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The Evolution of Quantitative Food Marketing Policy: A Public Perspective

Ronald W. Cotterill

Quantitative analysis of food marketing policy has played a critical role in the evolution of empirical industrial organization and antitrust enforcement over the past 40 years. This article highlights the contributions of the author and other agricultural economists. The second half of this article explains why an economist might want to do, or perhaps avoid, public policy work. It gives several examples from antitrust cases where economic policy analysis is a front-line contact sport.

Key Words: brand-level demand analysis, expert economic testimony, libel, market power, merger analysis, price analysis, reduced-form analysis

> One founder of the AAUP (the American Association of University Professors) had to leave Stanford when the widow of the university's namesake objected to his view on immigrant labor and railroad monopolies. But these days we rarely hear of tenure as a bulwark that allows unconventional scholars to make contributions to knowledge. To the contrary, tenure is understood to be a "perk" of professorship, and far from encouraging iconoclasm, it seems to have bred a culture of conformity [Gannon 2011].

Economics is often divided into two camps: theory and empirics. For many, the two never intersect. For agricultural economics and industrial organization economics, however, the two do intersect to form the basis for the food marketing policy area. Quantitative food marketing policy over the past 40 years has, to be credible, necessarily been based upon microeconomic theory, but theory provides many alternative models for market conduct. Theory and empirics come together in specifying a model for a particular industry and testing that model with data from the industry. In some cases one can validate a model of conduct from industry documents. Consider the proverbial "smoking gun" such as a taped secret collusive meeting among competitors in a price-fixing case. Usually, however, public policy decision makers (and I will focus upon the courts and agencies such as the Federal Trade Commission or the UK Competition Commission) require the services of an economist. An economist studies the industry, develops a model of industry conduct, tests it with data gathered from the industry, and uses estimation results to render an opinion as to the advisability of a particular policy action—for example, proscribing a merger of competing firms. Success in court or before a commission using an estimated economic model, however, usually requires corroborating evidence, if not a smoking gun from the business record.

Over the past 40 years quantitative food marketing policy research has been at the forefront of advances in the much broader field of applied industrial organization, and as a result has played a major role in the evolution of public policy, most notably in antitrust policy, the area on which I will focus. Advances have come in economic theory, new very large and detailed electronic databases, increases in computation power, and new estimation methods.

These advances have, however, been tempered by the need for credibility. Although credibility rests upon the quality of the science, in the antitrust policy arena the receptiveness of the decision maker (the judge, jury, or commission) to economic analysis is the most critical component.

Ronald Cotterill is Professor Emeritus in the Department of Agricultural and Resource Economics, and Director Emeritus of the Food Marketing Policy Center, at the University of Connecticut in Storrs, Connecticut. He is the 2011 recipient of the NAREA Award for Outstanding Public Service Through Economics. A version of this paper was presented by the author at the July 25, 2011, Awards Luncheon of the Northeastern Agricultural and Resource Economics Association (NAREA) annual meetings, held in Pittsburgh, Pennsylvania.

To convince such decision makers, the written and oral delivery of results and the ability to counter critique are critical to credibility.

In the final section of this article I will report on a few policy skirmishes from my career that illustrate the excitement and impact of active participation in policy work. Before this report from the trenches come several sections that summarize the changes in theory and method that my work has influenced. First is the shift in the 1970s and early 1980s from the analysis of the relationship between the number of sellers in a market (seller concentration) and profitability to the analysis of seller concentration and market price levels. Thereafter comes the introduction in 1985 of Bertrand price models for analysis of differentiated product markets. Initial empirical work that measured brand-level own- and cross-price elasticities relied upon what today would be labeled "crude" residual demand models. With the advent of scanner databases for differentiated food products in the 1990s, the field moved to estimation of the elasticity matrix for all brand prices and on rare occasion all brand advertising. Elasticities from either residual demand or full brand matrix estimation enable measurement of the price-elevating effect when two "close" brands are combined via merger and positive cross-price elasticities are internalized (Hausman, Leonard, and Zona 1994). As computer power increased in the 1990s, and after Stephen Berry (1994) discovered an elegant path for estimating discrete choice random coefficient models, more flexible demand specifications with superior identification properties became the preferred demand estimation approach. Such non-linear structural econometric models were cutting edge, and were employed for simulation of price impacts in merger analysis by the staff of the Federal Trade Commission (FTC) and Department of Justice (DOJ) during the first decade of this century.

Recently, dissatisfaction with simulation of merger events based on estimated elasticities has led to a rebirth of a more advanced form of reduced-form price analysis than that embodied in the concentration-price studies of the 1980s. Reduced-form methods have also been extended to *ex post* analysis of a merger event in an industry to determine whether that merger actually elevated prices. Ideally, an *ex post* study includes a control market where no merger has occurred so that one can document not only that prices went up over time in the merger market but also that there was no such price increase in the control market. This approach is commonly called a difference-in-differences model.

Beyond the Demsetz Critique of Mason-Bain Industrial Organization

Harvard economist Edward Mason, writing in 1939, founded what essentially is empirical investigation of industrial organization as opposed to the oligopoly theories of the 1930s (Robinson 1933, Chamberlin 1935), which provided a great array of price models with very diverse results for market performance. Today game theory provides a similar array of theoretical possibilities, and pricing and performance for an actual industry or market is (according to Mason, his premier student Joe Bain, and others) an empirical question. Consequently, to test industry models in the mid twentieth century the Department of Commerce developed a very detailed classification system for over 300 industries and, in a Census of Manufacturers every fifth year, collects information on seller concentration and price-cost margins as well as many other characteristics (Scherer and Ross 1990, pp. 76–77).

In the 1970s, with Leonard Weiss's (1974) publication of a comprehensive review of cross-industry studies based on census data, the analysis of concentration as a determinant of profitability reached its zenith. Agricultural economists Norman Collins and Lee Preston (1969) and Blake Imel and Peter Helmberger (1971) completed two of the most accomplished and cited concentration-profit studies. Such "Harvard school" economists attributed a positive relationship between seller concentration and profits to the exercise of market power (higher prices) by firms in more concentrated industries. Mergers, for example, that increase seller concentration (market share of the top four firms) beyond a critical concentration ratio (estimated in the 1960s to be roughly 50 percent) were considered anti-competitive.

The Chicago school, led by George Stigler (1964), attacked this marker power interpretation of concentration-profit analyses as *ad hoc* and lacking a firm basis in economic theory. Harold Demsetz (1974) employed the Cournot model to demonstrate that more concentrated markets could have higher profit because larger-share firms

could have lower costs. Such lower costs are the source of leading firms' larger market shares; therefore, increasing concentration, due to lower costs, leads to lower prices as well as higher profits. Unemphasized by Demsetz, however, is the fact that in the Cournot model, prices and price-cost margins increase with concentration when one has identical-cost (equal market share) firms. As the number of firms decreases, concentration, prices, and margins increase due to market power. Other models of oligopoly, including the dominant firm and Stackelberg models, also predict higher prices and profits with increasing concentration.

Mueller et al.'s (1977) report to the U.S. Congress Joint Economic Committee (and subsequent publications: Marion 1979a, 1979b) was the first study to explicitly address the Demsetz cost critique. It documented that more concentrated food retailing markets had higher profits *and* higher prices. My Ph.D. dissertation contributed the concentration-profit component. Subsequently, my study of pricing across Vermont cities and towns documented not only that prices are higher in more concentrated markets but also that prices charged by a given supermarket chain are higher in towns where that chain has a larger market share. The highest prices occurred when a particular chain had a complete monopoly (Cotterill 1986). In 1989 Leonard Weiss, the doyen of concentration-profit studies, published his book *Concentration and Price*, which is a compendium of concentration-price studies for several industries. Counter to the Demsetz hypothesis that more concentrated markets have lower costs and lower prices, Weiss reported that prices in several industries are higher in more concentrated markets.

The concentration-price work on food retailing and related work I did that established the existence of entry barriers and a corresponding clear rejection of contestable market theory for food retailing (Cotterill 1989, Cotterill and Haller 1992) served as the basis for University of Wisconsin agricultural economist Bruce Marion's testimony for the California attorney general's successful challenge of the massive American Stores–Lucky horizontal merger in 1988. That decision was appealed to the U.S. Supreme Court, not on economics but on the right of a state attorney general to enforce federal antitrust laws. The Supreme Court unanimously decided in favor of California, and as a result, state-level antitrust enforcement was elevated to the level of federal enforcement in the courts. The Reagan era of lax antitrust enforcement based on contestable market theory without empirics ended when state enforcement began.

New Empirical Industrial Organization

In 1989 the first *Handbook of Industrial Organization* appeared, with a chapter on concentration-profit analysis by Richard Schmalensee (1989) that effectively buried the method. Another chapter by Timothy Bresnahan introduced the new empirical industrial organization (NEIO) approach, giving grudging due to reduced-form price models (Bresnahan 1989, p. 1043). Bresnahan focused on several new approaches that estimated conjectural variations (price-cost margins) in structural econometric models. Subsequently, however, such approaches were heavily criticized and receded from the forefront of NEIO (Corts 1999, Perloff, Karp, and Golan 2007, pp. 43–51). Rather than discuss that literature and its problems here, I will focus on another NEIO approach that has had a greater impact on antitrust policy.

Deneckere and Davidson (1985) expanded the Bertrand price model from the homogenous product case to a model for differentiated product markets. Such markets are predominant in the food sector. Their model generalized unilateral effects analysis from the theory of a dominant firm in a homogeneous product industry to branded-product pricing power in a differentiated product industry. If a brand has a low but not inelastic own-price elasticity of demand, then it has market power since profit maximization leads to a positive price-cost margin (the inverse of the own-price elasticity). The brand manager sets price above marginal cost. A merger that internalizes the cross-price elasticity of a next-best substitute product results in lower own-price elasticity, a higher margin, and a higher price.[1]

[1] The 1992 and the 2010 Federal Merger Guidelines [see U.S. Department of Justice and Federal Trade Commission (1992, 2010)] explicitly recognize this unilateral effects contingency as well as a coordinated effects analysis. The latter considers the possibility of increased collusion after a merger. Most merger analysis over the past 20 years has been based on unilateral effects analysis. Detecting collusion by means of statistical analysis is very hard and consequently very rare. School milk price-fixing is the most notable empirical success.

Baker and Bresnahan (1985) developed a brand-level residual-demand empirical method that can focus on two merging brands, for example Coors and Miller beers. They showed that it is feasible to estimate the two brands' own- and cross-price elasticities with relatively sparse data: only the prices and quantities of the two brands, cost, and demand shift variables for all beer.

In retrospect, the residual demand method is crude and now often not necessary due to the advent of scanner databases in 1987. By 1994, Hausman, Leonard, and Zona (1994, p. 171) used scanner data to estimate the brand-level elasticity matrix for 15 brands of beer. They also worked out how to analyze the price impacts of a merger, allowing for possible cost efficiencies (pp. 175, 176). Cotterill and Haller (1994) used scanner data for 20 breakfast cereal brands to estimate the brand-level price, advertising, and coupon elasticity matrices. We found Nabisco Shredded Wheat and Post Grape Nuts brands to be next-best substitutes; consequently, the estimated price impacts of the Nabisco-Post merger were anti-competitive.

My testimony at trial in 1994 was the first presentation of a Bertrand differentiated product elasticity analysis in court. It did not go well. The judge did not find the method or conclusions credible. She focused erroneously on cross- rather than own-price elasticities and approved the merger. The chief economist at the U.S. DOJ Antitrust Division subsequently cited her error in an authoritative review of demand analysis in antitrust actions (Werden 1998).

Relatively soon after this "trial by merger" of the brand-level elasticity approach, both the DOJ and FTC stated that it would be the method they would use when analyzing differentiated product mergers (Shapiro 1995, Baker 1996). The recent 2010 DOJ/FTC merger guidelines are very explicit concerning the use of the brand-level demand elasticity approach for the analysis of unilateral price effects in differentiated product markets (U.S. Department of Justice and Federal Trade Commission 2010, p. 24).

One challenge for these brand-level models is the identification of appropriate instruments to control for price endogeneity. The most common approach has been to use contemporary prices in other cities in these panel data (Hausman, Leonard, and Zona 1994), but this method has its critics (Bresnahan 1997).

Following Berry (1994) and Berry, Levinsohn, and Pakes (1995), Aviv Nevo (2001) introduced discrete choice random coefficients demand functional forms, which require numerical estimation methods. As a Harvard Ph.D. student, Nevo came to the University of Connecticut for six months and used our IRI brand-level data. This empirical modeling of brand choice follows from theoretical analysis of differentiated product markets (Anderson, dePalma, and Thisse 1992) and is made possible by the ongoing increases in computing power and advanced computation methods that enable numerical analysis of these demand systems, which are not amenable to closed-form estimation methods such as least squares regression.

Today, most brand-level demand analysis employs the discrete choice random coefficients modeling approach, or an extension of it. It is based on utility theory, is very flexible, and controls for omitted variables so that the resulting demand elasticities are, if anything, more scientifically credible than multi-stage budget models such as those used by Hausman, Leonard, and Zona (1994) and Cotterill and Haller (1994). That said, the method is not without criticism.

In antitrust analysis, one uses the estimated brand-level demand elasticity matrix from one of these approaches (residual demand, multi-stage budget with logarithmic LA/AIDs, or non-linear AIDS, or discrete choice random coefficient models) to simulate the impact of a proposed merger. If one has cost impact estimates, they too are included in the analysis. Such simulations assume profit-maximizing conduct and forecast what prices will be after the merger.

Food industry mergers having been analyzed with scanner data since 1994, the natural next step in empirical antitrust analysis is to do *ex post* analysis of such events to see if prices in fact have increased. Of course this assumes that the agencies have allowed at least a few mergers with anti-competitive impacts. Unfortunately, from a policy perspective at least, this has occurred [see, for example, Cotterill (1999)].

If one can locate a similarly situated market, possibly with the same firms and brands, where the merger did not occur, then identification of an anti-competitive effect can be even stronger: if a merger increases price in the affected market but not in the control market, one has double confirmation. FTC economists recently used this differ-

ence-in-differences approach to examine, *ex post*, several mergers (Farrell, Pautler, and Vita 2009). Such evidence assembled over time for specific industries such as food retailing or specific food manufacturing industries can serve as a very direct economic yardstick for merger review.

Adding the Supply Side to Structural Econometric Models of Brand Pricing

Brand-level demand systems permit analysis of unilateral pricing effects, which by definition occur when a firm sets its prices assuming all other firms' prices remain constant. Coordinated effects, on the other hand, occur when firms recognize their dependence and follow each others' price moves. Cotterill, Franklin, and Ma (1996) and Werden (1998) recognize that a brand's total own-price elasticity consists of its unilateral (partial) demand elasticity plus the sum of the product of every other brand's price reaction and cross-price elasticities as given below:

$$\eta_{1,TOTAL} = \eta_{11} + \sum_{i=2}^{k} R_{i1} \times \eta_{1i} \ ,$$

where

$\eta_{1,TOTAL}$ = brand 1 total elasticity
η_{11} = unilateral (partial) own price elasticity
R_{i1} = % change in price i for 1% change in P_1 (price reaction elasticity)
η_{1i} = % change in quantity 1 for 1% change in P_i.

Cotterill, Franklin, and Ma (1996) is the first study to estimate unilateral, coordinated, and total effects for a set of branded products. Generally, unilateral pricing power is more important than coordinated effects. For example, 73 percent of the total elasticity for Coke is unilateral; for Pepsi, 75 percent (Cotterill et al. 2007, p. 236). This reaction function specification also permits one to identify price leaders (dominant brands) and followers. For carbonated soft drinks, Coke and Pepsi are relatively equal, so there is no clear price leader (Cotterill et al. 2007, p. 228), whereas in the American cheese category, Kraft is the undisputed price leader (Cotterill and Samson 2002, p. 821).

Villas-Boas (2007) incorporated the supply side in another fashion. She specifies a two-stage game that permits the analysis of manufacturer as well as retailer pricing and the nature of vertical pricing arrangements. Explicitly modeling the supply channel relaxes an implicit assumption in nearly all demand-based merger analysis. Analysis is at the retail level but branded-product mergers are at the manufacturer level, so to use retail price elasticities one must assume proportional markups, then price elasticities in the wholesale market are identical to estimated retail elasticities. Tests for proportional markups by retailers, however, usually fail (Cotterill and Putsis 2001). Consequently, antitrust agencies now require careful consideration of retail pricing conduct when analyzing mergers between food manufacturers using retail scanner data (Froeb et al. 2005).

Reduced Form Redux

Structural econometric modeling of brand-level demand and supply features is very data-intensive. In many instances it is not the most effective way to estimate pricing power. One now has a return to reduced-form price analysis with a treatment variable for competitive position (market share with appropriate instrumentation for endogeneity) or, if an *ex post* study, a merger event binary variable, and in either case control variables for cost and demand shifts.

Staples' proposed acquisition of Office Depot was ruled anti-competitive in Federal Court in 1997 after an extensive trial reintroduced reduced-form price analysis in a very swashbuckling fashion [FTC v. Staples, 970 F. Supp. 1066 (D.D.C. 1997)]. Baker (1997) provides a lucid blow-by-blow explanation of the dueling among FTC staff economists, Professor Jerry Hausman, the defendants' economic expert, and Professor Orley Ashenfelter, the FTC outside expert. Baker states, "the Commission looked to the unilateral competitive effects theory of mergers among sellers of differentiated products" (Baker 1997, p. 2).

Panel price data across several Office Depot and Staples stores over time were involved. In a cross-section reduced-form price model without store-level fixed effects, FTC staff economists found a 6–7 percent price effect. In response, Professor Hausman added store-level fixed effects and found that prices were less than 1 percent higher at locations where Staples or Office Depot had no competing store nearby. Professor Ashenfelter then entered the debate, noting that

fixed effects correct for omitted variable bias, but do not control for measurement error. He explained that measurement of the intensity of competition with variables that count the number of competitors within 5, 10, and 15 miles of a particular store ignored the fact that both chains established price zones by metropolitan area. Ashenfelter added a metro area wide number of competing stores variable. He also noted that the defendant's economist had arbitrarily excluded stores from two states and other areas. With these changes the price impact returned to 6–7 percent. The judge found Professor Ashenfelter's work most convincing, not only as an economic model but also because it was most consistent with the actual pricing practices documented in the business record.

Concerning reduced-form price analysis as opposed to structural demand analysis, Baker (1997, p. 9) concludes:

> While the result in *Staples* does not discourage the continued use of econometric studies of pricing…it does not mandate any specific form for the pricing analysis. In particular, future pricing studies may involve simulations based on reduced form price equations (the methodology employed by both sides in *Staples*), but they may instead involve simulations based on the estimation of demand elasticities. Reduced form price equations are attractive for expositing in court the systematic determinants of pricing because they relate price to market structure (concentration); this methodology is sympathetic to the structuralist perspective of the case law. On the other hand, demand estimation is attractive because it is more sympathetic to the logic of the localized competition analysis central to the unilateral theory of adverse competitive effects of merger among sellers of differentiated products.

The U.S. Department of Justice in its oversight of food manufacturing has routinely used reduced-form as well as structural approaches to price analysis. Recently, the UK's Competition Commission's (2008) extensive investigation of competition in the British supermarket industry included reduced-form profit, price, and entry analyses. In New Zealand, reduced-form price analysis was at the core of the government's case (Woolworths Ltd. 2007) challenging a merger that would have eliminated entry of a third firm into the country's supermarket duopoly. Professor Hausman (for Tesco Supermarkets) and this author (for the UK Competition Commission) were on opposing sides in the UK debate, but we both worked for the government in New Zealand.

Recently, reduced-form analysis has employed massive databases of actual sales transactions. Following a U.S. Department of Justice template from a similar case, this author aggregated over 100 million price quantity observations for the sale of fluid milk products over several years in the southeastern United States to over 6 million zip code level, monthly price quantity observations. Using these 6 million observations, I then estimated price impacts of alleged anti-competitive activity in fluid milk processing (Food Lion 2009). This level of quantitative engagement with market data was impossible until recent increases in computation speed and storage capacity. The author's now classic 1986 reduced-form price model for Vermont supermarkets contained only 35 observations (Cotterill 1986).

Reports from the Trenches in the Food Policy Wars

A policy economist cannot be satisfied with technical analysis and, as much as they count, refereed journal articles. These are the bedrock for credible policy analysis, but many proficient economists avoid the battleground that is antitrust policy. What creates the desire, the passion, for active debate with peers in legal matters where billions of dollars, the competitive fortunes of companies, and the economic welfare of relatively disorganized groups such as farmers and consumers are in play? To a large extent this question answers itself. The issues are so important that it is exhilarating to be part of a legal team, to have access to subpoena power to gather information on how firms and markets actually work, to identify economic models, to estimate them, to estimate damages if they occur, and to present evidence in an adversarial forum knowing full well there will be a vigorous and downright rough debate with your worthy adversaries, the lawyers and economists of the opposing side.

And there is more. The insight gained for research agendas is unobtainable from any other source; and the contribution to teaching, both undergraduate and graduate, is experience in real world problems with real world actors and solutions. Economics comes alive and moves into an intellectually charged atmosphere where students can appreciate its importance. Frankly, I can't imagine being a top flight agricultural marketing

economist without participation in a public policy arena.

Permit me, please, a few energizing examples from my career of 35-plus years. Consider introduction to the profession via baptism by fire. My Ph.D. dissertation on the concentration-profit relationship in food retailing was part of a study for the Joint Economic Committee (JEC) of the Congress (Mueller et al. 1977). This work was ultimately published in refereed journals and as a book. Early on, however, it was the focus of the congressional JEC hearings, reported on the CBS Evening News with Walter Cronkite and in other news media. In response, on April 7, 1977, the *Wall Street Journal* ran an editorial titled "The Grocery Trust," wherein they labeled my co-authors and me "The Wisconsin Five" and ridiculed our work.

This editorial appeared during my first week as an assistant professor at Michigan State University. Soon thereafter, Dr. Timothy Hammonds, vice president of the Food Marketing Institute, which is the trade association and lobbyist for supermarket chains, came to MSU and explained to an auditorium of over 150 how my work was flawed and biased. Herein lies a reason for engagement in the policy arena: self defense of one's professional reputation and career. Curiously, Tim Hammonds grew up on a small dairy farm in Marathon, New York, up in the hills near the 2,000-acre valley farm of my family in Harford, New York, that has been Cornell's dairy, beef, and sheep research farm since 1970. My parents knew his parents, but I did not know him. He and his loyal confrere, a Cornell Ph.D. classmate of his, Dr. Charles Handy of the USDA's Economic Research Service, sparred with me on retailing issues for 15 years.

Work for the Vermont attorney general in 1981 produced my 1986 *Review of Economics and Statistics* concentration-price study. The Vermont Retail Grocers Association, which represented small grocers, convinced the attorney general to defend the Sunday closing law for grocers over 5,000 square feet (supermarkets). At my request, the Association staff collected prices for the same market basket used in the JEC nationwide study. Econometric analysis confirmed higher prices at Grand Union and P&C supermarkets in towns or cities where they had larger market shares. The Sunday closing law sustained smaller, independent grocers that over time grow into supermarket competition and lower prices. The judge agreed and sustained the law on competitive grounds. A special moment came when an attorney for P&C tried to cite my book on consumer food cooperatives as evidence that I was anti supermarket chain. My response was to ask if he knew what "P&C" stood for and to inform him that "P&C" was originally "Producers and Consumers Cooperative." The Grange League Federation (GLF), which was the precursor of Agway, organized P&C. Mr. Hap Sadd from my hometown of Dryden, New York, was its first CEO.

Before serving in 1993–1994 as expert economist for the New York attorney general in one of the first state attempts to enforce the federal Clayton Antitrust Act, I had spent $150,000 at the University of Connecticut purchasing from Information Resources Inc. (IRI) five years of panel data for virtually all branded grocery products, including breakfast cereals, for all major U.S. urban areas. The New York case was an attempt to stop Phillip Morris/Post Cereals from acquiring Nabisco Shredded Wheat. Using these public data, I produced Food Marketing Policy Center (FMPC) Issue Paper No. 6 (Cotterill, Franklin, and Haller 1994). Phillip Morris threatened to sue me for libel if I disseminated it in any fashion. Unlike the University of Wisconsin, which backed Professors Willard Mueller and Bruce Marion in a similar scrape with Phillip Morris over their study of Kraft and the Green Bay Cheese Exchange, forcing Phillip Morris to back down, the University of Connecticut would not back me.

My first move was to transfer our house to my wife. My second move was to go to my congressman. He said to wait until after the election in the fall of 1974. Two days before the election, his agriculture staff person called and suggested that I might want to help get out the vote. I did so, and in the Gingrich Republican revolution of 1994 my Democratic congressman won by 2 votes: my wife's and mine. On a recount he won by 21, about the number of voters I encouraged to the polls to vote for him. In early 1995, Congressman Gejdenson honored his offer to defend my work on cereal pricing. He solicited the support of a Brooklyn, New York, congressman: Charles Schumer. Congressmen can't be sued for libel. Throughout 1995 the three of us waged war in the press and on national TV against the cereal indus-

try. After that year, wherein branded cereal consumption declined for the first time since World War II, the cereal companies cut prices 10 percent, saving consumers billions over the next three years (Cotterill and Franklin 1999). Schumer ran for the U.S. Senate as "Cereal Chuck," defeating Alphonse D'Amato, one of the most powerful Republican senators. The University of Connecticut Food Marketing Policy Center's congressional appropriation increased soon thereafter by $200,000 a year, to $585,000. This enabled the purchase of more scanner data, most notably milk data.

Milk marketing is another area where the antitrust perspective has influenced policy and market performance. At the FMPC we used the milk price data to analyze the Northeast Dairy Compact and Walmart's impact on milk pricing.[2] In 2003 Senators Leahy and Kohl invited University of Wisconsin Law School Professor Peter Carstensen and me to testify before the Senate Judiciary Committee on monopsony in U.S. food markets (Cotterill, Rabinowitz, and Tian 2003). The issue was low prices paid to farmers due to diminished competition for farm products. At that time, I questioned the competitive impact of vertical strategic alliances by the nation's leading and dominant fluid milk processor, Dean Foods, with dominant supermarket chains such as Stop & Shop and with Dairy Farmers of America (DFA), the dominant assembler of milk. Such vertical relations can reinforce market power at one or more stages of the marketing channel and produce lower prices to farmers. Peter gave similar testimony. At the end of the hearing we turned to face over 200 attendees in the audience. If looks could kill, Peter and I would have been dead. We had just filled the coffers for the re-election campaigns of many senators.

Soon thereafter a southeast U.S. dairy co-op CEO called and asked me to examine how DFA was strong-arming it to pay "tribute" and enter into a "merger of unequals." The evidence was compelling. A year later, Howrey and Simon, a large D.C.-based law firm, contacted Peter and me and requested advice concerning the filing of a class action lawsuit on behalf of farmers in the Southeast alleging monopsonization of fluid milk markets by DFA and Dean Foods. We obliged. This case went forward with Professor Gordon Rausser, a University of California at Berkeley agricultural economist, as economics expert for the farmer plaintiffs.

In July 2011, Dean Foods settled out of court for $140 million. As yet, DFA has not settled, and trial is scheduled for fall 2011, in Tennessee. *The Milkweed*, an industry newspaper, has provided very colorful summaries of the case that are worth reading (Hardin 2011a, 2011b, Walker 2011). Apparently it has surfaced that Gary Hanman, the CEO of DFA in the relevant timeframe, had an incentive contract with Dean Foods that paid him bonuses if he was able to deliver lower-priced raw milk to Dean. Also a DFA board member received questionable payments. These allegations, if substantiated, certainly provide graphic conduct support for any quantitative monopsony model Professor Rausser offers to the court.

In an identical monopsony case in the Northeast (filed by Howrey and Simon and another firm, Cohen and Milstein) that relies upon some of my work—though I am not otherwise involved—Dean recently settled, paying $30 million to the farmer class action. DFA has not settled, so a trial is imminent in federal court in Vermont.[3]

A complementary class action case on behalf of retailers in the Southeast alleges monopolization by Dean and DFA. The claim is that the defendants employed their market power to elevate wholesale prices while they were lowering farm milk prices. I serve as damages expert and have estimated damages using the reduced-form price analysis with millions of observations mentioned above. In addition to myself for damages estimation, the plaintiffs have Professor Einar Elhauge, Harvard Law School antitrust law teacher, for proof of antitrust liability, and Professor Luke Froeb of Vanderbilt University, formerly chief economist of the FTC, for market definition. Op-

[2] In 2008, Rebecca Cleary, working with Rigoberto Lopez, won the AAEA outstanding M.S. thesis award for "Impact of Wal-Mart Supercenters on Incumbents' Pricing Conduct: A Case Study of the Dallas/Fort Worth Milk Market." See also Canan and Cotterill (2006).

[3] Plaintiffs' counsel in class actions is a rough, risky business; however, winning such cases rewards counsel with millions of dollars, as much as 33 percent of an award. Howrey and Simon since has declared bankruptcy and dissolved, in part due to disagreements about doing class actions. The Howrey and Simon litigators are now at Baker and Hostetler. One of the two lead attorneys from Cohen and Milstein—Douglas Richards—was part of Milberg Weiss, a class action law firm that self-destructed over illegal payments that sent the two leading partners to prison.

posing economists are not from a university but rather from a consulting firm. This case is scheduled for trial in 2012.

Dean Foods has recognized that it paid too much for more than 40 acquisitions that consolidated its dominant position in the fresh milk processing industry (Cameron and Warner 2011). In November 2011, Dean reduced the goodwill charge for these acquisitions by $1.6 billion, because "industry conditions over the past few years affecting both consumption and pricing in Fresh Dairy Direct product categories culminated in a change in the Company's outlook for that business" (PR Newswire 2011). Effectively the capitalized monopoly/monopsony profits from these mergers, and the related vertical alliance with Dairy Farmers of America, have disappeared. Today the industry is more competitive because of antitrust enforcement via the class actions discussed above.

One last example of life in the trenches is a case in which a federal judge dismissed both economists because my work would have convinced the jury of monopolization. Earlier he had dismissed the case without trial, but on appeal the Second Circuit ordered him to try the case. After dismissal of myself and Cornell Law School Professor George Hay, the economist for the defendant, the court for the second time found no monopolization.[4] Judges have great discretion—so great that they can ignore economic analysis if their basis for decision lies elsewhere.

In closing, I would like to thank Professor Willard Mueller, my major professor and a lifelong mentor for his support and counsel. I also thank the University of Connecticut for the advice and support of Experiment Station Director Lou Pierro in the 1980s and after him the very large dose of "benign neglect" that the university has offered me over the past 30 years. Deans and I have, however, on occasion fought when outside firms have objected to my work. Professor Olan Forker, Cornell University, deserves grateful acknowledgement for his early respect for my work and his instrumental support that led to the Northeast Experiment Station directors allocating start-up funds in 1986 for the Food Marketing Policy Center at the University of Connecticut. The Center served as the core research group for Regional Research Project NE-165: Private Strategies, Public Policy and Food System Performance, a very large and successful project that I was instrumental in organizing in 1986 and, from 1987 to 2002, in leading with University of Massachusetts Professor Julie Caswell. Professors Emilio Pagoulatos and Rigoberto Lopez, my department chairs and fellow industrial organization economists, deserve special thanks, each in his own way. Finally, the relevance of the quotation heading this article should be clear. Tenure is, in my opinion, absolutely essential for a social scientist engaged in public policy work. Without it, a professor can be constrained in his work to the detriment of open inquiry, science, and the public interest.

[4] The defendant was Quality Foods, a Jamestown, New York, firm, and the judge was from Jamestown. The plaintiff, effectively excluded from Jamestown, was Tops Supermarkets, a Royal Ahold chain. At this time I also was working against Royal Ahold in a different case. I provided the FTC analysis that contributed to the abandonment by Stop & Shop (Royal Ahold) of acquisition of the leading chain in New York City (Pathmark).

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