Food Manufacturing Activities of the Largest Agricultural Cooperatives: Market Power and Strategic Behavior Implications

by

Richard T. Rogers and Bruce W. Marion

Originally published in JOURNAL OF AGRICULTURAL COOPERATION
5 J. AGRIC. COOPERATION 59 (1990)

Invited Paper

Food Manufacturing Activities of the Largest Agricultural Cooperatives: Market Power and Strategic Behavior Implications

Richard T. Rogers and Bruce W. Marion

Agricultural cooperatives are often described as vertical extensions of the farm enterprise. Their primary purpose is to provide services to their member-users on a nonprofit basis. These services range from the provision of production inputs through the entire set of assembling, processing, and marketing services required to deliver their agricultural products to final consumers. Of course, cooperatives are not the only providers of either farm inputs or marketing services. Typically they compete with noncooperative firms and in some cases with other cooperatives.

The Capper-Volstead Act granted agricultural marketing cooperatives limited exemption from the antitrust laws. As some agricultural cooperatives have evolved into large organizations that hold important market positions, there have been periodic challenges of the justification for this exemption (Jesse). The National Commission for the Review of Antitrust Laws and Procedures specifically considered the antitrust treatment of agricultural cooperatives (Mueller). The Commission concluded "that the threat of monopoly by some cooperatives is now substantial" (Vol. I, p. 259). The Commission recommended: "The antitrust treatment of (agricultural) cooperatives once formed. . .should be similar to that of ordinary business corporations. Specifically, mergers, marketing agencies in common, and similar agreements among cooperatives should be allowed only if no substantial lessening of competition results" (p. 253). The Commission, however, recognized that the unique characteristics of cooperatives warranted more lenient standards for mergers and agreements among cooperatives than among investor-owned firms.

The scrutiny placed on agricultural cooperatives during the late 1970s and early 1980s abated as antitrust enforcement waned during the Reagan terms. In late 1988,

Richard T. Rogers is assistant professor, Resource Economics Department, University of Massachusetts. Bruce W. Marion is professor, Department of Agricultural Economics, University of Wisconsin-Madison.

however, the antitrust exemption of cooperatives was again questioned by a high ranking government official. Daniel Oliver, then chairman of the Federal Trade Commission (FTC), told a press briefing: "There is no good reason to continue the antitrust exemption for agricultural cooperatives. . .what may once have spared small groups of individual farmers from harassment by overzealous antitrust law enforcers, now serves principally to immunize agricultural behemoths, who do business just like other large food companies and should be subject to the same statutory obligations as their competitors" (Food Institute Report, p. 10).

Such a statement by Mr. Oliver is particularly curious since his tenure at the FTC was probably the most permissive of modern times. It is also curious given the evidence presented in the mid 1980s by Combs and Marion and by Wills that within food manufacturing, cooperatives have little market power. Combs and Marion, drawing on census data for 1977, found the 100 largest agricultural cooperatives accounted for 5.7 percent of the value-of-shipments and 3.1 percent of the value-added in all food and tobacco manufacturing. And cooperatives held only 7.4 percent of the leading (top four) positions in food manufacturing product classes. Product classes in which cooperatives were most active were characterized by low levels of value-added, product differentiation, and sales concentration. These are characteristics of relatively competitive product classes.

In contrast, the 100 largest investor-owned food manufacturers were particularly strong in product classes with high seller concentration and product differentiation. In 1982, these companies did 92 percent of all measured media advertising of food and tobacco products. They held 66 percent of the four leading positions in the 141 census product classes and 80 percent of the leading positions in product classes with high product differentiation (Connor et al., p. 122).

Combs and Marion concluded: "In comparison to proprietary food manufacturers, cooperative ability to enhance price is infinitesimal" (p. 49).

Using Nielsen data on more narrowly defined products, Wills came to a similar conclusion. Cooperatives owned the leading brand in 15 of the 145 products in Wills' data set. Included were such brands as Land O'Lakes, Sunsweet, Sun Maid, Welch, Ocean Spray, and Treetop. However, Wills found that market share and advertising had less price-enhancing effects on cooperative brands than on proprietary brands. He concluded, "there is no evidence that cooperatives in general enhance price significantly above competition levels" (p. 190).

Finally, in a recent study of the competitive impacts of cooperatives, Petraglia and Rogers found that the presence of cooperatives had a salutatory effect on food manufacturing market performance. Using an econometric model, these researchers found the percentage of a market's shipments held by the largest cooperatives had a significant negative relationship to the market's price-cost margin, especially in concentrated markets.

Given the above conclusions, Oliver's concerns appear to have little foundation. The remainder of this paper updates the Combs-Marion analysis to 1982 to see if the conclusions concerning the lack of market power of cooperatives still holds. In addition, some observations will be made concerning the strategic behavior of agricultural marketing cooperatives. Throughout the paper, cooperatives and investor-owned firms (IOFs) will be compared.

Cooperatives Selected

The data on which the remainder of this paper is based are from a special Bureau of the Census tabulation of food manufacturing for 1982. To determine how the

Table 1.—Participation of Largest 100 Agricultural Marketing Cooperatives by Selected SIC Industry Groups, 1982

SIC	No. of Co-ops With Shipments		Percentage of Total Establishments in SIC 20 + 51	
	Top 20	Top 100	Top 20	Top 100
20 Food Manufacturing	16	68	42	39
51 Wholesale-Nondurable	19	78	58	61
514 Groceries & Related Products	11	52	19	26
5143 Dairy Products	9	33	16	18
515 Farm-product Raw Materials	12	35	39	35
5153 Grain	9	21	32	23

Source: Special tabulation by the Bureau of the Census.

largest agricultural marketing cooperatives fared in food manufacturing, the 100 largest were selected from a list of the largest 500 agricultural cooperatives supplied to the Bureau of the Census by the Agricultural Cooperative Service of the U.S. Department of Agriculture. The Bureau of the Census selected the cooperatives based on their sales in SIC 20 and 21, food and tobacco manufacturing; in SIC 514, wholesaling trade—groceries and related products (less SIC 5141, wholesaling of general line groceries); and in SIC 515, wholesale trade—farm product raw materials.[1]

Since the 100 largest cooperatives were chosen based on their sales in food and tobacco manufacturing and in parts of the wholesale trade, it is interesting to note the actual distribution between those two broad categories. When considering the combined sales of the cooperatives in only these two broad sectors, 47 percent of their sales were in food manufacturing (SIC 20) and 53 percent in wholesaling (SIC 51). Within wholesaling, farm product raw materials was more important with the top 100 cooperatives having 62 percent of their wholesale sales in raw materials (SIC 515) as opposed to 38 percent in groceries and related products (SIC 514, less 5141).

Thirty-two of these cooperatives had no shipments in SIC 20 and were included only because of their wholesaling activities. The top 100 included several cooperatives with substantial wholesale sales in either dairy or grain (table 1). Two out of three wholesaling establishments of the top 100 cooperatives were devoted to either dairy or grain. The remaining 4-digit SICs under 514 or 515 are not shown.

Importance of Cooperatives in Food Manufacturing

The 100 largest agricultural marketing cooperatives accounted for 6.9 percent of the total value-of-shipments in food and tobacco manufacturing in 1982, an increase from the 5.7 percent share held in 1977 (table 2). No cooperatives operated in tobacco manufacturing in 1982 or in 1977. The 20 largest cooperatives held most of that 6.9

Table 2.—Percentage of Total Food and Tobacco Manufacturing Value-of-Shipments and Value-Added by the 100 Largest Agricultural Cooperatives in 1982 and 1977

	Percentage of Universe Total in Food and Tobacco Manufacturing			
	Value-of-Shipment		Value-Added	
Size Class	1982	1977	1982	1977
Cooperatives:				
20 Largest	4.5	3.1	1.9	1.3
21–50 Largest	1.3	1.4	1.1	0.9
51–100 Largest	1.1	1.1	0.7	0.9
100 Largest	6.9	5.7	3.6	3.1
Investor-Owned Firms:				
20 Largest	23.6	20.2	34.0	27.4
21–50 Largest	16.8	14.2	16.0	15.9
100 Largest*	52.4	48.8	61.2	55.0

Source: Special tabulation by the Bureau of the Census.
*Five cooperatives are included in the 100 largest in 1982.

percent share, with a 4.5 percent share of value-of-shipments in 1982, up from 3.1 percent in 1977. The remaining 80 cooperatives experienced a slight decrease in combined share since 1977.

Based on value-added, the 100 largest cooperatives held only a 3.6 percent share in 1982, up from 3.1 percent in 1977. These figures reflect the fact that cooperatives tend to operate in first-stage food manufacturing industries with lower than average value-added to value-of-shipments ratios. The ratio of value-added to value-of-shipments for the 47 food industries that make up food manufacturing was 31.5 percent in 1982. For the 100 cooperatives, the ratio of value-added to value-of-shipments for their food manufacturing activities was only 17.2 percent, showing a clear tendency for the cooperatives to be in low value-added industries.

As might be expected, leading cooperatives are much smaller than leading IOFs in food and tobacco manufacturing. Of the 68 cooperatives with some food manufacturing sales, none ranked among the largest 50 food and tobacco manufacturers ranked by value-added. Five cooperatives ranked among the 51-100 largest food and tobacco manufacturers in 1982, up from 2 in 1977 (table 3). Cooperatives were more represented in the 101 to 200 largest food and tobacco manufacturers with 17 in 1982. In total, only 39 of the top 100 cooperatives ranked among the largest 500 food and tobacco manufacturers in 1982.

Since cooperatives operate in the lower value-added food industries, they rank higher when sales rather than value-added are used for the basis of the rankings. A list of the 50 largest food manufacturers in 1982 (Connor et al., p. 161), ranked by food sales (excluding tobacco), had no cooperatives ranked among the 20 largest food manufacturers in 1982. However, four cooperatives ranked in the 21-50 largest group, whereas no cooperatives were among the 50 largest food and tobacco manufacturers when value-added was the basis for the ranking in table 3. These four coopera-

Table 3.—Ranking of the 100 Largest Agricultural Marketing Cooperatives among the 500 Largest Food and Tobacco Manufacturing Companies, 1977 and 1982

Rank of 500 Companies[a]	100 Cooperative Rankings[b]							
	1–20		21–50		51–100		1–100	
	1982	1977	1982	1977	1982	1977	1982	1977
50 Largest	0	0	0	0	0	0	0	0
51–100 Largest	4	2	1	0	0	0	5	2
101–200 Largest	8	7	8	5	1	3	17	15
200–500 Largest	1	3	5	8	11	14	17	25
1–500 Largest	13	12	14	13	12	17	39	42
Not Among 500 Largest	7	8	16	17	38	33	61	58

Source: Special tabulation by the Bureau of the Census.
[a]The 500 companies are ranked by their value-added in SIC 20 and 21.
[b]Cooperatives are ranked by their value-of-sales in SIC 20, 21, 514 (less 5141), and 515 and in 0722 and 0734 in 1977 but not in the 1982 ranking. Ranking of the 100 cooperatives within the 500 largest food manufacturing companies was done using each cooperative's value-added in SIC 20 and 21.

tives were dairy cooperatives with most of their sales in the bulk handling of fluid milk rather than in the more value-added dairy industries.

The largest 20 investor-owned food and tobacco manufacturers have continued to expand their share of all value-added in SIC 20 (figure 1). Indeed, the increase in value-added share by the top 100 and 500 food and tobacco manufacturers from 1967 to 1982 is totally accounted for by the growth of the top 20. The value-added share of the top 20 food and tobacco manufacturers jumped sharply from 1977 to 1982, and again from 1982 to 1988, reflecting the many mergers involving large food manufacturers during this period.

Concern about the economic power of certain companies may be based on their overall size, often referred to as conglomerate power, or it may be based on their power within certain markets. Market power, the latter, is normally judged by the market share of individual companies, the concentration of sales among the leading firms, the level of product differentiation, and barriers to entry and exit.

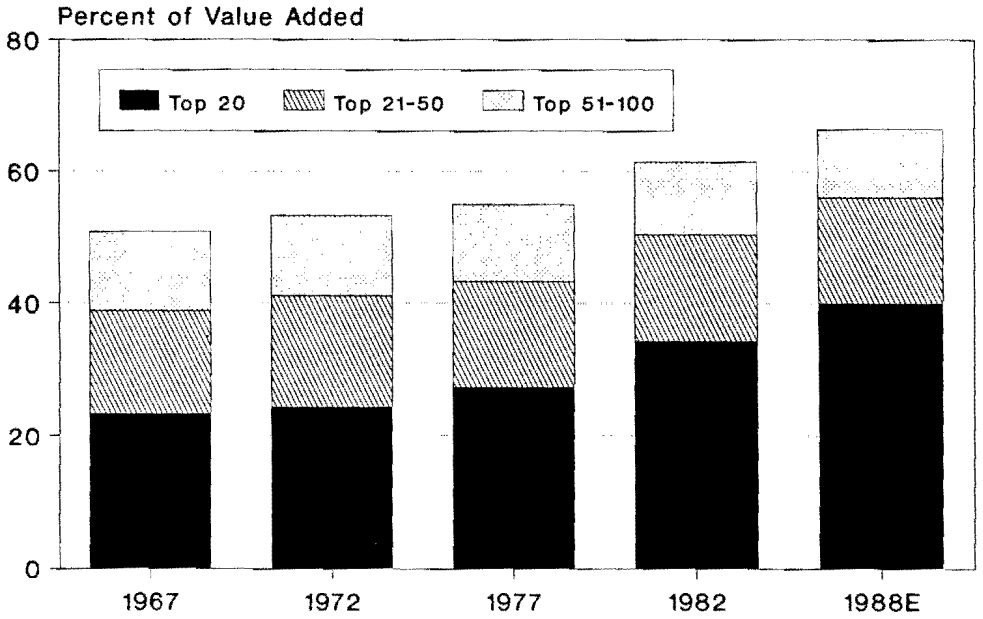
The foregoing suggests that the overall size of marketing cooperatives is on the puny side when compared with the top 20, 50, and 100 IOFs in food and tobacco manufacturing. These comparisons did not include sales outside of SIC 20 and 21. Thus, substantial sales by cooperatives in wholesaling were ignored. However, judged by their size in food and tobacco manufacturing, cooperatives hardly appear to be the "behemoths" referred to by Chairman Oliver. We turn our attention now to evidence of market power in food and tobacco manufacturing by cooperatives and IOFs, examining particularly product differentiation, market concentration, and market shares.

Where Is There Market Power in Food and Tobacco Manufacturing and Do Cooperatives Share in It?

Previous research of competition in food and tobacco manufacturing has found a pervasive linkage between product differentiation and market power (Connor et al.).

Figure 1.—Aggregrate Concentration among the Largest 100 Food and Tobacco Manufacturing Companies

Selected Years 1967-88



Source: Special tabulations by the Bureau of Census, 1988 estimated from trade sources.

Absent product differentiation, entry barriers into most food processing industries are modest. Market power derived from a large market share and/or oligopolistic interdependence alone tends to be limited. When these are combined, however, with highly differentiated products, market power premiums can soar.

When 45 national industries in food and tobacco manufacturing were separated into groups by the degree of product differentiation (based on industry advertising-to-sales ratios), the percentage of value-added controlled by cooperatives declined as product differentiation increased (table 4). The top 100 cooperatives held 8.0 percent of the value-added in the no product differentiation group, which contained mainly producer goods industries, a 4.9 percent share in the low product differentiation group, a 6.2 percent share in the medium product differentiation group, and only a 0.3 percent share in the highly differentiated group. The opposite was true for the top 20 food and tobacco companies (none of which were cooperatives); the top 20 had only a 5.3 percent share of the no product differentiation group but a 46.8 percent share of the highly differentiated group's valued-added. Clearly cooperatives were not active in industries characterized by heavy promotional efforts in direct contrast to the large investor-owned firms that dominated the highly differentiated group.

Table 4.—The Largest 100 Agricultural Marketing Cooperatives' Activity in National Food and Tobacco Industries by the Degree of Product Differentiation, 1982

Degree of Product Differentiation	Percentage of Value-Added		
	Top 20 Investor-Owned Companies	Top 20 Cooperatives	Top 100 Cooperatives
None (10)	5.3	3.7	8.0
Low (6)	3.8	4.2	4.9
Medium (13)	23.8	2.8	6.2
High (16)	46.8	0.2	0.3

Source: Special tabulation by the Bureau of the Census.
Note: The number in parenthesis is the number of national industries that are classified in this product differentiation group. The six local industries not included here are: 2024, 2026, 2048, 2051, 2086, 2097. None of the 100 cooperatives were in 2051 or 2097.

Although the top 100 cooperatives held 6.9 percent of all food and tobacco manufacturing shipments, that overall share conceals substantial differences in cooperatives' combined market share in more narrowly defined food industry groups (table 5). Since the Bureau of the Census required that at least six cooperatives participate in an industry group or industry before they would release shipments data, more detailed data were not provided.

The market share held by cooperatives in 1982 in these more narrowly defined food groups varied from zero in the bakery products industry group to 53.2 percent in the butter industry. Four-digit industries in which cooperatives accounted for at least 10 percent of the value-of-shipments in 1982 included butter, cheese, condensed milk, fluid milk, canned fruits and vegetables, prepared feeds, and soybean oil meal products (table 5).

Dairy was clearly the dominant product these cooperatives processed. The 68 cooperatives with some food manufacturing shipments in 1982 had $20.6 billion in food shipments in that year. Nearly half (47%) of these shipments were dairy products in 1982, up from 39 percent in 1977.

Cooperatives rarely held a sizable market share in any of the national food and tobacco industries. No cooperatives held a market share of 30 percent or higher in any of the 45 national industries in either 1977 or 1982. In contrast, 11 of the top 20 investor-owned firms held a market share of 30 percent or higher in at least one of these 45 industries. Only 4 of the top 100 cooperatives held market shares of 15 percent or more in 1982, whereas 34 of the top 100 IOFs held such market shares.

Table 6 compares the percentage of company shipments derived from various market shares held in national food and tobacco product classes. Whereas the largest cooperatives obtain virtually no sales from market shares of 20 percent or more, the 20 largest IOFs obtain over half their sales from market shares of 20 percent or greater. The largest 20 IOFs are in a class by themselves even when compared with the 100 largest IOFs.

Table 5.—The 100 Largest Agricultural Cooperatives' Activity in Food and Tobacco Manufacturing at the 2-Digit, 3-Digit, and Selected 4-Digit SIC Levels for 1977 and 1982

SIC	Name	No. of Co-ops[a]		Percentage of Universe Total		
				Value-of-Shipments		Change
		1982	1977	1982	1977	1982–77
				percent		*percentage point change*
20	Food & Kindred Products	68	71	7.2	6.0	1.2
201	Meat Products	6	9	4.2	2.3	2.0
202	Dairy Products	32	28	24.4	17.7	6.7
2021	Butter	22	19	53.2	43.1	10.1
2022	Cheese, Natural & Processed	19	18	24.0	16.7	7.4
2023	Condensed & Evaporated Milk	31	25	34.0	27.3	6.7
2024	Ice Cream & Ices	16	18	7.7	5.2	2.5
2026	Fluid Milk	29	27	21.3	15.6	5.7
203	Preserved Fruits & Vegetables	27	32	8.9	8.3	0.6
2033	Canned Fruits & Vegetables	23	24	17.0	13.7	3.3
2037	Frozen Fruits & Vegetables	9	10	7.7	10.4	−2.7
204	Grain Mill Products	23	25	6.4	7.1	−0.7
2048	Prepared Feeds	18	18	10.7	12.0	−1.3
205	Bakery Products	0	0	0.0	0.0	0.0
206	Sugar & Confectionary Products	7	6	6.7	5.9	0.8
207	Fats & Oils	12	16	9.6	12.0	−2.4
2075	Soybean Oil Meal Products	8	8	15.2	N/A	N/A
208	Beverages	27	23	1.4	0.9	0.5
2086	Bottled & Canned Soft Drinks	21	21	1.9	N/A	N/A
209	Miscellaneous Foods & Kindred Products	18	8	0.4	0.4	0.0
2099	Prepared Foods, N.E.C.	17	8	0.8	N/A	N/A
21	Tobacco Products	0	0	0.0	0.0	0.0

Source: Special tabulation by the Bureau of the Census.
Cooperatives are ranked by their value of sales in SIC 20, 21, 514 (except 5141), and 515. Five-digit product class value-of-shipments data have been used in calculating percentages.
[a]Number of cooperatives from the top 100 sample processing some output in this industry group or industry.
N/A = Not available

Table 6.—Share of Company Shipments in Various Market Share Categories, by Company Size Groups, National Product Classes, 1982

	Market Share[a]		
	10% or More	20% or More	30% or More
Cooperatives[b]			
20 Largest	19.5	0.7[e]	0.0
100 Largest	19.6	1.9	0.0
Investor-Owned Firms[c]			
20 Largest	75.1	56.6	40.6
100 Largest[d]	60.4	38.3	23.0

[e] = estimated.
[a]Percentage of the size group total value-of-shipments in 136 national food and tobacco manufacturing product classes with the given market share.
[b]Ranked by sales in SIC 20, 21, plus SIC 51 . . .
[c]Ranked by value-added in SIC 20 and 21.
[d]Five cooperatives, ranked in the 51–100 largest, are among the 100 largest.

Leading Positions Held by Cooperatives

For the first time, the 1982 special tabulation provided data on the leading positions held by cooperatives at the 4-digit industry level and the 5-digit product class level. In 20 of the 51 food and tobacco industries (45 national and 6 local industries), cooperatives held at least one of the top eight positions. They held three of the top four positions in butter (SIC 2021) and two of the top four positions in cheese (SIC 2022), canned fruits and vegetables (SIC 2033), dehydrated fruits and vegetables (SIC 2034), and milled rice (SIC 2044).

Table 7 breaks the 51 four-digit industries into five value-added to value-of-shipment (VA/VS) quintiles. The largest 100 cooperatives held most of their leading positions in the first quintile—that is the one with the lowest VA/VS. The 11 industries in this quintile also had low price-cost margins and very low advertising to sales.

In contrast, the cooperatives had no leading positions in the quintile with the highest ratio of value-added to value-of-shipments. The 10 industries in that quintile had very high price-cost margins, high four-firm concentration ratios, and high advertising intensity. Thus, cooperative leading positions tended to be inversely related to those characteristics associated with market power.

The Bureau of the Census defines 161 product classes in food and tobacco manufacturing, with 136 classified as national product classes and 25 as local product classes by the authors based on the average distance the product was shipped (see Connor et al.). Cooperatives held a similar share of the leading positions in the local product classes as they held in the national product classes. The top 100 cooperatives held 5.1 (7.2) percent of the number 1 (top 4) positions in the national product classes and 4.0 (11.0) percent of the number 1 (top 4) positions in the local product classes (table 8). In both the national and local product classes, the cooperatives held their largest percentage of leading positions in the undifferentiated product classes.

Table 7.—Leading Positions Held by 100 Largest Agricultural Marketing Cooperatives in Food and Tobacco Manufacturing Industries, by Value-Added to Value-of-Shipments Quintiles, 1982

VA/VS Quintile	VA/VS	No. of SICs	No. of Leading Positions Held 1–4	1–8	VS	PCM	CR4	TAS
1	15.6	11	10	19	869.7	10.9	44.5	0.2
2	25.6	10	5	8	543.0	17.6	35.7	0.5
3	36.4	10	2	3	598.7	27.5	47.6	2.2
4	46.1	10	2	4	419.1	34.4	46.2	3.2
5	61.3	10	0	0	447.7	46.8	64.6	3.9
Total		51	19	34				

where: VS : Value-of-shipments ($ million).
VA/VS : Ratio of value-added to value-of-shipments in percent.
PCM : Price-cost margin in percent.
CR4 : Four-firm concentration ratio in percent.
TAS : Seven media advertising-to-sales ratio in percent.

Source: Census of Manufacturers and special tabulation by the Bureau of the Census.

Investor-owned companies displayed the opposite pattern, holding a greater share of the leading positions in the most differentiated category of product classes. The top 20 IOFs held nearly 60 percent of the number 1 positions in the 42 highly differentiated product classes, whereas the top 20 cooperatives never held a number one spot in any of these product classes. For all 161 product classes, the top 100 IOFs held 77 percent of the number one positions compared with 5 percent for the largest 100 cooperatives.

In table 9, key market characteristics are given for product classes in which cooperatives held varying numbers of the top eight positions. The 100 largest cooperatives held three or more of the top eight positions in only nine product classes. Cooperatives held the number one position in seven product classes and the number two position in 13 product classes. Out of 136 national product classes, this hardly strikes us as a position of dominance. What are the product classes where cooperatives ranked number 1 in 1982? Butter, dry milk, concentrated milk, ice cream mix, bulk milk, milled rice, and fruit drinks—hardly a group known for its market power. In table 9, we once again find cooperative leading positions tend to be predominantly in product classes with low price-cost margins, low CR4, and low advertising to sales. In fact, cooperatives held only one number one position out of the 84 national product classes with a CR4 of 50 percent or more, whereas they held six number one positions in the 56 national product classes with CR4 less than 50 percent.

The preceding discussion of the three primary market characteristics—market size, concentration, and product differentiation—can be jointly related to cooperative participation by a simple probit model that predicts in which product classes cooperatives participated. The model provides a nice summary of the combined influences of the key structural variables associated with cooperative participation. The probit model had the following form:

Table 8.—Positions Held by the Largest 100 Agricultural Cooperatives in 161 National and Local Product Classes, by Degree of Product Differentiation, 1982

PD[a]	No. of SICs	Positions 1	1–4	1–8
		Percent		
		National Product Classes		
0 None	34	8.8	11.0	9.2
1 Low	33	6.1	7.6	8.3
2 Moderate	29	3.4	11.2	12.1
3 High	40	2.5	0.6	1.9
Total	136	5.1	7.2	7.4
		Local Product Classes		
0 None	11	9.1	15.9	15.9
1 Low	7	0.0	3.6	3.6
2 Moderate	5	0.0	10.0	5.0
3 High	2	0.0	11.0	9.5
Total	25	4.0	11.0	9.5

[a]PD is the extent of product differentiation in the product class, based on advertising expenditures and advertising-to-sales ratios.

Co-ops	=	f (lnVOS, CR4, TAS, NL) where:
Co-ops	=	1 if at least one of the top 100 cooperatives participated and 0 if none participated
lnVOS	=	the natural log of the product classes value-of-shipments
CR4	=	the four-firm concentration ratio
TAS	=	the seven major media advertising-to-shipments ratio
NL	=	0 if the product class is a national product class and 1 if the product class is a local product class

Cooperatives participated in 102 of the food and tobacco product classes and did not participate in the other 59 product classes. The model correctly predicted cooperative participation in 70 percent of the 161 product classes, with cooperatives more likely to participate in product classes where advertising intensity and concentration were lower and in the larger product classes. The national-local dummy variable was not significant but does serve as a correction factor for CR4 being measured on a national basis.

In sum, cooperatives have a respectable presence in parts of the food manufacturing sector, but have nowhere near the domination held by their investor-owned counterparts. Cooperatives typically had their strongest positions in those food manufacturing markets that are more commodity oriented, less differentiated, with low value-added to sales ratios, and low margins. Cooperatives seldom compete directly with the 20 largest food and tobacco companies, which are all investor-owned companies and have dominant positions in the

Table 9.—Leading Positions Held by Largest 100 Cooperatives in 136 National Food and Tobacco Manufacturing Product Classes, 1982

No. of Top 8 Positions	No. of SICs	No. of 1–8 Positions	VS	PCM	CR4	TAS
			averages			
3 or more	9	35	2113.4	.14	37.1	0.5
2	7	14	1239.5	.24	52.1	1.3
1	32	32	2092.7	.19	53.4	0.6
0 w/ co-ops present	37		1563.0	.29	54.8	2.0
0 w/no co-ops present	51		1095.5	.29	67.6	2.7
Total	136	81	1532.1	.25	58.0	1.8

where: VS : Value-of-shipments ($ millions).
PCM : Price-cost margin in percent.
CR4 : Four-firm concentration ratio in percent.
TAS : Seven media advertising-to-sales ratio in percent.
Source: Census of Manufacturers and special tabulation by the Bureau of the Census.

more concentrated, more processed, more differentiated, higher margin markets.

We are not arguing that market power by cooperatives—to the extent it exists—should be ignored. Market power, whether in the hands of cooperative or noncooperative organizations, should be of concern to those vested with preserving and protecting competition in the U.S. economy. However, if public policy attention is ordered by the potential negative consequences for American consumers, the evidence presented in this report indicates that agricultural cooperatives will be far down the list.

Strategic Behavior of Cooperatives

What does the foregoing tell us about the strategic behavior of cooperatives? In 1982 as in 1977, cooperatives were largely located in food manufacturing industries that appear to have little market power. Why is this the case? Are cooperative boards and managers disinterested in the higher prices and profits that come with market power? Or, are cooperatives unskilled in differentiating products and in competing with the leading investor-owned firms that hold strong positions in differentiated product industries? Or, are other factors driving the selection of industries by cooperatives?

We have puzzled over these and other questions about the strategic behavior of cooperatives. There are several points that may help explain the absence of cooperatives from market power positions.[2]

1. If cooperatives are a vertical extension of farmer-members' asset base, the greatest amount of activity will be closest to the integrator—in this case, the farmer. From this standpoint, it is logical that cooperatives are most heavily involved in first-stage marketing and food processing activities.

These are the businesses to whom farmers sell their products. IOFs, in contrast, may start out as a cookie manufacturer, flour miller, or grain elevator and may vertically integrate backwards toward the farmer or forward toward the consumer. IOFs are not attached to one stage in the food system, as is true with cooperatives.

2. The influence of governing boards should not be overlooked (Caswell). Most cooperative boards are very homogeneous since they are made up of all farmers. This also means these boards are very user oriented and tend to be product driven. IOF boards are not user oriented, have a very heterogenous composition, and tend to be primarily profit driven.
3. Given the above two characteristics, it is not surprising that cooperatives are most heavily involved in the first stages of processing of selected commodities that their members produce. In this way, they assure their members of a market for their farm output. In some cases cooperatives acquire food processing business specifically to protect a market for their grower-members.
4. In most commodities, the amount of processing and value-added is much greater in later processing stages than in early processing stages. It is primarily the later stage products that lend themselves to product differentiation. Given the propensity of cooperatives to integrate into the first handling and processing stages of the commodities their members produce, this places them in low value-added and low differentiation markets. In contrast, IOF brands are not tied to a particular stage and are more likely to choose industries into which to integrate on the basis of potential profits.
5. Past research has identified the structural characteristics associated with market power. However, for firms that do not have market power, it may be difficult to obtain.

Cooperatives often find themselves undercapitalized. If successful product differentiation requires substantial investments in R&D and advertising, many cooperatives may not have the resources.

In addition, positions of market power in U.S. food and tobacco manufacturing are currently held mainly by large IOFs. Other firms (including cooperatives) may covet such positions but may have neither the resources nor the endurance to dethrone the market leaders. Challenging the likes of Phillip Morris, RJR Nabisco, General Mills, Con Agra, Pepsico, Pillsbury, or Ralston Purina is for many firms like jumping from sandlot baseball to the major leagues. For example, Ralston Purina ranked 11th in advertising among food manufacturers in 1982 but still had 10 times the advertising expenditures of Land O'Lakes, the largest cooperative advertiser.

Concluding Comments

This study examined the extent to which large agricultural marketing cooperatives were involved in food and tobacco manufacturing in 1977 and 1982. Census data allowed us to identify the industries in which cooperatives were most active, the extent to which cooperatives held leading positions, and the extent to which they appeared to hold positions with market power.

Our conclusions are similar to those drawn earlier by Combs and Marion and by Wills. Within food and tobacco manufacturing, cooperatives appear to have

little market power. And when compared with the largest 20 and 100 investor-owned food and tobacco manufacturing firms, the size and market power of cooperatives is like a mosquito on an elephant's rump.

It may well be that our analysis has missed the most important positions of cooperative market power. The first handlers of farm production are sometimes not classified as food manufacturing and hence would be excluded from our analysis. In particular, grain elevators and raw milk assembly, cooling and pump-over stations are classified as wholesaling. If cooperatives derive their greatest market power from their control over the raw product, then such wholesaling markets need to be examined. Farmer first-handler markets are often relatively small geographically. In order to understand these markets, data on local and regional markets would be needed.

For cooperatives to have market power, they must be able to manage the production response of their members. Jesse et al. argued that the production response can be managed by "restricting the number of members, restricting individual member deliveries, or price discrimination involving diversion of some production out of the major market" (p. 439). Relatively few cooperatives have closed membership. However, many cooperatives do control their supply through production contracts or quotas. As a result, some price enhancement may be achieved by cooperatives. Absent further processing and product differentiation, however, we would expect any price enhancement to be modest particularly when compared with the price enhancement by large IOFs.

We find no trouble with calls to examine the competitive impact of cooperatives and to challenge cooperative mergers or agencies in common that are substantially anticompetitive as long as similar anticompetitive actions by IOFs are pursued with equal enthusiasm. We do have difficulty with those like Daniel Oliver who find few antitrust problems elsewhere in the food system yet pounce on cooperatives. We tend to agree with Willard Mueller who suggested:

> "The performance of cooperatives should be judged within the context of an economy where varying degrees of market power are the rule, not the exception, and a public policy environment in which little has or is likely to be done about existing entrenched power" (p. 252).

Notes

1. In the 1977 special tabulation, the selection of the 100 largest agricultural marketing cooperatives also included their sales in SICs 0722, crop harvesting services, and 0723, crop preparation services for market (for more information on the 1977 special tabulation of cooperatives see Combs and Marion). These two SICs were not used in the 1982 ranking, yet the difference was considered insignificant by Bureau of the Census personnel.

2. This section benefited from discussions with Michael Cook, Robert D. Partridge Professor of Cooperative Leadership, University of Missouri, and Richard Vilstrup, former professor, Department of Agricultural Economics, University of Wisconsin.

3. According to Areida and Turner, "moderate enhancement of price is always permissible. . ." without violating Section 2 of Capper-Volstead (Jesse et al., p. 442).

References

Caswell, Julie A. "The Cooperative-Corporate Interface: Interfirm Contact Through Membership on Boards of Directors." *Journal of Agricultural Cooperation* 4(1989):20–28.

Combs, Robert P., and Bruce W. Marion. "Food Manufacturing Activities of 100 Large Agricultural Marketing Cooperatives." Working paper No. 73, NC-117, Structure and Performance of the U.S. Food System, Madison, Wis., April 1984.

Connor, John M., Richard T. Rogers, Bruce W. Marion, and Willard F. Mueller. *The Food Manufacturing Industries: Structure, Strategies, Performance, and Policies.* Lexington, Mass.: Lexington Books, 1986.

Jesse, E.V., ed. *Antitrust Treatment of Agricultural Marketing Cooperatives.* NC-117 Mono. #15, University of Wisconsin, Sept. 1983.

Jesse, E.V., A.C. Johnson, Jr., B.W. Marion, and A.C. Manchester. "Interpreting and Enforcing Section 2 of the Capper-Volstead Act." *American Journal of Agricultural Economics* 64(1982):43–43.

Mueller, W.F. "The Capper-Volstead Exemption." *Report to the President and Attorney General,* Vol. II. Washington, D.C.: National Commission for the Review of Antitrust Laws and Procedures, Jan. 22, 1979.

National Commission for the Review of Antitrust Laws and Procedures. *Report to the President and the Attorney General.* Washington, D.C.: U.S. Government Printing Office, Jan. 22, 1979.

Petraglia, Lisa M., and Richard T. Rogers. "The Impact of Agricultural Marketing Cooperatives on Market Performance in U.S. Food Manufacturing Industries for 1982," NE-165 Research Monograph, University of Connecticut, forthcoming.

The Food Institute Report, American Institute of Food Distribution, Fair Lawn, N.J., p. 10, Dec. 3, 1988.

Wills, Robert L. "Evaluating Price Enhancement by Processing Cooperatives." *American Journal of Agricultural Economics* 67(1985):183–92.