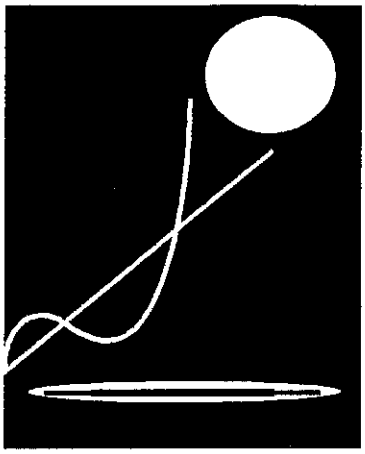

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## Performance Consequences of the Agricultural Cooperative Exemption

by

Ronald W. Cotterill
Food Marketing Policy Center
University of Connecticut

Food Marketing Policy Center, Department of Agricultural and Resource Economics, University of Connecticut, 1376 Storrs Road, U-21, Storrs, CT 06269-4021

# Performance Consequences of the Agricultural Cooperative Exemption

by Ronald W. Cotterill*

The Capper-Volstead Act, passed in 1922, is the magna carta of agricultural cooperatives. The act has two sections. The first section generally defines what a Capper-Volstead cooperative is and the second section prohibits undue price enhancement.[1] Congress clearly intended that farmers be able to organize cooperatives and capture a share of market sufficient to raise price. However, Congress did not want to allow cooperatives with large market shares to unduly enhance the prices in the market channel. The basic question is what impact on price does a particular agricultural cooperative have? If in fact an agricultural cooperative can raise farmgate prices, as indeed Congress hoped, is the resulting price elevation undue price enhancement?

There are two general types of cooperatives that need to be examined. Agricultural bargaining cooperatives horizontally integrate farmers into a commodity marketing organization. A typical example is a large milk cooperative that represents maybe 80 or 90 percent of the dairy farmers in a supply region. They bargain with handlers for price, and often have no processing facilities or just a supply balancing plant.

A second type of agricultural cooperative is a cooperative that is integrated forward into

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* The author is Director of the Food Marketing Policy Center, Department of Agricultural and Resource Economics, University of Connecticut. This invited paper was presented at the American Bar Association Annual Meeting in New York City on August 10, 1993. Research support via Agricultural Cooperative Service/USDA Cooperative Agreement No. 43-3531-2-0017 is gratefully acknowledged. However, the author retains sole responsibility for contents.

[1] A copy of the act is reproduced in Appendix A.

the food processing. Some well-known cooperatives in this area are Ocean Spray (cranberries) or Treetop Apple Growers, Selah, Washington, and Land O'Lakes with its well-known brands of dairy products. A cooperatives may bargain and also be integrated; however, that is not always the case.

Concerning investigation of Capper-Volstead undue price enhancement, cooperatives of both types have been reviewed. The most recent general review of Capper-Volstead enforcement is the 1990 General Accounting Office report on undue price enhancement activities by milk marketing cooperatives (GAO). The contention in that report is that milk cooperatives in a horizontal bargaining framework have been able to extract premiums over federally mandated market order prices for fluid milk. In the 1970s a different enforcement strategy was attempted. The Federal Trade Commission had a famous, or shall I say infamous, hit list of ten agricultural cooperatives that they thought deserved prosecution under Capper-Volstead. The hit list didn't involve the major dairy cooperatives that were doing commodity bargaining, possibly because a few large ones were extensively investigated during the 1970s for over order pricing by the Justice Department. Essentially, the FTC hit list had the vertically integrated cooperatives that are major players in the branded food product markets (Mosher, p. 51). The cooperatives on that list were:

Sunkist Growers Inc., Sherman Oaks, CA

Ocean Spray Cranberries inc., Plymouth, NH

National Grape Cooperative Association Inc., Westfield, NY

California Canning Peach Association, Lafayette, CA

California Canning Pear Association, San Francisco

Diamond Walnut Growers Inc., Stockton, CA

California Almond Growers Exchange, Sacramento

Sun-Maid Growers of California (raisins), Kingsburg, CA

Sunsweet Growers Inc. (prunes), Stockton, CA

Florida Celery Exchange, Orlando, FL

The undue price enhancement question is somewhat different for cooperatives that have integrated forward into processing. If an agricultural cooperative that happens to be a leading manufacturer of a particular product, for example, Land O'Lakes produces about 50 percent of the nation's butter under its Land O'Lakes brand, the question is whether a large or leading market share position in the processed product market allows the cooperative to unduly enhance price of the processed product?. In this context the cooperative may increase payments to farmers for raw product, and it may force investor owned firms who follow its price lead to similarly pay increased prices for raw product, otherwise farmers would join the cooperative. If the cooperative has a closed membership then IOF would not face pressure to increase prices to farmers and would enjoy increased net profits (Cotterill, 1987). Also to the extent that the cooperatives increased margins are due to superior product differentiation, the benefits would be returned to cooperative members, but there may be no price enhancement effect for other firms in the industry and farmers that are not members of the cooperative then would not receive higher prices. In this case, closed membership does not limit the market wide benefits of cooperation i.e., product differentiation eliminates the "free rider" problem.[2]

[2] This reasoning essentially assumes that product differentiation confers unilateral market power upon the firm that achieves it. See Levy and Reitzes for very credible alternative argument: i.e., product differentiation can enhance the ability of firms to exercise coordinated or tacitly collusive pricing.

The most important question for analysis is, does a vertically integrated cooperative presence in processed markets raise or lower consumer prices? Notice I said consumer prices, not farm level prices. There are two recent pieces of research with regards to the impact of cooperatives on performance of processing industries. Both of them, I am pleased to say have been done by colleagues of mine at the Food Marketing Policy Center. The first study is done by Richard Rogers and Lisa Petraglia and its title is *The Impact of Agricultural Marketing Cooperatives on Market Performance in the U.S. Food Manufacturing Industries* using 1982 Census data.[3]

Petraglia and Rogers look across five digit census product classes in food manufacturing to analyze price cost margins. This is a more narrowly defined and more accurate product market than the standard cross-section study which is at the four digit level (Scherer and Ross, p. 427). They analyze the impact of different structural features on the price cost margin in these product classes. The price cost margin is essentially the price minus the direct cost of materials involved. It does not include unit advertising costs nor does it include central office expenses or any kind of payment to capital. So it's a fairly gross measure of the Lerner index of market power. Petraglia and Rogers results are reproduced in Table 1. Their sample has 134 food product classes. The first variable used is NL (NL is national local). If this variable has a value of one, that means that the industry is essentially a local market oriented industry as opposed to a national market industry. It's basically a measure of the degree of local processing. For example, fluid milk markets are essentially local as opposed to national. NL

[3] Professor Rogers is at the University of Massachusetts; however, the Policy Center is a joint research activity between Connecticut and Massachusetts.

Table 1 MULTIPLE REGRESSION RESULTS EXPLAINING PRODUCT CLASS PRICE-COST MARGINS IN THE FOOD MANUFACTURING SECTOR FOR 1982

| | MODEL 1<br>n = 134 | MODEL 2<br>n = 134 |
|---|---|---|
| Dependent Variable | *PCM* | *PCM* |
| *Constant* | 4.54 | 4.57 |
| *NL* | 6.49* | 7.04* |
| | (2.85) | (3.23) |
| *ADS* | 2.27(*) | 5.07(*) |
| $ADS^2$ | (3.51) | (4.73) |
| *MES* | -- | -0.29* |
| | (0.18) | (0.99) |
| $CR_4$ | 0.20* | 0.17* |
| | (4.02) | (3.42) |
| *KO* | 0.08 | 0.07 |
| | (1.31) | (1.28) |
| *G* | 0.12* | 0.10* |
| | (4.62) | (3.96) |
| *%COOP* | -0.22* | -0.19* |
| | (-3.36) | (-3.03) |
| $R_2adj$ | 0.54 | 0.58 |
| | (23.5) | (24.1) |

( ) beneath coefficients are t-statistics
( ) beneath $R^2$-adjusted are F-statistics taken from the mean
(*) coefficient significantly > 1 at the 0.5 percent level
* coefficient significantly different than 0 at the 0.5 percent

Source: *The Impact of Agricultural Marketing Cooperatives on Market Performance in U.S. Food Manufacturing Industries for 1982* by Lisa M. Petraglia and Richard T. Rogers, Food Marketing Policy Center, Research Report No. 12, University of Connecticut, July, 1991.

has a significant positive impact on the price cost margin. The explanation is that if an industry is primarily local, national measures of market structure severely understate actual local market structure. Concentration and other structural variables probably are much higher in local areas and consequently price cost margins are much higher. So one expects a positive sign to correct the market misdefinition and indeed we do find that it is significant at the one percent level.

The next variables are the advertising sales ratio (ADS) and the advertising sales ratio squared ($ADS^2$). As mentioned earlier, the advertising-sales ratio (advertising costs per unit of sales) are not subtracted from the price cost margin. If, in fact, the relationship between ad-sales and price cost margins is due solely to the accounting identity, the coefficient on this variable in model one should be, in fact, one. That would mean for every one percent increase in the advertising sales ratio you'd get a one percent increase in price cost margin. The fact that it is greater than one, means that advertising sales not only pays for itself but also contributes to a widening of the price cost margin, the higher the advertising sales ratio the higher the price cost margin, over and above what is needed to cover the ad expenses, and that's a significant relationship. In the second model, they've put it in a quadratic form to see whether that relationship weakens at higher ad-sales ratios, and in fact it does. The negative coefficient on the square term means that the relationship gets flatter as ad sales go up, so it gives a decreasing marginal contribution to the price cost margin. The quadratic form does attain a peak and then declines in this sample but all but four of the observations are to the left of the peak on the rising portion of the ad-sales relationship (Petraglia and Rogers p. 62).

The next variable, MES, is the minimal efficient scale. This is a control for economies of size in the industry. One expects that higher minimum efficient scale, as measured by the

midpoint plant size in the product class, would lead to higher price cost margins. But it is not significant in either regression.

The four firm concentration ratio ($CR_4$, a variable we are all very familiar with is positive and very significant, suggesting that more concentrated markets have higher price cost margins.

The next variable is the capital output ratio or capital intensity variable (KO). Because the price cost margins do not net out the payments to cover capital, one expects a positive sign for this variable's coefficient. More capital intensive industries need larger price cost margins to cover their capital requirements. It is positive but it is not significant in Petraglia and Roger's study. Growth, (G) more rapidly growing markets have higher price cost margins. This demand shift variable is positive and significant.

Finally, the variable of choice for analysis of the Capper-Volstead question is the percent market share of the cooperative in the industry (% CO-OP). Here there is a negative coefficient, i.e., the greater the market share of the farmer cooperatives in these processed food markets, the lower the price cost margin. This result is consistent with the cooperative theories of Edwin Nourse, who in 1922 at the time Capper-Volstead was enacted into law, advanced the competitive yardstick theorem. According to Nourse, farmer cooperatives that integrate forward can ostensibly raise prices to farmers and lower prices to consumers by acting as a pilot plant or a competitive regulator on the processing and distribution sector forcing margins down to a level that is equal to a competitive rate of return on capital and managerial expertise (Nourse, 1922; Cotterill 1992, 1987).

Yet, there may be other explanations for the cooperatives market share impact reported

in Table 1. One possibility might be that cooperatives are just in low margin industries. In fact, cooperatives often are heavily engaged in private label processing of processed foods. For example, the milk marketing cooperatives that are integrated into processing may do a lot of private label milk for supermarket chains. Similarly, in canned fruits and vegetables, Tri-Valley Growers in California is one of the major packers of canned tomato products, but they primarily pack private label products. Similarly with peaches, they are the major packer of private label peaches. Their major competitor in the branded market is DelMonte. So it may be that this relationship is because cooperatives have gravitated towards the low margin industries with high private label activity. If that is true, then it may not provide a direct test of the hypothesis that the market was inherently uncompetitive and a farmer cooperative integrated forward and brought the market back into competitive balance. How can one examine this more subtle hypothesis?

In Table 2 Petraglia and Rogers provide us with some insight. They split the sample into highly concentrated and low concentrated industries by using the sample mean of 52.5 as the demarcation point. Note that in the low concentrated industry subsample, the four firm concentration ratio is not statistically significant. This is consistent with the general prediction of oligopoly theory as codified in the threshold levels of the federal and state merger guidelines. When concentration increases from, for example 20 to 50 percent, it probably does not result in an increase in price cost margins. By comparison in the more concentrated subsample four firm concentration is indeed statistically significant. Although Petraglia and Rogers did not test whether there's a significant discrete increase, the price cost margin does shift up 1.6 points at the 52.5 split value. Thus, concentration is not significant in the first sample and when one

Table 2 MULTIPLE REGRESSION RESULTS FOR THE SPLIT SAMPLE: $CR_4 < 52.5$ AND $CR_4 \geq 52.5$

| | Model 3a<br>n = 70<br>($CR^4 < 52.5$) | Model 3b<br>n = 64<br>($CR^4 \geq 52.5$) |
|---|---|---|
| Dependent Variable | *PCP* | *PCM* |
| *Constant* | 7.06 | 1.29 |
| *NL* | 4.60 | 5.84 |
| | (2.34) | (.97) |
| *AD/VOS* | 6.02(*) | 4.08(*) |
| | (4.29) | (2.61) |
| $AD/VOS^2$ | -0.38 | -0.21 |
| | (-3.34) | (-1.94) |
| *MES* | 0.13 | 0.40 |
| | (0.42) | (1.31) |
| $CR_4$ | 0.11 | 0.25 |
| | (1.18) | (2.15) |
| *KO* | 0.24 | 0.08 |
| | (3.82) | (-.87) |
| *G* | -0.01 | 0.19 |
| | (-.38) | (4.57) |
| *%COOP* | -0.12 | -0.35 |
| | (-2.14) | (-2.18) |
| *R2* | .58 | .58 |
| | (13.1) | (12.8) |

( ) beneath estimates are t-ratios
(*) coefficient significantly > 1 at the 5 percent level

Source: *The Impact of Agricultural Marketing Cooperatives on Market Performance in U.S. Food Manufacturing Industries for 1982* by Lisa M. Petraglia and Richard T. Rogers, Food Marketing Policy Center, Research Report No. 12, University of Connecticut, July, 1991.

shifts to the next one, not only does one have significant slope, one also has an intercept shift as well.

Turning now to the Capper-Volstead effect variable we see that the cooperative market share variable (% CO-OP) is statistically significant in both samples and negative as hypothesized, but notice the magnitude of the coefficients. In the less concentrated industries the impact of cooperative on price cost margins is only about a third of what it is in the more concentrated industries. The implication is that the cooperative effect is strongest the highly concentrated industries where concentration is a significant factor in predicting price cost margins in the first place. So this split sample analysis does suggest that when cooperatives are present in highly concentrated markets where margins are higher they still do have a negative effect on industry margins.

Having discussed this price cost margin analysis in detail provides a significant insight into the general performance impact of integrated cooperatives upon consumer prices. Thus, it may be vexing to state that this kind of study has fallen out of favor as vehicle for the analysis of market power. The most fundamental criticism of price cost margin studies is the Demsetz critique. If one analyzes a price cost margin, one really doesn't know whether the widening price cost margin in more concentrated markets is due to market power i.e., increased prices, or whether it's due to some sort of firm related efficiency i.e., cost economies, or some other kind of efficiency gain due to large market share. Also, one doesn't know whether the margin depressing effect of a large cooperative market share is due to 1) cooperatives charging lower prices and possibly forcing others to lower prices 2) cooperatives charging joint profit maximizing (monopoly) prices but paying all increased margins to farmers as higher raw product

prices or 3) cooperatives being inefficient and having higher costs for nonfarm inputs (labor, packaging, equipment).[4] So one doesn't know whether the margin is getting thin because one or more cost categories is rising or price is falling. Some of the work that my colleague Lawrence Haller and I have done at Connecticut in fact looks explicitly at price.

Results reported here are for cottage cheese and are from Haller (1993) and Cotterill and Haller (1994). Table 3 identifies the major cottage cheese processors and their local market penetration. With scanner installation in supermarkets, Information Resources Inc. (IRI) and A.C. Nielsen have been able to generate very large and complex data bases that document brand by brand price, quantity sold, and market share for local markets across the country. The Food Marketing Policy Center has purchased these data for 1988-1992. Table 3 contains 1989 annual data the cottage cheese industry. It includes the top 20 cottage cheese producers plus any cooperatives beyond that that have greater than .5 percent of a local market.

Notice that private label cottage cheese has a market share of 40 percent. In the world of branded food products this large share is somewhat of an anomaly, and it may be due to the fact that cooperatives play a major role in this industry. Private label shares are larger than the leading brand shares in many dairy product categories, but only for very few other food product categories. For example, one won't find private label dominance in soft drinks or breakfast cereals. Private label share is about 11 percent for soft drinks and about 8 percent for breakfast cereals, and of course no cooperatives are active in these industries.

Individual brands are listed in Table 3 for each company. Reported are the brand's

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[4] Sexton and Iskow, however, recently reviewed the research on the cooperative inefficiency and conclude: "No credible evidence exists to support the proposition that cooperatives are inefficient relative to investor-owned businesses" (Sexton and Iskow).

TABLE 3 Cottage Cheese: The Largest 20 Firms and All Cooperatives, 1989

| | Co-op | Mfr Brand | Mfr Vol (1000 lbs) | Brd Vol (1000 lbs) | Market Share | Avg Pr. per lb | Units per lb | No of Mkts | Frequency of Rank #1 | #2 | #3 | #4 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | PRIVATE LABEL | 234145 | | 40.54 | 1.01 | 0.79 | | | | | |
| 1 | | PHILIP MORRIS CO | 121505 | | 21.04 | 1.36 | 0.91 | 40 | 22 | 7 | 9 | 1 |
| | | LIGHT N LIVELY | | 45967 | 7.96 | 1.35 | 0.89 | 31 | 14 | 7 | 7 | 1 |
| | | KNUDSEN | | 31368 | 5.43 | 1.43 | 0.97 | 5 | 3 | 1 | 1 | 0 |
| | | BREAKSTONE | | 22589 | 3.91 | 1.42 | 0.91 | 33 | 0 | 6 | 9 | 6 |
| | | SEALTEST | | 19416 | 3.36 | 1.20 | 0.87 | 29 | 0 | 8 | 8 | 3 |
| | | PURITY | | 1168 | 0.20 | 1.27 | 0.92 | 1 | 1 | 0 | 0 | 0 |
| | | KNUDSEN NICE N LIGHT | | 997 | 0.17 | 1.52 | 1.00 | 4 | 0 | 0 | 1 | 1 |
| 2 | | BORDEN INC | 26424 | | 4.57 | 1.22 | 0.86 | 25 | 6 | 6 | 3 | 4 |
| | | BORDEN | | 10526 | 1.82 | 1.36 | 0.95 | 16 | 3 | 3 | 2 | 4 |
| | | BORDEN VIVA | | 7493 | 1.30 | 1.07 | 0.79 | 7 | 2 | 1 | 1 | 0 |
| | | LITE LINE | | 4292 | 0.74 | 1.34 | 0.79 | 12 | 0 | 3 | 0 | 2 |
| | | MEADOW GOLD | | 3625 | 0.63 | 1.03 | 0.79 | 7 | 0 | 1 | 2 | 0 |
| | | GREAT SCOTT | | 239 | 0.04 | 0.89 | 0.67 | 1 | 0 | 0 | 0 | 0 |
| 3 | C | AGWAY INC | 21813 | | 3.78 | 1.25 | 0.99 | 6 | 5 | 0 | 0 | 1 |
| | C | HOOD | | 21813 | 3.78 | 1.25 | 0.99 | 6 | 5 | 0 | 1 | 0 |
| 4 | | QLTY CHEKD DRY PRO | 16333 | | 2.83 | 0.99 | 0.77 | 14 | 1 | 2 | 1 | 2 |
| | | KEMPS SLIM TRIM | | 13295 | 2.30 | 1.01 | 0.77 | 13 | 1 | 2 | 0 | 3 |
| | | QUALITY CHEKD | | 2363 | 0.41 | 0.90 | 0.73 | 4 | 0 | 0 | 0 | 0 |
| | | BAY VIEW FARMS | | 479 | 0.08 | 0.99 | 0.72 | 1 | 0 | 0 | 1 | 0 |
| | | CURLYS | | 101 | 0.02 | 0.79 | 0.97 | 1 | 0 | 0 | 0 | 0 |
| 5 | | FRIENDSHIP FOOD PROD | 13038 | | 2.26 | 1.48 | 1.08 | 5 | 0 | 4 | 1 | 0 |
| | | FRIENDLY FARMER | | 10289 | 1.78 | 1.43 | 0.94 | 4 | 1 | 1 | 1 | 0 |
| | | FRIENDSHIP | | 2749 | 0.48 | 1.69 | 1.62 | 4 | 0 | 0 | 0 | 0 |
| 6 | | DEAN FOODS CO | 11694 | | 2.02 | 1.33 | 0.94 | 10 | 0 | 5 | 0 | 1 |
| | | DEANS | | 10809 | 1.87 | 1.36 | 0.95 | 8 | 1 | 2 | 2 | 0 |
| | | FIELDCREST | | 664 | 0.11 | 0.79 | 0.67 | 2 | 0 | 0 | 0 | 1 |
| | | BOWMAN | | 90 | 0.02 | 1.40 | 0.88 | 1 | 0 | 0 | 0 | 0 |
| | | ALL JERSEY | | 53 | 0.01 | 0.88 | 0.67 | 1 | 0 | 0 | 0 | 0 |
| | | VERIFINE | | 45 | 0.01 | 1.30 | 0.92 | 1 | 0 | 0 | 0 | 0 |
| 7 | | CROWLEY FOODS, INC | 10163 | | 1.76 | 1.20 | 0.93 | 12 | 0 | 5 | 3 | 2 |
| | | CROWLEY | | 5417 | 0.94 | 1.11 | 0.85 | 6 | 0 | 1 | 0 | 2 |
| | | AXELROD | | 4747 | 0.82 | 1.31 | 1.02 | 7 | 0 | 0 | 0 | 3 |
| 8 | | ANDERSON ERICKSON | 6655 | | 1.15 | 0.98 | 0.84 | 2 | 0 | 0 | 0 | 0 |
| | | ANDERSON ERICKSON | | 6655 | 1.15 | 0.98 | 0.84 | 2 | 0 | 0 | 1 | 0 |
| 9 | C | DARIGOLD, INC | 6514 | | 1.13 | 0.93 | 0.82 | 2 | 2 | 0 | 0 | 0 |
| | C | DARIGOLD | | 6514 | 1.13 | 0.93 | 0.82 | 2 | 2 | 0 | 0 | 0 |
| 10 | | H J HEINZ CO | 6263 | | 1.08 | 1.20 | 0.96 | 23 | 0 | 4 | 1 | 8 |
| | | WEIGHT WATCHERS | | 6263 | 1.08 | 1.20 | 0.96 | 23 | 0 | 2 | 3 | 4 |
| 11 | | MARIGOLD FOODS INC | 5551 | | 0.96 | 1.12 | 0.75 | 4 | 0 | 1 | 0 | 0 |
| | | QUALITY CHEKD | | 2867 | 0.50 | 1.07 | 0.67 | 3 | 0 | 0 | 0 | 0 |
| | | KEMPS | | 1354 | 0.23 | 1.25 | 0.99 | 2 | 0 | 1 | 0 | 0 |
| | | KEMPS LITE | | 1330 | 0.23 | 1.10 | 0.67 | 3 | 0 | 0 | 0 | 0 |
| 12 | C | PRAIRIE FARMS DRY, INC | 4713 | | 0.82 | 1.07 | 0.76 | 4 | 0 | 0 | 1 | 2 |
| | C | PRAIRIE FARMS | | 4504 | 0.78 | 1.09 | 0.76 | 4 | 0 | 1 | 0 | 1 |
| 13 | | GENERAL MILLS | 4542 | | 0.79 | 1.63 | 0.87 | 6 | 1 | 2 | 0 | 0 |
| | | MICHIGAN | | 4542 | 0.79 | 1.63 | 0.87 | 6 | 2 | 0 | 1 | 0 |
| 14 | C | INTERMOUNTAIN MILK | 4261 | | 0.74 | 1.00 | 0.82 | 3 | 1 | 1 | 0 | 1 |
| | C | CREAM O WEBER | | 4261 | 0.74 | 1.00 | 0.82 | 3 | 1 | 0 | 1 | 1 |
| 15 | | OLD HOME FOODS INC | 4019 | | 0.70 | 1.75 | 0.92 | 1 | 1 | 0 | 0 | 0 |
| | | OLD HOME | | 3367 | 0.58 | 1.75 | 0.93 | 1 | 1 | 0 | 0 | 0 |
| | | SLENDRELLA | | 653 | 0.11 | 1.73 | 0.84 | 1 | 0 | 0 | 1 | 0 |
| 16 | | NORDICA INTL INC | 3949 | | 0.68 | 1.24 | 0.82 | 2 | 0 | 1 | 0 | 0 |
| | | NORDICA | | 3944 | 0.68 | 1.24 | 0.82 | 2 | 0 | 1 | 0 | 0 |
| 17 | C | GOLDEN GUERNSEY DRY | 3291 | | 0.57 | 1.23 | 0.85 | 1 | 1 | 0 | 0 | 0 |
| | C | GOLDEN GUERNSEY | | 3291 | 0.57 | 1.23 | 0.85 | 1 | 1 | 0 | 0 | 0 |

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 18 | C | CABOT FRMRS' COOP | 2982 | | 0.52 | 0.88 | 0.98 | 5 | 0 | 0 | 3 | 2 |
| | | C CABOT | | 2982 | 0.52 | 0.88 | 0.98 | 5 | 0 | 0 | 2 | 1 |
| 19 | | NESTLE CO | 2745 | | 0.48 | 0.97 | 0.85 | 3 | 0 | 1 | 1 | 0 |
| | | CARNATION | | 2745 | 0.48 | 0.97 | 0.85 | 3 | 0 | 1 | 1 | 0 |
| 20 | | REITER FOODS INC | 2736 | | 0.47 | 0.86 | 0.73 | 3 | 0 | 0 | 1 | 2 |
| | | REITER | | 2736 | 0.47 | 0.86 | 0.73 | 3 | 1 | 0 | 0 | 1 |
| 21 | C | FARM FRESH DRY INC | 2640 | | 0.46 | 0.94 | 0.75 | 2 | 1 | 1 | 0 | 0 |
| | | C FARM FRESH | | 2123 | 0.37 | 0.97 | 0.76 | 2 | 1 | 1 | 0 | 0 |
| | | C COUNTRY GIRL | | 448 | 0.08 | 0.81 | 0.67 | 2 | 0 | 0 | 1 | 0 |
| | | C FARM FRESH HEALTH | | 69 | 0.01 | 1.07 | 1.00 | 1 | 0 | 0 | 0 | 0 |
| 24 | C | BISON FOODS CO | 2329 | | 0.40 | 1.19 | 0.93 | 1 | 1 | 0 | 0 | 0 |
| | | C BISON | | 2329 | 0.40 | 1.19 | 0.93 | 1 | 1 | 0 | 0 | 0 |
| 31 | C | ROBERTS DRY CO | 1488 | | 0.26 | 0.94 | 0.77 | 2 | 1 | 0 | 1 | 0 |
| | | C ROBERTS | | 1488 | 0.26 | 0.94 | 0.77 | 2 | 1 | 0 | 0 | 1 |
| 34 | C | SWISS VALLEY FARMS CO | 1161 | | 0.20 | 1.14 | 0.81 | 1 | 0 | 0 | 1 | 0 |
| | | C SWISS VALLEY FARMS | | 1161 | 0.20 | 1.14 | 0.81 | 1 | 0 | 0 | 0 | 1 |
| 35 | C | FLAV-O-RICH INC | 1127 | | 0.20 | 1.13 | 0.93 | 3 | 0 | 0 | 1 | 1 |
| | | C FLAV O RICH | | 1127 | 0.20 | 1.13 | 0.93 | 3 | 0 | 0 | 0 | 0 |
| 38 | C | ZARDA BROTHERS DRY | 823 | | 0.14 | 0.99 | 0.74 | 2 | 1 | 0 | 0 | 0 |
| | | C ZARDA | | 823 | 0.14 | 0.99 | 0.74 | 2 | 1 | 0 | 0 | 0 |
| 40 | C | LAND O'LAKES, INC | 804 | | 0.14 | 1.23 | 0.76 | 1 | 0 | 0 | 1 | 0 |
| | | C LAND O LAKES | | 511 | 0.09 | 1.17 | 0.72 | 1 | 0 | 0 | 0 | 1 |
| 47 | C | DAIRYLEA COOP INC | 521 | | 0.09 | 1.01 | 1.02 | 2 | 0 | 0 | 0 | 0 |
| | | C DAIRYLEA | | 521 | 0.09 | 1.01 | 1.02 | 2 | 0 | 0 | 0 | 0 |
| 53 | C | VALLEY OF VIRGINIA | 399 | | 0.07 | 0.94 | 0.79 | 2 | 0 | 1 | 1 | 0 |
| | | C SHENANDOAH PRIDE | | 399 | 0.07 | 0.94 | 0.79 | 2 | 0 | 0 | 0 | 1 |

Note: The cutoff for inclusion is that a firm must have 0.5 percent of sales of cottage cheese in at least one local market. Thus very small local cooperatives are not included.

Source: R. W. Cotterill and L. E. Haller. 1994. "Marketing Strategies in Branded Dairy Product Markets" in R.W. Cotterill ed. *Competitive Strategy Analysis for Agricultural Marketing Cooperatives*. Boulder: Westview Press.

national market share, its price per pound, and the units per pound. This last variable is a control for package size. If the number of units per pound is greater than 1, then the average package size is less than a pound. If the number of units per pound is one, then the average package size is a one pound unit. These data suggest that cottage cheese on average is sold in a one pound container. Table 3 also reports the number of the local markets where the company sells the brand. There are 50 local markets in this sample.

Philip Morris is the largest branded cottage cheese processor. It is essentially a national firm with operations in virtually all of the local markets. It ranks number one in terms of brand sales in 22 of those markets, number 2 in 7 markets and number 3 in 9 markets. One can see the various rankings of their products by brand underneath the company row. The number two branded processor is Borden. Number three is the Hood operation which is still owned and controlled by Agway Inc. In 1989 and 1988 it was a joint venture with the AgriMark Farmers Cooperative in New England. Then comes Quality Checked, Dean Foods, and Crowley. Darigold, a farmer cooperative is number 9 with a national market share of only 1.1 percent compared to Philip Morris' 21 percent of the market. Yet, if one examines its local market presence, Darigold is only in two markets and rank number 1 in both of those markets. This illustrates that there can be a very big difference between local as opposed to national market positions.

Let's now examine a regression analysis of cottage cheese prices in local markets in the fourth quarter of 1988 (Haller 1993). There are 390 observations. The unit of observation is a brand of cottage cheese in a local market, for example Darigold in Seattle or Sealtest Light N Lively in New York City or Hood cottage cheese in Boston. In the first equation the market

share of the brand in the local market has a positive and significant (5 percent level) impact on price. The package size control variable (units per pound variable) also has a very significant impact on price. The second equation, again includes the brand's market share in the first column and units per pound control for package size and then whether a cooperative is present in the market. For example, if we are looking at Sealtest Light N Lively cottage cheese in Seattle, the cooperative present binary variable would have a value of 1 because Darigold is there. The estimation result for this variable implies that if there is a cooperative present in the market, prices to consumers are significantly lower. The next variable in Table 4, the cooperative volume market share variable is an interaction term between the cooperatives present binary and the volume market share variable. If the observation is a proprietary firm, this variable has a value of zero, if it is a cooperative this variable has the value of the cooperative market share. So the total impact of the cooperative's market share on price is the sum of the coefficient in the first column and the coefficient in the cooperative volume market share column. The cooperative market share variable is negative and significant. If one adds the two share coefficients, the result is near zero, a slightly negative coefficient.

What these results tell us is the following. When cooperatives are present in the market all firms, including cooperatives, have lower prices, and there is no significant difference in price for large as opposed to small market share cooperatives. That's distinctly different from the positive share effect for proprietary firms.

The ultimate story is told by these first two equations. Equation 3 in Table 4 splits the market share variable up into two components—the average weighted distribution, that's the percent of stores in the local market that carry the product—and in-store share. Brands that are

## Table 4 REGRESSION RESULTS FOR THE COTTAGE CHEESE MARKET, 4TH QUARTER, 1988

Dependent Variable is Average Price per Pound

| Eq. | Volume Market Share | Average Wtd. Distrib. | In-store Share | Units per Pound | Co-ops Present Binary | Co-op Volume Market Share | Retail Market $CR_4$ | Pop. | Percent Volume w/ any Merch. | Private Label Price/ Pound | Constant | $R^2$ Adj. $R^2$ |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 0.00208 | | | 0.605 | | | | | | | 0.599 | 0.2508 |
| | (2.080) | | | (10.120) | | | | | | | (11.055) | 0.2461 |
| 2 | 0.00480 | | | 0.595 | -0.0676 | -0.00511 | | | | | 0.626 | 0.3078 |
| | (3.832) | | | (10.303 | (3.436) | (3.035) | | | | | (11.667) | 0.2991 |
| 3 | | 0.00233 | -0.00167 | 0.454 | -0.0737 | | | | | | 0.693 | 0.4630 |
| | | (9.527) | (3.082) | (8.533) | (4.348) | | | | | | (13.521) | 0.4563 |
| 4 | 0.00438 | | | 0.553 | -0.0602 | -0.00466 | 0.00127 | 9.94 E-9 | | | 0.557 | 0.3252 |
| | (3.500) | | | (9.351) | (3.055) | (2.781) | (1.701) | (2.630) | | | (8.467) | 0.3126 |
| 5 | | 0.00226 | -0.00195 | 0.407 | -0.0632 | | 0.000818 | 11.9 E-9 | | | 0.654 | 0.4844 |
| | | (9.380) | (3.610) | (7.527) | (3.735) | | (1.248) | (3.606) | | | (10.766) | 0.4747 |
| 6 | 0.00381 | | | 0.495 | -0.0361 | -0.00365 | 0.000974 | 0.790 E-9 | -0.00236 | 0.590 | 0.132 | 0.4348 |
| | (3.275) | | | (9.029) | (1.965) | (2.353) | (1.414) | (0.210) | (4.675) | (6.458) | (1.366) | 0.4205 |
| 7 | | 0.00235 | -0.00170 | 0.350 | -0.0384 | | 0.000548 | 4.22 E-9 | -0.00305 | 0.486 | 0.321 | 0.5960 |
| | | (10.708) | (3.535) | (7.236) | (2.511) | | (0.939) | (1.310) | (7.082) | (6.274) | (3.760) | 0.5858 |

(t statistics in parentheses)

**Note:** Significance levels for a two-tailed test are: $t > 1.645$, 10%; $t > 1.960$, 5%; $t > 2.576$, 1%

Source: *Branded Product Marketing Strategies in the Cottage Cheese Market: Cooperative versus Proprietary Firms* by L.E. Haller, Food Marketing Policy Center, Research Report No. 16, University of Connecticut, January 1992.

widely distributed throughout the local market area have significantly higher prices. The in-store share variable measures a consumer demand effect. If cottage cheese is in the store then for it to expand sales in that store it looks like they have to drop the price. There is a negative relationship between in-store share and price, tracing out more or less a demand curve.

Equation 4 adds population to see if there are higher prices in larger or smaller cities. There are higher prices in larger cities. Equation 5 adds population with the decomposed market share variables. Equation 6 adds population, retail concentration, a merchandising variable, and a private label price per pound variable. Since usually 40 percent of the market is private label, one might think that private label price may be a proxy for a competitive price which is equal to product cost. This specification doesn't change the story Haller tells to this point. One other variable which is of interest in this study would be the retail market concentration ratio, that's the sum of the market shares of the top four supermarket chains in the local market area. It is marginally positive in a couple of these regressions suggesting that there is some market power in the retail distribution system itself. However, this result is really relatively weak. After all we are only analyzing one out of 25,000 products in the typical supermarket, to have a retailer power measure come through on a single product would be, I think, somewhat extraordinary. Although in some of these specifications it does seem to do just that.

In summary, we examined a cross section analysis of 135 food product industries and an analysis of a very specific industry, the cottage cheese industry. Does a cooperative's presence in an industry raise or lower prices to consumers? Analysis of price cost margins suggests that cooperatives may lower prices, but is not sufficient evidence. Direct analysis of the price of cottage cheese indicates that cooperatives do lower prices to consumers. Cooperatives have a

procompetitive effect on other vendors of cottage cheese. A corollary is that as the market share of cooperatives gets larger, there seems to be no relationship or if anything a somewhat weak negative relationship between the cooperative price and their market share.

What should one conclude from this discussion? Well, if one is scrutinizing an agricultural marketing cooperative that markets products in the cottage cheese industry alone, both the price cost margin and the price analysis suggest that there are no Capper-Volstead problems. Agricultural cooperatives in the dairy sector, however, often process several other products as well as cottage cheese. Horizontally integrated bargaining cooperatives, e.g., Darigold in the Northeast or the Hood AgriMark System as it was in the late '80s in New England or Dairyman's Inc. in the South Central part of the country, on occasion have been able to elevate fluid (not manufacturing) milk prices through over-order premiums. Whether that is undue price enhancement or not given the kind of economic malaise that's been in the dairy industry is open to question. When prices for fluid milk are raised one might expect that the consumption of fluid milk might decrease somewhat and there would be more milk for manufacturing including cottage cheese. In this more general framework one might ask do the cooperatives also exert market power to extract a premium for farmers in the cottage cheese markets? The answer from this research is clearly *no*. In fact they are doing the exact opposite. They seem to try to move the product through to the consumer to get the milk through the market channels as much as they can. In other words a cooperative seems to be more committed to maximizing sales in the manufacturing milk area rather than maximizing price or price-cost margins on their sales in that area.

One other parting comment on Capper-Volstead doesn't come from this analysis

presented here but deserves mentioning. Some large cooperatives also produce processed products that are not from their member's output. For example, Land O'Lakes cooperative not only produces Land O'Lakes butter it also produces Land O'Lakes margarine. An interesting question with regards to Capper-Volstead is whether the cooperative's pricing strategy for those products is inherently different from the pricing strategy it has for its member produced products. For example, Land O'Lakes and its butter operation may again be looking to develop a market and to maintain butter sales as a way of disposing dairy products. The butter market is not a growing market. It's a declining market with declining per capita consumption for health reasons. Thus, Land O'Lakes pricing policy may be to move product through to the consumer. That may not be the case for Land O'Lakes margarine. Land O'Lakes margarine may be more of a profit generating item for the cooperative. They may manage it as a proprietary firm would to generate a contribution for their member owners. Such nonmember product pricing strategies may be fertile ground for Capper-Volstead enforcement.

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## Appendix A

## CAPPER-VOLSTEAD ACT

42 Stat. 388 (1922)

1. Authorization of associations: powers (7 U.S.C. 291)

Persons engaged in the production of agricultural products as farmers, planters, ranchmen, dairymen, nut or fruit growers may act together in associations, corporate or otherwise, with or without capital stock, in collectively processing, preparing for market, handling, and marketing in interstate and foreign commerce, such products of persons so engaged. Such associations may have marketing agencies in common; and such associations and their members may make the necessary contracts and agreements to effect such purposes: Provided, however, that such association are operated for the mutual benefit of the members thereof, as such producers, and conform to one or both of the following requirements:

First. That no member of the association is allowed more than one vote because of the amount of stock or membership capital he may own therein, or,

Second. That the association does not pay dividends on stock or membership capital in excess of 8 per centum per annum.

And in any case to the following:

Third. That the association shall not deal in the products of nonmembers to an amount greater in value than such as are handled by it for members.

2. Monopolizing or restraining trade and unduly enhancing prices prohibited; remedy and procedure (7 U.S.C. 292)

If the Secretary of Agriculture shall have reason to believe that any such association monopolizes or restrains trade in interstate or foreign commerce to such an extent that the price of any agricultural product is unduly enhanced by reason thereof, he shall serve upon such association a complaint stating his charge in that respect, to which complaint shall be attached, or contained therein, a notice of hearing, specifying a day and place not less than thirty days after the service thereof, requiring the association to show cause why an order should not be made directing it to cease and desist from monopolization or restraint of trade. An association so complained of may at the time and place so fixed show cause why such order should not be entered. The evidence given on such a hearing shall be taken under such rules and regulations as the Secretary of Agriculture may prescribe, reduced to writing, and made a part of the record therein. If upon such hearing the Secretary of Agriculture shall be of the opinion that such association monopolizes or restrains trade in interstate or foreign commerce to such an extent that the price

of any agricultural product is unduly enhance thereby, he shall issue and cause to be served upon the association an order reciting the facts found by him, directing such association to cease and desist from monopolization or restraint of trade. On the request of such association or if such association fails or neglects for thirty days to obey such order, the Secretary of Agriculture shall file in the district court in the judicial district in which such association has its principal place of business a certified copy of the order and of all the records in the proceeding, together with a petition asking that the order be enforced, and shall give notice to the Attorney General and to said association of such filing. Such district court shall thereupon have jurisdiction to enter a decree affirming, modifying, or setting aside said order, or enter such other decree as the court may deem equitable, and may make rules as to pleadings and proceedings to be had in considering such order. The place of trial may, for cause or by consent of parties, be changed as in other causes.

The facts found by the Secretary of Agriculture and recited or set forth in said order shall be prima facie evidence of such facts, but either party may adduce additional evidence. The Department of Justice shall have charge of the enforcement of such order. After the order is so filed in such district court and while pending for review therein the court may issue a temporary writ of injunction forbidding such association from violating such order or any part thereof. The court may, upon conclusion of its hearing, enforce its decree by a permanent injunction or other appropriate remedy. Service of such complaint and of all notices may be made upon such association by service upon any officer or agent thereof engaged in carrying on its business, or on any attorney authorized to appear in such proceeding for such association, and such service shall be binding upon such association, the officers, and members thereof.