficiency and lower costs could be attained in procurement.

At various times in recent years, federation or merger of some of the creameries in Freeborn and Steele Counties has been proposed and discussed. Some of the leaders of the local creameries have proposed buying or building a central processing plant for the manufacture of both butter and dry milk. This move would be desirable in that it would very probably reduce the uneconomic overlapping of milk supply areas and crosshauling which now exists. Processing butter and powder in a large central operation would very probably result in achieving significant economies of scale, lower unit plant costs, and larger net returns to producers.

#### Collection Routes

During 1962, 19 manufacturing plants in Freeborn and Steele Counties received 11,867,000 pounds of butterfat from their 2,317 patrons.<sup>4/</sup> In most creameries contract haulers were employed to transport milk and cream from the farms to the plant.

The contract hauler usually owns one or more milk trucks and makes an agreement with the creamery to haul the milk from a certain route for a specified rate. The route is thought of as the right to haul the milk of a specified group of patrons.

For the 19 creameries, 43 percent of the butterfat was hauled by contract haulers, with 32 percent transported by the plants' own trucks and 25 percent hauled by patrons themselves. In the case of the small creameries, however, only 28 percent of the milk was transported by contract haulers with the remaining 72 percent being evenly divided between the plants' own trucks and patrons themselves. The proportion of butterfat hauled and patrons served by the various methods for each size group are shown in Table 14.

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<sup>4/</sup> Includes grade A, manufacturing milk, and cream (bulk and can).

Table 14. Proportion of butterfat hauled and patrons served by the various means of hauling, 1962

Size group	Contract haulers		Plants' own trucks		Patrons themselves	
	Butterfat hauled	Patrons served	Butterfat hauled	Patrons served	Butterfat hauled	Patrons served
	(percent)					
Small	28	28	36	36	36	36
Medium	55	55	--	--	45	45
Large	<u>43</u>	<u>43</u>	<u>43</u>	<u>43</u>	<u>14</u>	<u>14</u>
Average all groups	43	43	32	32	25	25

#### Density of Routes

Table 15 shows the can route data for 19 creameries. There is substantial variation between creameries in such things as number of patrons per mile, number of miles per patron, pound of butterfat picked up per patron, and pounds of butterfat picked up per mile.

Table 15. Can route characteristics by size groups and by area, Freeborn and Steele Counties, 1962

Size of creamery	Number of creameries	Avg. no. of patrons per mile	Avg. no. of miles per patron	Avg. lbs. of butterfat per mile
Small	7	.86	2.22	6.33
Medium	6	.52	2.06	7.28
Large	6	.41	2.45	5.85

#### Milk Hauling Rates

Milk hauling rates are an important consideration because they are a factor in determining the net price received by producers. Milk hauling rates on contract routes are set either by the hauler, the creamery manager or the board of directors. Creameries which owned their trucks tried to set the rate so that the route paid its expenses.

In most instances hauling rates were set at the going rate in the area. Managers were not highly concerned about their truckers setting the rates too high because they felt that truckers would not be too far out of line if they expected to keep their

patrons. It was found that can hauling rates ranged from 15 to 25 cents per hundredweight with an average of 19 cents per hundredweight. The hauling rates on 4 bulk routes ranged from 15 to 20 cents per hundredweight. The distribution of hauling rates is shown in table 16.

Table 16. Hauling rates for 20 creameries can routes in Freeborn and Steele Counties

Hauling rate cents per hundredweight	Number of creameries
15	1
16	1
17	3
18	0
19	1
20	9
21	0
22-25	4
Total	19

The managers indicated that hauling rates were not used as a competitive device. The rates were seldom changed and were not advertised. In general the managers felt that hauling rates were not watched too closely.

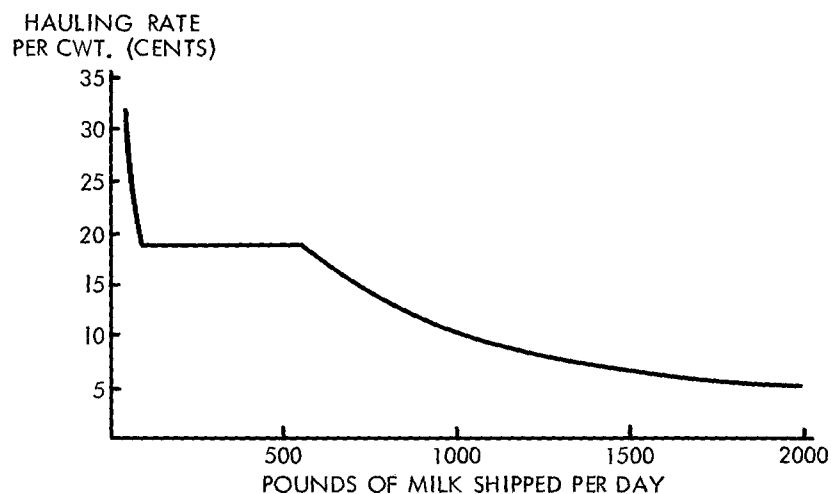
There has been an increased use of the minimum and maximum hauling charges. Over one-half of the plants interviewed in Freeborn and Steele Counties had a minimum charge and 13 out of 19 plants had a maximum charge. The minimum charge ranged from \$4.50 to \$10.00 per month, while the maximum ranged from \$30 to \$45 per month. None of the manufacturing milk bulk routes had a minimum or maximum charge.

The question that arises is whether these differential rates are justified on basis of actual cost differences. If the difference in rate just compensates for differences in hauling costs, they are justified. That is, it is likely that the cost per hundredweight to pick up a 100-pound-a-day shipper is higher than for a 1,000-pound-a-day shipper.

There appears to be a strong possibility, however, that the maximum rate serves to reward the larger producer more than is justified by cost savings. If this is the case, there is price discrimination. With a \$30 maximum charge per month, the cost per hundredweight to a 1,000-pound-a-day shipper is 10 cents; this decreases to 5 cents for a 2,000 per day shipper.

Figure 4 indicates the differences in hauling rates resulting from the use of maximum and minimum hauling charges.

Figure 4. Average milk hauling rates charged various size patrons\*



\* Based on a 19-cent-per-hundredweight rate with a \$5 minimum and a \$30 maximum charge for a 30-day month.

In a similar county study in Wright County similar results were obtained as far as minimum and maximum rates were concerned. Probably the main difference was that all the creameries in Wright County had a minimum charge while in Freeborn and Steele Counties only about one-half of the creameries used a minimum charge.

#### Creamery Assistance to Haulers

Studies have shown that some creameries subsidize contract haulers so that more attractive rates may be offered to farmers. In such cases the hauling rate is used as a competitive device to attract patrons. Such was not the case in Freeborn and Steele Counties. None of the managers interviewed indicated that they gave any financial aid to contract haulers.

## MILK PROCUREMENT--COMPETITIVE PRACTICES AND POLICIES

### Price Competition

One of the ways in which creameries compete for patrons' milk is through price. Buyers seek volume and high quality by means of the price paid for milk and cream at the time of purchase.

### Price Determination

Eighteen of 19 plants interviewed used the "gross receipts less cost" method of determining the pay price for No. 1 manufacturing milk, at least as a first approximation. The information on gross receipts was generally available to managers because payment to farmers was not made until 11 to 20 days after the close of the pay period. The total cost of processing was generally determined on the basis of available cost data and past experience. Creameries then tried to pay out the excess of receipts over costs for the period. However, when price competition was not severe, some creameries attempted to hold back a small amount to be paid back as patronage refunds at the close of the fiscal year.

The price paid by competing creameries was also an important factor in determining the price paid to producers. Twelve of the 19 creamery managers indicated that the price paid by competitors had an influence on the price they set. In nine creameries it was the price paid by the competitor in the previous period; in three cases managers tried to ascertain what competing creameries were going to pay this month. Ten of the managers watching competitors tried to pay the same, one tried to pay more, and one paid less than the competitors.

In order to determine a pattern of price leadership in the area, managers were asked what plant or plants they watched the closest when they set their prices. It was found that small- and medium-sized plants typically watched a nearby large creamery. Two of the six large creameries interviewed indicated that competitors' prices did not influence their price. The remaining four appeared to watch large neighboring creameries which were procuring milk in their areas.

It appeared that those plants which were large and were able to pay the highest prices were the price leaders in Freeborn and Steele Counties. In the case of Steele County one large creamery outside the county probably had more influence on the price paid by those creameries than any other plant within the county.

Sometimes a plant is able to pay high prices because the prices of products it manufactures are higher than prices of products manufactured by competing plants. Cheese prices were quite high a few years ago and consequently cheese plants were in a position to pay high prices to farmers, given similar cost structures. Because of this, several small-and medium-size plants found themselves following the price of a large cheese plant located just outside the two-county area.

Several managers indicated that they had to operate at a loss in certain months of the year in order to compete effectively for milk. Usually this happened in periods of short milk supply when per unit costs were high, competition for milk was keen, and pay prices were high. In general, many of these creameries indicated that this loss was made up during flush months.

It is difficult for creameries with high costs throughout the year to stay in the competitive race. Often they are forced to draw on their net worth reserves or omit or reduce depreciation allowances in order to stay out of the red. Eventually, however, creameries such as this will be forced to close. Creameries with high cost operations have been known to pay higher prices than justified for long periods of time. This can be done in several ways. One method is to allocate a portion of the creamery costs to sideline enterprises such as feed or farm supplies. In cooperative creameries this action results in misallocation of savings if the milk patrons and feed patrons are not the same individuals. The milk patrons in such a case are subsidized at the expense of the feed patrons.

#### Prices Paid

In 1962 the average prices paid to patrons for No. 1 manufacturing milk by the creameries in these two counties ranged from \$2.97 to \$3.32 per hundredweight. In 1963 the average pay price ranged from \$3.04 to \$3.22 per cwt.

Table 17. Average prices paid per cwt. for 3.5-percent No. 1 manufacturing milk in cans, 21 creameries, Freeborn and Steele Counties, 1962-63\*

Average quoted pay price			Average net price to farmers***		
Price	1962**	1963	Price	1962**	1963
Dollars	No. of creameries		Dollars	No. of creameries	
2.96 - 3.00	1	-	2.55 - 2.90	1	5
3.01 - 3.05	-	1	2.91 - 2.95	4	7
3.06 - 3.10	3	6	2.96 - 3.00	3	3
3.11 - 3.15	10	8	3.01 - 3.05	5	3
3.16 - 3.20	2	4	3.06 - 3.10	4	1
3.21 - 3.25	3	2			
3.25 - 3.35	1	-			

\* Quoted price plus cash patronage refund, less hauling charge.

\*\* Data were unavailable for one plant.

\*\*\* Only 19 of 21 creameries were interviewed so hauling rates were unavailable and the net price could not be computed for 2 plants.

One should recognize, however, that the net price which farmers receive per hundredweight of milk is usually not the same as what the farmer is quoted with his monthly payments. To determine the net return per hundredweight one must consider hauling charges and patronage refunds. The net price per hundredweight to farmers in Freeborn and Steele Counties was calculated by subtracting the hauling charge from the quoted pay price and adding any cash patronage refund.

To gain a better picture of price behavior in Freeborn and Steele Counties, a comparison was made between pay price and some characteristics of plants. These included (1) size of firm and (2) number of competing firms overlapping.

Price competition appeared to be keener in Steele County than in Freeborn County. This can be attributed largely to two butterpowder plants located outside the two-county area which procure milk in Steele County. In Freeborn County there was some evidence of a "live and let live" policy. For example, one manager felt grateful that a neighboring manager of a large creamery permitted him to continue his operation. He felt that this manager could put him out of business overnight. He indicated that he would not accept patrons of this larger creamery if they were dissatisfied and expressed a desire to market their milk with his creamery.

A cross-classification between pay price and size indicated that larger-size creameries appeared to pay somewhat higher prices. In 1963 the average quoted price for small creameries was \$3.10 per hundredweight while it was \$3.17 per hundredweight for large creameries (see table 18). The difference between the medium size and small plants was rather small.

Table 18. Prices paid for 3.5 percent No. 1 manufacturing milk by size of creamery and the amount of overlapping in creamery's procurement area, Freeborn and Steele Counties, 1962-63

	Number of creameries	Average quoted pay price		Average net pay price**	
		1962*	1963	1962*	1963
<u>Size of creamery</u>					
Small	7	3.11	3.10	2.93	2.87
Medium	6	3.14	3.12	2.99	2.96
Large	8	3.19	3.17	3.03	2.98
	21				
<u>No. of competing firms overlapping</u>					
2 to 4	7	3.12	3.10	2.98	2.87
5 to 7	6	3.12	3.12	2.97	2.96
8 to 10	3	3.19	3.13	3.03	2.95
more than 10	3	3.19	3.18	3.03	3.01
	19				

\* Includes data for 20 plants.

\*\* Only 19 of 21 creameries were interviewed so hauling rates were unavailable and the net prices could not be computed for 2 plants.

In almost all areas of the two counties there were at least two creameries and up to seven creameries procuring milk in an area. There may be two reasons for smaller creameries being able to maintain patronage; (1) farmers are not aware of prices paid by competitive creameries, or (2) creamery loyalty may be strong enough to offset the price difference. Most of the creamery operators indicated that if they paid 5 to 10 cents less than competitors over a longer period of time, say 6 months, that some of their patrons would leave them. Larger size could then be taken to explain, at least in part, higher pay prices.

The table also indicates that average prices paid producers for milk increase as the amount of overlap increases. The larger plants had a greater number of competing firms overlapping in their area. The reason is that larger plants have larger procurement areas and therefore compete directly with many more creameries.

#### Nonprice Competition

Another way in which creamery managers compete for patrons is through nonprice competition. Nonprice competition is a term used to denote the many services and convenience functions performed by creameries for farmers. This form of competition was preferred by many managers because it could not be quoted in exact terms and it generally took competitors a longer time to evaluate it. Of course, most managers agree that the price must be in line, in fact almost all managers indicated that services would not substitute for price.

Creamery managers were asked if providing these services attracted patrons. In most cases the answer was "no" because the neighboring creameries also provided the service. Table 19 shows that all plants sell dairy farm supplies to patrons, and most make group insurance available, advance money and withhold assignments.

Table 19. Nonprice competition practices as reported by 19 manufacturing plants in Freeborn and Steele Counties, 1962

Practice	Number of creameries using practice
Sale of dairy farm supplies	19
Make group insurance available to patrons	17
Advance money on next check	16
Withhold assignments out of check	16
Creamery ownership of milk cans	14
Sponsor community projects	12
Provide daily weight slips	7



However, fewer plants provided daily weight slips, free milk cans, and facilities for local activities.

There is a drawback in using nonprice services too extensively; they tend to be irreversible. A creamery that initiates a new service to farmers, free milk cans for example, may enjoy a period of increased patronage. Before long, however, other creameries also begin furnishing milk cans in order to hold their patronage. After a time virtually every creamery in the area is giving this service and farmers come to expect it. If the creamery wishes to discontinue this service for some reason, it will find it difficult to do so because of the danger of losing patrons and goodwill in the community. So new services are easily added but they cannot be so easily discontinued.

#### Nonprice Practices

(1) Advance Money on Next Check: In most plants there is about a 3-week interval between the end of the pay period and the creamery's payment to the farmers. Because of this, many creameries have started the practice of advancing money to patrons. Moreover, 18 of 19 creameries paid just once a month and frequently farmers were hard pressed for cash just before the payment date.

Managers are often forced into providing a nonprice service such as advancing money to patrons because competing plants offer the service. However, in most cases advancing money to patrons was not objected to. Most managers felt that it was the patron's money and he was entitled to it. Those that favored discontinuation of this practice said that it caused overdrawals and took a great deal of time.

All of the managers indicated that this practice had been carried on for years. The proportion of the patrons taking advantage of this service ranged from 1 percent to 50 percent in the various creameries. Some of the managers indicated that it was the same patrons who came in for advances each month while others indicated that they could not designate any particular patrons as taking advantage of advances more than others.

In most cases the cost of providing this service was considered to be negligible. The maximum time required to carry out the extra clerical work in any creamery was 2 hours per month.

(2) Withhold Assignments from Patron's Check: With this practice a creamery agrees to make installment payments for its patrons, deducting the amount paid each month from their checks. Again managers indicated that this practice has been

provided for quite some time in Freeborn and Steele Counties. The proportion of patrons using this service ranged from 2 to 50 percent. As installment buying increases this service will gain in importance.

The cost of this service was measured in terms of extra hours of clerical time required. The maximum time reported by any creamery was 12 hours per month.

Three managers reported that this service attracted patrons but most of the rest indicated that it was primarily as a service. The greatest service, however, appears to be for the businessmen and lending institutions. If the milk check is large enough to cover installments they are assured of prompt payment each month.

(3) Sale of Dairy Farm Supplies: This practice included selling dairy supplies such as feed, fertilizer, washing powder, filter discs, etc. It was used by all creameries. Actually this was of mutual benefit to both farmers and creameries. In some cases the feed was delivered to producers by milk haulers; in such cases farmers were relieved of the task of purchasing these supplies in town. For other patrons who hauled their own milk it was convenient for them to be able to purchase feed at the creamery. Creameries gained because farmers were less likely to go without needed supplies such as washing powder if they were delivered; this probably helped keep the quality of milk up.

Ten of the 19 creameries sold these supplies to farmers at less than retail. Most of the remaining nine creameries said that the sale of these supplies were a source of profit to the creamery; the others said they came out about even.

This practice was carried on by creameries in these counties for many years. The range in time in use of the practice was from 5 years to the life of the creamery. Managers started this practice mainly because that other creameries provided it or farmers requested this service. One manager thought it attracted patrons; several other managers indicated that it helped to hold patrons.

(4) Group Insurance for Patrons: Seventeen of 19 creameries provided the service of making a group medical and hospital insurance plan available. From 20 to 70 percent of the patrons were covered by this insurance.

All of the managers indicated that premiums were paid entirely by the patrons. The main service provided by the creamery was in keeping the records and withholding premiums from patrons' checks. All of the managers felt that time involved in providing this service was negligible.

This service was provided by creameries in Freeborn and Steele Counties from 1 year to 10 years. In most cases the service was started because the patrons requested it.

At the time of the study no creamery manager thought that this service attracted patrons. The reason for this was that most neighboring creameries also provided the service.

(5) Creamery Ownership of Cans: Nine of the creameries owned all of the cans used by the patrons. Five other creameries owned some of the cans used by patrons. The rent charged per can ranged between 0 and 15 cents.

There appeared to be a widespread disagreement among managers regarding the cost of providing can rental service. The manager of one creamery charging 15 cents indicated a \$200 to \$300 loss per year while another manager charging 10 cents indicated he was breaking even. Eight of the managers said they lost money, five said they broke even, and one indicated a slight profit. The variation in the amount of retinning and replacement of cans between creameries probably accounted for much of the variation in cost.

Maintaining cleanliness of the cans was the most frequent reason given by managers for owning the cans. The managers felt that if the creamery owned the cans they could be kept in better shape and replaced when necessary. Creamery owned cans may result in fewer problems with quality, and in that way may aid in retaining patrons.

Two managers felt that ownership of cans by the creamery did serve to attract patrons. However, the remaining managers felt that most other creameries also provided this service so that this did not attract patrons.

(6) Daily Weight Slips: This practice had been carried on by creameries in this two-county area for many years. Of the seven creameries providing this service, four had provided it for the life of the plant and the other three had provided the service from 3 to 15 years. In general the managers felt that the patron had a right to know the amount of milk shipped each day. Two of the managers felt that giving daily weight slips attracted new patrons. Most of the managers felt that it took little time to provide the service. One manager thought it took about 1 hour per month and two other managers felt it took about one-half hour per day. Creameries with automatic electric scales generally found it convenient to provide daily weight slips.

(7) Sponsor Community Projects: Twelve of the 19 creamery managers interviewed indicated that they provided or sponsored community activities. The most prominent type of activities sponsored were donations for 4-H trips, donations of milk

and butter for various banquets, medals or bonuses for 4-H and FFA activities, and radio broadcasts of ball games. Some creameries donated to a general fund used to sponsor trips for FFA and 4-H judging trips.

The amount spent for such activities in 1962 ranged from \$12 to \$500. Of the 12 creameries that provide for community activities only two indicated that it may help to attract patrons. Most of the other creamery managers felt that it was done to create good will. Apparently most managers believe it is important to provide this service because only seven creameries did not provide the service. One thing it may do is to differentiate the creamery from competing creameries, especially in the minds of patrons in their immediate supply area. A creamery located outside the area cannot easily duplicate community projects carried on within the immediate area nor can they easily provide facilities for local events.

(8) Other Services: Some creameries mentioned other special services including (1) herd testing at no cost to patrons, (2) butterfat tests on individual cows, and (3) butterfat testing for 4-H club members.

#### Cost of Services to Patrons

The determination of costs of services to patrons is very difficult. In addition, some services such as selling supplies were a source of revenue and as such the cost of providing the service could be zero-or there might even be a profit.

An attempt was made to estimate the costs of the services. The cost of four of the services were estimated by multiplying the number of hours times the wage rate.<sup>5/</sup> These include (1) advances on the next check, (2) withholding assignments, (3) administrative cost of group insurance, and (4) providing daily weight slips. The distribution of expenditures is shown in table 20. The total expenditures for nonprice services ranged from none to almost 1 cent per hundredweight of milk.

In the case of indirect expenditures where costs were computed in terms of number of hours required to provide the service, it should be pointed out there may be some doubt whether this is a real cost to the creamery. Could a creamery reduce its labor costs by discontinuing these services? It might be argued that discontinuing these services might not reduce the number of men employed by the creamery, but their labor time might be used profitably elsewhere. The maximum hours required for the 4 services was 20 hours per month or 5 hours

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<sup>5/</sup> The hourly wage rate was assumed to be \$1.25.

Table 20. Expenditures per hundredweight of milk for non-price services in manufacturing milk creameries, Freeborn and Steele Counties, 1962

Indirect* expenditures		Direct cash** expenditures		Total expenditures	
Cents per cwt.	Number of creameries	Cents per cwt.	Number of creameries	Cents per cwt.	Number of creameries
0 - .20	17	0 - .20	13	0 - .20	12
.21 - .40	1	.21 - .40	3	.21 - .40	2
.41 - .60	0	.41 - .60	2	.41 - .60	1
.61 - 1.00	1	.61 - 1.00	1	.61 - 1.00	4

\* Includes: (1) advances on next check, (2) withholding of assignments, (3) administrative cost of group insurance, and (4) providing daily weight slips.

\*\* Includes: (1) community projects and (2) providing milk cans at less than cost.

per week. Fifteen of the creameries required less than 6 hours per month to provide these services, thus discontinuing the services would not likely reduce the need for administrative help. The number of hours required to provide these services were estimates by the creamery manager. The answers as to time required for approximately identical service appeared to vary considerably.

In general, the service of providing milk cans for patrons at less than cost and community projects were more expensive than providing the four aforementioned services.

#### The Role of the Hauler

The milk hauler plays an important twofold role in the milk procurement process. First, the hauler furnishes the labor and facilities with which milk is moved from the farm to the creamery. In this respect, the contract hauler is a businessman. The revenue the hauler obtains depends on the hauling rate charged and the volume of milk hauled. From this revenue he must pay operating expenses such as gas, oil, taxes, depreciation and wages paid to hired drivers. The excess of revenue over expenses is considered wages to the route owner, or profit. The situation is similar where the creamery owns the routes and trucks although in this case the route can be thought of as an enterprise within the creamery instead of a separate business.

The milk hauler has a second important role. He is, in fact, a liaison or connecting link between the farmer patron and the creamery. He is an important source of information

for the patron. Farmers may call upon haulers for advice when milk quality or production problems arise.

As creameries become larger, the importance of the hauler will increase because the relationship between farmers and creameries is likely to become more impersonal. Managers will not be able to know each farmer personally and as a result the creamery will have to depend more on the hauler to solicit and hold patrons.

The importance of good hauling service was expressed by managers in terms of its substitutability for price. Twelve of the 19 creamery managers indicated that good hauling service can substitute for price to some degree. That is, a creamery that has superior hauling service can hold its patrons even though its pay price is lower than competitors pay price. The opinion of managers as to the degree to which good hauling service can substitute for price ranged from "a small amount" to "a lot."

Because haulers perform important functions for the creamery, managers must select new contract haulers very carefully. The hauler qualifications that managers thought to be important included punctuality, a good personality, careful driving, dependability, trustworthiness and sound business sense. Most managers were satisfied with their haulers. However, several managers did complain about haulers not being punctual and not driving carefully.

Eight of the 19 managers complained of unethical conduct by haulers of competing plants. The most important practice was that of spreading damaging rumors. One manager complained that certain haulers for other plants claimed that their creameries paid higher prices for milk. Other complaints included chiseling in hauling rates and plants paying bonuses for every new patron obtained. However, most of the managers felt that haulers of competing plants were not guilty of unethical practices.

#### The Role of the Fieldman

The fieldman also plays a very important role in the creamery's procurement process. His primary task is to check on the quality of patron milk and to suggest solutions to quality problems. This is a very difficult task because, first of all, the fieldman must have a thorough knowledge of the technical aspects of his job. He must be able to pinpoint the quality problems and then suggest solutions.

The fieldman must be able to communicate with the farmer. As one manager put it, he must be able to tell a farmer that he is doing something wrong and still keep him happy. He

needs to have the technical knowledge of a milk sanitarian and must have the tact of a diplomat.

Another function of the fieldman in some areas of the state was that of soliciting new patrons and in doing general public relations work. If the fieldman is used in this way there is a possibility that field service can substitute for the price paid for milk at least to some degree. This means that by having good field service, a creamery can hold its patrons even though they pay somewhat lower price for milk than its competitors. However in Freeborn and Steele Counties only 3 of the 19 creamery managers indicated that fieldman were used for soliciting patrons or general public relations work. All of the managers in Freeborn and Steele Counties indicated that a field service could not substitute for a relatively low price for milk.

All of the creameries in the study carried on a field service, although under a number of different arrangements. Three creameries hired full time fieldman. For these creameries the time devoted to quality work, soliciting, and public relations differed substantially. In one creamery the fieldman devoted 25 percent of his time to quality work and 75 percent of his time to soliciting and public relations. In another creamery the percentage of the time devoted to quality work was 95 percent and the remaining 5 percent was devoted to public relations.

In 16 creameries, either the manager served as a fieldman or the creamery hired field services provided by special field service cooperative associations. These associations did only quality work and no soliciting or public relations work for the creameries.

Information on the cost of providing a field service was obtained from 15 creameries. For these creameries the cost of providing a field service ranged from .22 to 4.73 cents per hundredweight of milk with an average of 1.57 cents. Generally, managers appeared to be satisfied with their field service and all agreed it was necessary for a successful creamery operation.

A few managers charged that some fieldmen in the area were using unethical practices to gain patrons for their respective creameries. A frequently mentioned unethical practice was that of spreading false rumors about the financial condition of the competing plant, prices paid for milk, and other conditions.

#### SUMMARY AND CONCLUSION

The changing market structure of the dairy manufacturing industry in Freeborn-Steele Counties is evidenced by the trend

towards fewer and larger firms. During the past 13 years the number of creameries in Freeborn and Steele Counties decreased by almost one-half. However, the average size of the creamery more than doubled. Most of the gains were made by the largest creameries. The largest creameries have increased in importance to the point where the three largest creameries process more than 40 percent of the total dairy products manufactured in the two counties. In comparison to the entire state, the growth of plants in Freeborn and Steele Counties has been slower. The largest 5 percent of the plants in the entire state showed an increase in the proportion of butter manufactured of 6.6 percentage points for the period 1938 to 1962. The largest 5 percent of the plants in Freeborn and Steele Counties showed an increase in the proportion of butter manufactured of 3.6 percentage points for the period 1938 to 1962.

The financial condition of creameries in Freeborn and Steele Counties was not good. The worth-to-debt ratio was .80 to 1.00 for 1963. A 2 to 1 ratio is desired. The current ratio was .76 to 1.00. The smaller firms in Freeborn and Steele Counties were found to have better ratios than the larger firms. One reason that the financial standing of creameries in Freeborn and Steele Counties may be poor is because price competition was more severe than in many other areas of the state.

Manufacturing costs are affected significantly by the structure of the industry in an area. Unit costs are likely to be higher for an area of numerous small plants than in areas of fewer and larger plants. It was found that the average cost per pound of butterfat received was somewhat higher for Freeborn and Steele Counties than for the 25 west-central Minnesota butter plants. The average costs per pound for Freeborn - Steele and the west-central butter plant was 7.66 and 7.23 cents respectively. The average volume of butterfat received was less for Freeborn-Steele Counties than for the west central plants. A comparison of the three largest and three smallest plants in Freeborn and Steele Counties shows that the average cost per pound was a great deal less for the three largest plants than for the three smallest plants. This supports the contention that larger plants are likely to be more efficient than smaller plants.

There was a substantial amount of overlapping of procurement areas in Freeborn and Steele Counties. In Freeborn County as many as five creameries obtained milk in one supply area in the county, and in Steele County as many as seven creameries obtained milk in one supply area. The reason for more overlap in Steele County can be attributed to two large cooperatives from outside the county that procured milk over a large part of the county.



For the 19 creameries studied in Freeborn and Steele Counties, 43 percent of the butterfat was transported by contract haulers. The hauling rates in these counties ranged from 15 to 25 cents per hundredweight, with an average of 19 cents. There has been an increased use of maximum and minimum hauling charges. There appears to be a strong possibility that the maximum rate gives the larger producer a greater advantage than is justified by cost savings. If this is the case, there is price discrimination.

Competition between creameries for milk consists of (1) price competition and (2) nonprice competition. Most creameries used gross receipts less cost as a method to determine milk prices paid to producers. However, most creamery managers also watched competitors' prices. Generally each creamery attempted to stay in line with competing plants.

The medium-size and large-size creameries were found to pay higher prices than small creameries. In general, one may say that this is so because larger creameries can afford to pay higher prices because they can attain great economies of size.

Creameries offered various nonprice services to their patrons. These included: advancing money on the next milk check, withholding assignments from patrons' checks, selling dairy farm supplies, making group insurance available to patrons, providing milk cans at cost or less, and others.

Managers appeared to prefer offering additional services rather than higher prices as a competitive device because of fear of retaliatory action by competing managers. Managers preferred the use of nonprice services because they could not be quoted in exact terms and it took competitors some time to evaluate them. It was apparent that managers preferred to gain patrons on the basis of overall merits of the creamery rather than strictly on price paid for milk.

The managers were mostly satisfied with the number and variety of services offered. However, it is possible that the amount of service provided could become excessive. It is relatively easy to initiate new services but it is not so easy to eliminate them. Consequently, it might mean that some services provided by the creamery could be more efficiently provided by some other institution.

The fieldman and the hauler are very important in a creamery's procurement operation. Because of their daily contact with patrons they are in an excellent position to strengthen plant loyalty. Their importance in the future might even be greater as the plant becomes larger and becomes further

removed from farmers.

No attempt was made at this state of the study to draw conclusions on market performance. The statewide study, however, will include a study of how market structure and conduct affect performance.

Several questions can be raised in regard to performance. One is, is the industry operating at optimal efficiency? There are several ways in which efficiency could be improved: Most plants have not achieved optimal efficiency; some of the larger plants may be getting close to this goal. Larger volume permits the adoption of the newest technology and thus permits the reduction of per unit costs. The cost data in this study indicates that plants in Freeborn and Steele Counties have somewhat higher costs than plants in some other areas of the state. One can conclude that plants in Freeborn and Steele Counties probably are not operating at optimal levels of production or scale of plant. In other words the possible reductions in per unit costs have not been fully exploited. Optimal efficiency has not been attained in milk procurement. The fact that there were seven creameries procuring milk in one area of these two counties indicates waste of resources. Less overlapping among cooperatives could be attained by the consolidation of two or more associations with the processing being done in one large plant.

These observations on market performance have been preliminary in nature. The completion of the statewide study will permit a more detailed evaluation of market performance which in turn, will permit more definite conclusions to be drawn.