NE-165

PRIVATE STRATEGIES, PUBLIC POLICIES & FOOD SYSTEM PERFORMANCE (NE165)

Price Determination in the Bottled Water Industry: A Case Study of Poland Spring

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Abstract

This paper analyzes the price of a single brand in the bottled water industry. We find that the brand's price is negatively related to its own share. We also find that price is positively related to the four firm concentration ratio in the carbonated segment, but unrelated in the noncarbonated segment.

This paper analyzes the performance of a single brand in the bottled water industry. The brand studied is Poland Spring, which ranks among the top 10 brands (by volume) in both the carbonated and noncarbonated segments of the industry. Its manufacturer, Source Perrier S A, was the third largest vendor of bottled water at the end of 1992. This study uses quarterly data extracted from Information Resources, Inc.'s (IRI) InfoScan data base for the period beginning with the first quarter of 1988 and ending with the fourth quarter 1992

Bottled water first gained popularity in the United States in the late 1970s and early 1980s. In the late 1970s, bottled water began to appear in bars and on the tables of restaurants in metropolitan areas. Since that time consumers have increasingly used bottled water as an accompaniment to or substitute for wine at mealtime (Beverage Marketing). Throughout the 1980s, it was the fastest growing segment of the beverage industry, experiencing double-digit growth throughout the decade.

Because of its rapid growth, the industry remains highly fragmented, with many small regional brands trying to establish a foothold in what is characterized as a "lucrative market" (Beverage Marketing). In addition to pure price competition, firms competing for market share in this industry are using a good deal of non-price competition, including advertising and product differentiation via brand names. Industry analysts predict that "competition will be greater and the prices lower" in the future (Beverage Marketing).

The first section of this paper extends oligopoly theory to show the relationship between the price a dominant firm charges and its market share and market conditions in a differentiated goods industry. The second section develops an estimatable model of price in the bottled water industry and discusses the data and methodology used. Third, we present the results of our estimations, and finally, we discuss and draw conclusions from the results.

Theoretical Development

Our formal analysis of the differentiated product dominant firm model[1] begins with the dominant

firm's profit function:

$$\pi_i = p_i \cdot q_i - TC_i \,. \tag{1}$$

where $q_i = q[Q(p_i,...), q_R(p_i,...), P_R(p_i,...)]$ is firm i's perceived demand,
$Q = q_i + q_R$ is total industry output,
q_R is the sum of all rivals' output quantities, and
P_R is the rivals' price response function[2].

The first-order condition for profit maximization in the Bertrand (price setting) model, in terms of firm i's price, marginal cost, and own-price elasticity of demand, η_i[3]:

$$\frac{d\pi_i}{dp_i} = -(p_i - MC_i)\,\eta_i + p_i = 0 \,. \tag{2}$$

Using the fact that $q_i = q[Q(p_i,...), q_R(p_i,...), P_R(p_i,...)]$, we can express η_i as

$$\eta_i = -\left(\frac{dq_i}{dp_i}\frac{p_i}{q_i}\right) = \frac{\eta^M + \theta(1 - s_i) - \eta^C \eta^R s_i}{s_i} \tag{3}$$

where $\eta^M = -\dfrac{\partial Q}{\partial p_i}\dfrac{p_i}{Q} > 0$ is the price elasticity of market demand,

$\theta = \dfrac{\partial q_R}{\partial p_i}\dfrac{p_i}{q_R} \gtreqless 0$ is the conjectural own-price elasticity of rivals' supply,

$\eta^C = \dfrac{\partial q_i}{\partial P_R}\dfrac{P_R}{q_i} \geq 0$ is the cross-price elasticity of own-firm demand, and

$\eta^R = \dfrac{\partial P_R}{\partial p_i}\dfrac{p_i}{P_R} \gtreqless 0$ is the conjectural rival price response elasticity.

Substituting this into equation (2) and solving for p_i yields:

$$p_i = MC_i \frac{\eta_i}{\eta_i - 1} = MC_i \frac{\eta^M + \theta(1 - s_i) - \eta^C \eta^R s_i}{\eta^M + \theta(1 - s_i) - \eta^C \eta^R s_i - s_i} \tag{4}$$

The derivative of equation (6) with respect to market share is

$$\frac{\partial p_i}{\partial s_i} = MC_i \frac{\eta^M + \theta}{\left[\eta^M + \theta(1 - s_i) - \eta^C \eta^R s_i - s_i\right]^2} \tag{5}$$

This derivative will be positive unless $\theta < 0$ (firm i's conjecture is that rivals will respond to a price cut by *increasing* their own output) and $|\theta| > \eta^M$ (firm i's conjecture is that rivals will expand their output

by more than the total increase in market demand resulting from its price cut) (Harris, p. 274). In the case of constant costs, a firm's price is a positive function of its market share. In the event of a marginal cost decrease, price also decreases. If the decrease in marginal cost increases market share, then one has an ambiguous price result.

Development of the Empirical Model

The theoretical model must be expanded to reflect institutional realities in the particular industry studied and the panel nature of the data set. The data set is three dimensional in nature — it contains observations across up to 22 markets for a time period of twenty quarters. In addition, it contains observations for both carbonated and noncarbonated water. To address this last dimension, we will assume that the structural variables affect both segments equally, and that only the relationship between market share and price differs for the two segments.

The dependent variable used is the **Average Price** per volume equivalent. The industry standard "volume equivalent" in soft drinks and bottled water is traditionally 192 ounces, an amount equal to a case of 8 ounce bottles. The Average Price is the average price paid by consumers for the quarter, net of all discounts except manufacturers' coupons.

We use two alternative variables to examine the effects of share on price. The **Volume Share** is the quantity of Poland Spring sold during the quarter divided by the total quantity of all brands of carbonated and noncarbonated water sold in the market that quarter. Theory developed above, as well as previous empirical findings (e.g., Wills), leads us to expect a positive relationship between volume share and price. As an alternative specification, we replace market share with **Brand CR_4**. Brand CR_4 is constructed for each market by summing the market shares of the four leading brands in that market for the quarter. Previous empirical studies (e.g., Cotterill, Weiss) have found a positive relation between concentration and price. We therefore expect to find a positive relationship between concentration and price.

We use **Private Label Price** as an instrument for the unobservable marginal cost. Connor and Peterson argue that private label price represents the "competitive" price in a market since private label

goods are not promoted and are produced under contract to retailer specifications that usually copy leading brand ingredients, flavors, etc. Private label price effectively equals marginal cost. Higher private label prices merely reflect a higher cost of doing business in a given market and therefore prices for branded products should also be higher. The private label price represents the average price for all store brands offered by retailers in the market area.

We include two demographic variables that act as demand shifters. The **Population** of the market area is included to examine the effect of market size. If there are increasing economies of scale in the range of market sizes in this sample, population should have a negative influence on price. However, if firms incur higher costs in larger markets, these markets should have higher prices. This variable is constant over a calendar year and is obtained from *Market Profiles*, provided by IRI, supplemented with Progressive Grocer's *Market Scope*.

Median Family Income can be considered a proxy for wage costs in the market, and so represent a cost of doing business for the retailer. Second, assuming that bottled water is a normal good, rising income will increase demand and, *ceteris paribus*, price. Median Family Income is constant over a calendar year and its source is *Market Scope*.

The **Volume per Unit** variable is included to control for the lower prices charged per ounce for water sold in larger "economy" size containers, such as two liter bottles. It is constructed by dividing number of 192 oz. "volume equivalents" sold within a market by the total number of units (12 oz. cans, one liter bottles, etc.) sold. Unless consumers actually pay more per ounce for larger sizes, this variable should have a negative sign.

The basic models we will estimate are

$$Price = \beta_1 D_1 + \beta_2 D_2 + \beta_3 (D_1 * StructureVar) + \beta_4 (D_2 * StructureVar) + \beta_5 PvtLabelPr + \beta_6 MedianIncome + \beta_7 Population + \beta_8 VolPerUnit$$

where ***Structure Var*** is either Market Share or Brand CR_4;

D_1 is equal to one if the observation is for carbonated Poland Spring, zero otherwise; and

D_2 is equal to one if the observation is for noncarbonated Poland Spring, zero otherwise.

Results

Table 1 contains descriptive statistics for the data used in our estimations. As can be seen, the mean price for carbonated water is more than twice that for noncarbonated water. This price difference is not unique to Poland Spring. In the fourth quarter of 1992, for example, the mean price for all carbonated water in the U.S. was $4.64, while the mean price for noncarbonated water was $1.52 (IRI). There are marked differences in market share as well; the mean local share for carbonated Poland Spring is 7.76 percent, while the mean local share for noncarbonated Poland Spring is only 1.88 percent.

In order to get a better feel for the data, let us take a look at the data for Boston. In Figures 1 and 2, we see that in Boston Poland Spring's carbonated water reached a maximum market share of 3.88 percent and a maximum price per volume $7.88. For noncarbonated water (Figures 3 and 4), the maximum price is $1.95 and the maximum market share is 28.45 percent. Note that over time price has dropped and market share has increased for carbonated water; with a significant price decrease in the first quarter of 1991 corresponding to a jump in its market share. A similar price drop for its noncarbonated water did not produce a similar increase in market share. This suggests that the two product markets are separate and that there may be different relationships between price and market share in the two segments.

The mean CR_4 is similar for the two segments. Poland Spring's noncarbonated products are more widely distributed, however, and this accounts for the different means for CR_4 and for the following variables. In fact, Poland Spring's noncarbonated water accounts for more than 60 percent more observations (302 *vs.* 182) than its carbonated products.

The mean private label price was a little less than $1.50 for both segments, and the median family income averaged about $35,000. Mean population for both segments was about 3.6 million, which is larger than the mean population of 2.7 million for all IRI markets. Poland Spring tends to be sold more in larger markets. The mean of the Volume per Unit variable is quite different for the two segments. It is much larger for the noncarbonated water segment, indicating that Poland Spring sells its

noncarbonated water in larger containers.

Table 2 contains the results of our regressions. Equation 1 contains the structural variable Market Share. Overall, the model explains a high percentage of the variation in the price of Poland Spring, with an R^2 of 0.819. Market share is negative in both segments, and significant at the five percent level for the carbonated water segment and significant at the one percent level for the noncarbonated water segment. This finding is in contradiction to the theory presented above; its implications will be discussed below. The coefficient on carbonated water's market share is more than four times greater in magnitude than that for noncarbonated water, indicating that carbonated water faces a much steeper demand curve. Private Label Price is positive, as hypothesized, and significant at the one percent level. Private label price is clearly a good indicator of costs in local markets.

Larger markets have higher prices. Population is positive and significant at the one percent level. The magnitude of the coefficient indicates a price spread between the smallest and largest markets in the sample of about 55 cents. The coefficient for median family income is negative and significant at the one percent level. This is in contradiction to our hypothesis that median income should serve as an instrument for labor costs and so carry a positive sign. If demand for bottled water is higher in higher income markets, this greater demand may attract entrants to these markets and increase competition, thereby lowering price. Finally, the coefficient for the volume per unit variable is negative, as hypothesized, and significant at the one percent level. Consumers who purchase water in larger sized bottles do save money.

Turning to equation 2 containing brand level CR_4 as the structural variable, we again see a high level of explanatory power, with an R^2 of 0.814. In this case, we see that CR_4 is positive, as hypothesized, and significant at the five percent level for carbonated water, but it is not significant for noncarbonated water. This indicates that market power is being exercised in the carbonated water segment, providing a price umbrella for all brands, but not in the noncarbonated segment.

The remaining variables perform much as they did much in equation 1, except that the significance level of the coefficient for population drops to the five percent level and the significance of the

coefficient for median family income drops to the ten percent level.

Discussion and Conclusions

The finding of a significant negative relationship between market share and price, in contradiction of our hypothesis, merits some discussion. Haller (1994), modelling brand price in the catsup industry, finds that the relationship between share and price when viewed in an *inter*brand context (Heinz' share *vs*. Hunts' share) is positive, but the relationship turns negative when viewed in an *intra*brand context (variations in Heinz' share across markets or over time). The negative intrabrand relationship is determined by the short-run demand effects of price changes. Higher share brands do have, on average, higher prices but demand effects trace a negative relationship around the higher mean price.

We find evidence that market power is being exercised and price levels increased in more concentrated markets, at least in the carbonated water segment. Poland Springs is not frequently in the top four brands in the local markets it competes in, so it appears that it is following the price leadership of the top selling brands. There is no evidence to support a similar conclusion in the noncarbonated segment. Indeed, this segment appears to be effectively competitive.

Private label price is an excellent predictor of price and, following Connor and Peterson, an excellent instrument for marginal cost. We also find that prices are higher in larger markets, but we cannot determine from this data whether this is due to diseconomies of size (greater amounts of inputs necessary to deliver the same output) or merely due to higher input costs (the same amount of inputs at higher prices to deliver the same output), or both. Finally, we find that it is important to control for package size when modelling price for retail packaged food products, and that consumers do save money by buying bottled water in larger containers.

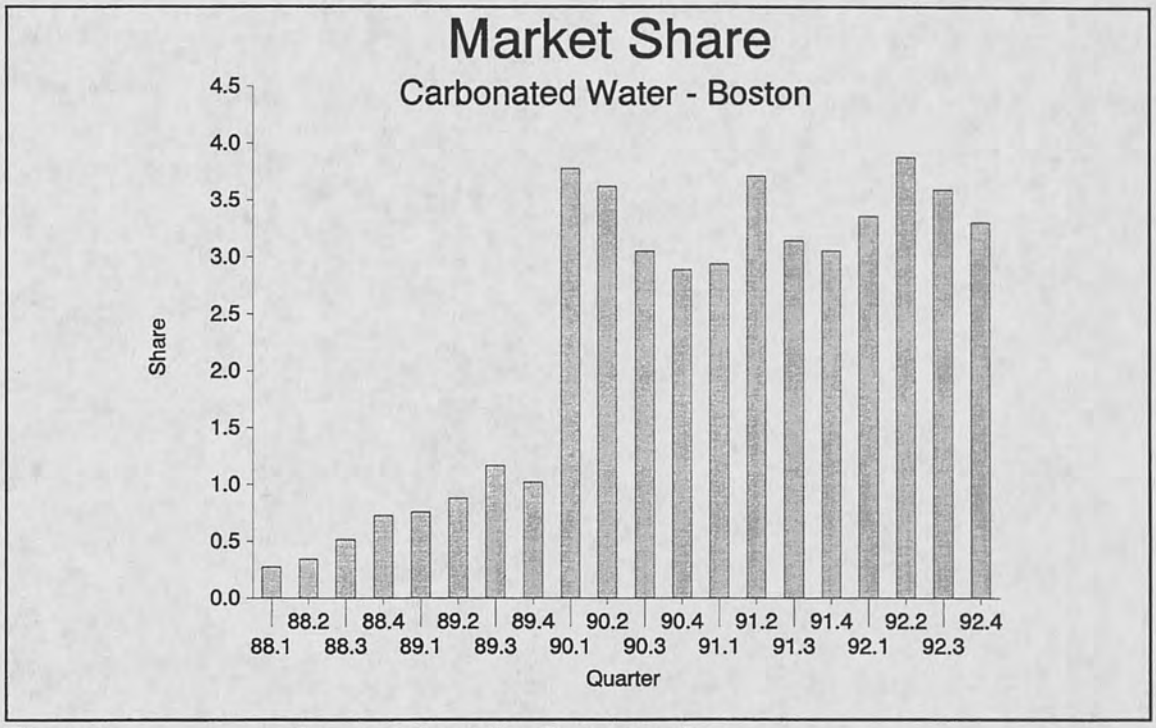

Figure 1 Source: Information Resources, Inc.

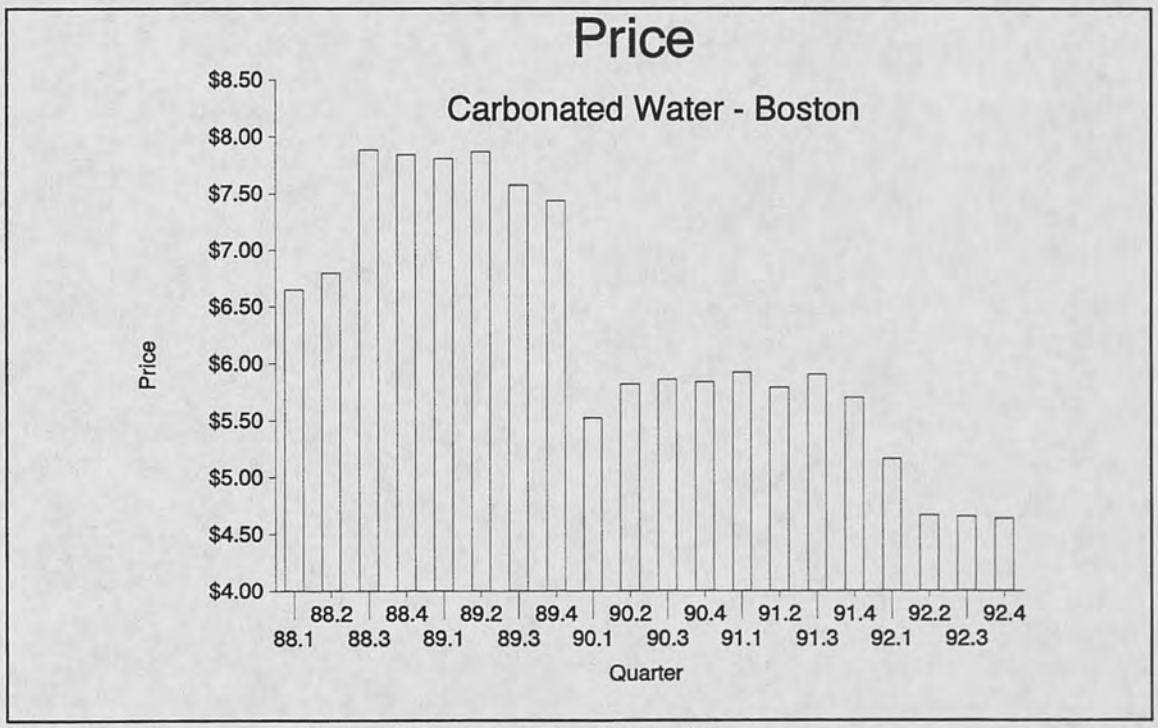

Figure 2 Source: Information Resources, Inc.

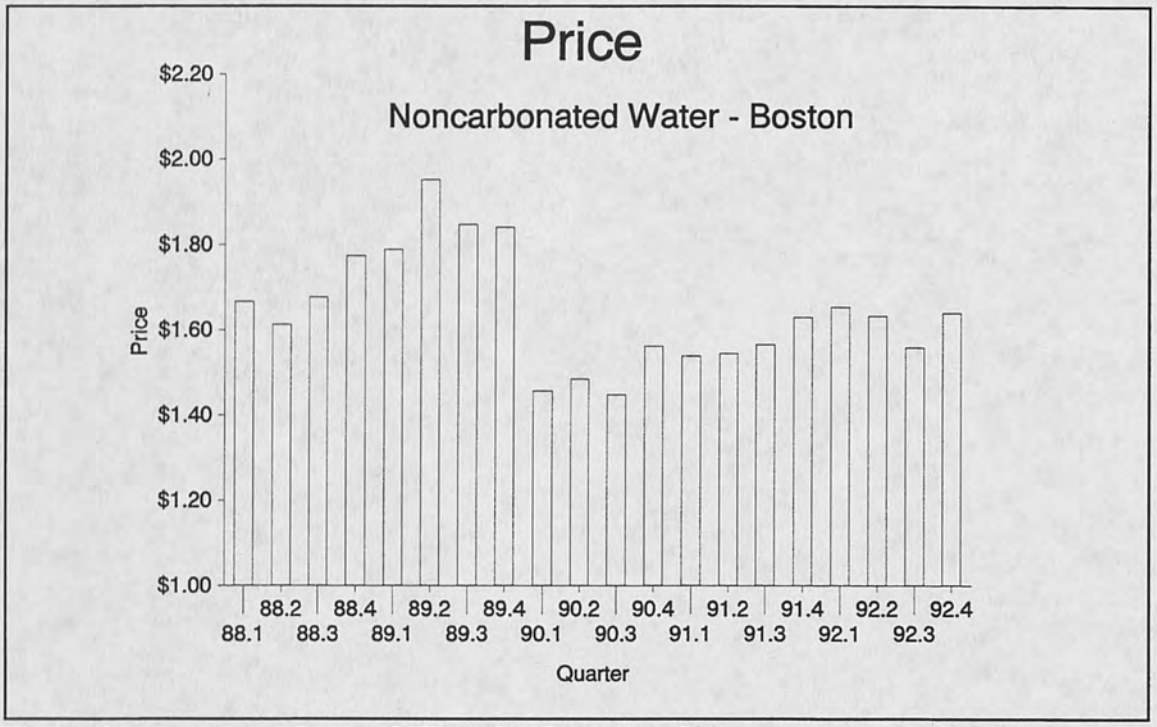

Figure 3 Source: Information Resources, Inc.

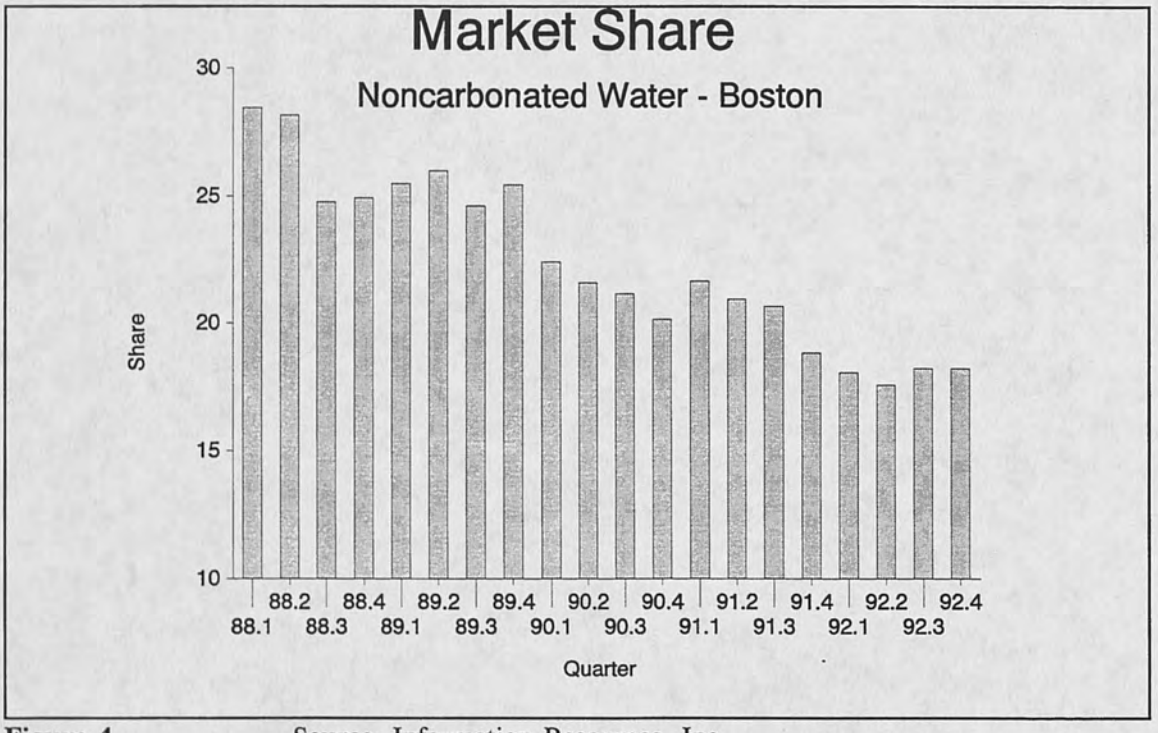

Figure 4 Source: Information Resources, Inc.

Table 1 Descriptive Statistics for Poland Spring: First Quarter 1988 - Fourth Quarter 1992

	Mean	Standard Deviation	Minimum	Maximum
		Carbonated Water Segment (n = 182)		
Average Price	$5.85	1.12	$4.30	$9.56
Volume Share	1.88	1.41	0.50	7.42
Brand CR_4	36.83	10.20	12.8	76.2
Private Label Price	$1.45	1.02	0.0	$3.69
Population	3,630,000	3,920,000	924,000	15,700,000
Median Family Income	$35,820	8,400	$20,730	$52,950
Volume per Unit	0.163	0.0165	0.146	0.245
		Noncarbonated Water Segment (n = 302)		
Average Price	$2.53	1.63	$1.23	$7.01
Volume Share	7.76	7.91	0.52	28.45
Brand CR_4	39.86	10.23	12.8	77.8
Private Label Price	$1.49	1.25	0.0	$9.48
Population	3,630,000	3,690,000	740,000	15,700,000
Median Family Income	$34,090	8,270	$20,730	$52,950
Volume per Unit	0.56	0.21	0.15	0.91

Table 2 **Regression Results for Poland Spring Bottled Water**
Dependent Variable is Average Price per Volume

Explanatory Variable	Equation 1 Coefficient (t-ratio)	Equation 2 Coefficient (t-ratio)
Market Share (Carbonated Segment)	-0.112 (-2.02)**	
Market Share (Noncarbonated Segment)	-0.0273 (-3.68)*	
Brand CR_4 (Carbonated Segment)		0.0150 (2.12)**
Brand CR_4 (Noncarbonated Segment)		0.00051 (0.092)
Private Label Price	0.204 (5.45)*	0.190 (5.07)*
Population (Millions)	0.0371 (3.10)*	0.0272 (2.19)**
Median Family Income ($Thousands)	-0.0137 (-2.56)**	-0.0094 (-1.74)***
Volume per Unit	-6.059 (-21.54)*	-6.456 (-24.26)*
Constant (Carbonated Segment)	7.11	6.31
Constant (Noncarbonated Segment)	6.18	6.08
R^2	0.819	0.814

Note: There are 534 observations.
* Significant at 99% level, ** Significant at 95% level,
*** Significant at 90% level

End Notes

1. For a more detailed derivation, see Haller (1994).

2. All rivals are assumed to be characterized by a single price response function, making this in effect a 2 firm model. The model can be fully generalized to n firms by incorporating $n - 1$ distinct price response functions.

3. Throughout this paper we will follow the convention of considering the price elasticities of demand to be positive numbers; for instance, firm i's own-price elasticity of demand is given by:

$$\eta_i = -\frac{dq_i}{dp_i}\frac{p_i}{q_i}$$

References

Beverage Marketing. *Bottled Water in the United States, 1993 Edition*. New York: Beverage Marketing.

Clarke, Roger; Stephen W. Davies; and Michael Waterson. "The Profitability-Concentration Relation: Market Power or Efficiency?" *Journal of Industrial Economics*, Vol. 32 (June 1984), pp. 435 - 50.

Class/Brand Year-to-Date. New York: Leading National Advertisers, 1987, 1988, 1989, 1990, 1991.

Connor, John M.; and Everett B. Peterson. "Market-Structure Determinants of National Brand-Private Label Price Differences of Manufactured Food Products," *Journal of Industrial Economics*, Vol. 40 (June 1992), pp. 157 - 72.

Cotterill, Ronald W. "Market Power in the Retail Food Industry: Evidence from Vermont," *The Review of Economics and Statistics*, Vol. 68, No. 3 (August 1986), pp. 379 - 86.

Haller, Lawrence E. *Branded Product Pricing Strategies in the Catsup and Cottage Cheese Industries: The Effects of Brand Share and Cooperative Presence*, unpublished Ph.D. dissertation, University of Connecticut, 1994.

Harris, Frederick. "Testable Competing Hypotheses from Structure-Performance Theory: Efficient Structure Versus Market Power," *Journal of Industrial Economics*, Vol. 36 No. 3 (March 1988), pp. 267 - 80.

IRI. *InfoScan Market and Regional Profiles 1992*. Chicago: Information Resources, Inc., 1992.

Progressive's Grocer's Market Scope. Stamford, Ct.: Maclean Hunter Media, Inc., 1989, 1990, 1991, 1992, 1993.

Weiss, Leonard W., ed. *Concentration and Price*. Cambridge: The MIT Press, 1989.

Wills, Robert L. "Evaluating Price Enhancement by Processing Cooperatives," *American Journal of Agricultural Economics*, Vol. 67, No. 2 (May 1985), pp. 183 - 92.

Regional Research Project NE-165
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Working Papers

1. Rogers, Richard T. and Julie Caswell. 1987."Strategic Management and Internal Organization of Food Marketing Firms." University of Massachusetts, Amherst, MA.

2. Roberts, Tanya. 1987. "Salmonellosis Control: Estimated Economic Benefits." ERS/USDA, Washington, D.C.

3. Lee, David R. 1987. "Labor Market Dynamics in the U.S. Food Sector." Cornell University, Ithaca, NY.

4. McLaughlin, Edward W. and Vithala R. Rao. 1987. "An Explanatory Modeling of the Decision Process of New Product Selection by Supermarket Buyers." Cornell University, Ithaca, NY.

5. Smith, Mark E., Eileen O. van Ravenswaay and Stanley R. Thompson. 1987. "Sales Loss Determination in Food Contamination Incidents: An Application to Milk Bans in Hawaii." Michigan State University, East Lansing, MI.

6. Zellner, James A. 1987. "Some Causes and Consequences of Food Industry Conduct: A Simultaneous Analysis." University of Florida, Gainesville, FL.

7. Caswell, Julie A. and Ronald Cotterill. 1988. "New Theoretical Approaches to Measuring Industry Performance." University of Massachusetts, Amherst, MA.

8. Lopez, Rigoberto A. 1988. "Political Economy of the United States Sugar Policies." Rutgers University, New Brunswick, NJ.

9. Azzam, Azzeddine, Emilio Pagoulatos and John Schroeter. 1988. "Agricultural Price Spreads and Market Performance." University of Connecticut, Storrs, CT.

10. Lopez, Rigoberto A., and Daniel Dorsainvil. 1988. "The Degree and Sources of Oligopsony Power: An Application to the Haitian Coffee Market." Rutgers University, New Brunswick, NJ.

11. Caswell, Julie A. 1988. "A Model of the Intra/Interstate Impacts of State Product Regulation." University of Massachusetts, Amherst, MA.

12. Cotterill, Ronald W. and Lawrence E. Haller. 1988. "Entry Barriers, the Queue of Potential Entrants, and Entry into Food Retailing Markets." University of Connecticut, Storrs, CT.

13. Caswell, Julie A. 1988. "An Alternative Measure of Aggregate Concentration with an Application to the Agribusiness Sector." University of Massachusetts, Amherst, MA.

14. McLaughlin, Edward W. and Vithala Rao. 1989. "The Strategic Role of Supermarket Buyer Intermediaries in New Product Selection: Implications for Systemwide Efficiency." Cornell University, Ithaca, NY.

15. Azzam, Azzeddine and Emilio Pagoulatos. 1989. "Testing for Oligopoly and Oligopsony Power." University of Nebraska-Lincoln.

16. Connor, John M. 1989. "Concentration Issues in the U.S. Beef Subsector." Purdue University, W. LaFayette, IN.

17. Manalo, Alberto B. 1989. "Benefits Sought by Apple Consumers." University of New Hampshire, Durham, NH.

18. Fletcher, Stanley, Kay H. McWatters and Anna V.A. Resurreccion. 1990. "Analysis of Consumer's Willingness to Pay for New Fried Food Prepared From Cowpea Flour." University of Georgia, Experiment, GA.

19. Padberg, Daniel I. and Julie A. Caswell. 1990. "Toward a More Comprehensive Theory of Food Labeling." University of Massachusetts, Amherst, MA.

20. Loehman, Edna. 1991. "Alternative Measures of Benefit for Nonmarket Goods which are Substitutes for Complements for Market Goods." Purdue University, W. LaFayette, IN.

21. Williams, Jr., Richard A. and Robert N. Brown. 1991. "Health and Safety Regulation of Small, High-Risk Subpopulations." FDA, Washington, DC.

22. McLaughlin, Edward W. 1991. "The Fresh Company." Cornell University, Ithaca, NY.

23. Connor, John M. and Everett B. Peterson. 1991. "Market-Structure Determinants of National Brand-Private Label Price Differences of Manufactured Food Products." Purdue University, W Lafayette, IN. & Virginia Polytechnic Institute & State University, Blacksburg, VA.

24. Steahr, Thomas E. and Pamela McMullin. 1991. "An Interdisciplinary Framework for the Analysis of Foodborne Disease." The University of Connecticut, Storrs, CT.

25. Ding, John Y. and Julie Caswell. 1991. "A Framework for Analysis of Alternative Restructuring Strategies Employed by Large Food Manufacturers in the 1980s." University of Massachusetts, Amherst, MA.

26. Coaldrake, Karen and Steve Sonka. 1992. "Leaner Pork: Can New Sector Linkages be Formed?" University of Illinois, Urbana, IL.

27. Coaldrake, Karen and Steve Sonka. 1992. "Canola as an Emerging Industry: A Processor and Producer Perspective." University of Illinois, Urbana, IL.

28. Hopkins, Yvette S. and John Connor. 1992. "Re-Examination of Event Studies Applied to Challenged Horizonal Mergers." U.S. Environmental Protection Agency and Purdue University, W. Lafayette, IN.

29. Peterson, Everett, Paul V. Preckel, Thomas W. Hertel and Anya M. McGuirk. 1992. "Impacts of Growth Stimulants in the Domestic Livestock Sector." Virginia Polytechnic Institute and State University, Blacksburg, VA and Purdue University, W. Lafayette, IN.

30. McLaughlin, Edward. 1992. "Strengthening the Competitive Position of Commodity Marketers." Cornell University, Ithaca, NY.

31. Cotterill, Ronald W. and Hachim M. Salih. 1992. "Testing for Risk Premiums in the Wheat-Flour Subsector." University of Connecticut, Storrs, CT.

32. Steahr. Thomas E. and Tanya Roberts. 1993. "Microbial Foodborne Disease: Hospitalizations, Medical Costs and Potential Demand for Safer Food." University of Connecticut, Storrs, CT and U.S.D.A., Economic Research Service.

33. Cotterill, Ronald W. and Don Pinkerton. 1993. "Motives for Mergers in Food Manufacturing." University of Connecticut, Storrs, CT and Chicago Board of Trade.

34. Rogers, Richard T. 1993. "Advertising Expenditures in U.S. Manufacturing Industries, 1967 and 1982" University of Massachusetts, Amherst, MA.

35. Eom, Young Sook. 1993. "Pesticide Residue Risks, Produce Choice, and Valuation of Food Safety: A Random Utility Approach" Clark University, Worcester, MA.

36. Caswell, Julie A. and Jaana K. Kleinschmit v.L. 1993. "Economic Criteria for Settling Federalism Disputes with an Application to Food Safety Regulation" University of Massachusetts, Amherst, MA.

37. Ding, John Y. and Julie A. Caswell. 1993. "Relatedness and Performance: A Reexamination of the Diversification-Performance Link" Ohio State University, Columbus, OH and University of Massachusetts, Amherst, MA.

38. Ding, John Y., Julie A. Caswell and Richard T. Rogers. 1994. "Restructuring's Effect on Related and Unrelated Diversification Among Top Food Manufacturing Firms in the 1980s" Ohio State University, Columbus, OH and University of Massachusetts, Amherst, MA.

39. Connor, John M. and Everett B. Peterson. 1994. "New Estimates of Welfare and Consumer Losses in U.S. Food Manufacturing." Purdue University, W. Lafayette, IN and Virginia Polytechnic Institute and State University, Blacksburg, VA.

40. Bhuyan, Sanjib and Ronald W. Cotterill. 1994. "Countervailing Power and Seller Performance in U.S. Food and Tobacco Manufacturing Industries." University of Connecticut, Storrs, CT.

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