The Role of Marketing Cooperatives in Increasingly Concentrated Agricultural Markets: *Reaction*

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This paper complements the preceding paper by Sexton and provides additional empirical support for many of his main points.

I concur with his paper regarding the special characteristics of agricultural products sold as inputs to food processors. Therefore, as I examine the concentration found in the processed food and tobacco industries I will not focus on processor input markets, but remind the reader that such markets are much more concentrated than the numbers seen for the processors' output markets.

The potential monopsony power held by many processors is an obvious concern to farmers seeking fair prices, and cooperatives continue to provide a possible solution, enabling farmers to extend their operations into the processing stage and alleviate the monopsony threat.

Many agricultural cooperatives have entered processing, and, as their size has grown, some people have questioned whether cooperatives pose market power concerns for consumers.

Textbook cooperative theory suggests that open-membership processing cooperatives can benefit both farmers and consumers by correcting any market imperfections caused by large firms exercising their market power.

Empirical evidence in food processing markets, although scarce, supports the general theory and this paper will review some of that evidence and suggest what is needed for a more complete assessment of how cooperatives perform in increasingly concentrated markets common in food and tobacco processing.

The Food and Tobacco Industries

The data sources I use in this paper typically assume a national market as the appropriate geographic scope. Although there are exceptions, this is not the major flaw it is when examining processors' input markets. A handful of food and tobacco industries are more regional than national in scope (e.g., packaged fluid milk) and a few others are better defined with an international market scope (e.g., wine). Nevertheless, as the size of regional markets continues to enlarge, and since the international activity of most industries remains a significant but not overwhelming consideration, the majority of food and tobacco industries can be fairly treated as national markets.

With regard to a market's product scope, a processors' output market is not nearly as narrow as found in the agricultural input markets (as Sexton's paper shows) because of greater substitution in consumption than production. However, the census four-digit SIC industry level is often too broadly defined even on the output side (e.g., SIC 2033, canned fruits and vegetables). Typically, the census product class (the five-digit SIC level rather than the four-digit industry level) best corresponds with

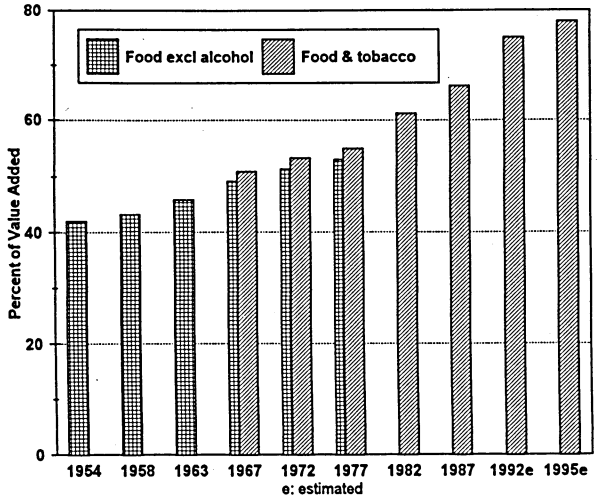
a well-defined economic product scope. Nevertheless, in many cases, the industry level gives a meaningful representation of many food and tobacco industries and several four-digit industries do not have more narrowly defined product classes (e.g., SIC 2043, breakfast cereals; or SIC 2021, butter). In only one case, refined sugar, do I find the four-digit industry level too narrowly defined in that it separates refined from cane sugar. Such a separation is critical in input markets but in output markets the two should be joined to form a refined sugar industry. In most cases, we will use the fifty-three census industries, unadjusted, to evaluate the degree of concentration in food and tobacco processing. I will also review other work in which a more appropriate market definition was used.

Increased Aggregate Concentration

As a sector, food and tobacco processing continues to consolidate, especially among the largest of the large. The number of companies in the sector has stopped its long historic decline, with about 16,000 firms in 1992, but the top 100 companies continue to gain an ever larger share of the sector's value added (Figure 1). The food and tobacco sector contains some of the world's largest corporations (e.g., Philip Morris Companies and Coca-Cola Company) and thousands of extremely small startup firms with high hopes. The 100 largest food and tobacco processors have increased their collective share in each census year since the first special tabulation revealed they held slightly more than 40 percent of the sector's value added in 1954. The latest special tabulation of census data was done in 1987, but I have used trade sources to estimate that the top 100's share has doubled to nearly 80 percent in 1995.

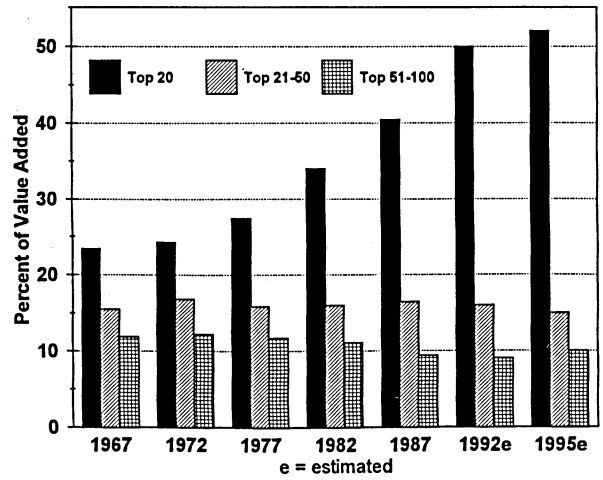
The increased share held by the top 100 is largely accounted for by the super growth of the largest twenty companies (Figure 2). Except for the top twenty food and tobacco firms, the remaining firms, large firms in their own right,

Figure 1. Aggregate Concentration Among the Largest 100 Food Manufacturing Companies Census Years 1954-1995



Source: Special tabulations of the Census of Manufactures, 1954-1987; 1992 and 1995 were estimated from trade sources.

Figure 2. Increasing Dominance by the Top 20 Among the Largest 100 Food and Tobacco Manufacturing Companies Census Years 1967-1995



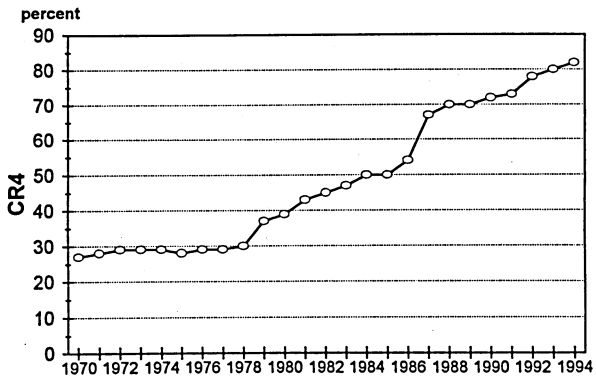
Source: Special Tabulations of the Census of Manufactures, 1954 to 1987; 1992 and 1995 were estimated from trade sources

have not held their own over time. The growth of the top twenty was not fueled by internal growth but by an aggressive merger strategy that increasingly seeks acquisitions of companies, usually other large food companies or their divisions, more related to their core business. The days of wild conglomerate mergers of unrelated businesses are over as large firms trade divisions among themselves as they shed lines in areas in which they have decided they cannot be among the leaders and acquire others that bolster their positions. The strategy is consistent with both an efficiency argument and a market power argument as these firms seek brands that are among the leaders in their category or will add to their existing market shares in product categories they have decided to support.

Such mergers drive the increased concentration seen in the sector. A conglomerate merger of a large food company and a nonfood company does not increase the sector's aggregate concentration, but a merger of two food companies even when they operate in different product lines does increase sector concentration. No company has done this more so than Philip Morris. Starting as a cigarette company, in the early 1970s it went on a well-known buying spree picking up companies such Miller Brewing, Oscar Mayer, General Foods, Kraft and parts of Nabisco. Each of its acquisitions were food companies that ranked among the top 100 food and tobacco companies.

Agricultural cooperatives have also grown to impressive sizes, but they lack the multiple product lines to rank among the overall leaders. In 1987, the last year with a special tabulation of the census data, only one cooperative ranked among the top fifty food and tobacco companies, and only four were among the top 100, based on value added. When the ranking is based on sales rather than value added, a greater number of cooperatives appear among the top 100 food and tobacco firms but still no cooperatives reach the top twenty group.

Figure 3. Concentration in U.S. Beef Slaughtering 1970 to 1994



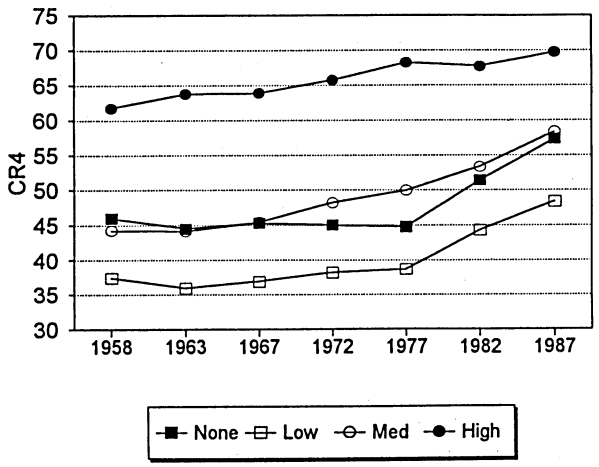
Source: Azzan and Anderson, pp. 22-23.
Note: CR4 is the combined market share of the four largest producers.

Market Concentration in Food and Tobacco Processing

The consolidation at the sector level is a structural fact that is unlikely to be reversed (Figure 2). Economists, however, are more concerned with market concentration than aggregate concentration. The connection between market share and market power is much more accepted than market power stemming from a firm's overall size. The market with the most discussed change in market concentration is the U.S. beef processing industry (Figure 3). After a long period of stable, low concentration, as measured by the four-firm concentration ratio (CR4), the industry began an unbroken and sharp increase in concentration from 1978 to the present. During this period, CR4 rose from near 30 to over 80. Such a rapid increase in concentration triggered calls for investigations by farmers who were facing fewer buyers and from con sumers worried about rising prices. The recently released U.S. Department of Agriculture (USDA) report[1] on this industry finds no significant market power abuses and substantial efficiencies from the consolidation to date. However, the concerns remain and calls for further inquiries continue.

Market concentration in other food and tobacco industries has not been so closely watched of late, but in their study, Rogers and Ma classified seventy-eight well-defined product markets (mainly five-digit product classes except where a four-digit or broader definition was more appropriate) in food and tobacco processing into four groups based on the degree of product differentiation found in the industry. The classification was done using media advertising levels and intensities to proxy product differentiation. The nineteen product markets with the highest differentiation displayed the highest average concentration in every census year from 1958 to 1987 and the level of concentration increased throughout the period (Figure 4). After twenty years of stable average concentration hovering in the mid-40s, the twenty-

Figure 4. Concentration in Food Processing by Product Differentiation, 1958 to 1987



Source: Census of Manufacturing, Concentration Reports, various years, analyzed by Richard Rogers and Yu Ma, University of Massachusetts, Amherst

five product markets in the no product differentiation group suddenly began to concentrate and from 1977 to 1987 the group's average CR4 rose by more than 10 points. Marion and Kim were the first to notice this new increased concentration in producer good markets. Companies like Archer-Daniels Midland led a merger wave of consolidation in several such food markets. Certainly, since 1977 all four groups have shown increased average market concentration.

The Census, unfortunately, has discontinued publishing concentration data at the five-digit product class level ever since the 1982 census. The Food Marketing Policy Center and the USDA purchased a special tabulation for the data in 1987, but not for the 1992 data. Thus, the information in Figure 4 cannot be updated to include the completed 1992 census. The Census did calculate, but did not print, a published report on concentration at the four-digit industry level (the 1992 data can be downloaded from the Census' World Wide Web pages). Furthermore, the Census plans to discontinue all concentration reporting starting with the 1997 census.

The 1992 concentration data for the fifty-three food and tobacco industries are given in Table 1. Overall, most industries, but not all, experienced increased concentration over the twenty-five years, with the average CR4 rising from 43.9 in 1967 to 53.3 in 1992. As concentration increases, the number of companies usually declines but not always as some industries become bi-modal with increased shares held by the largest firms and an increased number of small fringe firms. No industry displayed this pattern better than the beer industry (SIC 2082) as its CR4 more than doubled from 40 in 1967 to 90 in 1992, but the number of companies fell from 125 in 1967 to 101 in 1987, and then jumped to 160 in 1992. The rise of the small-scale micro breweries explains the increased numbers, but their size, even collectively, remains too small to affect the growing consolidation at the top.

Cooperatives have a wide variation in their involvement in these fifty-three food and tobacco industries (see last column of Table 1)—from none in wet corn milling (SIC 2046) to nearly 63 percent of butter's value-of-shipments (SIC 2021). These data are from a special tabulation of the 1987 census that measured the extent of involvement of the 100 largest

Table 1. Concentration in Food and Tobacco Processing Industries, 1967 to 1992

SIC	Name	Concentration-CR4			Change	Change	Number of Companies			% Change	% Change	VA/VS	Ag Input	Co-op VS
		1967	1987	1992	67-87	87-92	1967	1987	1992	67-87	87-92		Share	Share
20+21	All Food & Tobacco Products (a)	51	66	75	15	9	26958	15790	16151	-41.4	2.3	38.8	-	5.4
2011	Meat packing plant products	26	32	50	6	18	2529	1328	1296	-47.5	-2.4	11.6	75.9	0.1
2013	Sausages & prepared meats	15	26	25	11	-1	1294	1207	1128	-6.7	-6.5	26.9	0.0	0.1
2015	Poultry and egg processing	15	28	34	13	6	709	284	373	-59.9	31.3	27.6	68.5	5.0
2021	Butter	15	40	49	25	9	510	44	31	-91.4	-29.5	9.4	19.1	62.8
2022	Cheese, natural and processed	44	43	42	-1	-1	891	508	418	-43.0	-17.7	20.2	47.2	23.4
2023	Condensed and evaporated milk	41	45	43	4	-2	179	124	153	-30.7	23.4	40.8	36.1	27.1
2024	Ice cream and ices	33	25	24	-8	-1	713	469	411	-34.2	-12.4	32.4	7.2	6.0
2026	Fluid milk	22	21	22	-1	1	2988	652	525	-78.2	-19.5	26.4	56.4	17.2
2032	Canned specialities	69	59	69	-10	10	150	183	200	22.0	9.3	49.6	5.7	0.5
2033	Canned fruits and vegetables	22	29	27	7	-2	930	462	502	-50.3	8.7	45.8	28.0	13.7
2034	Dehyd. fruits, vegetables, soups	32	39	39	7	0	134	107	124	-20.1	15.9	51.2	15.0	14.2
2035	Pickles, sauces, salad dressings	33	43	41	10	-2	479	344	332	-28.2	-3.5	50.4	10.3	1.8
2037	Frozen fruits and vegetables (b)		31	28	2	-3		194	182	42.6	-6.2	45.2	46.2	8.4
2038	Frozen specialties (b)		43	40	5	-3		244	308	-37.1	26.2	49.9	5.9	0.2
2041	Flour & other grain mill products	30	44	56	14	12	438	237	230	-45.9	-3.0	26.8	70.1	1.0
2043	Cereal breakfast foods	88	87	85	-1	-2	30	33	42	10.0	27.3	74.7	8.7	0.0
2044	Milled rice and byproducts	45	56	50	11	-6	54	48	44	-11.1	-8.3	38.0	88.2	44.5
2045	Prep. flour mixes & refr. doughs	63	43	39	-20	-4	126	120	156	-4.8	30.0	48.7	0.0	0.0
2046	Wet corn milling	68	74	73	6	-1	32	31	28	-3.1	-9.7	43.3	53.3	0.0
2047	Dog, cat, and other pet food	46	61	58	15	-3		130	102	-11.6	-21.5	54.1	7.0	0.2
2048	Prepared feeds, n.e.c. , (b) (e)	22	20	23	-2	3		1182	1161	-25.1	-1.8	22.7	16.0	4.2
2051	Bread, cake, & related products	26	34	34	8	0	3445	1948	2180	-43.5	11.9	64.9	0.0	0.2
2052	Cookies and crackers	59	58	56	-1	-2	286	316	374	10.5	18.4	65.0	0.0	0.0
2053	Frozen bakery products		59	45		-14		103	160		55.3	51.5	0.0	0.0
2061	Sugar cane mill products	43	48	52	5	4	61	31	37	-49.2	19.4	40.7	81.3	10.7
2062	Refined cane sugar	59	87	85	28	-2	22	14	12	-36.4	-14.3	18.1	0.0	15.5
2063	Refined beet sugar	66	72	71	6	-1	15	14	13	-6.7	-7.1	33.5	75.3	29.3
2064	Candy & confectionary (c)		45	45		0			705			55.0	1.9	0.7
2066	Chocolate and cocoa products		69	75		6		173	146		-15.6	46.6	0.3 d	0.0
2067	Chewing gum (c)	86	96	96	10	0	19	8	8	-57.9	0.0	68.8	0.0	0.0
2068	Nuts & seeds		43	42		-1		79	102		29.1	39.8	35.5	25.9

SIC	Name	Concentration-CR4 1967	1987	1992	Change 67-87	Change 87-92	Number of Companies 1967	1987	1992	% Change 67-87	% Change 87-92	VA/VS	Ag Input Share	Co-op VS Share
2074	Cottonseed oil mill products	42	43	62	1	19	91	31	22	-65.9	-29.0	22.7	67.6	16.0
2075	Soybean oil mill products	55	71	71	16	0	60	47	42	-21.7	-10.6	11.1	76.0	16.8
2076	Vegetable oil mill products, n.e.c.	56	74	89	18	15	34	20	18	-41.2	-10.0	19.2	70.8	4.3
2077	Animal and marine fats and oils	28	35	37	7	2	477	194	159	-59.3	-18.0	42.7	0.0	1.5
2079	Shortening and cooking oils	43	45	35	2	-10	63	67	72	6.3	7.5	30.4	0.0	4.3
2082	Malt beverages	40	87	90	47	3	125	101	160	-19.2	58.4	53.5	1.9	0.0
2083	Malt and malt byproducts	39	64	65	25	1	32	15	16	-53.1	6.7	28.9	85.4	0.0
2084	Wines, brandy, and brandy spirits	48	37	54	-11	17	175	469	514	168.0	9.6	43.0	27.0	2.5
2085	Distilled liquor, except brandy	54	53	62	-1	9	70	48	43	-31.4	-10.4	59.5	2.0	0.1
2086	Bottled and canned soft drinks	13	30	37	17	7	3057	846	637	-72.3	-24.7	38.5	0.0	4.1
2087	Flavoring extracts & syrups n.e.c.	67	65	69	-2	4	401	245	264	-38.9	7.8	70.6	0.0	0.3
2091	Canned & cured seafood inc soup	44	26	29	-18	3	268	153	144	-42.9	-5.9	36.9	0.0 d	0.0
2092	Fresh or frozen packaged fish	26	18	19	-8	1		579	600		3.6	26.8	0.0 d	0.0
2095	Roasted coffee	53	66	66	13	0	206	110	134	-46.6	21.8	40.5	0.0 d	0.6
2096	Potato chips and similar products	41	62	70	21	8		277	333		20.2	65.5	19.4	0.0
2097	Manufactured ice	33	19	24	-14	5	688	503	513	-26.9	2.0	70.0	0.0	0.0
2098	Macaroni and spaghetti	34	73	78	39	5	190	196	182	3.2	-7.1	58.6	0.0	0.0
2099	Food preparations, n.e.c.	23	26	22	3	-4	1824	1510	1644	-17.2	8.9	52.4	8.3	0.6
2111	Cigarettes	81	92	93	11	1	8	9	8	12.5	-11.1	74.7	2.3	0.0
2121	Cigars	59	73	74	14	1	126	16	25	-87.3	56.3	55.5	4.7	0.0
2131	Chewing, smoking tobacco, snuff	51	85	87	34	2	41	23	23	-43.9	0.0	71.1	4.2	0.0
2141	Tobacco stemming and redrying	63	66	72	3	6	54	62	32	14.8	-48.4	19.0	49.5	0.0
	means for SIC 20-21	43.9	51.1	53.3	7.5	2.1				-25.5	3.0	42.8	24.1	6.9

Note: CR4s are from 4-digit industry data, where available, else 4 digit product class data from Rogers.

(a): For SIC 20+21 the concentration data are the percent of the sector' s value-added held by the top 100 food and tobacco companies

(b): The changes are from 1972, not 1967

(c): In 1992, SIC 2067, Chewing Gum, was combined with SIC 2064. The 1992 data for SIC 2067 are estimated by Rogers.

(e): 1967 CR4 is estimated.

(d): Cocoa, coffee, and fish inputs were ignored

Where:VA/VS is the ratio of value-added to the value-of-shipments, percent, 1987 data.

Ag Input share is the percentage of total cost of materials accounted for by agricultural inputs, 1987 data.

Co-op VS Share is the 1987 estimated percent of value-of-shipments accounted for by the 100 largest agricultural marketing cooperatives.

Source: Census of Manufacturing, prepared by Richard T. Rogers, Department of Resource Economics, UMass, Amherst, MA 01003.

agricultural marketing cooperatives in food and tobacco processing. These tabulations were done for 1977, 1982 and 1987, but not for 1992 (for more information on these tabulations see Rogers and Torgerson). Overall, these cooperatives held an average 7 percent share in these industries, but there is a tendency for the cooperatives' shares to be highest in the industries with the lower value-added-to-sales ratios.

Since cooperatives often form as a vertical extension of the farm enterprise, one would expect cooperatives to hold their largest shares in industries with a high percentage of their cost of materials coming from agricultural inputs (given as a column in Table 1). I could not, however, show a statistically significant relationship between the two in a regression model that tried to predict the cooperatives' collective shares of an industry's value-of-shipments and the extent of agricultural inputs (although the relationship was positive and approached standard significance in some models). The relationship is present in rice milling (SIC 2044), but there are several other industries with a high use of agricultural inputs and very little, if any, cooperative presence. Thus, there remain several industries, from meat packing to the tobacco, in which agricultural cooperatives could expand and challenge the existing investor-owned firms (IOFs).

Cooperatives: Good for Farmers, But What About Consumers?

An expanded presence by agricultural marketing cooperatives should lessen concerns by farmers about selling their farm products even though there are fewer buyers, but would any benefits be realized by final consumers as envisioned by standard cooperative theory? Given the increased size of cooperatives, they occasionally find themselves under public scrutiny. Although the Capper-Volstead Act gave cooperatives limited anti-trust exemptions, it also gave consumers a unique protection against any "undue" price enhancement by cooperatives in Section 2 of the Act. The Secretary of Agriculture, to the disappointment of many consumer groups, is charged with making such a determination and no Secretary has found a case of undue price enhancement by cooperatives in the seventy-five years since the Act's passage. A brief review of some of the periodic challenges to public policy regarding cooperatives is given in Figure 5 and are representative of the view that not all cooperatives merely correct market imperfections and restore poorly performing markets to the ideal outcomes associated with the economist's competitive model.

Figure 5. Capper-Volstead Act (1922)

Grants cooperatives limited antitrust exemptions.

Periodic Challenges to Capper-Volstead

1979	A National Commission stated: "...the threat of monopoly by some cooperatives is now substantial" (Rogers and Marion).
1988	FTC Chairman Oliver stated: "There is no good reason to continue the antitrust exemption for agricultural cooperatives" (Rogers and Marion).
1993	"The OPEC of the citrus industry (Sunkist) is on the verge of breaking up, and the U.S. consumer may eventually benefit. ...The disarray demonstrates the built-in flaws of cartels buttressed by long-standing Agricultural Department rules to stabilize prices and supply under so-called marketing orders."

Source: King, p. A2.

For cooperatives, or any firm, to exercise market power requires them to possess large market shares, have highly differentiated products, and have a means to prevent market entry

or expansion. Without such barriers to entry, any price increases beyond costs would trigger expanded supply and falling prices. As Rogers and Marion and Rogers and Torgerson have shown, cooperatives are not well-positioned in general to exercise much market power against consumers.

Cooperatives seldom hold leading positions in industries known for high levels of product differentiation or other factors associated with market power opportunities (Figure 6).

Figure 6. Nature of Food Processing Markets in Which Cooperatives Hold Their Greatest Shares

Cooperatives hold their greatest shares in food processing markets that:

- Have low value added-to-sales ratios.
- Have low product differentiation.
- Are not highly concentrated.
- Are commodity based.
- Are not dominated by the top 20 food processors
- Have a high proportion of unbranded sales.

Reasons:

- Extend farm enterprise.
- Homogeneous governing boards—often all farmers.
- Assure farmer/members a market.
- First-stage processing is low value-added activity.
- Cooperatives are often undercapitalized.
- Barriers are high for further mobility.
- Production versus marketing outlook.
- Horizon problem.

In 1987, the 100 largest cooperatives showed a strong tendency to be more involved in those industries that were either undifferentiated producer goods or had the lowest levels of product differentiation (Table 2). In contrast, the top food and tobacco processors, none of which are cooperatives, have a strong preference for the most highly differentiated industries with the top twenty IOFs holding a 61.3 percent share of the value-of-shipments in the 17 most highly differentiated industries, whereas the top 100 cooperatives held only a 4 percent share in this group.

Although cooperatives do not generally hold leading positions in the more highly differentiated, concentrated markets, there are a few markets in which cooperatives do hold leadership positions with well-known brands (e.g., Sun Maid raisins). There are not many studies that have examined the market performance of industries with cooperatives holding significant leadership positions. Combs and Marion found so few cases in which cooperatives held leading positions in markets with structural characteristics conducive to market power they concluded: "In comparison to proprietary food manufacturers, cooperative ability to enhance price is infinitesimal" (p. 49).

Wills came to a similar conclusion using Nielsen data on narrowly defined products. Cooperatives owned the leading brand in fifteen of the one hundred forty-five products—including 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).

Rogers and Petraglia found that the presence of cooperatives had a salutatory effect on food manufacturing market performance (assuming cooperatives are as efficient as their IOF counterparts, an assumption supported by Sexton and Iskow). They found the percentage of a market's shipments held by the largest cooperatives had a significantly negative relationship to the market's price-cost margin, especially in concentrated markets (Table 3). The summary of their model given in Table 3 shows that concentration increased the predicted price-cost margin, but this increase was negated when cooperatives held a substantial share of the market.

Table 2. The Largest 100 Agricultural Marketing Cooperatives' Activity in Food and Tobacco Industries by the Degree of Product Differentiation, 1987

Degree of Product Differentiation		Percent of Value-of-Shipments	
		Top 20 Investor-Owned Companies	Top 100 Cooperatives
None	(12)	8.2	12.9
Low	(7)	23.5	21.0
Medium	(17)	30.1	8.4
High	(17)	61.3	4.0

Note: The number in parentheses is the number of industries classified in this product differentiation group.
Source: Special tabulation by the Bureau of the Census.

Table 3. Predicted Price-Cost Margins by Degree of Market Concentration and the Combined Market Share Held by the 100 Largest Agricultural Marketing Cooperatives

Market Concentration		Cooperative's Share			
		0%	10%	20%	40%
		percent			
low	20%	20.6	19.4	18.2	15.8
	40%	22.8	21.6	20.4	18.0
high	60%	27.7	24.2	20.7	13.7
	80%	32.7	29.2	25.7	18.7

Source: Rogers and Petraglia, p. 10.
Note: Predictions were made with all other variables held at their mean levels.

Table 4. Media Advertising for Food and Tobacco Products[1]

	1982	1987	1992	1982	1987	1992
	$ Millions			Percent of Total		
All Advertisers	**4,304**	**5,951**	**6,327**	**100.0**	**100.0**	**100.0**
Agricultural	**40**	**74**	**76**	**0.9**	**1.2**	**1.2**
Associations	**97**	**216**	**256**	**2.3**	**3.6**	**4.0**

1. Includes all media advertising in SIC 01 (Crops) and SIC 02 (Livestock) as well as SIC 20 and 21 (Food) and (Tobacco Products).
Source: Leading National Advertisers, data analyzed by Richard T. Rogers and Dennis West of Department of Resource Economics, University of Massachusetts, Amherst.

Even in concentrated markets, a 20 percent to 40 percent share held by cooperatives was sufficient to yield a predicted price-cost margin consistent with those observed in workable competition.

Haller examined the cottage cheese industry using Information Resources, Inc. (IRI) brand data gathered from supermarket scanners in metropolitan retail markets throughout the United States. His study found cooperatives decreased overall prices in markets in which they had a presence and increased their prices as their market share increased, but only at a rate of one-third to one-half of that done by IOFs.

Can Cooperatives Compete in Increasingly Concentrated Markets?

Given the structural fact that most markets are further concentrating, the question remains whether cooperatives can effectively compete in such markets. If increased concentration is driven by economies of scale in processing, then large investments in plant and equipment are required. Cooperatives often have difficulty raising the necessary capital. Also, as concentration advances, firms find it advantageous to compete in nonprice forms. Advertising and new products become important forms of rivalry as firms attempt to avoid direct price competition. Such rivalry requires large capital outlays, and shifts the business emphasis further from production and more toward a marketing focus. Connor et al. identified advertising created and maintained product differentiation to be the most formidable barrier to entry in food and tobacco processing. Such advertising rivalry not only erects barriers to new entry, but it can be a barrier to mobility for lesser known brands to join the leading brands in a market. This could relegate cooperatives to minor brands or being the processor for others, most notably, the retailer's own private label line.

Padberg and Westgren contend that the modern food system is geared toward providing variety and innovation aimed, in part, at satisfying consumers' increasing demand for new products, but not too new. They view this incremental change of existing brands as central to the modern food marketing company and success will accrue to those firms most adept at this form of rivalry. Cooperatives, in general, are not such firms and usually strive for efficiency gains rather than tinker with incremental change and new product introductions. If this distinction is valid, it adds to concerns that cooperatives may be ill-suited for competition in the more concentrated markets found when nonprice forms of rivalry become critical strategies for success. Cooperatives may be left to focus on the private label segment of these markets, wherein efficiency is critical to success since this segment serves the price sensitive consumer.

Cooperatives have not been major users of brand-level media adverting (Rogers). In food and tobacco processing, roughly thirty cooperatives used such consumer-oriented advertising and together they represented only 1.2 percent of all such advertising in 1992 (Table 4). Rogers found that has been their approximate share even back to 1967. Associations, acting on behalf of their members—including the farmers in the cooperatives—spent far more and have increased their share of food and tobacco advertising over time (Table 4). Associations spent 4 percent of all such food and tobacco advertising in 1992, up from the 2.3 percent share they held in 1982. Association advertising, however, is not aimed at brand-level product differentiation but industry-wide demand expansion. Such generic advertising is not found in industries in which marketing firms have invested heavily in advertising their own brands.

Media advertising is extremely concentrated in the hands of the largest food and tobacco

Table 5. Concentration of Advertising Expenditures in Food and Tobacco Processing 1967 to 1992

	1967	1982	1987	1992
	percent			
Top 4	19.4	26.8	32.8	36.9
Top 8	29.9	39.3	47.3	51.0
Top 20	53.4	65.7	72.1	75.3
Top 50	78.1	88.7	90.6	91.1
Top 100	90.5	95.6	96.2	96.4

Note: Excludes advertising by associations, boards and governments.
Source: Leading National Advertisers, Inc., data analyzed by Richard Rogers and Dennis West, Department of Resrouce Economics, University of Massachusetts—Amherst (File: T9FT92a.WPD).

firms (Table 5) and the concentration has increased over time. The top four food and tobacco advertisers accounted for nearly 37 percent of all such advertising in 1992, up from 19.4 percent in 1967. The top twenty advertisers now account for more than 75 percent of all food and tobacco media advertising. No agricultural cooperatives are found among these top twenty advertisers, partly because cooperatives are not as diversified across several food products, but also because there are barriers and reluctance to engage heavily in advertising rivalry. Ocean Spray was the largest cooperative advertiser in 1992, ranking forty-second overall, and only three cooperatives were among the 100 largest food and tobacco media advertisers in 1992.

Philip Morris Companies was the number one media food and tobacco advertiser, accounting for 17.6 percent of all such advertising in 1992 (Table 6). The other leading advertisers are well known consumer marketing companies. These are the food and tobacco firms that are comfortable with advertising rivalry, new product introductions, and other consumer-oriented marketing activities. Such techniques can be among the most successful in building product differentiation that allows a firm to raise prices without losing substantial market share.

Even before a firm can use consumer-media advertising they must market a branded product. In some markets, cooperatives have successfully developed brands. Although it is not common, Rogers noted a handful of such cases, ranging from canned cranberries to refined sugar. Here I examine two such cases, butter and raisins, to demonstrate the need for more detailed market data than typically is available to public researchers. The data are from the Selling Areas Marketing, Inc. (SAMI) Million Dollar Brands Report. SAMI is no longer in business as it was losing market share to both Nielsen and upstart IRI, Inc., in providing market information on brands at the retail level. SAMI donated its data archives to Purdue University and sold its Million Dollar Brands Report to interested researchers at prices that reflected an understanding of price discrimination (I paid $5,000, but others got it for less). Both Nielsen and IRI make it difficult for public researchers to use their data either by restricting its use or pricing it beyond most research budgets. However, more and more research is done with these new micro data sets (see Cotterill).

Table 6. Leading Company Advertisers in Food and Tobacco Processing, 1992 (including associations)

Rank	Company	Company Total	Percent of Total	Cumulative Percent
		($000)		
1	Philip Morris Inc	1,085,823	17.60	17.599
2	Kellogg Co	416,019	6.74	24.342
3	General Mills Inc	359,313	5.82	30.166
4	Anheuser-Busch Inc	333,203	5.40	35.566
5	Coca-Cola Co	232,948	3.78	39.342
6	Pepsico Inc	212,182	3.44	42.781
7	RJR Nabisco Inc	204,845	3.32	46.101
8	Nestle SA	185,443	3.01	49.107
9	Procter & Gamble Co	179,170	2.90	52.011
10	Unilever NV	162,753	2.64	54.649
11	Mars Inc	159,124	2.58	57.228
12	Campbell Soup Co	138,989	2.25	59.481
13	Coors Adolph Co	120,716	1.96	61.437
14	Quaker Oats Co	120,264	1.95	63.387
15	Wrigley WM Jr Co	119,256	1.93	65.320
16	Grand Metropolitan PLC	112,345	1.82	67.140
17	Hershey Food Corp	92,272	1.45	68.636
18	Seagram Co Ltd	82,666	1.34	69.976
19	Conagra Inc	82,131	1.33	71.307
20	Ralston Purina Co	77,507	1.26	72.563
21	Hicks & Haas	74,477	1.21	73.770
22	National Dairy Board	72,970	1.18	74.953
23	American Brands Inc	61,140	0.99	75.944
24	Slim Fast Foods Co	61,025	0.99	76.933
25	Loews Corp	57,508	0.93	77.865

Source: Leading National Advertisers, Inc., data analyzed by Richard Rogers and Dennis West, Department of Resource Economics, University of Massachusetts—Amherst (File: T9FT92a.WPD).

In the U.S. retail butter market the agricultural cooperative Land O' Lakes has a dominant position with one-third of the retail market (Table 7). No other firm comes close to its share. Kraft (now part of Philip Morris Companies) held 63 percent of the market in 1987. The major competitor for Land O' Lakes is not other processor brands but the retail store's own brand of butter, called private label. I treat private label as unbranded since the processor is unknown. Unbranded sales accounted for 44.5 percent of the retail butter market in 1987. There is no consumer-oriented media for private label butter, but industry associations (mainly the American Dairy Association) spent nearly $16 million on generic advertising for the butter industry. Land O' Lakes dominated the media spending for branded butter, spending almost $2 million and accounting for 84 percent of the total amount.

The butter market data reflect a competitive industry. Even with one firm holding one-third of the market, the CR4 is under 50 and the industry's brand media advertising-to-sales ratio

Table 7. Market Shares, Advertising and Prices in the Retail Consumer Butter Market, 1987

Brand Name	Market Share (%)	Advertising Total (000)	Ad Share (%)	A/S (%)	Average Price/lb.	% > PL	1989 Manufacturer
CATEGORY TOTAL	100.00	2303.2		0.29	2.16	8.00	
Branded Total	55.48	2303.2	100.00	0.53	2.31	15.50	
Unbranded Total	44.52	0.0	0.00	0.00	2.00	0.00	
Land O Lakes	33.32	1927.1	83.67	0.72	2.29	14.50	Land O Lakes
Challenge Dairy	4.21	101.7	4.42	0.30	2.48	24.00	Challenge Dairy
Darigold	0.78	12.2	0.53	0.20	2.30	15.00	Darigold Inc.
AMPI	0.73	0.0	0.00	0.00	2.09	4.50	Assoc. Milk Prod.
Tillamook	0.53	0.0	0.00	0.00	2.23	11.50	Tillamook Cnty.
Cabot	0.38	0.0	0.00	0.00	2.06	3.00	Cabot Creamery
MidAm	0.26	0.0	0.00	0.00	2.14	7.00	Mid Amer. Dairy
Seal of Arizona	0.21	10.9	0.47	0.64	2.03	1.50	United Dairymen
Remus	0.14	0.0	0.00	0.00	1.78	-11.00	Michigan Milk
Cooperatives	40.56	2051.9	89.09	0.63	2.29	14.50	
Breakstone	6.30	0.0	0.00	0.00	2.61	31.01	Kraft Inc.
Borden	4.14	95.0	4.12	0.00	2.38	19.33	Borden Total
Swift-Brookfield	0.88	0.0	0.00	0.00	1.96	-1.80	Beatrice Foods Co.
Crystal Farms	0.61	0.0	0.00	0.00	1.90	-4.65	North Star Univ.
American Beauty	0.48	0.0	0.00	0.00	2.11	5.66	L. Frank & Co.
Level Vly. Dy. Tot.	0.25	0.0	0.00	0.00	1.75	-12.29	Level Vly. Dy. Tot.
Knudsen	0.22	0.0	0.00	0.00	2.81	41.03	Knudsen Corp.
Cache Valley	0.14	0.0	0.00	0.00	1.92	-3.68	Cache Valley Dairy
Country Maid	0.14	0.0	0.00	0.00	2.07	3.50	Other Manufs.
Sugar Creek	0.13	8.4	0.36	0.00	1.76	-11.58	National Dairy
Lov-It	0.12	0.0	0.00	0.00	1.80	-9.75	Lov-It Creamery
Recipe	0.12	0.0	0.00	0.00	1.98	-1.00	Other Manufs.
Golden Roll	0.08	0.0	0.00	0.00	1.85	-7.50	Other Manufs.
Noncooperatives	13.270	103.4	4.49	0.09	2.37	19.15	

Nonbranded Advertising by Associations: $15,785,300.
Note: % > PL is the percentage difference between a company's average price and the average private label price.
Source: SAMI 1990 Million Dollar Brands and 1987 advertising data from Leading National Advertisers.

(A/S) is only 0.3 percent, making it an industry with very low product differentiation. The number one firm, has an A/S of 0.7 percent, hardly the amount associated with excessive advertising. The large, private-label (unbranded) share is consistent with the characteristics usually observed in industries in which cooperatives operate. It remains to be seen whether this is because cooperatives process whatever their farmer members supply or for some other reason. Industry experts agree that Land O' Lakes does not process for private labels, but other cooperatives may.

The average retail price per pound of butter in 1987 was $2.16, with the average branded segment price being $2.31 and the average unbranded segment priced at $2.00. Neither Land O' Lakes, which charged $2.29 per pound, nor any of the other cooperatives charged consumers the highest price observed. That distinction went to Knusdsen Corporation at $2.81, followed by the second largest shareholder, Kraft, at $2.61. All of the cooperatives had average prices above the $2.00 price of the unbranded butters (except Michigan Milk which is sold, Dr. Larry Hamm informs me, in a large, minimally wrapped package not typical of consumer butter packages). As a group, the cooperatives had an average price of $2.29, or 14.5 percent higher than the unbranded price. As a group, the IOFs had an average price of $2.37, or 19.15 percent higher than the unbranded price, but showed much more variation in individual company's average prices. Several

IOFs had average prices less than the unbranded price.

Connor and Peterson have argued that the private label price for food products serves as a useful proxy of the competitive price. If one accepts that viewpoint, then all of the cooperatives but Michigan Milk earned a price over the competitive price. The market leader, with its 33.3 percent market share, earned a price that was 14.5 percent over this proxy competitive price. The cooperative, Challenge Dairy, received the highest price among the cooperatives with a price that was 24 percent over the competitive benchmark. These premiums over this proxy competitive price are larger than a strict interpretation of cooperative theory would suggest since the theory would bring consumers the competitive price. Is this evidence of undue price enhancement or merely reasonable premiums firms need to cover their marketing costs? Furthermore, some of the IOFs charged higher prices, but IOFs do not face the equivalent test of Capper-Volstead's Section 2 clause of no undue price enhancement.

Butter represents one of the most competitive food industries with very little market power potential: low concentration, low product differentiation and low barriers to entry. In the other market I examine here, raisins, the Sun Maid brand has a much larger market share, 56 percent, and a more noticeable A/S of 3 percent (Table 8). Sun Maid accounted for essentially all of the $5 million of brand advertising, but industry associations spent more, $6.6 million in 1987. The unbranded segment accounted for 30.6 percent of the retail sales. The average price per pound was $1.60, and the average private label price was $1.39. Sun Maid had the highest price at $1.74, or 25 percent above the competitive benchmark price determined by the average private label price. The four IOF rivals had prices ranging from $1.36 to $1.68. Let me re-ask the question, does a 25 percent price premium constitute undue price enhancement by the Sun-Diamond Growers? Does the product differentiation enjoyed by the Sun Maid brand prevent the competitive outcome from emerging in the raisin market? What would the price be had the Sun Maid brand been a noncooperative brand? Would an IOF settle for a 25 percent premium?

I cannot answer these questions, but I did prepare similar information for the instant gelatin dessert market—a market without cooperatives and in which the Jell-O brand is nearly synonymous with the product category (Table 9). Only two companies marketed a branded gelatin in 1987, and the branded segment of the market was 94 percent, and the unbranded segment 6 percent (the market shares in Table 9 fail to add to 100 because of rounding). Jell-O's main brand had a 54 percent share and earned a 43 percent premium over the private label price. The newer product, Jell-O Sugar Free, had a 28 percent share and a slightly higher price per serving. The private label data did not distinguish between gelatins with or without sugar, but one can suspect that private label sugar-free products lagged behind the introduction of such new products by the two national brand processors. Private label products seldom lead in new product development and leave those efforts, and development costs, to the national brand firms (Padberg and Westgren). Since there is no cooperative to compare with Jell-O's price, we can only say that with a combined market share in excess of 80 percent, the brand received a premium over the average private label price of around 50 percent. Also, the advertising investment was much more intensive than found in the previous examples involving cooperatives, with Jell-O and Jell-O Sugar Free having an A/S of 4.8 percent and 12 percent, respectively. Such a high A/S would classify this market as highly differentiated and should provide sufficient market power to allow price enhancement. The number two firm, and the only brand rival, did not advertise at all and received a price that was 28.6 percent above the private label price. If a cooperative brand secured a price premium similar to Jell-O's would that constitute undue price enhancement?

Table 8. Market Shares, Advertising and Prices in the Retail Consumer Raisin Market, 1987

Company Name	Market Share (%)	Advertising Total (000)	Ad Share (%)	A/S (%)	Average Price/lb.	% > PL	1989 Manufacturer
CATEGORY TOTAL	100.00	5211.9	100.00	2.11	1.60	14.95	
Branded Total	69.42	5211.9	100.00	3.04	1.72	23.71	
Unbranded Total	30.58	0.0	0.00	0.00	1.38	-0.96	
Sun-Maid	55.86	5139.6	98.61	3.73	1.74	25.25	Sun-Diamond Growers
Del Monte	7.09	0.0	0.00	0.00	1.54	10.97	Del Monte Corp.
Dole/Sun Giant	6.38	34.7	0.67	0.22	1.68	21.05	Castle & Cooke
Champion	1.23	37.6	0.72	1.24	1.36	-2.16	Natl Raisin Co.
Bonner	0.59	0.0	0.00	0.00	1.42	2.29	Bonner Pkg.
Private Label	28.27	0.0	0.00	0.00	1.39	0.00	
Generic Private Label	2.31	0.0	0.00	0.00	1.23	-11.38	

Non-brand Advertising by Associations: $6,640,300.
Note: % > PL is the percentage difference between a company's average price and the average private label price.
Source: SAMI 1990 Million Dollar Brands and 1987 advertising data from Leading National Advertisers.

Table 9. Market Shares, Advertising and Prices in the Retail Consumer Gelatin Desserts Market, 1987

Brand Name	Market Share (%)	Advertising Total (000)	Ad Share (%)	A/S (%)	Average Price Serving	% > PL	1989 Manufacturer
CATEGORY TOTAL	100.00	13960	100.0	5.96	0.102	42.86	
Branded Total	94.53	13960	100.0	6.30	0.104	42.86	
Unbranded Total	6.14	0	0.0	0.00	0.071	0.00	
Jell-O Brand	53.65	6084	43.6	4.84	0.104	42.86	PM General Foods
Sugar Free Jell-O	27.82	7876	56.4	12.08	0.114	57.14	PM General Foods
Royal Gelatin	11.47	0	0.0	0.00	0.880	28.57	RJR Nabisco Brd In
Sugar Free Royal	1.60	0	0.0	0.00	0.092	28.57	RJR Nabisco Brd In
Private Label	5.36	0	0.0	0.00	0.072	0.00	
Generic Private Label	0.78	0	0.0	0.00	0.063	-14.29	

Non-brand Advertising by Associations: $0.
Note: % > PL is the percentage difference between a company's average price and the average private label price.
Source: SAMI 1990 Million Dollar Brands and 1987 advertising data from Leading National Advertisers.

This simple comparison of three markets forces the question as to what the benchmark or "yardstick" should be in judging the market performance by cooperatives in food and tobacco processing. Should cooperatives be held to the competitive benchmark or to outcomes more typically found by IOFs in branded product markets? Should cooperatives be credited with providing price-sensitive consumers with a large private label segment that is usually found in all markets in which cooperatives have leadership positions and seems much less developed in markets in which IOFs hold leadership positions?

To examine questions of market performance in markets with or without cooperatives, researchers need better data. Census publications are wholly inadequate, and are getting worse rather than better. Private data providers, like IRI, supply such data to all of the major food companies, including many cooperatives, but often refuse access to public researchers.

We continue to use the now discontinued SAMI data to amass a sufficient number of markets with the detail provided in Tables 7, 8 and 9 to allow meaningful cross-sectional analysis comparing prices, market shares, and advertising intensities of cooperatives to IOFs under various market structures. Perhaps this research will add to the limited information now available on cooperatives in branded food markets.

Notes

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