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FOOD MANUFACTURING ACTIVITIES
OF 100 LARGE AGRICULTURAL
MARKETING COOPERATIVES

by

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INTRODUCTION

The basic purpose of any cooperative enterprise is to provide services to its member-users on a non-profit basis. In the case of agricultural cooperatives these member-users are producers of agricultural products and the services they receive from their cooperatives can range from provision of production inputs and services through the entire range of manufacturing and marketing services required to deliver their products to final consumers. In short, an agricultural cooperative is an extension of its patrons individual farm enterprises.

In providing services to their member-users, cooperatives of course enter into competition with non-cooperative enterprises. As some agricultural cooperatives have evolved into large organizations that hold important market positions and provide their members with a wide range of services, concerns have arisen that their increased size may provide sufficient market power to be detrimental to competition.¹

The dual purposes of this paper are to provide some insight with regard to the scope of activities engaged in and the market power held by agricultural cooperatives with special attention to their activities in the area of food manufacturing.

The source of the empirical data employed here is the U.S. Department of Commerce, Bureau of the Census. The information was made available through a special Census tabulation of confidential data on 100 large agricultural marketing cooperatives. The 100 cooperatives were selected by Census from a list of the 150 largest cooperatives marketing agricultural products provided by the Agricultural Cooperative Service. Census ranking of cooperatives was done on a basis of their

value of sales within the following Standard Industrial Classifications (SIC):

- 20 - Food and Kindred Products Manufacturing;
- 21 - Tobacco Manufactures;
- 514 - Wholesale Trade, Groceries and Related Products
(less 5141 - Wholesale Trade, Groceries General
Line);
- 515 - Wholesale Trade, Farm Product Raw Materials;
- 0722 - Agricultural Services, Crop Harvesting;
- and 0723 - Agricultural Services, Crop Preparation
Services for Market

The data made available in this special Census tabulation are unique in their detail of both (1) the scope of activities engaged in by large agricultural marketing cooperatives and (2) the market leadership those cooperatives accounted for in food manufacturing.² The information reflects 1977 activity only.

CHARACTERISTICS OF THE COOPERATIVES

The cooperatives included here among the 100 largest vary dramatically in size as can be seen in Table 1. The 20 largest are far larger than the next 80 by any measure but it is worth noting that the differential is somewhat smaller in the area of food manufacturing. While the 21-100 largest cooperatives are indeed smaller on average in terms of food manufacturing value of shipments, this business is of relatively greater importance to them (48 to 51% of their total value of shipments) than to the 20 largest cooperatives (35%). Among the 20 largest agricultural cooperatives are included the largest grain, livestock, cotton, and dairy cooperatives, all of which market very large quantities of raw farm products for their members. This results in very large value of shipments totals for the largest 20 cooperatives; their food manufacturing activities appear small by comparison.

Food manufacturing activities accounted, on average, for 40% of the total value of shipments reported by all 100 cooperatives. Although the food manufacturing activities reported by the 20 largest cooperatives accounted for 55% of all food manufacturing value of shipments by the 100 cooperatives, food manufacturing still only contributed about one-third of the value of shipments of the 20 largest.

The dairy industry group (SIC 202) represented 38.9% of all food manufacturing value of shipments by the 100 cooperatives (see Table 2). While dairy products represented the single largest food manufacturing category for each of the three size groups, fats and oils (SIC 207) and grain mill products (SIC 204) combined accounted for 36.7% of food manufacturing value of shipments for the 20 largest cooperatives, again

Table 1: General Characteristics of
Sample of 100 Agricultural Cooperatives¹
by Size Group, 1977

	<u>Simple Average for Cooperatives by Size Group</u>			
	<u>20 Largest</u>	<u>21-50 Largest</u>	<u>51-100 Largest</u>	<u>100 Largest</u>
Value of Shipments (\$1000)				
Total	906,638	199,120	87,843	284,985
Food Mfg.	317,966	96,288	44,524	114,741
Food Mfg. as a % of Total	35%	48%	51%	40%
Value Added (\$1,000)				
Total	53,695	19,545	11,364	22,285
Food Mfg.	39,204	18,440	11,302	19,024
Food Mfg. as a % of Total	73%	94%	99%	85%
Employees (#)	2,806	809	438	1,023
Payroll (\$1000)	31,821	9,161	4,743	11,484
Establishments (#)	104	17	14	33

¹ Cooperatives are ranked by their value of sales in SIC 20, 21, 514 (less 5141), 515, 0722, and 0723.

Source: Special tabulation by the Bureau of the Census.

Table 2--Percentage Distribution of Total Value of Shipments Within SIC Major Group 20 (Food and Kindred Products) Among the Nine 3-Digit Food Subgroups, by the 100 Sample Agricultural Cooperatives, 1977

SIC	DESCRIPTION	COOPERATIVE SIZE GROUPING			
		20 LARGEST	21-50 LARGEST	51-100 LARGEST	100 LARGEST
Total Value of Shipments in SIC 20 by Cooperatives in Each Group ¹					
		5,856,468	2,735,505	2,116,782	10,708,755

Percent of Cooperative Total in SIC 20					
201	Meat Products	N/A	N/A	N/A	8.7
202	Dairy Products	36.6	41.9	41.3	38.9
203	Preserved Fruits and Vegetables	4.0	22.5	32.0	14.3
204	Grain Mill Products	15.4	11.0	14.3	14.1
205	Bakery Products	0	0	0	0
206	Sugar and Confectionery Products	N/A	N/A	N/A	6.4
207	Fats and Oils	21.3	N/A	N/A	15.3
208	Beverages	2.7	.9	.1	1.7
209	Misc. Food and Kindred Products	1.0	N/A	N/A	.6

¹ Five digit product class value of shipments figures are used here in arriving at the 2 digit major and 3 digit industry group totals for the 100 cooperatives.

N/A - not available due to nondisclosure requirements of the Bureau of Census.

Source: Special tabulation by the Bureau of Census.

reflecting the presence of the largest grain and oil seed cooperatives in that group. Among the smaller cooperatives on the other hand, preserved fruits and vegetables (SIC 203) represented the second largest area of involvement with the combination of dairy products and fruits and vegetables accounting for 64.4% and 73.3% of food manufacturing value of shipments for the 21-50 and 51-100 largest cooperatives respectively.

The importance of the nine food manufacturing industry groups, as well as other manufacturing activities, in the overall value of shipments of the cooperatives is shown in Table 3. Manufacturing activities outside of food and kindred products (SIC 20) accounted for only 12.1% of all manufacturing value of shipments reported by the cooperatives. Of the \$1,477.7 million reported as manufacture of non-food products, \$1,349.2 million or 91.3% came from the 20 largest cooperatives. For the 21-100 largest cooperatives the manufacture of non-food products amounted to only about 1.2% of their total value of shipments.

Overall then, of the total value of shipments of the 100 cooperatives, 37.6% came from food manufacturing activities, 5.2% from manufacture of non-food products, and the remaining 57.2% came from non-manufacturing activities, primarily provision of production inputs to patrons and the marketing of unprocessed commodities.

The 2-digit major industry groups in which the cooperatives participated and their primary enterprise classifications are presented in Tables 4 and 5 respectively. The largest cooperatives are more diversified on average, operating in over 5 major industry groups. The

Table 3--Food Manufacturing & All Manufacturing Activities as a Percentage of Total Value of Shipments by the 100 Sample Agricultural Cooperatives, 1977

SIC	Number of Cooperatives	Number of Establishmts.	Value of ¹ Shpmts. (\$ mil.)	% of Cooperative SIC Total	% of Cooperative all Mfg. Total	% of Coop. All Industry Total
201	9	69	931.1	8.7	7.6	3.3
202	28	671	4,164.6	38.9	34.2	14.6
203	32	180	1,531.5	14.3	12.6	5.4
204	25	840	1,505.8	14.1	12.4	5.3
205	0	0	0	0	0	0
206	6	13	684.4	6.4	5.6	2.4
207	16	91	1,640.0	15.3	13.5	5.8
208	23	59	186.7	1.7	1.5	.7
209	8	21	64.6	.6	.5	.2
20 Total	71	1944	10,708.8	100.0	87.9	37.6
Other Mfg.	N/A	N/A	1,477.7	-	12.1	5.2
All Mfg. Total	N/A	2117	12,186.5	-	100.0	42.8
All Industries Total	100	N/A	28,498.5	-	-	100.0

¹ Five digit product class value of shipments figures are used here in arriving at the 2 digit major and 3 digit industry group totals for the 100 cooperatives.

N/A -- not available due to nondisclosure requirements of the Bureau of Census.

Source: Special tabulation by the Bureau of the Census.

Table 4
Participation¹ of the 100 Sample Agricultural
Cooperatives in 2-Digit Major
Standard Industrial Classifications, 1977

2-Digit Major SIC	Number of Cooperatives Participating by Size Group			
	20	21-50 Largest	51-100	100
01 Ag. Prod.-Crops	2	3		5
02 Ag. Prod.-Livestock	3	2	2	7
07 Ag. Services	6	1	3	10
13 Oil & Gas Extraction	1			1
14 Mining-Not Metal or Fuel	1			1
15 Building Construction	2			2
17 Construction Trades	2			2
20 Mfg.-Food & Kindred Prod.	15	20	36	71
24 Mfg.-Lumber	2			2
27 Printing & Publishing	2			2
28 Mfg.-Chemicals	6	1	1	8
29 Mfg.-Petro & Coal Products	3			3
31 Mfg.-Leather			1	1
34 Mfg.-Fab. Metal Products	2	1	1	4
36 Mfg.-Electrical Equipment	1			1
42 Trucking & Warehousing	6	4	1	11
46 Pipelines-Not Gas	1			1
48 Communication	1			1
50 Wholesale-Durables	4	3	3	10
51 Wholesale-Non-Durables	20	23	30	73
52 Bldg. Material & Garden Supp.	2			2
54 Food Stores	2	3	2	7
55 Auto Dealer & Service	3	1	1	5
58 Eating & Drinking Place	1	1		2
59 Misc. Retail Store	3	2	1	6
61 Credit Agency-Non Bank	3	2	1	6
62 Sec/Commod. Broker	1			1
63 Insurance Carrier	2			2
64 Insurance Broker	1			1
65 Real Estate	2			2
67 Investment Office	4		1	5
73 Business Services			1	1
76 Misc. Repair Service	1			1
86 Membership Organizations	2	1		3
89 Misc. Service	1	1		2
No. of 2-Digit Majors ²	33	16	15	35
Average Participation ³	5.4	2.3	1.7	2.6

¹Participation at the 4-digit industry level.

²The number of 2-digit major standard industrial classifications in which at least one of the cooperatives in the group participated.

³The average number of 2-digit majors participated in by each cooperatives in the group.

Source: Special tabulation by the Bureau of the Census.

Table 5--The 100 Sample Cooperatives by Primary Enterprise Classification, 1977, by Cooperative Size Groupings

PRIMARY ENTERPRISE CLASSIFICATION	COOPERATIVE SIZE GROUPINGS				
	20	21-50	LARGEST 51-100	100	
<u>FOOD MANUFACTURING</u>					
20A	Meat Packing Plants	1		1	
20B	Prepared Meats and Poultry Products	1	1	1	3
20C	Fluid Milk	1	5	9	15
20D	Dairy Products, NEC	4	4	4	12
20E	Canned Fruits & Vegetables		3	4	7
20F	Preserved Fruits and Vegetables, NEC	2	1	6	9
20G	Grain Mill Products	2	1	3	6
20J	Sugar and Confectionery Products	1	2	1	4
20K	Fats & Oils	1	2	3	6
<u>WHOLESALE TRADE</u>					
51D	Groceries & Related Products		4	6	10
51E	Farm Product Raw Materials	7	6	10	23
51H	Nondurable Goods, NEC		1	2	3
<u>RETAIL TRADE</u>					
54C	Food Stores, NEC			1	1
Totals		20	30	50	100

Source: Special tabulation by the Bureau of the Census.

21-100 largest cooperatives operate primarily in nondurables wholesaling (SIC 51) and food manufacturing (SIC 20).

The most frequent primary enterprise classifications³ (Table 5) for the group were: (1) dairy [20C and 20D] - 27 cooperatives, (2) farm product raw materials [51E] - 23 cooperatives, and (3) fruits and vegetables [20E and 20F] - 16 cooperatives.

Sixty three of the 100 largest cooperatives were classified as primarily food manufacturers. However, these primary enterprise classifications can be somewhat deceptive. For example, the cooperative in the 51-100 largest group classified in "Retail Trade-Food Stores, NEC" (54C) is actually a dairy cooperative holding 51% ownership in a chain (251 stores in 1977) of small dairy/convenience stores. The chain's entire sales and total payroll were assigned to the cooperative for census purposes thus diluting the relative importance of their dairy operations. Another example can be seen in "Wholesale Trade-Groceries and Related Products" (51D) where all 4 of the cooperatives listed there in the 21-50 largest group are actually dairy bargaining cooperatives as are 3 of the 6 listed there from the 51-100 largest group. These cooperatives provide bulk milk to others but do not process milk themselves. The addition of these eight dairy cooperatives to the 27 actually classified as such brings the total number of dairy cooperatives up to 35 of the 100 largest.

The participation of the 100 sample cooperatives in food manufacturing is shown in Tables 6, 7 and 8. Only 71 of these 100 cooperatives report any participation in food manufacturing; these 71 report operations in 8 of the 9 three digit groups, 31 of the 47 four-digit industries and 88 of the 139 five digit product classes defined within

food manufacturing.⁴ A major part of this participation at the 4 digit industry level was in the five dairy products manufacturing industries, SIC 2021-2026, where 28 of the 71 cooperatives having food manufacturing activities reported participation.

Table 6 presents a view of the diversity of these cooperatives calculated at the 3 digit SIC level. The 15 cooperatives in the top 20, that had some involvement in food manufacturing, participated in 2.6 of the nine 3-digit industry groups, on average. The average participation rate for the largest 100 cooperatives was 1.5. The diversity of these cooperatives appears very limited when compared to the 20 or 100 largest food and tobacco manufacturers for whom the participation rate was 5.1 and 3.6 respectively.⁵

The greater diversity of the largest cooperatives is also apparent at the 4-digit level (Table 7). The 15 of the largest 20 cooperatives that operated at least one food manufacturing establishment participated, on average, in 5.1 four-digit food manufacturing industries, more than twice the number for smaller cooperatives. By comparison, the 20 largest food and tobacco manufacturing companies (non-cooperative and cooperative) had plants in 9.8 four-digit food manufacturing industries on average.

Participation by the cooperatives in food manufacturing product classes (5 digit SIC) is shown in Table 8. In the three and four digit participation tables participation was indicated only for the primary product of establishments operated by cooperatives. For example, a cooperative that bottles milk and makes ice cream in the same plant would be counted as participating in either 2024 or 2026 depending upon the value of shipments of fluid milk versus ice cream. If the value of

Table 6--Participation of the 100 Sample Agricultural Cooperatives in the Food and Kindred Products Industry Groups¹ (3 Digit SIC) by Cooperative Size Groupings, 1977

INDUSTRY GROUP DESCRIPTION	NO. OF COOPERATIVES PARTICIPATING BY SIZE GROUPING			
	LARGEST			
	20	21-50	51-100	100
201 Meat Products	6	1	2	9
202 Dairy Products	5	9	14	28
203 Canned and Preserved Fruits and Vegetables	4	4	11	19
204 Grain Mill Products	9	3	10	22
205 Bakery Products	0	0	0	0
206 Sugar and Confectionery Products	2	2	1	5
207 Fats and Oils	6	3	4	13
208 Beverages	2	0	0	2
209 Misc. Food Preparations and Kindred Products	5	1	0	6
	39	23	42	104
Cooperatives Participating ²	15	20	36	71
Average Participation Rate ³	2.6	1.2	1.2	1.5
Number of Industry Groups	8	7	6	8

¹ None of the cooperatives in the sample reported any activity in SIC 21 at either the 4 digit industry or 5 digit product class level.

² The number of cooperatives from each size grouping that operated at least one establishment classified in SIC 20.

³ The average number of industry groups (3 digit level) within SIC major group 20 participated in by those cooperatives reporting activity in SIC major group 20.

Source: Special tabulation by the Bureau of the Census.

Table 7--Participation of the 100 Sample Agricultural Cooperatives in Food and Kindred Products Industries, by Cooperative Size Groupings, 1977

INDUSTRY DESCRIPTION	NUMBER OF COOPERATIVES PARTICIPATING BY SIZE GROUPINGS			
	20	21-50	51-100	100
2011 Meat Packing	4			4
2013 Sausages & Prepared Meats	1			1
2016 Poultry Dressing	3	1	2	6
2017 Poultry and Egg Processing	4	1	1	6
2021 Creamery Butter	5	3		8
2022 Cheese--Natural & Processed	4	3	6	13
2023 Condensed & Evaporated Milk	5	8	2	15
2024 Ice Cream	4	2	4	10
2026 Fluid Milk	5	8	12	25
2032 Canned Specialties	1			1
2033 Canned Fruits & Vegetables	2	3	4	9
2034 Dehydrated Fruits and Vegetables			2	2
2035 Pickles, Sauces & Salad Dressings	2			2
2037 Frozen Fruits & Vegetables	2	2	5	9
2038 Frozen Baked Goods	1		1	2
2041 Flour & Grain Mill Products	3		1	4
2044 Rice Milling	1	2	3	6
2047 Pet Food	1		1	2
2048 Prepared Animal Feed	8	2	6	16
2061 Raw Cane Sugar			1	1
2062 Cane Sugar Refining	1			1
2063 Beet Sugar		1		1
2065 Confectionery Products	1	1		2
2074 Cottonseed Oil Milling			2	2
2075 Soybean Oil Mill	6	2		8
2076 Vegetable Oil, NEC	2		1	3
2077 Animal & Marine Fats & Oils			2	2
2079 Shortening & Cooking Oils	3	1		4
2083 Malt	1			1
2086 Bottled & Canned Soft Drinks	1			1
2099 Food Preps., NEC	5	1		6
Totals	76	41	56	173

Table 7--Continued

INDUSTRY DESCRIPTION	NUMBER OF COOPERATIVES PARTICIPATING BY SIZE GROUPINGS			
	20	21-50	51-100	100
Cooperatives Participating ²	15	20	36	71
Average Participation Rate ³	5.1	2.1	1.6	2.4
Number of Industries ⁴	26	16	18	31

¹ Only those 4 digit food and kindred products industries in which the 100 largest agricultural cooperatives reported some participation at the 4 digit industry level are listed here. In total there were 47 industries in major group 20.

² The number of cooperatives participating in at least one 4 digit industry within SIC major group 20.

³ Total number of times cooperatives appeared in 4 digit industries within SIC 20 divided by the number of cooperatives indicating some participation at the 4 digit level in SIC 20.

⁴ The total number of 4 digit industries within SIC 20 in which the cooperatives participated at the 4 digit industry level.

Source: Special tabulation by the Bureau of Census

Table 8--Participation of the 100 Sample Agricultural Cooperatives in Food and Kindred Products Manufacturing (SIC20) 3 Digit and 5 Digit Standard Industrial Classifications¹, by Cooperative Size Groupings, 1977

SIC	DESCRIPTION	Number of Cooperatives Participating, by Size Groupings			
		Largest			
		20	21-50	51-100	100
20	Food & Kindred Products ²	15	20	36	71
201	Meat Products	6	1	2	9
20111	Beef	3			3
20114	Pork	3			3
20115	Lard	3			3
20116	Pork, processed	3			3
20117	Sausage	3			3
20118	Canned Meats	1			1
20119	Hides, Skins and Pelts	3			3
20136	Pork, Processed	1			1
20138	Canned Meats	1			1
20139	Sausage Casings	1			1
20161	Young Chickens	1	1	2	4
20162	Hens			1	1
20163	Turkeys	2		1	3
20173	Turkeys	1			1
20175	Processed Poultry & Small Game	1		1	2
20179	Processed Eggs	1	1		2
202	Dairy Products	5	9	14	28
20210	Butter	5	8	6	19
20221	Natural Cheese	4	3	9	16
20222	Processed Cheese	3	1	2	6
20231	Dry Milk	5	7	9	21
20232	Canned Milk	1			1
20233	Bulk Concentrated Milk	5	8	7	20
20234	Ice Cream Mix	4	5	7	16
20240	Ice Cream and Ices	4	5	9	18
20261	Bulk Fluid Milk and Cream	5	8	10	23
20262	Packaged Fluid Milk	5	7	12	24
20263	Cottage Cheese	5	4	9	18
20264	Buttermilk & Chocolate Milk	5	8	11	24
203	Processed Fruits & Vegetables	8	7	17	32
20322	Canned Soups		1		1
20323	Canned Dry Beans	1			1
20324	Canned Specialties	1			1
20331	Canned Fruits	2	3	4	9
20332	Canned Vegetables	1	2	3	6
20334	Canned Fruit Juices	4	6	9	19
20335	Canned Vegetable Juices	1	3	1	5
20336	Catsup & Tomato Sauces	1	2	1	4
20338	Jams, Jellies & Preserves	1	1	1	3

Table 8, Continued.

20341	Dried Fruits & Vegetables	1	2	2	5
20352	Pickles	1			1
20353	Meat Sauces	2			2
20354	Mayonnaise & Salad Dressing	2	1		3
20371	Frozen Fruits and Juices	1	2	4	7
20372	Frozen Vegetables	1		3	4
20382	Frozen Dinners	1			1
20383	Other Frozen Specialties	1		1	2
204	Grain Mill Products	9	5	11	25
20411	Wheat Flour	3		1	4
20412	Wheat Products, Not Flour	2			2
20413	Corn Mill Products	1	1		2
20416	Other Grain Mill Products	1			1
20440	Milled Rice	1	2	3	6
20460	Wet Corn Milling	1			1
20471	Dog and Cat Food	6	2	2	10
20472	Other Pet Food	8	2	3	13
20481	Poultry Feed	8	2	5	15
20482	Dairy Cattle Feed, Complete	8	3	3	14
20483	Dairy Cattle Feed, Supplement	6	2	3	11
20484	Swine Feed, Complete	8	2	3	13
20485	Swine Feed, Supplement	8	2	3	13
20486	Beef Cattle Feed, Complete	8	2	3	13
20487	Beef Cattle Feed, Supplement	7	2	2	11
20488	Other Livestock Feeds	8	2	3	13
20489	Other Prepared Feeds	6	1	2	9
205	Bakery Products	0	0	0	0
206	Sugar & Confectionery Products	2	2	1	5
20610	Cane Sugar Mill Products			1	1
20620	Refined Cane Sugar	1			1
20630	Refined Beet Sugar		1		1
20658	Confectionery Products, Misc.	1	1		2
207	Fats and Oils	8	3	5	16
20741	Cottonseed Oil, Crude			2	2
20742	Cottonseed Oil, Refined	1		2	3
20743	Cotton Linters			2	2
20744	Cottonseed Cake and Meal			2	2
20751	Soybean Oil	6	2		8
20752	Soybean Cake and Meal	6	2		8
20761	Linseed Oil	1			1
20762	Vegetable Oils	2		1	3
20763	Other Vegetable Oil Mill Prod.	2		1	3
20771	Grease and Inedible Tallow	3		1	4
20772	Meat Meal and Tankage	2		2	4
20773	Animal and Marine Oils	1			1
20791	Shortening and Cooking Oils	3	1	1	5
20792	Margarine	2		1	3

Table 8, Continued.

208	Beverages	8	7	8	23
20830	Malt	1			1
20860	Soft Drinks, Bottled & Canned	6	7	8	21
20871	Flavoring Extracts	1			1
209	Misc. Food Preparations	6	1	1	8
20991	Desserts		1		1
20992	Chips	1			1
20993	Sweetening Sirups & Molasses	1			1
20996	Vinegar and Cider			1	1
20999	Other Food Preparations	6			6
5 Digit Totals		238	129	187	554
5 Digit Average Participation Rate ³		15.9	6.5	5.2	7.8
Number of 5 Digit Product Classes ⁴		79	43	52	88

¹ See Appendix Table A for a listing of the 51 (of 139 total) product classes in which the cooperatives reported no participation. The 31 NSK product classes in SIC 20 have been excluded in the preparation of this table.

² The number of cooperatives participating in at least one 5 digit product class within SIC major group 20.

³ Total number of times cooperatives appeared in 5 digit product classes within SIC 20 divided by the number of cooperatives reporting some participation at the 5 digit level in SIC 20.

⁴ The total number of 5 digit product classes within SIC 20 (of 139 possible - see text footnote #4) in which the cooperatives participated at the 5 digit product class level.

shipments of milk exceed those for ice cream, the plant is considered by Census to be a 2026 establishment. At the five digit product class level, Census defined participation to include all activities of each establishment. In the above example, the cooperative would be considered as participating in both 20240 and 20262. Thus, whereas the 3 and 4 digit participation tables indicate the primary products produced in cooperative establishments, Table 8 indicates all products produced -- whether primary or not.

At the five digit product class level the relative lack of diversity on the part of the cooperatives is again evident. The largest cooperatives were the most diverse -- participating in 15.9 out of 139 product classes, on average. The rate falls sharply to 6.5 for the 21-50 group and 5.2 for the 51-100 group. The average participation rate for the 100 largest agricultural marketing cooperatives was 7.8 product classes. By way of comparison the 20 largest food and tobacco manufacturing firms participated in 25.2 out of 139 food product classes, on average, in 1977. The 21-50 and 51-100 largest food and tobacco manufacturers participated in 17.1 and 14.8 product classes respectively; the 100 largest participated in 17.6 product classes, on average.

These data indicate that the scope of operations of the largest 100 cooperatives was, on average, relatively limited, particularly for the 21-100 largest cooperatives. While the larger cooperatives in the group were more diversified in terms of food manufacturing activities than their smaller companions, the participation rates calculated for all three size groups appear low when compared to the equivalent measure of diversification calculated for the largest food manufacturing companies.

The lower level of food manufacturing diversification by cooperatives is not surprising. A cooperative tends to operate as an extension of the farm operations of its patrons. Many cooperatives have diversified from farm output marketing into production inputs such as feed, fuel, agricultural chemicals and farm supplies, or vice versa. Vertical integration by cooperatives from the assembly and sale of raw farm products through manufacturing and retailing has occurred to some extent, but primarily for those commodities produced by a cooperative's members. Thus, a cooperative organization comprised of dairy farmers is likely to limit its food manufacturing activities to dairy products (SIC202) and prepared animal feed (SIC2048).⁶

The absence of cooperative activity in some areas of food manufacturing is, however, a result of something other than this restriction to processing only in product areas in which patrons already have a direct involvement at the raw product level. The lack of cooperative participation in cereal breakfast foods (SIC2043), malt beverages (SIC2082) and liquors (SIC2085) for example, is clearly not because there are no grain handling and processing cooperatives; in fact there are many. Entry barriers associated with these and other industries and the fact that these industries utilize a very small percentage of the total raw farm product a cooperative is charged with marketing are more likely the reasons cooperatives have not attempted entry into these industries.

What are the characteristics of the product classes in which cooperatives participated in 1977 vis-a-vis those product classes from which they were absent? Table 9 shows that cooperative participation tended toward those product classes with high value of shipments in 1977.

Table 9--Participation of the 100 Sample Agricultural Cooperatives in the Food and Kindred Products Manufacturing Product Classes (5 Digit SIC) with Various Value of Shipments Levels, by Cooperative Size Groupings, 1977

Product Classes by 1977 Value of Shipments (\$mil.)								
	<u>Less Than 500</u>		<u>500-9999</u>		<u>1000 or More</u>		<u>All</u>	
	Nr.	%	Nr.	%	Nr.	%	Nr.	%
All Product Classes	55	(100)	30	(100)	54	(100)	139	(100)
Participation by:								
20 Largest Co-ops	26 ¹	(47) ²	17	(57)	36	(67)	79	(57)
21-50 Largest Co-ops	12	(22)	7	(23)	24	(44)	43	(31)
51-100 Largest Co-ops	18	(33)	12	(40)	22	(41)	52	(37)
100 Largest Co-ops	32	(58)	19	(63)	37	(69)	88	(63)

¹ Number of product classes in which cooperatives had some activity.

² Percent of the total product classes in value of shipments group in which cooperatives had some activity.

Sources: 1977 Census of Manufacturers and Special Census Tabulations.

Product classes involving the initial processing of major commodities tend to be large (e.g., flour milling, soybean mills, meat packing, milk processing). Many more farmers are involved in producing major commodities than minor ones. Thus, it is logical that more cooperatives would be involved in marketing these commodities -- and that some of them would be large. Cooperative involvement in these commodities has also tended to be greatest at the assembly and first processing stages. Thus, the positive relationship between cooperative participation and product class size makes sense.

Table 10 shows the extent of participation by the cooperatives in 139 product classes categorized by their value added measured as a percentage of the total value of shipments in each. Value added as a percentage of value of shipment usually reflects the extent of processing in each product class. Cooperative participation was greatest in those product classes with the lowest degree of processing.

Initial processing of farm commodities involves adding relatively little value when compared to later stages in processing. For example, the value added when grinding wheat into flour pales beside the value added by making flour (and other ingredients) into bread or crackers. Since the stages of food manufacturing most removed from the farm tend to be those with the highest value added, we would expect cooperatives to be more heavily involved in low value added product classes. Table 10 confirms this expectation. Furthermore, Table 11 shows that the largest cooperatives (top 20) are even more inclined towards low value added product classes than the 21-100 largest cooperatives.

Table 10--Participation of the 100 Sample Agricultural Cooperatives in Food and Kindred Products Manufacturing Product Classes (5 Digit SIC) Classified by Value Added as a Percentage of Value of Shipments Levels, 1977

Product Classes By Value Added as a Percentage of Value of Shipments Level

	Less than 10	10-19.99	20-29.99	30-39.99	40-49.99	50-59.99	60 or more	All
Nr. %	Nr. %	Nr. %	Nr. %	Nr. %	Nr. %	Nr. %	Nr. %	Nr. %
All Product Classes	8 ¹ (100) ²	21 (100)	37 (100)	28 (100)	25 (100)	16 (100)	4 (100)	139 (100)
Participation by:								
20 Largest Cooperatives	8 (100)	16 (76)	23 (62)	17 (61)	14 (56)	1 (6)	0 (0)	79 (57)
21-50 Largest Cooperatives	6 (75)	8 (38)	11 (30)	9 (32)	9 (36)	0 (0)	0 (0)	43 (31)
51-100 Largest Cooperatives	4 (50)	10 (48)	17 (46)	14 (50)	7 (28)	0 (0)	0 (0)	52 (37)
100 Largest Cooperatives	8 (100)	16 (76)	28 (76)	19 (68)	16 (64)	1 (6)	0 (0)	88 (63)

¹ Number of product classes in which cooperatives had some activity.

² Percent of the total product classes in value added or a percent of value of shipments group in which cooperatives had some activity.

Sources: 1977 Census of Manufacturers and Special Census Tabulations, 1977.

Table 11--Total Value of Shipments and Value Added by Manufacture in 4 Digit Industries Within the Food and Kindred Products Industries (SIC 20), and by the 100 Sample Agricultural Cooperatives, 1977.

	VALUE OF SHIPMENTS	VALUE ADDED	VALUE ADDED AS A % OF VALUE OF SHIPMENTS
All 47 SIC 20 Industries	192,911.6	56,062.2	29.1
16 SIC 20 Industries with no Cooperative Participation	43,310.9	18,854.3	43.5
31 SIC 20 Industries where Cooperatives Participated	149,600.7	37,207.9	24.9
For the 100 Largest Agricultural Cooperatives by Size Groups:			
20 Largest	6,359.3	784.1	12.3
21-50 Largest	2,888.6	553.2	19.2
51-100 Largest	2,226.2	565.1	25.4
100 Largest	11,474.1	1,902.4	16.6

Source: Special Tabulation by the Bureau of the Census.

Tables 12 and 13 show product class participation by the sample cooperatives with regard to two important entry barrier characteristics of the product classes. In Table 12 the product classes are categorized by four firm concentration ratio. Participation by the cooperatives, while not totally confined to the product classes with the lowest four firm concentration ratios, was certainly most often associated with those least concentrated product classes. Subdivision of the product classes in Table 13 was done on the basis of the degree of product differentiation (measured by advertising as a percentage of total domestic sales). For this purpose, producer goods product classes were taken as a group with the remaining five digit classes categorized as low, moderate or high product differentiation consumer goods. Cooperatives participated in nearly all of the producer goods product classes within food manufacturing while participating to a much more limited extent in the consumer goods product classes. This is consistent with their greater participation in product classes involving lower levels of value added (see Table 10). A tendency toward the product classes at the lower end of the product differentiation scale within consumer goods is apparent.

The preceding cross tabulations lend support to a hypothesis that these largest agricultural marketing cooperatives have for the most part restricted their food manufacturing activities to areas (1) offering the largest outlets for their members raw products, (2) requiring lower levels of processing and marketing activity, and (3) with relatively low market concentration and product differentiation barriers to entry.

Table 12--Participation of the 100 Sample Agricultural Cooperatives in Food and Kindred Products Manufacturing Product Classes (5 Digit SIC) with Various Four Firm Concentration Ratios, by Cooperative Size Groupings, 1977

	Product Classes by 1977 Four Firm Concentration Ratio (%)									
	35 or Less		36-50		51-70		71 or More		All	
	Nr.	%	Nr.	%	Nr.	%	Nr.	%	Nr.	%
All Product Classes	40	(100)	38	(100)	42	(100)	19	(100)	139	(100)
Participation By:										
20 Largest Cooperatives	31 ¹	(78) ²	26	(68)	20	(48)	2	(11)	79	(57)
21-50 Largest Cooperatives	21	(53)	11	(29)	9	(21)	2	(11)	43	(31)
51-100 Largest Cooperatives	24	(60)	20	(53)	8	(19)	0	(0)	52	(37)
100 Largest Cooperatives	31	(78)	31	(82)	22	(52)	4	(21)	88	(63)

¹ Number of product classes in which cooperatives had some activity.

² Percent of the total product classes in CR4 groups in which cooperatives had some activity.

Sources: 1977 Census of Manufacturers, Concentration Ratios in Manufacturing and Special Census Tabulations, 1977.

Table 13--Participation of the 100 Sample Agricultural Cooperatives in Food and Kindred Products Manufacturing Product Classes (5 Digit SIC) with Various Degrees of Product Differentiation, 1977

	Product Classes, by Degree of Product Differentiation ²									
	Producer Good		Consumer Good							
			Low	Moderate		High		All		
	Nr.	%	Nr.	%	Nr.	%	Nr.	%	Nr.	%
All Product Classes	38	(100)	56	(100)	32	(100)	13	(100)	139	(100)
Participation by:										
20 Largest Cooperatives	31 ¹	(82) ²	30	(54)	15	(47)	3	(23)	79	(57)
21-50 Largest Cooperatives	16	(42)	16	(29)	9	(28)	2	(15)	43	(31)
51-100 Largest Cooperatives	24	(63)	18	(32)	9	(28)	1	(8)	52	(37)
100 Largest Cooperatives	35	(92)	33	(59)	16	(50)	4	(31)	88	(63)

¹ Number of product classes in which cooperatives had some activity.

² Percent of the total product classes in product differentiation group in which cooperatives had some activity.

³ See Appendix Table B for an identification of the five digit product classes included within each product differentiation subgrouping.

Sources: Special Tabulation by the Bureau of the Census and John M. Connor; "Estimates of Manufacturers' Food and Beverage Shipments Among Major Marketing Channels, 1977, Staff Report, Nat'l. Economics Div., ERS, USDA, April 16, 1982.

Cooperative participation in food manufacturing product classes was also examined using regression analysis, the results of which are offered in Table 14. The model employed was:

$$PCT = a + b_1 VOS77 + b_2 CR4 + b_3 VAVOS + b_4 PDIF$$

where:

PCT is the number of cooperatives (n) among those in each size group in the sample participating in a particular product class (i) divided by the number of cooperatives in each size group participating in at least one food manufacturing product class at the five digit SIC level. (i.e.,

$$PCT20_i = \frac{n_{20i}}{15}, \quad PCT30_i = \frac{n_{30i}}{20}, \quad PCT50_i = \frac{n_{50i}}{36}, \text{ and}$$

$$PCT100_i = \frac{n_{100i}}{71}).$$

VOS77 is the total value of shipments, stated in billions of dollars, in each five digit product class for 1977.

CR4 is the 1977 four firm concentration ratio of each product class stated as a percentage.

VAVOS is the 1977 value added for each product class stated as a percentage of the product class value of shipments.

PDIF is the level of product differentiation for each product class, ranging from 0 to 3 where 0 corresponds to a producer good and 1 to 3 to consumer goods. The assignment of integer values from 1 to 3 was based on the percentage of domestic value of shipments expended on advertising with 1 being assigned to product classes with advertising percentages (ADSALE) of less than 1%, 2 where $1\% \leq \text{ADSALE} < 3\%$ and 3 where $\text{ADSALE} \geq 3\%$. Product differentiation is also measured by the advertising-to-sales ratio (ADSALE).

ADSALE is the expenditures on six media advertising in 1977 from LNA, divided by adjusted product class value of shipments. Product class value of shipments were increased/decreased by the amount of net imports/exports.

All variables with the exception of VOS77 are hypothesized to have a negative relationship to cooperative participation (PCT). The signs on all estimated coefficients are consistent with the hypotheses. The negative coefficient on CR4 is significant at the 99% level in all models, indicating a strong affinity by cooperatives for relatively unconcentrated product classes. Value of shipments has a significant positive relationship to cooperative participation, indicating that cooperatives tend to participate in larger product classes. Because of collinearity between the value added variable and the two variables measuring product differentiation, only one of these three variables at a time were included in the models. Participation by the top 20 and 21 to 50 largest cooperatives was negatively and significantly related to percent value added. The largest 20 cooperatives tended to participate more in product classes with low product differentiation. Product class product differentiation and advertising-to-sales were not significantly related to the degree of participation by the 21st to 100 ranking cooperatives. The regression results are generally consistent with the earlier simple tabulations.

Table 14--Regression Analysis of Cooperative Participation in All Food Manufacturing Product Classes 1977, n=139¹

Dependent Variable	Constant	VOS77	CR4	VAVOS	PDIF	ADSALE	Adjusted R ²
PCT20	.33407 ^a (8.78)	.00920 ^c (1.36)	-.00267 ^a (-4.34)	-.00314 ^a (-3.99)			28.9
PCT30	.12848 ^a (4.95)	.00745 ^c (1.61)	-.00137 ^a (-3.27)	-.00076 ^c (-1.43)			13.5
PCT50	.11301 ^a (5.89)	.00574 ^b (1.68)	-.00142 ^a (-4.58)	-.00042 (-1.05)			19.7
PCT100	.16323 ^a (7.48)	.00667 ^b (1.72)	-.00168 ^a (-4.78)	-.00107 ^a (-2.37)			25.4
PCT20	.35731 ^a (10.47)		-.00284 ^a (-4.72)	-.00325 ^a (-4.15)			28.4
PCT30	.14731 ^a (6.31)		-.00152 ^a (-3.68)	-.00086 ^c (-1.59)			12.5
PCT50	.12751 ^a (7.39)		-.00153 ^a (-5.01)	-.00049 (-1.23)			18.6
PCT100	.18007 ^a (9.17)		-.00181 ^a (-5.22)	-.00115 ^a (-2.55)			24.3
PCT20	.26493 ^a (7.79)	.01632 ^b (2.33)	-.00255 ^a (-3.91)		-.04172 ^a (-3.17)		26.0
PCT30	.11102 ^a (4.85)	.00857 ^b (1.82)	-.00146 ^a (-3.32)		-.00410 (-.64)		12.3
PCT50	.10373 ^a (6.16)	.00661 ^b (1.91)	-.00142 ^a (-4.39)		-.00479 (-.74)		19.4
PCT100	.13945 ^a (7.21)	.00888 ^b (2.23)	-.00168 ^a (-4.55)		-.01214 ^c (-1.63)		23.8
PCT20	.25609 ^a (7.09)	.01257 ^b (1.75)	-.00318 ^a (-4.54)			-.00369 (-.54)	20.6
PCT30	.11120 ^a (4.73)	.00807 ^b (1.73)	-.00156 ^a (-3.43)			-.00051 (-.12)	12.2
PCT50	.10334 ^a (5.97)	.00611 ^b (1.78)	-.00151 ^a (-4.51)			-.00009 (-.03)	19.0
PCT100	.13760 ^a (6.87)	.00770 ^b (1.94)	-.00189 ^a (-4.89)			-.00048 (-.13)	22.3

¹The 31 NSK product classes in SIC 20 have been excluded for purposes of this regression analysis. Pearson correlation coefficients are available in Appendix Table C.

^a - significant at the .01 level;

^b - significant at the .05 level;

^c - significant at the .10 level.

IMPORTANCE OF THE COOPERATIVES IN FOOD MANUFACTURING

The first measure of the overall strength of these cooperatives among all food manufacturers is offered in Table 15 which shows the percentage of the total value of shipments and value added in food manufacturing industries accounted for by the cooperatives in the sample. These percentages are also calculated including in the divisor only the 31 (of 47 total) industries where the cooperatives reported participation at the 4-digit industry level.

The 100 large cooperatives, as a group, accounted for 3.4% of all value added in food manufacturing. By comparison, the percentage of total food manufacturing (SIC 20) value added in 1977 accounted for by the 100 largest food manufacturers was 54.9%; the 20 largest alone accounted for 27.4%. In calculating these percentage market shares for the 100 largest food manufacturers, all 47 of the food industries plus the 4 tobacco industries are included in the denominator. The 100 largest food manufacturers as a group participate in all 51 of these industries and in fact the top 20 participate in all but ice manufacturing (SIC 2097). The 100 largest cooperatives, however, participate in none of the tobacco industries and only 31 of the 47 food industries. In addition, the 31 food industries in which the cooperatives report activity have, on average, a lower ratio of value added to value of shipments than the average for all food industries. Not only do the cooperatives as a group tend to be most active in the industries with lower ratios, this is particularly true for the 20 largest cooperatives.

The cooperatives have generally avoided highly processed products where advertising and new product development are of greater importance and where there are other significant barriers to entry. The most

Table 15--Value of Shipments and Value Added by Manufacture in 4 Digit Food and Kindred Products Industries (SIC 20) by the 100 Sample Agricultural Cooperatives as a Percentage of Industry Totals, 1977

COOPERATIVE SIZE GROUP	PERCENTAGE ACCOUNTED FOR BY THE 100 LARGEST COOPERATIVES			
	ALL 4 DIGIT SIC 20 INDUSTRIES		31 FOUR DIGIT SIC 20 INDUSTRIES IN WHICH COOPERATIVES PARTICIPATED ¹	
	VALUE OF SHIPMENTS	VALUE ADDED	VALUE OF SHIPMENTS	VALUE ADDED
20 Largest	3.3	1.4	4.3	2.1
21-50 Largest	1.5	1.0	1.9	1.5
51-100 Largest	1.2	1.0	1.5	1.5
100 Largest	6.0	3.4	7.7	5.1

¹ The total here includes only those 31 four digit SIC industries within SIC major groups 20 where the 100 largest cooperatives reported participation at the four digit level. The 16 industries under SIC major group 20 which are excluded here are: 2043, 2045, 2046, 2051, 2052, 2066, 2067, 2082, 2084, 2085, 2087, 2091, 2092, 2095, 2097, and 2098.

Source: Special tabulation by the Bureau of the Census.

obvious example of cooperative preference for less processed food products is in the grain product industries. While cooperatives process significant quantities of grain into animal feed products (SIC 2048), they are altogether absent in those industries requiring more extensive processing and where market entry is more difficult, e.g., breakfast cereals (SIC 2043), blended and prepared flour (SIC 2045), and bakery products (SIC 205).

Only 42 of the 100 sample cooperatives rank among the top 500 food and tobacco manufacturers when ranked on a basis of value added in food and tobacco manufacturing (Table 16). Two cooperatives rank among the 100 largest food and tobacco manufacturers, albeit in the lower half of this group. Relative to non-cooperative food manufacturing companies, cooperatives are clearly small factors in food manufacturing.

The comparisons available from this special tabulation do suffer to some degree from the inconsistency introduced by ranking the largest food and tobacco manufacturers on a basis of their value added in food and tobacco manufacturing while ranking the cooperatives on a basis of sales in a number of non-manufacturing areas of importance to them as well as their food and tobacco manufacturing activities. The fact that 29 of these cooperatives are not involved in food manufacturing of any kind is obvious testimony to this. If the ranking of the cooperatives from the list provided by the Agricultural Cooperative Service had been performed using value added in food and tobacco manufacturing as the criterion, there would have been some change in the order of the 71 food manufacturing cooperatives already included here and the addition of 29 small cooperatives with at least some food or tobacco manufacturing activity. The overall picture of the agricultural marketing

Table 16--Ranking of the 100 Sample Cooperatives Among the 500 Largest Food Manufacturing Companies, 1977

RANK OF 500 COMPANIES ¹	100 COOPERATIVE RANKINGS ²			
	1-20	21-50	51-100	1-100
20 Largest	0	0	0	0
21-50 Largest	0	0	0	0
51-100 Largest	2	0	0	2
101-150 Largest	5	4	1	10
151-200 Largest	2	1	2	5
201-300 Largest	2	3	5	10
301-400 Largest	1	4	5	10
401-500 Largest	0	1	4	5
1-500 Largest	12	13	17	42
Not Among 500 Largest	8	17	33	58

¹The 500 companies are ranked by their value added in SIC 20 and 21.

²Cooperatives are ranked by their value of sales in SIC 20, 21, 514 (less 5141), 515, 0722, 0734, while ranking of the 100 cooperatives within the 500 largest food manufacturing companies was done using each cooperatives value added in SIC 20 and 21.

Source: Special tabulation by the Bureau of the Census.

cooperatives as very small competitors in the food and tobacco manufacturing industries would remain unchanged.

Although cooperatives are generally Davids when compared to the Goliaths in food manufacturing, they may still have market power in specific industries, product classes or products within food manufacturing. A large number of studies have examined the factors affecting competitive performance in food manufacturing industries (see Connor, Rogers, Mueller and Marion⁷ for a summary). Three structural dimensions have been linked to various measures of market performance: market concentration, product differentiation and firm market share. In general, as these three structural dimensions increase, competitive performance tends to deteriorate. They are therefore important indicators of the effectiveness of competition and/or the degree to which market power is likely to exist in a market. Here we will examine the number of leading positions held by cooperatives, the number of industries or product classes in which they held market shares of 5% or more, and the concentration and product differentiation of industries/product classes in which these cooperatives participated.

The number of leading positions held by these cooperatives in 4 digit food manufacturing industries is shown in Table 17. Only 14 of the 100 cooperatives held any top 4 positions in national food manufacturing industries in 1977 and the 18 positions they held were spread over 13 different industries. Cooperative presence in the 5th through 8th positions in national food manufacturing was even more limited (12 positions). Only 3 top 8 positions were held in all of the national non-food manufacturing industries. Measured simply by their possession of top 8 positions, these 100 cooperatives would certainly

Table 17--Leading Positions Held by the 100 Sample Agricultural Cooperatives in Four-Digit National Food and Non-Food Manufacturing Industries, by Cooperative Size Groupings, 1977

<u>COOPERATIVE SIZE GROUP</u>	<u>NUMBER OF COOPER- ATIVES HOLDING LEADING POSITIONS</u>	<u>NO. OF LEADING POSITIONS HELD</u>	<u>NO. OF INDUSTRIES IN WHICH POSITIONS WERE HELD</u>
41 NATIONAL FOOD MANUFACTURING INDUSTRIES			
<u>Top 4 Leading Positions</u> ¹			
20 Largest	6	10	9
21-50 Largest	3	3	3
51-100 Largest	5	5	3
100 Largest	14	18	13
<u>Top 5-8 Leading Positions</u> ¹			
20 Largest	7	8	5
21-50 Largest	2	2	1
51-100 Largest	2	2	1
100 Largest	11	12	7
NATIONAL NON-FOOD MANUFACTURING INDUSTRIES			
<u>Top 4 Leading Positions</u>			
20 Largest	1	1	1
21-50 Largest	0	0	0
51-100 Largest	0	0	0
100 Largest	1	1	1
<u>Top 5-8 Leading Positions</u>			
20 Largest	2	2	2
21-50 Largest	0	0	0
51-100 Largest	0	0	0
100 Largest	2	2	2

¹ There were 164 top four positions and 164 5-8 leading positions in the 41 industries.

Source: Special tabulation by the Bureau of the Census.

appear to have very limited market power. Of 164 possible top 4 positions in 41 national food manufacturing industries, cooperatives held just 18 (11%). By comparison, the 100 largest food and tobacco manufacturers held 113 of the 164 top 4 positions (69%) and 189 of the 328 top 8 positions (58%) in national food manufacturing industries in 1977.

Table 18 summarizes cooperative leading positions in the more narrowly defined product classes (5-digit SIC). At this level, 21 of the cooperatives held 35 top 4 positions in 24 product classes. There were 118 national food manufacturing product classes and therefore 472 top four positions. Cooperatives accounted for 7.4 percent of the leading positions. The cooperatives held very few leading positions in non-food manufacturing product classes.

In Table 19 the number of cooperatives holding one or more top 4 leading positions in food manufacturing is shown. At the industry level (4 digit SIC) three cooperatives held 2 or more top 4 positions; at the product class level six of the cooperatives held 2 or more top 4 positions. By comparison, 36 of the 100 largest food and tobacco manufacturers held 2 or more top 4 positions in food and tobacco manufacturing industries (4-digit SIC). These 36 companies accounted for a total of 90 such positions or 44.1% of the total of 204 possible top 4 positions in the 51 food and tobacco manufacturing industries. At the product class (5 digit SIC) level, 65 of the 100 largest food and tobacco manufacturers held 2 or more top 4 positions, accounting in total for 292 (50.0%) of the 584 top 4 positions in the 146 food and tobacco product classes. Of these 65 companies, 26 held 5 or more positions each, accounting as a group for 187 positions or 32.0 percent of the 584 total positions.

Table 18--Leading Positions Held by the 100 Sample Agricultural Cooperatives
in National Food and Non-Food Manufacturing Product Classes, by
Cooperative Size Groupings, 1977

COOPERATIVE SIZE GROUP	NO. OF COOPS HOLDING LEADING POSITIONS	NO. OF LEADING POSITIONS HELD	NO. OF PRODUCT CLASSES IN WHICH POSITIONS WERE HELD
<u>NATIONAL FOOD MANUFACTURING PRODUCT CLASSES¹</u>			
<u>Top 4 Leading Positions</u>			
20 Largest	7	18	14
21-50 Largest	7	7	6
51-100 Largest	7	10	7
100 Largest	21	35	24
<u>Top 5-8 Leading Positions</u>			
20 Largest	8	18	15
21-50 Largest	5	8	7
51-100 Largest	8	8	6
100 Largest	21	34	23
<u>NATIONAL NON-FOOD MANUFACTURING PRODUCT CLASSES</u>			
<u>Top 4 Leading Positions</u>			
20 Largest	1	1	1
21-50 Largest	0	0	0
51-100 Largest	0	0	0
100 Largest	1	1	1
<u>Top 5-8 Leading Positions</u>			
20 Largest	2	4	4
21-50 Largest	1	1	1
51-100 Largest	0	0	0
100 Largest	3	5	5

¹ In 1977 there were 118 national market food manufacturing product classes excluding NSKs.

Source: Special tabulation by the Bureau of the Census.

Table 19--Number of Leading Positions (Top 4) in Food Manufacturing Held by the Sample Agricultural Cooperatives in 4 Digit National Industries and 5 Digit National Product Classes, 1977¹

NUMBER OF LEADING POSITIONS HELD IN FOOD AND KINDRED PRODUCTS	4-DIGIT INDUSTRIES			5-DIGIT PRODUCT CLASSES		
	NUMBER OF COOPERATIVES	AVERAGE NUMBER OF POSITIONS HELD IN:		NUMBER OF COOPERATIVES	AVERAGE NUMBER OF POSITIONS HELD IN:	
		FOOD MFG.	ALL MFG.		FOOD MFG.	ALL MFG.
5	0	.0	.0	2	5.0	5.0
4	0	.0	.0	0	.0	.0
3	1	3.0	3.0	2	3.0	3.0
2	2	2.0	2.0	2	2.0	2.0
1	11	1.0	1.0	15	1.0	1.0
0	86	.0	.0	79	.0	.0

¹ In addition to the leading (top 4) positions included here, one such position was held in 2873-Nitrogenous Fertilizer at the 4-digit industry level and another leading (top 4) position was held in a non-food and tobacco manufacturing product class (5-digit level) the identity of which could not be determined from the special Census tabulation. These positions were held by a company or companies that held no leading positions in food and tobacco manufacturing and were thus not included when Census produced the data for this table.

Source: Special tabulation by the Bureau of the Census.

Leading positions are often viewed as a necessary but not sufficient condition for market power. Leading positions in unconcentrated markets or in industries with low barriers to entry may entail no significant market power. Thus, it becomes important to examine the structural characteristics of the industries in which cooperatives held leading positions. Product differentiation has been found to be an important source of market power because of the discretion allowed in pricing and the barriers created to new entry. Table 20 examines a number of characteristics of the four digit food manufacturing industries in which cooperatives held leading positions. Of 13 national industries in which the cooperatives held at least one of the top four positions, 4 were producer goods industries. Five of the 18 top 4 positions held by the sample cooperatives were in these producer goods industries which are characterized by little if any product differentiation. Of the nine national market consumer goods industries in which sample cooperatives held at least one top 4 position, seven are characterized by low levels of product differentiation; these seven accounted for 9 of the 13 top 4 positions held in national consumer goods markets. National industries characterized by a moderate level of product differentiation accounted for only 4 top 4 positions (in 2 industries) and a total of 9 top 8 positions (in 4 industries) held by the 100 largest cooperatives. Put another way, approximately one-fifth of cooperative top four positions were in industries with a moderate level of product differentiation. The cooperatives held no leading positions in high product differentiation food manufacturing industries.

The concentration ratios of the industries in which the cooperatives held leading positions are also shown in Table 20 along with the

Table 20--Leading Positions Held by the 100 Sample Cooperatives in Food and Tobacco Industries with Concentration Ratios for Each Industry, 1977

INDUSTRY DESCRIPTION	TYPE OF MARKET ²	LEADING POSITIONS HELD BY THE 100 LARGEST COOPS					FIRMS IN THE INDUSTRY		CONCENTRATION RATIOS	
		TOP 4	5-8TH	TOP 8	OF THE 100 COOPS	ALL COMPANIES ¹	CR4	CR8		
2016 Poultry Description	NCL	1	0	1	6	313	16	27		
2017 Poultry and Egg Processing	NCL	1	0	1	6	124	21	35		
2021 Creamery Butter	NCL	3	2	5	8	123	49	66		
2022 Cheese-Nat. or Proc.	NCL	1	2	3	13	660	35	48		
2023 Cond. & Evaporated Milk	NCL	1	1	2	15	167	30	46		
2033 Canned Fruits & Vegetables	NCM	0	2	2	9	648	22	35		
2034 Dehyd. Fruits & Vegetables	NCM	2	0	2	2	143	37	53		
2035 Pickles, Sauces & Salad Dr.	NCM	0	1	1	2	380	55	62		
2044 Rice Milling	NCM	2	2	4	6	47	51	76		
2048 Prepared Feeds	XP	0	1	1	16	1435	22	30		
2061 Raw Cane Sugar	NP	1	0	1	1	49	42	62		
2062 Cane Sugar Refining	NCL	1	0	1	1	27	63	90		
2063 Beet Sugar	NCL	1	0	1	1	14	67	95		
2074 Cottonseed Oil Mill	NP	2	0	2	2	62	45	62		
2075 Soybean Oil Mill	NP	0	2	2	8	65	54	73		
2076 Vegetable Oil Mill, NEC	NP	1	0	1	3	37	54	80		
2083 Malt	NP	1	0	1	1	27	59	81		

¹ Total number of companies participating in each industry and the concentration ratios presented are taken from Concentration Ratios in Manufacturing, 1977 Census of Manufacturers, U.S. Dept. of Commerce, Bureau of the Census.

² Industry classification and product differentiation symbols used are as follows: N=national market; X=local market; C=consumer good market; P=producer good market; L=low product differentiation; M=moderate product differentiation; and H=high product differentiation.

Source: Special tabulation by the Bureau of the Census, except as noted above.

total number of firms and the number of cooperatives from among the 100 in the sample participating in each. Of the 31 top 8 positions held by the cooperatives, 8 were in producer goods industries where there is little if any product differentiation. Of the remaining 23 leading positions in consumer goods industries, 11 were in the industries with four-firm concentration less than 40%. Of the 12 leading positions in consumer industries with CR4 over 40, five were in butter, and two were in sugar refining, all areas of low product differentiation. The other five leading positions in rice milling and pickles, sauces and salad dressings may provide some degree of market power for the cooperatives involved -- based upon the structure of these industries. Both industries are moderate in concentration and have moderate levels of product differentiation.

Rice milling (SIC 2044) was the only industry where cooperatives were among the largest 4 firms in a consumer goods industry having a CR4 of 50% or more (in 2044 the CR4 equals 51%). The three dairy industries in which the cooperatives held leading positions (SIC 2021, 2022, 2023) accounted for 10 of the 31 top 8 positions held. These three industries are all low product differentiation markets and are relatively unconcentrated.

The Census industry data used in Table 20 should be interpreted with caution. Many of these industries are broader than relevant economic markets. For example, condensed and evaporated milk (SIC 2023) includes four product classes (dry milk products, consumer canned milk products, bulk concentrated milk, ice cream mix) that are separate economic markets. Four-firm concentration in these product classes range from 22 in ice cream mix to 72 in consumer canned milk products.

In addition, Census procedures can result in substantial differences in industry vs. product class figures. In developing four-digit information, all the value of shipments of an establishment is assigned to the four-digit industry in which that establishment has the highest percent of its shipments. For example, if a butter-powder plant realizes 55% of its value of shipments from butter and 45% from dry milk products, all of the value of shipments would be assigned to SIC 2021, creamery butter. At the five digit level, Census would assign 55% to SIC 20210 (butter) and 45% to SIC 20231 (dry milk products). Thus, five digit data are generally more accurate indicators of total shipments and concentration. Unfortunately, cooperative leading positions were not identified by specific product class -- only by industry as shown in Table 20.

An additional indicator of market power is market share. Cooperative market share positions (in national markets) of 5% or more are tabulated for 4-digit industries in Table 21 and 5-digit product classes in Table 22. A comparison of these tables with the information on leading positions provides additional insights into the magnitude of top 4 and 8 leading positions held by cooperatives. For example, Table 17 indicated that the 20 largest cooperatives held 10 top 4 positions and another 8 top 5-8 positions in national food manufacturing industries in 1977. These 20 cooperatives, however, held a total of only 8 positions of 5% or more market share in the national food manufacturing industries. Clearly, at least two of the 10 top 4 positions held by these 20 cooperatives represented market share positions of less than 5%. On the other hand, the 51-100 largest cooperatives, as a group, held 5 top 4 positions but held six market share positions of 5% or more. A similar

Table 21--Number of Market Share Positions in Excess of 5% Held by the 100 Sample Agricultural Cooperatives in National Food Manufacturing Industries and National Non-Food Manufacturing Industries, 1977

Percentage Market Share	National Food Mfg. Industries			National Non-Food Mfg. Industries			All National Manufacturing Industries						
	1-20	21-50	51-100	1-20	21-50	51-100	1-20	21-50	51-100				
	Largest			Largest			Largest						
5 to 10%	2	1	4	7	1	0	0	0	1	3	1	4	8
10 to 15%	2	1	2	5	0	0	0	0	0	2	1	2	5
15 to 20%	3	1	0	4	0	0	0	0	0	3	1	0	4
20 to 30%	1	0	0	1	0	0	0	0	0	1	0	0	1
30% or more	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	8	3	6	17	1	0	0	0	1	9	3	6	18

Source: Special tabulation by the Bureau of the Census.

Table 22--Number of Market Share Positions in Excess of 5% Held by the 100 Sample Agricultural Cooperatives in National Food Manufacturing Product Classes and National Non-Food Product Classes, 1977

Percentage Market Share	National Food Mfg. Product Classes			National Non-Food Mfg. Product Classes			All National Mfg. Product Classes					
	1-20	21-50	51-100	1-20	21-50	51-100	1-20	21-50	51-100			
	Largest			Largest			Largest					
5 to 10%	15	4	10	29	4	0	0	4	19	4	10	33
10 to 15%	2	1	3	6	0	0	0	0	2	1	3	6
15 to 20%	2	1	0	3	0	0	0	0	2	1	0	3
20 to 30%	1	0	0	1	0	0	0	0	1	0	0	1
30% or more	1	0	0	1	0	0	0	0	1	0	0	1
TOTAL	21	6	13	40	4	0	0	4	25	6	13	44

Source: Special tabulation by the Bureau of the Census.

situation can be seen in the more accurate product class data in Tables 22 and 18. While the 20 largest cooperatives held 21 market share positions of 5% or more with only 18 top 4 leading positions, the 21-50 largest held 7 top 4 positions while having only 6 market share positions of 5% or more.

Market shares of 5% to 10% in a properly defined market rarely results in significant market power. Of the 40 product class positions in which cooperatives held 5% or more market shares, only 11 involved market shares of 10% or more; 5 were market shares of 15% or more (Table 22). The data available does not allow identification of the markets in which market shares of 10% or more were held. It seems likely that some represent positions in dairy product classes. However, market power in consumer food products is closely linked to strong brands. Although cooperatives are heavily involved in dairy manufacturing, only Land O'Lakes butter has a strong brand franchise. Otherwise, cooperatives largely produce private label dairy products or products that are sold to other handlers (e.g., cheese to Kraft) or to the government.

The growing literature on strategic groups and strategic behavior indicates that submarkets often exist within industries or product categories; these submarkets may differ substantially in competitive characteristics. Within food manufacturing, for example, research indicates that advertised brands of a product are generally produced by a different group of firms from the firms that make private label, and generic, and unbranded products. Whereas the advertised brand manufacturers often advertise heavily and enjoy some degree of market power, the manufacturers of private label, generic, and unbranded products rarely have much discretion in pricing their product or

selecting competitive tactics. In general, private label and generic products have larger market shares in those product categories in which advertised brands are weakly differentiated, in which concentration is relatively low, and which are growing slowly.

Census data provide no information on the strategic groups in which cooperatives are involved. These data do reveal that cooperatives tend to participate more heavily in product classes that are relatively low in product differentiation and in four-firm concentration -- characteristics that have also been associated with high private label and generic market shares. Data on advertising by cooperatives indicates that they are low users of media advertising. In 1982, only four cooperatives ranked among the 100 largest advertisers (six media) of food and tobacco products (Leading National Advertisers):

	<u>Advertising Expend.</u>	<u>Rank</u>
Land O'Lakes, Inc.	10.2 mill.	62nd
Ocean Spray Cranberries Inc.	5.7 mill.	83rd
Welch Food, Inc.	5.5 mill.	84th
Sun-Diamond Growers of Cal.	4.4 mill.	95th

Among the 200 largest food and tobacco advertisers, there were nine cooperatives, including Sunkist, which primarily advertises fresh fruit. These cooperatives did 0.87% of all advertising of food and tobacco products in 1982. Since the top 200 advertisers accounted for 96.9% of all food and tobacco six media advertising in 1982, cooperatives and proprietary firms below the top 200 did very little advertising. In total twenty-one cooperatives ranked among the top 500 food and tobacco advertisers in 1982, exactly half the number of cooperatives that ranked

among the 500 largest food manufacturers based upon value added in SIC 20 and 21 (Table 16).

Wills examined brand shares, advertising and price levels in 145 specific product categories using Nielsen Early Intelligence System (NEIS) data for 1979 and 1980 and LNA data for 1978.⁸ NEIS product categories often are much narrower than Census 5 digit product classes. For example, the Census product class 20338 includes jams, jellies, preserves, marmalades and fruit butters. Nielsen has a separate product category for each of these five group of products. Wills analyzed 145 categories of edible packaged food products. Cooperative brands represented about one-tenth of all brands in these product categories. The average quantity share for cooperative brands was 9.2% compared to 7.8% for proprietary brands. Advertising expenditures per brand was \$223,000 for cooperative brands vs. \$552,000 for noncooperative brands. Cooperatives had the leading brand in 15 product categories. Leading cooperative brands included Land O'Lakes, Treetop, Sunsweet, Sun Maid, Welch and Ocean Spray. Wills' analysis indicates that "cooperative brands with similar market share and advertising tended to obtain lower, but not significantly different, prices than their corporate competitors" (p. 20). Where cooperatives had strong brands, some price premium was realized over unadvertised brands. However, cooperatives were somewhat less effective in exploiting the market power provided by high market share and high advertising than noncooperative firms.

SUMMARY

The 1977 food manufacturing activities of the 100 largest agricultural marketing cooperatives account for a relatively small part of the total U.S. food manufacturing industry, especially when compared to the operations of the industry's largest firms. The largest 100 cooperatives accounted for 6% of the value of shipments and 3.4% of the value added of all food manufacturing in 1977. While two of these cooperatives ranked among the 100 largest food manufacturing firms, none ranked as high as the top 50 and a majority (58 of 100) did not rank among the top 500 food manufacturers. The product classes in which these cooperatives were most active in 1977 were characterized by low levels of value added, product differentiation and concentration.

The 100 largest cooperatives held 35 of the 472 top four positions in food manufacturing product classes, or 7.4% of these positions. By comparison, the largest 100 food manufacturing companies (including two cooperatives) held 66% of the top four leading positions in food and tobacco product classes in 1977. Cooperatives held product class market shares greater than 10% in 11 cases; most of their 35 leading positions apparently involve market shares of less than 10%. In total, Census data indicate that cooperatives are relatively unimportant in food and tobacco manufacturing. In addition, cooperative involvement is focused on product classes with low levels of concentration and advertising-- that is, those product classes in which research indicates competition tends to be relatively effective. Cooperatives are low users of advertising, an important means of differentiating products. In 1977, only nine cooperatives ranked among the largest 200 advertisers of food and tobacco products.

This general scenario is repeated using data on specific product categories from Nielsen Company. Cooperative brands accounted for about 10 percent of all brand numbers in 145 product categories; cooperatives had the leading brand in 15 of the 145 categories. Cooperative advertising per brand was about 40% that of proprietary brand advertising. Brand market share and advertising resulted in somewhat less price enhancement for cooperative brands than for comparable proprietary brands. For whatever the reason (more elastic demand, products that are less responsive to differentiation and/or less control over supply by cooperatives), in those specific products where cooperatives held the leading brand, they were somewhat less able to develop or exercise market power.

These results have both public policy and cooperative strategy implications. From a public policy point of view, cooperative market power in food manufacturing appears to be very limited. In comparison to proprietary food manufacturers, cooperative ability to enhance price is infinitesimal. We are not arguing that market power by cooperatives -- to the extent it exists -- should be ignored. Market power, whether by cooperative or noncooperative organizations should be of concern to those vested with preserving and protecting competition in the American economy. If public policy concern about competition is ordered by the potential negative consequences for American consumers, the evidence presented in this report indicates that agricultural cooperatives will be far down that list.

The results also convey implications for cooperative strategic planning. Considerable research indicates that product differentiation, industry sales concentration and firm market share are positively

related to profitability. Our results show that cooperatives tend to be most active in relatively unconcentrated product classes and to be low users of advertising. Thus, in general, cooperatives tend to be involved in those areas of food manufacturing with relatively low returns on investment. Why is this so? Several reasons seem plausible.

Historically, as cooperatives expanded their member and raw product bases, typically within narrow commodity areas, they have participated in food manufacturing primarily at the first stages of processing. This is consistent with a perceived responsibility for assuring producer members with a market for their raw output. Relatively less emphasis has been placed on capturing the returns to invested capital available in subsequent processing stages.

In fact, in some cases cooperatives have acquired, and continue to acquire, positions in food manufacturing as much to protect a market for their members' raw product as for the capital investment opportunity that the processing function might represent. Agway's 1980 acquisition of H.P. Hood (milk processing) and their similar earlier acquisition of Curtice-Burns (fruit and vegetable processing) provide examples of this type of cooperative expansion in food manufacturing. According to their 1980 annual report: "Agway's acquisition of majority interest in the Hood firm means that farmers' control of this milk marketing system will be assured."

Other cooperatives have found that the cooperative joint venture best suits their needs. An example is the formation of Sun-Diamond in 1980. Sun-Diamond is the joint marketing organization for a group of four cooperatives (Sun-Maid Growers, Sunsweet Growers, Diamond Walnut Growers, and Valley Fig Growers). The objective in this case was

greater efficiency in the utilization of marketing and financial management facilities and not the creation of a more diverse food manufacturing entity. The individual cooperatives continue to operate as independent organizations each with its own narrow product base. As stated in the first annual report of Sun-Diamond: "...the members of each cooperative gain the economic and marketing benefits that come from a strong centralized single sales and financial management organization. ..." and, "Our new partnership in marketing is consistent with our individual company objectives of expeditiously selling members' crops; and providing attractive returns on members' investment in their ranch and cooperative."

In other cases the attractive rates of return in food manufacturing areas previously outside the scope of their activities have prompted cooperatives to consider diversification or entry into food manufacturing. Land O'Lakes, for example, has been historically a very effective and successful dairy cooperative involved in nearly all aspects of the dairy industry; the cooperative has a highly respected and nationally recognized brand. Its management has been aware that successful utilization of their marketing capacity and brand name need not be limited to dairy products alone. Investment in additional processing facilities and diversification of their membership base to include producers of poultry products, hogs, beef cattle, grains and oilseeds has led to their entry into a much wider variety of processed food products. The adjustment in emphasis is clearly stated by the Land O'Lakes president in the cooperative's 1975 annual report: "We have an objective of becoming a total agricultural/food company. A unique status, a position that many are coming to recognize as the means by

which cooperatives will generate maximum returns for the farmers who own, who control and direct destiny of their cooperatives." In the case of Land O'Lakes, growth and diversification has been achieved, and is continuing, through a combination of mergers, acquisitions and construction of new facilities.

Many cooperatives are wrestling with the nature and extent of their involvement in food manufacturing. Although the advertised brand segment of most products is more profitable than the private label or producer goods segments, entering the advertised brand segment is often difficult. Large noncooperative firms occupy most of the leading positions in food manufacturing product classes. This is especially true of products that are moderately to highly differentiated. Most cooperatives have had relatively little experience in developing and marketing advertised brands. They may be ill-prepared to take on General Foods, R.J. Reynolds, General Mills, Kraft or Ralston Purina in the branded product ballgame. Even Purina, which ranked 11th in advertising in 1982, had 10 times the advertising expenditures of Land O'Lakes, the largest cooperative advertiser.

Curtice Burns has been successful by acquiring a number of fruit and vegetable processors with regional brands. This may be the most feasible means for cooperatives to enter many product markets. Successful regional brands can be gradually broadened in distribution, if desired. Nearly all national brands started out as regional brands. Alternatively, cooperatives can enter the private label/generic or producer goods segments of product markets where entry barriers are generally fairly low, but where profit opportunities also tend to be modest. We expect in many cases the choice depends upon the objectives

of the cooperative and its members. Do they want to be a stronger force in food manufacturing? Do their managerial and financial resources restrict the nature and extent of their involvement?

FOOTNOTES

- ¹ See for example, "The Billion Dollar Farm Co-ops Nobody Knows", Business Week, Feb. 7, 1977.
- ² For discussion of the competitive position of cooperatives in first handler markets see: NC Project 117, Monograph 4, Agricultural Cooperatives and the Public Interest, B.W. Marion, editor, September, 1978.
- ³ The primary enterprise classification is determined using annual payroll as the criteria by first ascertaining the largest major industry division of a company and then the primary enterprise industry category is selected from within that major division. See: 1977 Enterprise Statistics, General Report on Industrial Organization, U.S. Dept. of Commerce, Bureau of the Census, Appendices A and C.
- ⁴ There are actually 170 product classes in food manufacturing (SIC major group 20) but 31 of these represent poorly defined NSK (not specified as to kind) product classes which have been excluded here.
- ⁵ Source: Special tabulation by the Bureau of the Census, 1977.
[Note: In this case all food manufacturers were ranked by their value added in food and tobacco manufacturing (SIC 20 and 21).]
- ⁶ Some dairy cooperatives reported very limited activity in canned fruit juices (SIC20335) and bottled and canned soft drinks (SIC20860) as well. Activity in these product classes is a very minor part of their dairy plant operations, however, and would appear to reflect an attempt to increase capacity utilization and thus reduce unit costs in their fluid milk bottling operations rather than an intention to enter these manufacturing industries to any significant extent.
- ⁷ Connor, J., R. Rogers, W. Mueller, and B. Marion, The Food Manufacturing Industries: Structure, Strategies, Performance and Policies, Lexington Books, forthcoming.
- ⁸ Wills, R., "A Comparison of Price Enhancement Practices of Cooperative and Proprietary Brands," NC-117 Working Paper No. 76, University of Wisconsin-Madison, forthcoming.

Appendix Table A
 51 Five Digit Food and Kindred
 Products Product Classes in Which
 the 100 Sample Agricultural Cooperatives
 Reported No Participation

20112	Veal (fresh)	20821	Canned beer & ale
20113	Lamb & mutton (fresh)	20822	Bottled beer & ale
20137	Sausage (not made in meat packing plants)	20823	Barrel & keg beer & ale
20164	Other poultry & small game	20824	Other malt beverages
20165	Processed poultry & small game	20840	Wines, brandy & brandy spirits
20171	Young chickens	20851	Distilled liquors
20172	Hens	20853	Bottled liquors
20174	Other poultry & small game	20872	Liquid beverage bases
		20873	Flavoring sirups for soft drink bottlers
		20874	Other flavoring agents
20321	Canned baby food	20910	Canned & cured seafood
20333	Canned dry beans	20922	Fresh packaged fish & seafood
20342	Dried soup mixes	20923	Frozen packaged fish
20381	Frozen pies & baked goods	20924	Frozen packaged shell- fish & seafood
20415	Flour mixes & refrig- erated doughs	20951	Roasted coffee
20430	Cereal breakfast foods	20952	Concentrated coffee
20455	Flour mixes & refrig- erated doughs	20970	Manufactured ice
		20980	Macaroni, spaghetti & noodles
		20994	Baking powder & yeast
20511	Bread	20995	Tea
20512	Rolls	20998	Chocolate & cocoa products
20513	Sweet yeast goods		
20514	Soft cakes		
20515	Pies		
20516	Pastries		
20517	Doughnuts		
20521	Crackers & pretzels		
20522	Cookies & ice cream cones		
20652	Chocolate confectionery		
20653	Nonchocolate confec- tionery		
20661	Chocolate coatings		
20662	Chocolate confection- ery		
20668	Other chocolate & cocoa products		
20670	Chewing gum		

Appendix Table B
Product Classes by Product
Differentiation Classification

Producer Goods (38):

20115, 20119, 20139, 20179, 20233, 20234, 20261, 20411, 20412,
20416, 20460, 20481, 20482, 20483, 20484, 20485, 20486, 20487, 20488,
20489, 20610, 20661, 20741, 20742, 20743, 20744, 20751, 20752, 20761,
20762, 20763, 20771, 20772, 20773, 20791, 20830, 20851, 20873.

Consumer Goods (101):

Low Product Differentiation (56):

20111, 20112, 20113, 20114, 20116, 20117, 20118, 20136, 20137,
20138, 20161, 20162, 20163, 20164, 20165, 20171, 20172, 20173, 20174,
20175, 20210, 20221, 20222, 20231, 20232, 20240, 20262, 20263, 20323,
20331, 20332, 20333, 20334, 20341, 20352, 20371, 20413, 20472, 20514,
20515, 20516, 20517, 20620, 20630, 20668, 20871, 20872, 20910, 20922,
20923, 20924, 20951, 20970, 20994, 20996, 20998.

Moderate Product Differentiation (32);

20264, 20321, 20322, 20324, 20335, 20336, 20338, 20354, 20372,
20381, 20382, 20383, 20440, 20511, 20512, 20513, 20521, 20522, 20652,
20653, 20658, 20662, 20792, 20821, 20822, 20823, 20824, 20860, 20952,
20980, 20992, 20993.

High Product Differentiation (13):

20342, 20353, 20415, 20430, 20455, 20471, 20670, 20840, 20853,
20874, 20991, 20995, 20999.

Appendix Table C

Pearson Correlation Coefficients, N = 139

	<u>PCT20</u>	<u>PCT30</u>	<u>PCT50</u>	<u>PCT100</u>	<u>VOS77</u>	<u>CR4</u>	<u>VAVOS</u>	<u>PDIF</u>	<u>ADSALE</u>
PCT20									
PCT30	.6068								
PCT50	.5855	.9020							
PCT100	.8156	.9293	.9336						
VOS77	.2380	.2234	.2423	.2580					
CR4	-.4533	-.3485	-.4348	-.4673	-.2508				
VAVOS	-.4233	-.2278	-.2233	-.3232	-.1738	.3069			
PDIF	-.3482	-.1297	-.1781	-.2473	.0877	.3475	.6041		
ADSALE	-.2178	-.1259	-.1702	-.1937	.0099	.4344	.4927	.7887	

APPENDIX TABLE D MARKET STRUCTURE DATA FOR FOOD PRODUCT CLASSES BY SIC - 1977

SIC	PCT20	PCT30	PCT50	PCT100	VOS	CR4	PDIF	ADSALE	VAVOS	NL
20111	.20	.00	.00	.04	14095.8	25	1	0.00	8.83	0
20112	.00	.00	.00	.00	319.3	32	1	0.00	14.38	0
20113	.00	.00	.00	.00	329.5	58	1	0.00	10.30	0
20114	.20	.00	.00	.04	5647.5	37	1	0.00	7.91	0
20115	.20	.00	.00	.04	214.1	39	0	0.03	12.85	0
20116	.20	.00	.00	.04	2095.3	31	1	0.09	18.49	0
20117	.20	.00	.00	.04	1859.3	29	1	0.77	28.63	0
20118	.07	.00	.00	.01	561.7	59	1	0.77	12.85	0
20119	.13	.00	.03	.04	807.7	23	0	0.00	12.85	0
20136	.07	.00	.00	.01	1683.3	26	1	0.09	17.31	0
20137	.00	.00	.00	.00	2820.7	31	1	0.77	28.08	0
20138	.07	.00	.00	.01	694.6	43	1	0.77	29.58	0
20139	.07	.00	.00	.01	33.2	36	0	0.00	28.81	0
20161	.07	.05	.06	.06	3961.1	22	1	0.14	21.19	0
20162	.00	.00	.03	.01	229.5	48	1	0.00	22.54	0
20163	.13	.00	.03	.04	927.3	42	1	0.34	19.33	0
20164	.00	.00	.00	.00	57.9	75	1	0.17	46.30	0
20165	.00	.00	.00	.00	331.4	70	1	0.00	24.18	0
20171	.00	.00	.00	.00	253.6	22	1	0.14	26.96	0
20172	.00	.00	.00	.00	14.7	48	1	0.00	22.17	0
20173	.07	.00	.00	.01	59.4	42	1	0.34	22.17	0
20174	.00	.00	.00	.00	3.7	75	1	0.17	22.17	0
20175	.07	.00	.03	.03	326.3	45	1	0.00	24.83	0
20179	.07	.05	.00	.03	312.7	30	0	0.00	18.40	0
20210	.33	.40	.17	.27	1109.7	30	1	0.16	9.25	0
20221	.27	.15	.25	.23	2727.2	32	1	0.62	16.61	0
20222	.20	.05	.06	.08	2518.5	59	1	0.13	14.55	0
20231	.33	.35	.25	.30	1735.4	38	1	.55	36.48	0
20232	.07	.00	.00	.01	672.4	72	1	0.78	43.53	0
20233	.33	.40	.19	.28	264.2	33	0	0.00	7.67	0
20234	.27	.25	.19	.23	293.2	22	0	0.00	24.62	0
20240	.27	.25	.25	.25	2229.4	27	1	0.63	33.24	1
20261	.33	.40	.28	.32	2123.8	25	0	0.00	9.80	1
20262	.33	.35	.33	.34	7345.5	18	1	0.04	24.01	1
20263	.33	.20	.25	.25	545.6	25	1	0.85	16.91	1
20264	.33	.40	.31	.34	851.7	32	2	1.38	44.79	1
20321	.00	.00	.00	.00	401.3	98	2	1.04	47.41	0
20322	.00	.05	.00	.01	762.3	90	2	2.64	40.39	0
20323	.07	.00	.00	.01	556.5	51	1	0.77	31.87	0
20324	.07	.00	.00	.01	641.7	55	2	2.74	43.08	0
20331	.13	.15	.11	.13	1289.3	37	1	0.58	36.42	0
20332	.07	.10	.08	.08	1650.9	38	1	0.38	38.47	0
20333	.00	.00	.00	.00	149.8	53	1	0.75	23.38	0
20334	.27	.30	.25	.27	1223.4	34	1	0.50	37.97	0
20335	.07	.15	.03	.07	251.8	67	2	1.64	33.38	0
20336	.07	.10	.03	.06	1350.0	52	2	2.91	44.13	0
20338	.07	.05	.03	.04	396.9	49	2	1.63	36.50	0

APPENDIX TABLE D MARKET STRUCTURE DATA FOR FOOD PRODUCT CLASSES BY SIC - 1977

SIC	PCT20	PCT30	PCT50	PCT100	V05	CR4	PDIF	ADSALE	VAV05	NL
20341	.07	.10	.06	.07	898.6	39	1	.85	40.42	0
20342	.00	.00	.00	.00	224.7	78	3	6.96	54.58	0
20352	.07	.00	.00	.01	553.2	40	1	0.87	44.55	0
20353	.13	.00	.00	.03	261.6	49	3	3.44	59.70	0
20354	.13	.05	.00	.04	1292.3	60	2	2.42	35.48	0
20371	.07	.10	.11	.10	1153.5	36	1	0.69	33.37	0
20372	.07	.00	.08	.06	1797.9	34	2	1.24	41.88	0
20381	.00	.00	.00	.00	770.3	52	2	2.17	50.92	0
20382	.07	.00	.00	.01	1297.7	45	2	1.76	29.93	0
20383	.07	.00	.03	.03	718.2	58	2	1.94	39.87	0
20411	.20	.00	.03	.06	2208.9	38	0	0.09	20.33	0
20412	.13	.00	.00	.03	455.4	39	0	0.29	22.42	0
20413	.07	.05	.00	.03	413.3	62	1	0.32	27.52	0
20415	.00	.00	.00	.00	287.2	74	3	4.61	37.97	0
20416	.07	.00	.00	.01	98.3	67	0	0.00	27.93	0
20430	.00	.00	.00	.00	1832.9	81	3	10.16	57.94	0
20440	.07	.10	.08	.08	1242.3	47	2	2.54	26.99	0
20455	.00	.00	.00	.00	1204.3	57	3	4.61	40.40	0
20460	.07	.00	.00	.01	1946.1	61	0	0.41	33.09	0
20471	.40	.10	.06	.14	2717.1	58	3	6.68	45.71	0
20472	.53	.10	.08	.18	268.1	34	1	0.01	41.41	0
20481	.53	.10	.14	.21	2758.6	24	0	0.00	8.39	1
20482	.53	.15	.08	.20	1145.6	31	0	0.00	12.52	1
20483	.40	.10	.08	.15	308.5	40	0	0.00	23.68	1
20484	.53	.10	.08	.18	575.8	35	0	0.00	23.99	1
20485	.53	.10	.08	.18	892.3	46	0	0.00	21.98	1
20486	.53	.10	.08	.18	367.1	31	0	0.00	20.82	1
20487	.47	.10	.06	.15	603.8	35	0	0.00	19.54	1
20488	.53	.10	.08	.18	337.9	35	0	0.00	19.70	1
20489	.40	.05	.06	.13	338.0	21	0	0.00	21.57	1
20511	.00	.00	.00	.00	3500.7	36	2	1.06	60.32	1
20512	.00	.00	.00	.00	1679.6	27	2	1.03	64.11	1
20513	.00	.00	.00	.00	640.4	28	2	1.38	54.56	1
20514	.00	.00	.00	.00	949.9	51	1	0.95	59.87	1
20515	.00	.00	.00	.00	297.1	54	1	0.10	56.19	1
20516	.00	.00	.00	.00	31.2	40	1	0.00	50.68	1
20517	.00	.00	.00	.00	241.1	60	1	0.11	43.64	1
20521	.00	.00	.00	.00	1168.9	70	2	1.87	57.98	0
20522	.00	.00	.00	.00	1578.4	55	2	1.20	50.52	0
20610	.00	.00	.03	.01	707.6	42	0	0.00	39.16	0
20620	.07	.00	.00	.01	2168.0	63	1	0.16	23.28	0
20630	.00	.05	.00	.01	1160.4	67	1	0.16	29.25	0
20652	.00	.00	.00	.00	1709.3	50	2	1.25	46.11	0
20653	.00	.00	.00	.00	1241.7	36	2	2.10	50.32	0
20658	.07	.05	.00	.03	1004.0	58	2	1.10	40.76	0
20661	.00	.00	.00	.00	340.9	62	0	0.00	19.02	0
20662	.00	.00	.00	.00	565.4	82	2	2.26	39.60	0

APPENDIX TABLE D MARKET STRUCTURE DATA FOR FOOD PRODUCT CLASSES BY SIC - 1977

SIC	PCT20	PCT30	PCT50	PCT100	VOS	CR4	PDIF	ADSALE	VAVOS	NL
20668	.00	.00	.00	.00	680.6	85	1	0.64	48.98	0
20670	.00	.00	.00	.00	649.3	93	3	11.97	59.22	0
20741	.00	.00	.06	.03	146.6	41	0	0.00	20.81	0
20742	.07	.00	.06	.04	236.5	54	0	0.00	20.92	0
20743	.00	.00	.06	.03	43.4	44	0	0.00	24.58	0
20744	.00	.00	.06	.03	323.9	42	0	0.00	24.21	0
20751	.40	.10	.00	.11	2070.1	53	0	0.00	4.27	0
20752	.40	.10	.00	.11	4016.7	49	0	0.00	4.31	0
20761	.07	.00	.00	.01	72.5	98	0	0.00	13.16	0
20762	.13	.00	.03	.04	210.8	40	0	0.00	17.37	0
20763	.13	.00	.03	.04	86.9	48	0	0.00	32.27	0
20771	.20	.00	.03	.06	989.4	25	0	0.00	33.38	0
20772	.13	.00	.06	.06	753.9	20	0	0.00	30.94	0
20773	.07	.00	.00	.01	250.4	44	0	0.00	46.71	0
20791	.20	.05	.03	.07	3166.3	47	0	0.91	13.71	0
20792	.13	.00	.03	.04	1070.4	60	2	2.80	26.84	0
20821	.00	.00	.00	.00	3548.9	66	2	2.93	34.84	0
20822	.00	.00	.00	.00	2263.1	68	2	2.93	39.26	0
20823	.00	.00	.00	.00	398.1	58	2	2.93	39.12	0
20824	.00	.00	.00	.00	379.7	70	2	2.93	46.04	0
20830	.07	.00	.00	.01	488.9	60	0	0.00	20.43	0
20840	.00	.00	.00	.00	1357.7	52	3	3.27	37.07	0
20851	.00	.00	.00	.00	205.7	54	0	0.00	22.78	0
20853	.00	.00	.00	.00	1703.3	54	3	6.52	51.52	0
20860	.40	.35	.27	.30	8503.6	14	2	1.78	40.84	1
20871	.07	.00	.00	.01	226.4	21	1	0.86	39.28	0
20872	.00	.00	.00	.00	213.0	78	1	0.86	46.64	0
20873	.00	.00	.00	.00	919.6	86	0	0.00	64.00	0
20874	.00	.00	.00	.00	1062.7	76	3	5.08	52.56	0
20910	.00	.00	.00	.00	1025.5	37	1	0.87	33.94	0
20922	.00	.00	.00	.00	460.5	10	1	0.00	27.37	0
20923	.00	.00	.00	.00	744.4	36	1	0.59	19.93	0
20924	.00	.00	.00	.00	887.6	27	1	0.01	30.83	0
20951	.00	.00	.00	.00	3674.5	57	1	0.97	14.04	0
20952	.00	.00	.00	.00	1387.8	88	2	2.66	25.43	0
20970	.00	.00	.00	.00	140.6	22	1	0.00	71.12	1
20980	.00	.00	.00	.00	751.7	32	2	2.77	49.40	0
20991	.00	.05	.00	.01	412.9	81	3	6.31	41.03	0
20992	.07	.00	.00	.01	1797.4	52	2	1.93	48.59	0
20993	.07	.00	.00	.01	296.8	52	2	2.82	37.24	0
20994	.00	.00	.00	.00	170.2	78	1	0.77	50.85	0
20995	.00	.00	.00	.00	616.8	79	3	3.50	59.67	0
20996	.00	.00	.03	.01	122.8	54	1	0.02	39.39	0
20998	.00	.00	.00	.00	207.5	54	1	0.64	36.45	0
20999	.40	.00	.00	.08	2159.8	18	3	3.58	41.38	0

APPENDIX E

Media Advertising Expenditures of Top 150
Advertisers of Food Products, 1982

CO NUM	CO NAME	SIX MEDIA TOTAL (\$000)	PER CENT	CJM PERCENT	NET TV	SPOT TV	TOTAL TV
1	13 GENERAL FOODS CORP	322150.1	8.85	8.6483	218296.6	65774.8	284071.4
2	622 ANHEUSER-BUSCH COS INC.	156665.6	4.30	13.1514	95676.5	39680.4	135362.9
3	831 PHILIP MORRIS INC	151373.3	4.16	17.3091	110845.0	34217.6	145064.6
4	64 GENERAL MILLS INC	136261.4	3.74	21.0517	67903.2	52717.6	120621.0
5	1 DART AND CRAFT INC.	125536.3	3.45	24.4998	41392.5	62118.2	103510.7
6	187 COCA-COLA CO.	123432.1	3.39	27.8900	61570.4	53340.1	114910.5
7	711 PEPSICO INC	122425.0	3.36	31.2526	59845.7	53683.1	113528.8
8	53 PRJCTER AND GAMBLE CO	113995.3	3.13	34.3837	67299.2	37015.3	104314.5
9	1086 SEAGRAM CO LTD	102433.7	2.81	37.1972	13754.6	8410.3	22164.9
10	164 KELLOGG CO.	100973.6	2.77	39.9706	61010.2	30054.3	91064.5
11	50 NABISCO BRANDS INC	95449.2	2.62	42.5922	55935.0	18243.6	74178.6
12	72 NESTLES ENTERPRISES INC	88708.0	2.44	45.0287	49105.1	28682.2	77787.3
13	75 REYNOLDS R J INDUSTRIES INC.	86327.7	2.37	47.3999	29678.4	30341.7	60020.1
14	109 CAMPBELL SOUP COMPANY	76153.8	2.09	49.4915	40733.8	17156.5	57890.3
15	218 MARS INC.	74187.2	2.04	51.5292	35149.8	37731.3	72881.1
16	907 WRIGLEY WILLIAM JR. CO.	66134.1	1.82	53.3457	47515.3	16854.9	64370.2
17	111 HEINZ H J CO.	58413.4	1.60	54.9501	37567.9	15200.0	52767.9
18	51 NORTON SIMON INC	57279.2	1.57	56.5234	26182.3	9059.5	35281.8
19	74 PILLSBURY CO	51805.0	1.42	57.9453	34742.9	12226.7	46969.6
20	23 LEVER BROTHERS CO.	47278.7	1.30	59.2448	20773.6	14654.3	35628.1
21	7 CPC INTERNATIONAL INC.	46259.3	1.27	60.5154	23468.5	13541.5	37010.0
22	30 QUAKER OATS CO	43363.6	1.19	61.7070	23805.0	18043.2	41848.2
23	643 HEILEMAN G. BREWING CO	41861.1	1.15	62.8568	10198.0	29161.8	39359.8
24	103 MERSHEY FOODS CORP.	41757.0	1.15	64.0037	25052.1	11359.4	36412.0
25	1045 BROWN-FUKMAN DISTILLERS CORP.	38226.7	1.05	65.0537	7167.8	3851.2	11019.0
26	906 WARNER-LAMBERT CO	35234.6	.97	66.0214	18938.3	11667.6	30605.9
27	41 AMERICAN HOME PRODUCTS CORP.	34841.2	.96	66.9734	19669.0	10096.8	29765.8
28	1057 GALLO E AND J WINERY	33552.7	.92	67.9000	26411.6	4474.7	30886.3
29	43 BEATRICE FOODS CO	33022.0	.91	68.6070	1196.8	17959.6	19156.4
30	1062 MIRAM WALKER RESOURCES LTD.	32691.7	.90	69.7049	.0	20.1	20.1
31	1033 STROH BREWERY CO.	32461.2	.89	70.5965	9403.9	20735.9	30139.8
32	92 NATIONAL DISTILLERS AND CHEMICAL CORP	31066.3	.85	71.4503	8205.6	1908.4	10114.5
33	645 INTERNATIONAL TELEPHONE AND TELEGRAPH CO	25126.4	.69	72.1405	7979.6	16946.4	24926.0
34	61 CHESBROUGH-PONDS INC.	24853.0	.68	72.8231	15831.9	2091.1	17923.0
35	158 ESMARK INC	24080.3	.66	73.4845	18061.7	5010.8	23092.5
36	966 DR PEPPER CO	23445.5	.64	74.1285	10991.3	10988.1	21989.4
37	100 CONSOLIDATED FOODS CORP.	22466.5	.62	74.7456	8042.3	12158.2	20200.5
38	6 BORDEN INC.	22147.1	.61	75.3539	6236.5	9025.0	15261.5
39	1009 COORS ADJ.PH CO.	22114.3	.61	75.9613	7069.4	14290.3	21359.7
40	1084 RAPID-AMERICAN CORP.	21676.1	.60	76.5567	.0	3827.9	3827.9
41	1059 GRAND METROPOLITAN P L C	20776.8	.57	77.1273	.0	320.4	320.4
42	838 SAFEMAY STORES INC	20730.8	.57	77.6968	52.0	19153.6	19205.6
43	244 AMERICAN DAIRY ASSN.	20404.5	.56	78.2572	3686.5	13713.5	17400.0
44	8 CABBURY SCHWEPPE'S P L C	19960.3	.55	78.8055	9982.8	7138.1	17120.9
45	768 AMERICAN STORES CO.	18759.7	.52	79.3207	.0	18626.6	18626.6
46	368 FLORIDA STATE OF	17756.7	.49	79.8064	17081.1	317.9	17399.0
47	975 ROYAL CROWN COS. INC.	16420.3	.45	80.2544	.0	16023.2	16023.2
48	812 KROGER CO.	16091.9	.44	80.7014	.0	15962.1	15962.1
49	77 UNITED BISCUITS HOLDINGS P L C	15667.8	.43	81.1318	10528.2	4956.4	15484.6
50	168 RALSTON PURINA CO.	15072.7	.41	81.5458	10952.4	2715.9	13668.3
51	1063 HOUSE OF PANFI	14920.8	.41	81.9556	11738.9	2714.8	14453.7
52	864 WINN-DIXIE STORES INC	13789.5	.38	82.3343	.0	13789.5	13789.5
53	308 SOUTHLAND CO.	13104.5	.36	82.6943	7794.7	4521.3	12316.0
54	1034 VAN MUNCHING AND CO. INC.	13043.4	.36	83.0539	3310.4	6055.9	9366.3
55	814 LUCKY STORES INC.	12674.2	.35	83.4020	.0	12638.4	12638.4
56	212 MORMEL GEORGE A AND CO	12592.7	.35	83.7479	1814.9	2586.8	4401.7
57	66 IC INDUSTRIES	11141.3	.31	84.0539	2865.2	6667.8	9533.0
58	47 LAND O LAKES INC.	10250.5	.28	84.3355	1676.4	5921.9	7598.3
59	186 FOREMOST-HKSSON INC.	10209.8	.28	84.6159	.0	5712.6	5712.6
60	741 NATIONAL FEDERATION OF COFFEE GRUERS OF	9380.1	.26	84.8735	6762.7	897.8	7660.5
61	1085 RENFIELD IMPORTERS LTD.	8879.9	.24	85.1174	725.5	1261.3	1986.8
62	1104 BACARDI CORP	8753.5	.24	85.3579	.0	.0	.0
63	367 CASTLE AND COOKE INC.	8660.7	.24	85.5942	2029.3	3931.4	5960.7
64	429 UNITED BRANDS CO.	7864.9	.22	85.8103	4081.7	2780.9	6862.6
65	1075 MOET-HENNESSY	7841.1	.22	86.0256	.0	2857.9	2857.9
66	1113 GLENMORE DISTILLERIES CO	7570.3	.21	86.2336	.0	.0	.0
67	129 GREYHOUND CORP.	7530.5	.21	86.4404	2636.3	1943.1	4579.4
68	189 GOLDEN GRAIN MACARONI CO	6950.9	.19	86.6313	1807.5	4076.4	5883.9
69	1129 PUERTO RICO COMMONWEALTH OF	6729.5	.18	86.6162	.0	.0	.0
70	81 CLORUX CO.	6702.8	.18	87.0003	3684.7	732.0	4416.7
71	811 JEWEL COS. INC.	6456.1	.18	87.1776	.0	6378.3	6378.3
72	127 CARNATION CO.	6336.7	.17	87.3517	2659.7	2312.9	4972.6
73	177 KEVLON INC.	6241.3	.17	87.5231	5124.7	116.6	6241.3
74	970 GENERAL CINEMA CORP.	6201.8	.17	87.6939	135.6	5940.0	6125.6
75	97 RECKITT AND COLMAN P L C	6166.5	.17	87.8629	3082.2	1726.4	4808.6

APPENDIX E (continued)

Media Advertising Expenditures of Top 150
Advertisers of Food Products, 1982

CO NUM	CO NAME	SIX MEDIA TOTAL (\$000)	PER CENT	CJM PERCENT	NET TV	SPOT TV	TOTAL TV
76	259 CALIFORNIA OREGON WASHINGTON DAIRYMAN AS	6120.0	.17	88.0310	1425.0	4695.0	6120.0
77	1082 PENNOJ RICARD S A	5939.6	.16	88.1941	.0	412.1	412.1
78	421 STOKELY-VAN CAMP INC.	5932.3	.16	88.3571	.0	2737.9	2737.9
79	1069 KOBRAND COOKP.	5875.9	.16	88.5184	.0	42.4	42.4
80	757 OCEAN SPRAY CRANBERRIES INC	5651.7	.16	88.6737	1724.2	2833.5	4557.7
81	39 WELCH FOODS INC	5544.6	.15	88.6260	3698.4	1602.3	5300.7
82	898 RAGJLD INC	5479.2	.15	88.9765	4797.9	126.0	4923.9
83	553 NATIONAL LIVE STOCK AND MEAT BOARD	5454.9	.15	89.1263	2434.0	1717.1	4151.1
84	1013 GENESEE BREWING CO INC	5367.7	.15	89.2737	.0	4909.5	4909.5
85	250 BSN-GERVAIS DANONE	5115.9	.14	89.4142	559.8	4113.9	4673.7
86	833 PUBLIX SUPER MARKETS INC	5092.5	.14	89.5541	.0	5091.2	5091.2
87	10 COPEKSUCAR	5047.5	.14	89.6927	.0	5040.7	5040.7
88	232 TYSJN FOODS INC	5037.0	.14	89.8311	1740.9	2837.7	4578.6
89	850 SUPERMARKETS INVESTMENT CO.	4500.5	.12	89.9547	.0	4493.3	4493.3
90	422 SUN-DIAMOND GROWERS OF CALIFORNIA	4303.9	.12	90.0746	.0	1276.1	1276.1
91	842 SHOP RITE FOODS INC.	4310.3	.12	90.1930	.0	4310.3	4310.3
92	700 AMERICAN BRANDS INC.	4230.5	.12	90.3092	.0	1054.1	1054.1
93	388 CALIFORNIA RAISIN ADVISORY BOARD	4201.4	.12	90.4246	3507.5	6.6	3514.1
94	36 SMUCKER J M CO.	4177.3	.11	90.5393	1060.7	717.3	1778.0
95	803 GREAT ATLANTIC AND PACIFIC TEA CO. INC.	4076.8	.11	90.6513	.0	4071.6	4071.6
96	42 ANDERSON CLAYTON & COMPANY	4071.0	.11	90.7631	2726.4	790.4	3516.8
97	40 ALBERTO-CULVER COMPANY	4008.1	.11	90.8732	2485.3	1226.0	3711.3
98	90 MCCORMICK AND CO INC	3989.2	.11	90.9827	1304.1	2505.0	3809.1
99	63 FEDERAL CO.	3942.9	.11	91.0910	.0	3896.9	3896.9
100	1076 MONSIEUR HENRI WINES LTD	3883.0	.11	91.1977	.0	686.0	686.0
101	565 PERDUE FARMS INC	3859.1	.11	91.3037	.0	3859.1	3859.1
102	169 ROMAN MEAL CO	3851.9	.11	91.4095	3071.6	754.3	3825.9
103	851 SUPERMARKETS GENERAL CORP.	3621.4	.10	91.5089	.0	3621.4	3621.4
104	211 GENERAL MIST CORP	3613.2	.10	91.6082	.0	3613.2	3613.2
105	114 IMPERIAL SKEUP P L C	3510.0	.10	91.7046	2812.2	491.3	3303.5
106	496 EVANS BDB FARMS INC	3475.8	.10	91.6031	.0	3381.7	3381.7
107	375 SUNKIST GROWERS INC.	3470.7	.10	91.8954	.0	3185.5	3185.5
108	807 HOUSEHOLD INTERNATIONAL INC	3456.2	.09	91.9903	.0	3253.8	3253.8
109	646 INTERSTATE BAKERIES CORP	3431.5	.09	92.0846	374.7	2855.2	3229.9
110	146 CHURCH AND DWIGHT CO. INC.	3200.9	.09	92.1725	2713.1	193.6	2906.7
111	99 CALIFORNIA ALMOND GROWERS EXCHANGE	3135.5	.09	92.2586	591.7	.0	591.7
112	791 FISHER FOODS INC	3124.9	.09	92.3444	.0	3124.9	3124.9
113	1024 MOLSON CDS LTD	3095.5	.09	92.4235	.0	834.4	834.4
114	94 OGDEN CORP	3028.5	.08	92.5126	821.3	2115.1	2936.4
115	759 TREE TOP INC	3006.8	.08	92.5952	2204.0	3.0	2207.0
116	995 SOURCE PERRIER S A	2938.7	.08	92.6759	35.2	1790.7	1825.9
117	181 GERBER PRODUCTS CO	2804.0	.08	92.7530	.0	184.7	184.7
118	234 WEAVER VICTOR F INC	2776.5	.08	92.8292	.0	2776.5	2776.5
119	483 CONTINENTAL GRAIN CO.	2659.2	.07	92.9023	.0	253.8	253.8
120	184 ARCHER-DANIELS-MIDLAND CO.	2638.4	.07	92.9747	2314.3	324.1	2638.4
121	389 CALIFORNIA STATE OF	2610.9	.07	93.0464	.0	2537.5	2537.5
122	763 ALBERTSONS INC.	2565.8	.07	93.1169	.0	2565.8	2565.8
123	636 FLOWERS INDUSTRIES INC.	2552.9	.07	93.1870	.0	2530.7	2530.7
124	773 ATLANTIC RICHFIELD CO.	2429.2	.07	93.2538	.0	2429.2	2429.2
125	828 PANTRY PRIDE INC	2420.1	.07	93.3202	.0	2420.1	2420.1
126	433 WASHINGTON STATE OF	2413.6	.07	93.3865	168.5	1684.9	1853.4
127	758 PIERCE S S CO INC	2392.3	.07	93.4522	1747.8	585.1	2332.9
128	2 ALEXANDER AND BALDWIN INC.	2269.1	.06	93.5146	131.6	1963.3	2094.9
129	217 M J B CORP.	2200.0	.06	93.5750	273.4	1665.7	1939.1
130	237 KANE-MILLER CORP.	2189.3	.06	93.6351	1163.9	1025.4	2189.3
131	9 CONAGRA INC.	2168.0	.06	93.6952	.0	1980.8	1980.8
132	1003 BRAUEREI BECK AND CO.	2160.1	.06	93.7546	.0	2148.6	2148.6
133	1098 WINE IMPORTS OF AMERICA LTD	2124.6	.06	93.8129	.0	2124.6	2124.6
134	141 REILY WILLIAM B AND CO. INC.	2118.1	.06	93.8711	.0	2106.8	2106.8
135	133 PRINCE CO INC	2117.3	.06	93.9292	.0	2117.3	2117.3
136	647 STOP AND SHOPS CDS INC.	2053.1	.06	93.9856	.0	2053.1	2053.1
137	1073 MANISCHENWITZ B CO.	2046.2	.06	94.0419	.0	501.9	501.9
138	245 AMERICAN EGG BOARD	1968.9	.05	94.0960	846.4	174.3	1020.7
139	84 CUMBERLAND PACKING CORP.	1920.5	.05	94.1487	107.5	672.0	779.5
140	839 SALES AIDES INTERNATIONAL FOOD PROMOTION	1915.8	.05	94.2013	.0	.0	.0
141	1135 SUNTORY LTD.	1910.3	.05	94.2538	.0	.0	.0
142	101 CURTICE-BURNS INC	1900.5	.05	94.3060	.0	964.2	964.2
143	1047 BANADAIGUA WINE CO. INC.	1854.9	.05	94.3570	1406.2	448.7	1854.9
144	806 HANNAFORD BROS. CO.	1797.1	.05	94.4053	.0	1795.6	1795.6
145	443 IDAHO STATE OF	1782.5	.05	94.4553	.0	1424.7	1424.7
146	392 CALIFORNIA TREE FRUIT AGREEMENT	1719.0	.05	94.5025	.0	897.3	897.3
147	391 CALIFORNIA TABLE GRAPE COMMISSION	1714.7	.05	94.5496	.0	1714.7	1714.7
148	612 WILSON FOODS CORP	1708.8	.05	94.5965	.0	1662.3	1662.3
149	179 SANDOZ LTD.	1695.4	.05	94.6431	.0	1366.3	1366.3
150	834 PURITY SUPREME INC	1647.3	.05	94.6883	.0	1647.3	1647.3