A Response to the Federal Trade Commission/Anderson Critique of Structure-Performance Studies in Grocery Retailing

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Abstract

This research report responds to the comprehensive critique of structure-price and structure profit studies in the food retailing industry by Keith Anderson, Staff Economist, Federal Trade Commission. Mr. Anderson's critique was in response to a request from certain members of the House Subcommittee on Monopolies and Commercial Law that the Federal Trade Commission explain why these studies should not serve as the basis for more rigorous enforcement of the antitrust laws. The introduction of this research report explains the evolution of this debate since the May 1988 hearings. Then Anderson's specific criticisms of the prior studies are addressed. The final section of this report contains some additional comments on Mr. Anderson's position, and identifies future research possibilities. Basic conclusions are: the research to date is not, as Anderson argues, flawed, it does support more rigorous enforcement of the antitrust laws, and given the advent of new electronic data bases, additional research will be forthcoming in the 1990s on the status of competition in the food retailing industry.

1. Introduction

Responding to Dr. Keith Anderson's critique of structure performance studies in grocery retailing, requires historical perspective. In May 1988 I testified at the invitation of then chairman of the House Judiciary Committee, Peter Rodino, before his Subcommittee on Monopolies and Commercial Law (Cotterill, 1988, 1989). Congressman Rodino was most concerned about the status of merger enforcement in the general economy and the food sector in particular. At that time the merger and LBO wave was at its high water mark and the Federal Trade Commission was on the sidelines. Based upon research of structure performance relationships in the food retailing industry, I criticized the F.T.C. for not enforcing the antitrust laws as rigorously as warranted to constrain the unprecedented wave of mergers and leveraged buyouts in the food retailing industry (U.S. Congress, 1988 p. 81-132). Others, including state antitrust enforcement officials, questioned the lack of FTC action in other industries.

The Subcommittee requested that the FTC respond to this testimony[1]. Subsequently, the Bureau of Economics reviewed the structure performance research on the food retailing industry and explained why this research should not be used as the basis for antitrust enforcement. Keith Anderson, staff economist, produced a paper in the Bureau of Economics, Economic Issues series titled "A Review of Structure Performance Studies in Grocery Retailing". It appeared in June 1990. He presented a shorter version of that report at a conference, titled "Competitive Strategy Analysis in the Food System", organized by Regional Research Project NE-165 and The Food Marketing Policy Center, June 3-5, 1991 in Alexandria, Virginia. This research report responds primarily to Anderson's shorter report and also was presented at that conference.

Since 1988, with the change of administration, the legal staff of the enforcement agencies have, in fact, moved back to a more moderate and vigorous approach to antitrust enforcement. With regard to the analysis of entry barriers, for example, in 1985 the Reagan FTC adopted the Chicago School definition of entry barriers as additional long run costs that must be incurred by an entrant relative to the long

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[1]See Cotterill, (1989), Appendix A or U.S. Congress (1988) for letters to Chairman Rodino from Daniel Oliver, chairman of the FTC and Commissioners Azcuenaga and Strenio. For underlying research on performance of the food retailing industry see, inter alia, Cotterill 1983, 1984, 1985, 1986, de Maintenon 1984; Hall, 1979; Lamm, 1981; Marion et al., 1979.

run costs faced by incumbent firms. (Echlin Manufacturing Co., 105,FTC 410, 485). Under this definition, any sunk costs, diseconomies of small scale, product differentiation or other strategic conduct by incumbents are not entry barriers. By 1990, however, Kevin Arquit, the Director of the Bureau of Competition and Judy Whalley, Deputy Assistant Attorney General in the Justice Antitrust Division explained that the enforcement staff had moved away from Professor Stigler's definition. Arquit explained this shift as follows:

> "The test in the Bureau is not whether based on some theoretical model, entry could occur, but whether in fact sufficient entry will likely take place in response to an anticompetitive increase, and on a timely basis so as to deter or prevent supracompetitive pricing" (Arquit, 1989, pg. 4).

The authors of an article in the American Bar Association magazine, Antitrust titled "Justice, FTC Signal Tougher Merger Enforcement Standards" conclude:

> "the message...is clear. Reliance on the Stigler formulation or an intuitive approach based on the nature of the industry in question...will not be sufficient at the agency enforcement level"(Bell and Herfort, 1990, p. 7).

With regard to analysis of the ability to exercise market power in more concentrated markets with barriers to entry, enforcement staff similarly have retreated from an exclusive focus upon collusive pricing. James F. Rill, Assistant Attorney General for Antitrust emphatically makes this point stating:

> "...it is important to consider both coordinated and noncoordinated views of competitive effects when analyzing a merger of firms in a highly concentrated market where entry is not likely. The term "noncoordinated" refers to firms' independent decisions about price and output-decisions that do not rely on the concurrence of rivals or on coordinated responses by rivals. In contrast, the term "coordinated" refers to such conduct as either tacit or overt collusion, price leadership, and concerted strategic retaliation-conduct that requires the

concurrence of rivals to work out profitably. The Department considers both noncoordinated and coordinated effects, but often the parties to a merger or their counsel are prepared only to discuss collusion or other coordinated effects" (Rill, 1990, p. 51).

This retreat towards moderation has been based upon a renewed commitment to empirical analysis of industries. However, research during the 1980s produced a comprehensive critique of the empirical work, especially cross-section studies of the concentration profit relationship for the entire manufacturing sector of economy. Scherer and Ross in their 1990 text summarize the current state of knowledge. Citing Ravenscraft (1983) and subsequent research, they conclude that market share is positively related, and concentration is negatively or not related to profits.[2] For the entire manufacturing sector of the US economy, the relationship between industry profits and concentration now seems to be spurious and due to aggregation bias (Sherer and Ross, 1990, P. 430).

Scherer, Ravenscraft, Shepherd, and others have cautioned against moving from this result to the conclusion that the profits of large market share firms are only due to the superior efficiency a la Demsetz of large share firms. Scherer and Ross conclude their analysis of possible sources of the share-profit relationship by stating:

> "The positive profit-market share relationships observed in line of business studies represents a still-unknown mixture of temporary efficiency differences and more or less durable monopoly power. Disentangling the relative importance of the two effects..., is the great challenge facing empirical industrial organization researchers" (Scherer and Ross, 1990, p. 433).

Similarly Shepherd states:

> "Market share is the unifying basis for evaluating market power, pricing behavior, and restrictive actions. Market structure is not closely determined by costs; substantial excess market share exists. Reducing the issue to 1) collusion versus 2) an

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[2]Ravenscraft, however, found that in some sectors, including food manufacturing, share and concentration both positively related to profits (Connor et al., 1985, p.335).

efficient structure hypothesis is wrong and misleading" (Shepherd, 1986, p. 53).

Several industrial organization economists, however, have ignored this view, and Keith Anderson is among them. He writes:

> "the authors of some recent studies have suggested that a positive coefficient on market share is evidence of market power in some way. How this occurs is not very well specified. (See in particular, Shepherd (1986a), pp. 34-35 and Shepherd (1986b), pp. 1205-1206. Also see Ravenscraft (1983), Mueller (1986), and Borenstein (1988)" (Anderson 1990, p. 177).

Anderson accepts the efficient structure-collusion position as developed by Cowling and Waterson, (1976) and Clark Davies, and Waterson (1984) wherein the profits due to high market share are assigned by theory entirely to the Demsetz efficiency explanation. More specifically, Anderson argues that empirical work that uses the relative market share, four firm concentration specification at the business unit level is not well grounded in economic theory. I disagree. Decomposing market share at the business unit level into two components, relative market share and concentration, produces a more general model that has the Cowling and Waterson market share specification nested in it. This model allows one to test to see if that specification is appropriate, and work on the entire PIMS data set and for the food manufacturing sector indicates that it is not. (Cotterill and Iton, 1991). This more general operationalization of oligopoly theory provides a theoretical basis for the relative share concentration specification used in much of the earlier structure performance research at the firm or business unit level in food manufacturing and retailing (Connor et al., 1985, p.335; Marion et al., 1977, 1979; Cotterill, 1986).

The Demsetz critique of the industry level concentration profit studies generated another approach to the analysis of market power, the evaluation of structure-price relationships within particular industries. Demsetz maintained that the observed concentration profit relationship may be due to lower costs instead of higher prices. (Demsetz, 1973, 1974). However, if one can directly analyze the concentration price relationship, and document that it is positive, then one has a direct test for market power. Recently, Weiss has published a set of structure price studies that tend to confirm a positive concentration-price relationship (Weiss, 1989). The structure-price

study in food retailing completed by Marion et al., at the University of Wisconsin for the Joint Economic Committee of the Congress is the pioneering work that stimulated Weiss and others to examine other geographically dispersed industries to measure structure price relationships (Marion et al., 1977, 1979).

Anderson maintains that the price and profit studies for the food retailing industry are so poorly done that they do not provide reliable guidance for policy. Empirical work can always be improved as more detailed data and more refined methods of analysis become available. However, many of the studies that Anderson critiques have been relied upon by state attorneys general and private third party firms to challenge mergers that the FTC did not challenge or approve subject to cosmetic consent decrees during the 1980s. The most notable example is the California Attorney General's successful challenge (1990) of the American Stores - Lucky merger, after the Federal Trade Commission approved this multi-billion dollar merger subject to the sale of approximately 35 supermarkets. Also, the Federal Trade Commission has relied upon these studies in its challenge or negotiation of consent decrees in some merger matters, most notably the National Tea Applebaum merger (1979), the Safeway sale of its El Paso division to Furrs (1987) and the acquisition of Grand Union by Miller Tabak and Hirsch, the investment holding company that owns P&C Markets (1989).

In this paper, I will respond to each of Anderson's particular points in the order that he makes them to facilitate comparison. First, I will discuss the structure-price studies and then the structure profit study. Thereafter, I will discuss some issues not raised by Anderson and comment on how research in this area might proceed.

2. Structure-Price Studies: Controlling for Costs

Anderson's basic criticism of the structure-price studies in food retailing is two-fold. First, he maintains that the studies do not adequately control for differences among markets in the cost of retailing food. The cost of retail labor, for example, may be different in different cities and, thus, retail prices might be different. Second, he maintains that within a particular market different firms could have different prices because they offer different levels of service, including quality, to consumers.

With regard to the first point, Anderson claims that the general food price level will vary among markets to reflect difference in retail

costs, and that failure to control for these intermarket variations in costs may explain why more concentrated markets have higher prices. Specifically, he argues that we do not know if more concentrated markets have higher costs. If they do, it could be the cause of the concentration-price relationship; his first candidate is labor costs. Yet, as he notes all of the studies do control for wage rate differences in different markets, and the concentration-price relationship persists.

His second cost control candidate is the difference in the cost of goods sold. Anderson notes that Lamm (1981) and Hall et al. (1979) specify the BLS wholesale price index for food and beef respectively; but, I don't believe Anderson realizes that these are national indexes, and, as such, are constant across local markets at a point in time. The BLS wholesale price series is of no use for cross section studies. In footnote 9 of his paper, Anderson correctly explains that in a cross section study such as the JEC, Vermont or Arkansas study, the branded and private label processed food products and the nonfood products included in the grocery basket of items are produced nationally and, therefore, there is relatively little variation in their price to integrated retailers except for transportation.

Changes in procurement practices and public policy since these price studies were conducted (1974, 1981, 1982) probably makes the constant procurement price but for transportation less tenable today. Yet, even if procurement prices do vary, it is very unlikely that the chains analyzed in these studies now pay higher prices for food products in local market areas that have high retail concentration. Economic theory, and the decline in enforcement of the Robinson-Patman act proscription against secondary line price discrimination jointly predict that large local buyers would, if anything, pay lower not higher prices. Industry analysts from Goldman Sachs describe the current state of affairs as follows:

> "Supermarkets just have to recognize that the marketplace is becoming a free-for-all, that Robinson-Patman is breaking down, that diverting is here to stay, that deals are here to say, that nobody really knows what their competitors are paying, and that buyers just have to be sharp and use their leverage to their best advantage. For a supermarket chain with a leading share position in a major market, that leverage is considerable. Most manufacturers go to market regionally, and thus a 30% or greater market share for a retailer represents powerful control over a limited commodity -- shelf space. The rise of

slotting allowances and display allowances is simple economic proof that retailers can charge increasing amounts of money for their "real estate" (shelf space)" (Mandel and Heinbockel, 1989, p. 22).

Thus, it is not likely that procurement prices generate a spurious positive concentration-price relationship. Anderson provides no evidence that prices paid for products by integrated chains are higher in more concentrated local markets. In the 1990s it is very doubtful that anyone would find such evidence.

For the Arkansas/Vermont studies there is additional reason to conclude that procurement prices are not positively correlated to local retail market structure variables. Since the Arkansas study focuses upon 32 local markets in that state or near its border in six surrounding states, all procurement is located essentially at the same spot. This is even more true for the Vermont study. Twenty-six of the 35 observations come from two leading chains and each chain had only one warehouse supplying the Vermont area. Moreover, the concentration price relationship holds for observations from each chain as well as the full sample (Cotterill, 1986, p. 383).

Anderson's alternative theory of variation in the cost of goods sold proffered in footnote 9 of his paper is not coherent. He suggests that supermarkets could and would purchase higher priced locally produced goods if they can charge higher prices for other goods. His argument could also apply to higher priced goods from any location worldwide. In addition to the fact that this is not profit maximizing conduct, this reasoning violates cross market price comparison methodology. The reason for conducting a structure-price study in an industry with local geographic markets is to compare the price of the same product across several firms and markets to see if firm and/or market structure influence the price. It makes no sense to compare the price, for example, of a locally produced brand in one store to a leading national brand in another store.[3]

Anderson's next cost difference candidate is differences in the prices of real estate and utilities, and local taxes among local market areas. He recognizes that Lamm partially controls for variation in these with his binary variables for region of the country, and Marion et al. may do an even better job by specifying city size in their model. In my opinion, since these costs represent a very small fraction of the

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[3]This, in fact, is a serious flaw in the Kaufman-Handy study. See Geithman and Marion (1991) for an extensive discussion of this and related sampling problems in the Kaufman-Handy study.

retail price of food and since it is very unlikely that their prices are positively correlated with market concentration or a firm's market share, they do not offer an alternative explanation for the concentration-price or relative market share price relationship reported in the studies reviewed by Anderson. Leading firms in concentrated markets may, if anything, be more likely to receive price discounts on real estate because of their desirability as an anchor tenant in a shopping mall.

Next, Anderson does a flip flop and argues that more concentrated markets have lower prices. He conjectures that markets that are served by identical large supermarkets that are units in firm with identical and large market shares will have lower costs due to real economies of scale and that competition would force them to pass these on to the consumer as lower food prices. This is the contestible markets hypothesis. In addition to the structure price and profit studies reviewed by Anderson, work on entry by Cotterill and Haller (1987, 1991) and Marion (1987) document that retail food markets are not contestible.

Anderson provides no evidence that large stores enjoy economies of scale. To my knowledge, the most recent study is in Marion et al. and it found no scale economies for traditional format supermarkets from one chain that ranged in size from 13,000 to 31,000 square feet (Marion et al. 1979, p.136). Also, this reasoning suggests that one would observe a trend toward very few firms with large equal market shares and uniformly large identical stores. Anderson provides no evidence on this point and a cursory review of recent new store formats indicates that it is not correct. Food Lion, for example, is doing very well building 25,000 square foot traditional supermarkets. (Poole, 1991). Albertsons has prospered over the past decade with the combination food-drug store format. Others have advanced with the warehouse format, and the superstore format is the most common new unit. Economies of scale at the store or local market level are not the primary drivers of the strategic plans of large supermarket chains.

Anderson's final point concerning intermarket costs differences is to return to his argument that high concentrated markets may have higher costs. He correctly notes that smaller markets tend to have higher concentration. Then he hypothesizes that firms would not be able to achieve economies of scale in these small markets and, thus, would have higher costs that they would need to pass on to consumers. There are four answers to this hypothesis. First, Anderson cites no evidence of economies of scale that are so large in this industry that small or medium SMA's would force firms to operate below minimum efficient scale. Second, if such economies exist and are important, then we would expect to observe a more rapid trend towards uniformly large

stores operated by fewer firms, possibly even one firm, in these smaller markets. Third, average unit costs for retailing are a function not only of possible economies of scale but also the price of the inputs. The fact that the price level for local inputs such as labor, real estate, and possibly utilities tends to be lower in small or medium cities probably more than offsets any diseconomies related to small sales volume. Fourth, is the issue of causality. If more concentrated markets do have higher retailing costs, these higher costs may be due to x-inefficiency. Retailers may share the benefits of market power with input suppliers including labor and real estate owners.

3. Structure-Price Studies: Controlling for Variation in Services

Anderson's thoughts about differences in the price-service mix and its impact upon structure-price relationships suffer from the fact that the price determination model implicit in his analysis is too restrictive. He assumes in equilibrium all firms in a local market will charge the same price and that any dispersion in the equilibrium price charged by a firm is due to differences in the costs of the services including quality that they provide. Yet studies by Devine and Marion (1979) and others have demonstrated that consumers have imperfect information on food prices. This suggests that different firms could charge different prices for the same price-service mix in a market. Also, it is entirely possible, even with perfect information that one supermarket chain is able to differentiate its enterprise from others and charge a higher price then competing firms for a set of groceries and services.

These points indicate that firms within a market may have higher prices not only because they need to cover the costs of more services but also because they are able to exercise market power due to imperfect information or superior enterprise differentiation. Anderson, for example, would attribute any positive relationship between a firm's market share and its price level to cost differences related to the "superior price service mix" that large share firms provide. Again, this is not a fact. It is a hypothesis that requires testing. Moreover, if it is true, then one would not observe as we do a strong relationship between a firm's relative position in a market and its profitability. Anderson cannot have it both ways at the same time; i.e., leading firms cannot have higher prices due to higher cost "price-service mixes" and have higher profits due to superior efficiency.

Anderson maintains that the only study that controls for differences in services is the Kaufman-Handy study (1990). They count up the services offered by a firm in a local market giving double weight to some to produce an index. Their index has a significant positive impact on price. However, Anderson needs more than this result to conclude that the positive price relationship structure reported by other studies are spurious because services are not specified in the model. If removing the service index from the Kaufman Handy model produces significant positive structure price relationships, then we would have evidence that the structure price relationship of the other studies may be due at least in part to the costs of higher services in noncompetitively structured markets. However, given the major flaws that Geithman and Marion (1991) have uncovered in the retail price survey and index computation methods of the Kaufman-Handy study, it is most unlikely that any respecification of their model will provide a reliable insight on the vigor of competition.

Moreover, even if higher costs exist in noncompetitively structured markets if profits are also related to structure, then enterprise differentiation is operative. Firms with larger relative market positions in markets with higher concentrations have higher prices, part of which covers the costs of the differentiating services and part of which generates higher profits.

Looking more carefully at some of the other studies also suggests that their failure to explicitly introduce a services variable is not crucial. The JEC price study by Marion et al. was for the local market operations of only three chains in 1974, well before the explosion in store format and service options.

In the Vermont study there was a binary variable to identify independents and they did have higher prices. Also, the fact that the structure price relationship held in the Grand Union and the P&C subsamples indicates that there is no bias due to pooling observations. Having visited several chain stores in the State, interviewed the staff of the Vermont Retail Grocers association, reviewed operations and pricing records of these chains as part of a court case, and having participated in a lengthy court trial, I observed that the issue of different store formats or service levels only arose in one fashion. Grand Union and P&C stores in Vermont in 1981 were old, provided relatively few services, and rarely did any sort of merchandising because there was no competitive stimulus to do otherwise.

The Arkansas study controlled for store format (traditional, superstore, warehouse) and like the Vermont study specified store size to capture the price-service mixes and cost conditions related thereto. The store size results are interesting because a significant quadratic

relationship exists in both studies. The quadratic relationship also was reasonably robust for the individual chain regressions in Vermont. Smaller supermarkets have higher prices, moderate sized units have lower and the largest units which are most likely the newest with the broadest product and service assortment have higher prices. In Vermont with its older, smaller supermarkets, the least cost size was 16,000 square feet. (Cotterill, 1986 p. 384). In Arkansas and surrounding states where superstores as large as 65,000 square feet were in operation, the minimum was very near the 30,000 square feet cut off between the traditional and superstore formats. It was 33,000 square feet. (Cotterill, 1983 p. 118). Clearly, store formats and/or store size do affect price levels. In my opinion, there is no doubt that diseconomies of store size affect very small supermarkets (less than 20,000 square feet). Operators of these stores survive by differentiating themselves in one fashion or another. The largest supermarkets, rather than suffer diseconomies, are able to differentiate themselves and not only cover the higher costs of doing so but also generate more profit due to higher prices. Superstores are commonly acknowledged to be more profitable than other stores (Mandel and Heinbockel, p. 10).

4. Concentration and Profitability

The Joint Economic Committee study completed by Marion et al. at the University of Wisconsin contained in addition to a structure price study a companion study of the relationship between structure and profits. Anderson's critique has four major points: first, he raises the Fisher McGowan critique that accounting profits are not economic profits; second, he questions the nonlinear functional form used for concentration in some models; third, he mentions that market share, not relative market share, is the correct specification; and, fourth, he maintains that the model overstates the impact of concentration on profits, and in certain cases profits actually decrease when concentration increases. Also, in the Economic Issues paper, Anderson critiques our treatment of the A&P company and questions the validity of the results because the industry was under wage-price controls

during part of the five-year 1970-1974 period analyzed.[4]

Before launching into specifics, one general observation may be helpful. This structure profit study is not a typical cross-section study of four digit census industry profitability or firm profitability or line of business profitability. As such, it avoids many of the criticisms of these studies. Specifically, this study is for one industry, not a cross section of the entire manufacturing sector. It, moreover, examines intrafirm profitability in different local markets to assess how local market structure influences profitability. For example, we can and did estimate the structure profit model for 28 observations from the A&P company. Rather than decry this lack of generality as Anderson does, one should welcome the ability to test hypotheses for specific firms in specific industries because these studies control for variability in profits due to differences in internal firm organization and industry conditions such as elasticity of demand. To my knowledge, no other cross section concentration-profit study has been able to hone in upon one management team and assess its strategic conduct in markets that are essentially identical except for strategic factors such as market growth, market share and concentration levels (i.e., all retail food markets). As expected, A&P's profits were significantly related to market structure prior to their W.E.O. campaign, and not related to it during or after that massive price cutting exercise.[5]

Our larger samples include local market operations for 6 and 12 of the top 17 chains of 1972, and there are multiple observations from individual chains. In fact, chain identity as measured by each chain's internal total company growth rate, which we interpret as a proxy for a chain's managerial acumen, is the most powerful determinant of a firm's profitability. The idea that well-managed companies, as measured by their ability to expand by internal growth, are more profitable is clearly supported by this study. In the early 1970s and today, Albertsons, for example, is commonly acknowledged to be an excellently managed company; and then as now, it is significantly more profitable than a laggard such as A&P.

Yet, as the study demonstrates, this firm level effect does not detract from the fact that the profitability of companies in a local

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[4]See Appendix B for a discussion of the A&P issue and see Marion et al, 1979, p. 63 for a discussion of the price control issue. My only comment on this latter point is that, if anything, it would have reduced the liklihood of finding structure profit relationships because it limited upward movements and not downward movements, in gross margins for a few quarters of the 5 year period.

[5]See Appendix B for a discussion of this result.

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market is significantly influenced by its relative market position, seller concentration, growth in market demand, and other features of market structure. Also these models, once corrected for heteroskedasticity related to the proxy for firm managerial acumen, routinely explain over 80 percent and, in certain instances, over 90 percent of the variation in the five year 1970-1974 average profit sales ratio. When one has data that are as disaggregate as these data are, one can obtain a clearer evaluation of the impact of market structure upon firm and industry profitability.[6]

Now turning to particulars, Anderson raises the Fisher-McGowan critique. This is not the place to rebut Fisher and McGowan. I refer you to the set of articles in the June 1984 American Economic Review, and Scherer and Ross (1990) Ch 11. This study uses the pretax profit-sales ratio for firm operations at the local market level. With regard to the Fisher-McGowan critique, Anderson states:

> "The ultimate question is whether the errors (in using accounting profitability to measure economic profitability) that arise with the data for real firms are significant and whether they are correlated with variables included in the regression models being estimated" (Anderson, 1991, p. 8).

In this study the structure-profit model was estimated for samples of local market operations from six and twelve leading chains and for 28 A&P observations. Accounting conventions within a particular firm and within a particular industry such as food retailing most likely do not vary from local market to local market. Also, the nature of the investment and the shape of the cash flow streams from those investments are similar across these firms, suggesting that there is little interfirm bias of accounting profit sales ratios. Within a firm, if these profit rates solely reflect different accounting conventions, different cash flow patterns or the current expensing of long term assets such as advertising, and, thus, say nothing about economic profits, then how does a firm's managers evaluate the performance of operations in different local markets? In fact, they do use these local market profit rates as measures of economic returns, and we will too.

Anderson's point that market power is capitalized into the

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[6]This point is equally significant when comparing this study's methods and results to price theoretic studies that estimate conjectural variations or Lerner indexes. Most of those studies were aggregate industry level data. If and when they are able to use firm level or intrafirm level data, as this study does, then they may more accurately identify oligopolistic interdependence.

purchase price of a firm and, thus, return on assets and return on equity profit rates in the subsequent firm do not measure market power is correct. This is a major problem today given the ownership changes that occurred in the 1980s. However, the 12 large firms included in this study of profitability in the 1970-1974 period were not recently acquired and, due to the stringent merger policy of that era, had not made major acquisitions.

The criticism that the profit sales ratio represents price minus average cost, not price minus marginal cost (the Lerner index) and, therefore, is not an accurate measure of market power is over emphasized. All profit rate measures, including the Lerner index, have advantages and disadvantages as a measure of market power. The distinction between average and marginal profit sales ratios is of minor consequence in this industry for the following reasons. First, this is primarily a study of long run, five year average profitability. Thus, the relevant cost curves are long run constructs. A firm increases its market share in a local market in the long run by adding stores. This would influence long run average and marginal costs in all stores only if there are not constant returns to scale. No one maintains that there are long run real diseconomies of scale in local food markets. Although there is no research on long run real economies of scale at the local market level, I don't believe anyone maintains that they are significant. To the extent that there are real economies of scale, the price average cost margin would understate the Lerner index, but even then these profit measures most likely remain highly correlated and close in value.

Moving onto another issue, Anderson's comments about the need to adjust the net profit sales ratio by subtracting the competitive rate of return to produce a measure of economic profits are not as clear as they could be. In theory, the cost of capital is included in costs; i.e., the net profit sales ratio is net of that cost as well as others. In practice, the net profit sales ratio is the return to equity holders in the firm; and, thus, we do not expect it to be zero in competitive equilibrium. Anderson confuses the cost of capital with the capital-sales ratio and actually would like us to adjust for both. Yet, the oligopoly theory articles that he so heavily relies upon, specifically Cowling and Waterson, and Clark, Davies and Waterson do not make these adjustments in their related empirical work. The problem is more serious for these studies than our study because we are analyzing variation in profitability for one firm and small sets of firms within one industry. The competitive rate of return required by investors and the capital sales ratio are not likely to vary much across our sample. Again, for it to explain our structure profit results, firms with large

relative market shares and those in concentrated markets have to have higher required rates of return and higher capital sales ratio. On this latter point, there is no readily observable preference by firms for more capital intensive store formats in more concentrated markets or where they have leading shares.

Moving from measurement problems to model specification, Anderson's major contention is that using relative firm market share instead of market share has no basis in oligopoly theory and, thus, constitutes a serious misspecification. Yet, as demonstrated by Cotterill and Iton, one can generalize oligopoly theory by decomposing market share into two components, relative market share defined as market share divided by four firm concentration, and market concentration. This enables one to avoid the efficient structure-collusion dichotomy of the Cowling and Waterson model with its complete assignation of a positive market share-profit relationship to the Demsetz hypothesis. As Scherer and Ross, Shepherd, and many others have argued, that model begs the question.

If the industry is Cournot in our more general model, one obtains a linear specification of relative market share and concentration as explanatory factors for the profit sales ratio. Relative market share measures differential efficiency. The concentration ratio measures the size of leading firms relative to the size of the market and, as such, indicates how close leading firm demand curves are to the market demand curve and their ability to increase profits by exercising market power. In a more general model that allows firms to charge different prices due to enterprise differentiation, relative market share could also be related to profits because leading firms who have differentiated themselves are able to charge higher prices. In fact, the JEC study and the Vermont price study do find that firms with high relative share have higher prices (Marion, et al., 1979, Cotterill, 1986).

If the industry is not Cournot and one models, as prior theorists cited in this paper have, the conjectural variation parameter as a function of market structure, a nonlinear relationship between concentration and profitability can exist (Cotterill and Iton, 1991, p. 8). Anderson correctly maintains that the nonlinear concentration profit relationship found in Marion et al. does not identify a critical concentration ratio. We never said that it did. We looked for a critical point and did not find one. The observed relationship, however, is not inconsistent with the generalized Cournot oligopoly model that I have discussed here. Profits are higher in more concentrated markets due

to the exercise of market power.[7]

I agree with Anderson that concentration is not as important as are some other variables in the determination of firm profitability; however, it is a significant determinant of profits. To my knowledge, no industrial organization economist, has ever maintained that concentration is the most important determinant of firm performance. Based upon the research reviewed in this paper, a firm seems primarily to secure market power and related profits in local retail food markets through enterprise differentiation associated with a large relative market share position; but, high concentration is also beneficial.

Moving to Anderson's second criticism of relative market share, he argues that researchers who use it misunderstand competitive equilibrium and the role of the marginal firm or least efficient firm. According to Anderson, if they did understand this role, they would use market share not relative firm market share to measure differential efficiency. With due respect, it is Anderson who is confused. Using relative market share instead of market share does not negate or mismeasure the marginal or least efficient firm's role in determining efficiency rents.

Let's look at Andersons example, as reproduced in Table 1. His marginal firm has a one percent market share and the next smallest firm has 10 percent. He argues that the difference in share position between firm 1 and firm 2 should not change when one shifts from example 1 to example 2. Citing the fact that RFMS declines from 25 to 12.5 percent, he maintains that the difference in share position does change and that this change distorts the test for differential profitability between these two firms. Note, however, that the relative share of the marginal firm also is halved form 2.5 to 1.25 percent and that the number 2 firm remains 10 times larger than the fringe firm. In a single market, relative market share does no better or worse than market share in measuring the relative size distribution of firms.

When one moves to cross section analysis of several different sized markets, relative market share is superior to market share. For example, if one examines a second market and it is twice as big as the market in Table 1, then all market shares will be one half of those reported in Table 1; but relative market share will remain at their reported values. Therefore, in a cross section sample of several markets, relative share is the appropriate measure for the differential efficiency related to firm size.

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[7]See Appendix A for a graph of the nonlinear relationship.

Table 1 ALTERNATIVE SHARE DISTRIBUTIONS IN A MARKET

Firms	Example 1 Share (%)	Example 1 Relative Share (%)	Example 2 Share (%)	Example 2 Relative Share (%)
1	1	2.5	1	1.25
2	10	25	10	12.5
3	10	25	20	25
4	10	25	20	25
5	10	25	20	25
6	-		20	25
CR4	40		80	

One can also illustrate the superiority of relative market share, concentration specification as follows. If four firm concentration is 40 percent and all firms in the industry have 25 percent relative market shares (10 firms at 10 percent market share) and if market concentration increases to 80 percent with all firms retaining the same 25 percent relative share position (5 firms at 20 percent market share), then an observed increase in profits, if any, is due to market power, not increased efficiency due to higher market shares relative to fringe firms. There are no fringe firms. In this equal share case the four firm concentration ratio is equivalent to the more familiar measure of concentration in the Cournot model, the number of firms in the market.

Relative market share is also preferable to market share on statistical grounds because, by definition, market share and four firm concentration are correlated and relative market share and concentration are not.[8] When correlation between two explanatory variables is a sample problem, gathering more data can mitigate multicollinearity. However, when the correlation arises from a theory that requires specification of two variables that by definition are correlated, one has to question the usefulness of the theory and attempt to provide a more tractable theory.

Finally, as demonstrated in the Cotterill and Iton paper, aggregation of the market share, concentration specification from the firm to the industry level, produces a very unattractive model with both the four firm concentration ratio and the Herfindahl index as determinants of industry profitability. This specification clearly illustrates the multicollinearity problems with the share, concentration specification at the firm level. The relative share concentration specification is more attractive. It aggregates to two variables that are a decomposition of the Herfindahl index: the four firm concentration ratio and the Herfindahl index divided by the four firm concentration ratio.

Anderson's final critique of the structure profit study, may very well be the most misleading. He maintains that the concentration profits relationship is overstated because relative market share is used instead of firm market share. I would argue the exact opposite. The concentration - profit relationship is understated when market share is specified instead of relative market share (Cotterill and Iton, 1991, p. 7). Anderson would increase concentration holding a firms market share constant and compute the change in the profit rate for that particular firm. But if concentration increases and one firm's share

doesn't increase, then one or more other firms must have be increasing market shares and their relative market shares go up. Anderson's conclusion that profit rates fall in more concentrated markets focuses upon the firm that is left behind as the market becomes more concentrated. I agree that the laggard firm's profitability declines as it loses relative position to other firms. The real question, however, is what happens to total industry profits as the market becomes more concentrated.

Table 2 reproduces and expands Anderson's average and high market share cases to answer this question for market that has 1.0 billion in total sales. It uses the same estimated equation that Anderson uses, with a statistically significant nonlinear relationship between concentration and profits. Note in the high market share case in Table 2 with four firm concentration at 40 percent, a leading firm with a 25 percent market share has profits totaling 9.8 million dollars. The other firms are much smaller and their profits due to relative position are much lower. Total industry profits consist of the profits due to relative position (11.97 million) and those due to the level of concentration (28.24 million). The total is 40.2 million dollars.

Actually, Anderson and I are not interested in the level of profits which depends upon the values of several other variables in the regression. The question is how do these numbers change when concentration increases to 80 percent. After this change in market concentration the relative share of the leader declines one-half, and its profits due to relative position also decline one-half to 4.922 million dollars. Is this an unreasonable result? I think not. Note that the relative shares of the second to fourth firm increase and their profits due to relative position increase. The leader has lost its commanding position, and, consequently, it is sharing industry profits with firms that are now more its coequals.

One can find examples of this type of change in grocery retailing. Steve Weinstein, the editor of Progressive Grocer writes:

> "Safeway has been the king of Seattle for many years. but while the chain still reigns there, with a market share of more than 30%, there are ample signs that some of its subjects are getting unruly...The chain at one time had a market share approaching 50%, although it would never acknowledge the figure was that high, according to one observer..'Four or five years ago this was a me-too market', says one wholesaler official, but not anymore. Competitors no longer are content to

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[8]Please see the appendix of Cotterill and Iton (1991) for a proof of this proposition.

Table 2. CHANGE IN INDUSTRY PROFITS RESULTING FROM CHANGE IN RELATIVE MARKET SHARE AND CURVILINEAR CONCENTRATION (CCR4)*

Firm	Market Share (%)	Relative Market Share (%)	Firm Sales (Million $)	Relative Firm Share Profits (Mil$)	CCR4 Component Profits (Mil$)	Total Profits (Mil$)
High Market Share Case						
Before Market Concentration						
1	25	62.5	250	9.844		
2	5	12.5	50	0.394		
3	5	12.5	50	0.394		
4	5	12.5	50	0.394		
Other[1]	1	2.5	600	0.945		
Profits (Mil$)				11.97	28.242	40.212
After Market Concentration						
1	25	31.25	250	4.922		
2	20	25	200	3.15		
3	20	25	200	3.15		
4	15	18.75	150	1.772		
Other[2]	1	1.25	200	0.158		
Profits (Mil$)				13.151	36.61	49.761
Change in Industry Profits (Mil$)				1.181	8.368	9.549
Low Market Share Case						
Before Market Concentration						
1	10	25	100	1.575		
2	10	25	100	1.575		
3	10	25	100	1.575		
4	10	25	100	1.575		
Other[1]	1	2.5	600	0.945		
Profits (Mil$)				7.245	28.242	35.487
After Market Concentration						
1	20	25	200	3.15		
2	20	25	200	3.15		
3	20	25	200	3.15		
4	20	25	200	3.15		
Other[2]	1	1.25	200	0.158		
Profits (Mil$)				12.758	36.61	49.367
Change in Industry Profits (Mil$)				5.513	8.368	13.881

[1] 60 firms with 1 percent market share each.
[2] 20 firms with 1 percent market share each.
*Based upon equation 1b Table 3.5, Marion, et.al. (1979) p. 82.

follow them on pricing..."(Weinstein, 1987, pg. 21).

Returning to Table 2, industry profits also increase because concentration increases. The total increase in industry profits is 9.599 million dollars. Since total market sales remain constant in this example at 1.0 billion dollars, this amounts to an increase in the industry profit rate of .95 percent of sales. Looking at Anderson's low market share case in Table 2 the increase in industry profits when moving from 40 to 80 percent concentration is much greater. It is 13.88 million dollars or 1.388 percent of sales.

Appendix A contains an analysis of Anderson's high and low market share cases using a model that specifies concentration linearly. The changes in industry profitability when concentration increases from 40 to 80 percent are larger. In the high share case, the industry profit sales ratio increases by 1.16 percentage points. In low share case it increases by 1.59 percentage points. For comparison the average pretax profit sales ratio for these companies during the 1970-1974 period was 1.45 percent (Marion et al., 1979, p. 62). Therefore, the changes in profitability due to changes in concentration significantly enhance the profitability of the industry, and in both low share cases the increase approximately equals the average profit rate for these firms.

The implications of this result for merger policy needs to be clearly drawn. Prior analysis of rivalry in more concentrated markets, most notably Kwoka and Ravenscraft (1986), has missed the distinction between changes in profits for a leading firm, and changes in total industry profits. If one defines market rivalry as a decrease in industry profits, then allowing smaller firms to merge to challenge a leader reduces the leader's profitability, but at least in this industry it does not increase market rivalry. Industry profits go up. The merger is not inducing firms to pass profits on to consumers in the form of lower prices.

5. Additional Comments and Research Possibilities

In his conclusions to his Economic Issues paper, Anderson states that the Kaufman and Handy study is the only study that is an appropriate basis for policy in this industry, because it is the only study to control adequately for costs and services. As explained earlier, several of the other studies do control for costs and services by either the explicit introduction of control variables or sample selection. I

would be more receptive to Anderson on this point if deleting the cost and service variables in the Kaufman Handy regression produced positive and significant coefficients for relative share and concentration. I doubt that it does. Moreover, the Kaufman Handy study has unique flaws in its price survey and aggregation procedures that compromise its reliability (Geithman and Marion, 1991). Anderson is unaware of these problems.

Another comment in Anderson's Economics Issues paper suggests a serious lack of familiarity with this industry. The Joint Economic Committee study found that prices seem to rise more rapidly than profits as one shifts to more concentrated markets. Marion, et al. concluded that these results in the 1970-1974 period may indicate the presence of x-inefficiency in the operations of these large chains in noncompetitively structured markets. Anderson rejects this conclusion stating:

> "The (high) level of foregone profits suggests that this is unlikely to be the explanation. It seems likely that such performance would quickly mark the firm as an attractive takeover target for someone with an eye to improving operations and profitability" (Anderson, 1990, p. 76).

Anderson is unaware of the merger, takeover, and leveraged buyout wave that completely restructured this industry during the 1980s. Table A-2 in Appendix A documents the extent of those changes on the top 20 supermarket chains. Between 1979 and 1989 mergers leveraged buyouts, or leveraged recapitalizations affected 81.6 percent of the top 20 chain sales.[9] Investment analysts at Goldman-Sachs speaking before the Food Marketing Institute Financial Executive Conference, May 1989, document the extent of the change in another fashion. They write:

> ..the aggregate amount of debt assumed by supermarket chains as a result of leveraged buyouts or recapitalizations over the 1986-1989 period alone exceeds $20 billion, which is greater than the aggregate market value of all publicly traded supermarkets today (Mandel and Heinbockel,

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[9]For more information see Ronald W. Cotterill, "Food Retailing: Mergers, Leveraged Buyouts and Performance", in Lawrence Duetsch ed. Industry Studies, Englewood Cliffs: Prentice Hall, (forthcoming 1992).

1989,p.1).

The fundamental question concerning the performance of the food retailing industry today is where is the increased cash flow necessary to cover the massive debt load of the industry coming from? Permit me to quote the Goldman-Sachs analysts' speech to supermarket finance executives again at length. The underlining for emphasis is in the original text.

> LBO buyers have been lucky thus far, not only because of a favorable overall economic and stock market environment, but also because <u>many of these buyers did not, in our opinion, foresee the positive structural economic changes that are occurring in the supermarket business: the power of large store formats, increasing leverage versus suppliers, and market concentration, all of which have led to more rapid operating margin improvement than we had forecast</u> ...it is certainly important from your point of view to understand the implications of this LBO phenomenon on the economic structure of the supermarket business. We see three primary implications: 1) increasing market concentration in major metropolitan markets, 2) increasing pressure on vendors, and 3) opportunities for aggressive, well-capitalized operators to pick up abnormal market share. The LBO phenomenon has accelerated the process of market consolidation...weak markets are sold off. Instead of Safeway deluding itself into thinking that one day it would become number one in southern California, management sold to Vons and chose to be a stockholder (35 percent ownership), hopefully benefitting from the improved economics of the combined company...Kroger sold its northern California Fry's stores to Savemart, and so on...The market share changes that have occurred in the country's two largest markets -- New York and Los Angeles -- over the last five years illustrate the impact of increasing concentration. Five years ago, five chains split 55% of the Los Angeles market. Now, three chains -- Ralph's, Vons, and Lucky control 65%. Not surprisingly, the current returns of Ralph's, Vons, and Lucky are far superior to their

returns of five years ago. <u>The Los Angeles and New York markets have had a reputation for being two of the most ruthlessly competitive markets in the country, but the reality has been record operating margins for most of the chains in both markets (e.g., Ralph's EBITD (earnings before interest, taxes and depreciation) margin is 7%, and A&P's profitability is now close to that in the Metro New York region)</u> (Mandel and Heinbockel, 1989 p. 4-7).

Commenting in the wake of the 1988 Kroger leveraged recapitalization to avoid hostile takeover. Edward Comeau, an analyst with Oppenheimer and Company similarly explained:

> "Kroger has a history of being the tough guy in most of the markets it's in, dictating pricing and promotions in those markets. But as a highly leveraged company, Kroger is likely to become less competitive and less aggressive than it's been" (Zwiebach, 1988, p. 8).

Investment bankers, or at least their analysts, seem quite at home with the benefits of increased concentration and the exercise of market power against input suppliers as well as consumers to increase cash flow. Industry executives also recognize this reality. Erivan Haub, who owns a controlling interest in A&P via the West German firm,Tengelmann, explained in a 1988 interview in Forbes magazine how firms, such as A&P, benefit from LBOs in the supermarket industry when they are competitors of the affected firms: "Through leveraged buyouts and takeovers, A&P's competitors are becoming loaded with debt... They will pass along the cost of serving this debt by raising prices." (Fuhrman, 1988).

The question appears to be not whether leveraged firms will raise prices, but how fast will their shares erode? Let's look at some crude but suggestive evidence on this point. Table 3 shows how Safeway's earnings before interest and taxes (EBIT) has increased since its LBO in 1986. It also shows EBIT for two chains that compete directly with Safeway for all of their sales (Quality Foods in Seattle, and Giant in Washington and Baltimore). The comparison, of course is far from perfect because Safeway operates in several other markets. Note that the earnings of all three chains increase dramatically from 1985 through 1990. Safeway goes from 2.18 to an estimated 3.65 percent. Giants moves from 4.73 to an estimated 5.92 percent, and

Quality Foods moves from 3.26 to an estimated 6.55 percent.

If expansion by the competitive fringe in these markets or entry by firms from outside the market was timely and sufficient to restrain the exercise of market power, one should see declines in the market shares of all of these firms, not just Safeway, and more competitive conditions might ultimately prevail. This has not occurred.[10]

In Seattle there was no entry during the 1985-1990 period. Quality Foods' share of grocery sales in Seattle actually increased from 6.1 in 1985 to 9.8 percent in 1991. Safeway's share in Seattle increased slightly from 24.8 to 25.4 percent between 1985 and 1990.

In Washington, D.C., Shoppers Food warehouse entered and captured an 8.5 percent market share by 1990. This move into a strategic group where Giant and Safeway do not have operations did not affect their market shares. Safeway's grocery market share in Washington remained roughly constant. It was 24.6 percent in 1985 and 23.1 percent in 1990. Giant's share, however, exploded, increasing from 33.2 percent in 1985 to 43.4 percent in 1990.

Safeway's leading competitors appear to have reinvested their high profits in new stores and have consequently achieved significant share gains at the expense of fringe firms rather than Safeway. Thus, there is little evidence that competitive pressures from the fringe or new entrants are eroding the positions of the high profit firms listed in Table 3. One of the primary goals of Safeway's restructuring program—one that they have achieved—is to maintain a number one or two position in every local market in which it operates (Morgenson, 1990).

Clearly, there is need for more research on the organization and performance of the food retailing industry. Anyone who maintains the industry is currently performing in accordance with the competitive market norm or the contestable market norm is misinformed. The industry is split between highly leveraged and unleveraged firms with very different short run requirements for survival. The likelihood for noncompetitive pricing in concentrated markets seems higher now than ever before. Moreover, fringe firm expansion or entry may not be timely and of sufficient scope to discipline firms that exercise power over price.

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[10]Data on the Seattle and Washington markets are from the 1986 and 1991 issue of Metro Market Studies, Inc. Grocery Distribution Analysis and Guide. The market shares are grocery market rather than supermarket shares, as such they are understated, but this does not affect analysis of changes in shares much.

Table 3 EARNINGS BEFORE INTEREST, AND TAXES 1985-1990 FOR SAFEWAY, GIANT AND QUALITY FOOD CENTERS

Year	Safeway*	Giant Food	Quality Food Centers
1985	2.18	4.73	3.26
1986	2.03	4.05	3.50
1987	2.28	5.24	4.62
1988	2.39	5.70	4.98
1989	3.23	5.75	6.48
1990E	3.65	5.92	6.55

E-Estimated

*   Include results of Canadian and Australian retail food centers as well as all U.S. operations.

Source: Mandel and Heinbockel, Corporate 10-K's.

Anderson believes that a definitive new study of the structure-price relationship "would entail a major research effort, which would probably require several work years of effort to collect and analyze all of the necessary data" (Anderson, 1990, p. 48). Again, I disagree. Price, product movement, and merchandising information is now readily available in electronic form due to the use of scanners in retail outlets. Retailers and manufacturers have developed complex strategic price and merchandising models that use this data to improve their profitability. At the Food Marketing Policy Center, we have purchased a comprehensive data base that provides price, market share, and 14 other merchandising variables for individual branded grocery products and private label counterparts in 51 local markets on a quarterly basis. These data span most dry grocery product categories, bakery, dairy, and drink categories; but, they do not include fresh produce or fresh meat. Our initial work with the data is on cottage cheese. We find that a relatively simple model with variables such as the brand's local market share, and retailer concentration can explain over 50 percent of the variation in branded cottage cheese prices. Preliminary results indicate that both of these variables are positive determinants of a brands price in a local market; however, other variables are more significant (Haller, 1991).

In conclusion, I would like to thank Keith Anderson for the substantial effort that he devoted to this project. Although I do not agree with most of his points, they are constructive, and help us define the research agenda. The strategic and public policy issues addressed by the studies critiqued by Anderson are important. There will be more structure price studies in the food sector. Moreover, the new data may enable us to unravel the role of product differentiation as a source of market power in a more definitive fashion than has heretofore been possible. No single study or new theoretical approach will ever answer the central questions of industrial organization that we have discussed here. In the meantime, we need to proceed as best we can using theory judiciously and devising tests of hypothesis that recognize and, if possible, take advantage of new data as they become available. As one economist put it when faced with the Fisher McGowan critique:

> "having wandered into the jungle, spied some fresh elephant tracks and smelt an elephant, one must be prepared to conclude that an elephant has recently wandered by" (Horowitz, 1984, p. 493).

APPENDIX A

Supporting Tables

Table A-1 Change in Industry Profits Resulting From Change in Relative Market Share and Linear Market Concentration*

Firm	Market Share (%)	Relative Market Share (%)	Firm Sales (Million $)	Relative Market Share Profits (Mil$)	Market Concentration Profits (Mil$)	Total Profits (Mil$)
High Market Share Case						
Before Market Concentration						
1	25	62.5	250	9.844		
2	5	12.5	50	0.394		
3	5	12.5	50	0.394		
4	5	12.5	50	0.394		
Other[1]	1	2.5	600	0.945		
Profits (Mil$)				11.97	10.4	22.37
After Market Concentration						
1	25	31.25	250	4.922		
2	20	25	200	3.15		
3	20	25	200	3.15		
4	15	18.75	150	1.772		
Other[2]	1	1.25	200	0.158		
Profits (Mil$)				13.151	20.8	33.951
Change in Industry Profits (Mil$)				1.181	10.4	11.581
Low Market Share Case						
Before Market Concentration						
1	10	25	100	1.575		
2	10	25	100	1.575		
3	10	25	100	1.575		
4	10	25	100	1.575		
Other[1]	1	2.5	600	0.945		
Profits (Mil$)				7.245	10.4	17.645
After Market Concentration						
1	20	25	200	3.15		
2	20	25	200	3.15		
3	20	25	200	3.15		
4	20	25	200	3.15		
Other[2]	1	1.25	200	0.158		
Profits (Mil$)				12.758	20.8	33.558
Change in Industry Profits (Mil$)				5.513	10.4	15.913

[1] 60 firms with 1 percent market share each.
[2] 20 firms with 1 percent market share each.
*based upon equation 1b Table 3.5, Marion, et al. (1979) p. 82.

TABLE A-2 TOP TWENTY RETAIL CHAINS OF (1972, 1979, AND 1989) AND OWNERSHIP/FINANCE CHANGES BETWEEN 1979 AND 1989.

Rank	Name, Sales ($ million)/Share (%) 1972	Name, Sales ($ million)/Share (%) 1979	Changes 1979-1989	Name, Sales ($ million)/Share (%) 1989
1	A&P (6,369) 7.21	Safeway (13,718) 7.52	(LBO-KKR 1986)	American (22,004) 6.27
2	Safeway (6,057) 6.86	Kroger (9,029) 4.95	(RECAP-G.Sachs 1988)[5]	Kroger (18,832) 5.37
3	Kroger (3,791) 4.29	A&P (6,684) 3.66	(acquired by Tengelmann 1979)	Safeway (14,325) 4.08
4	ACME (American) (2,025) 2.29	American (6,121) 3.36	(acquired by Skaggs 1979)	A&P (11,100) 3.16
5	Jewel (2,009) 2.28	Lucky Stores (5,816) 3.19	(acquired by American 1988)	Winn-Dixie (9,151) 2.61
6	Lucky (1,988) 2.25	Winn-Dixie (4,931) 2.70		Albertson's (7,420) 2.11
7	Food Fair (1,980) 2.24	Grand Union (3,138) 1.72	(LBO-Mgmt, 1988, acquired by Miller, Tabak, Hirsch 1989)	SGC (6,299) 1.79
8	Winn-Dixie (1,834) 2.08	Jewel Cos. (2,818) 1.54	(acquired by American 1984)	Publix (5,386) 1.53
9	Grand Union (1,380) 1.56	Albertson's (2,674) 1.47		Vons (5,200) 1.48
10	Supermarkets GC (SGC) (1,194) 1.35	SGC (2,370) 1.30	(LBO-Mgmt, 1987)	Food Lion (4,717) 1.34
11	National Tea (1,090) 1.23	Stop & Shop (1,879) 1.03	(LBO-KKR, 1988)	Stop & Shop (4,636) 1.32
12	First National (849) .96	Publix (1,800) .99		AHOLD[4] (3,630) 1.03
13	Stop & Shop (774) .88	Dillon (1,792) .98	(acquired by Kroger, 1983)	Giant Food (3,250) .93
14	Albertson's (349) .40	Von's (1,060) .58	(LBO-Mgmt, 1985)	Grand Union
15	(682) .77	(1,500) .82	from Household Int.)	(2,717) .77
16	Publix (676) .77	Food Fair (1,492) .82	(bankrupt, exited 1986)	H.E. Butt (2,586) .74
17	Fisher Foods (650) .74	First National (1,365) .75	(LBO, acquired by AHOLD 1985)	Ralphs (2,556) .73
18	Giant Food (496) .56	Fisher Foods (1,336) .73	(merged with Riser Foods, 1988 divested main division Dominick's)	Fred Meyer (2,285) .65
19	Dillon (406) .46	Giant Food (1,243) .68		Bruno's (2,134) .61
20	Waldbaum (394) .45	Waldbaum (1,103) .60	(acquired by A&P, 1986)	Dominick's (2,000) .57
	Fred Meyer (349) .40	Fred Meyer (1,060) .58		Hy-Vee (1,800) .51
Top Twenty Sales	34,993 37.49%	71,869 38.38%		132,028 37.61%
Total Grocery Sales	93,328	187,242[3]		351,000

Source:
1. 1979, and 1989 sales reported by Progressive Grocer Marketing Guidebook 1981, 1991; Bureau of Census, Statistical Abstract, 1981.
2. Cotterill and Haller, 1987; Bureau of Census, Statistical Abstract, 1977.
3. After 1977, Census reports establishments with payroll, the 1979 figure is adjusted upward based on the ratio of total sales to payroll sales for the 1977 census.
4. Includes Giant Food Stores, Carlisle, PA., Bi-Lo, and First National.
5. In response to hostile takeover by Haft family, Kroger with Goldman-Sachs did a leveraged recapitalization. Operationally it is equivalent to a LBO.
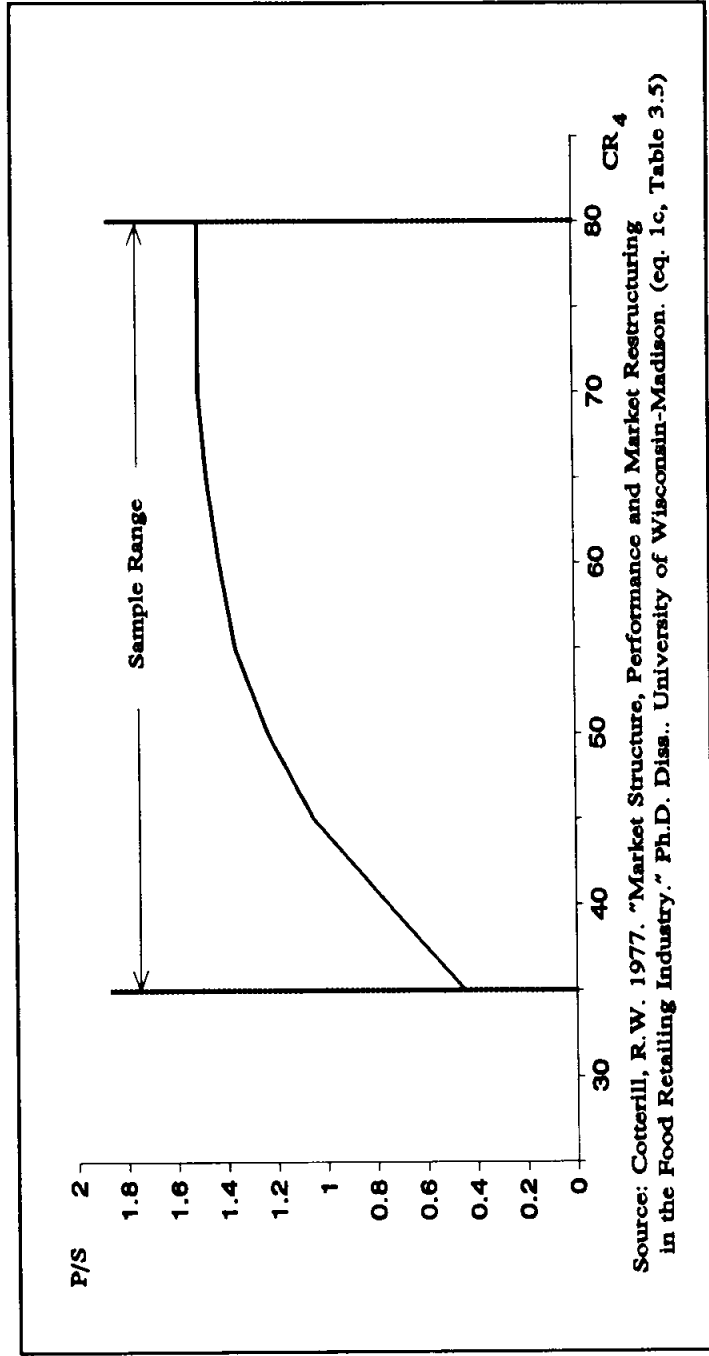
Figure A-1. Graph of the Concentration-Profit Relationships in Food Retailing

Source: Cotterill, R.W. 1977. "Market Structure, Performance and Market Restructuring in the Food Retailing Industry." Ph.D. Diss.. University of Wisconsin-Madison. (eq. 1c, Table 3.5)

APPENDIX B

ANALYSIS OF A&P PERFORMANCE

A&P launched a massive price cutting campaign in all its stores as a last ditch effort to save its strategy of extensive vertical integration to produce a wide array of private label products for sale in small, older, supermarkets this program was named W.E.O. (where economy originates) (Marion et al., 1979, Chpt. 3). It did drive at least one competitor into insolvency (Penn Fruit) and affected others' profitability for a few quarters. However, A&P lost millions and closed over a thousand stores in a retrenchment that ultimately recognized that the dominant retailing strategy is to merchandise a broader array of nonfoods as well as foods in larger stores, not to be a cost focused, private label dominated, supermarket with very few nonfood items. Consequently, we did specify a variable that identified whether a chain competed against A&P (A&P impact variable) and a variable that identified an A&P observation. Both are significant; however, adding or deleting them from the models does not affect the estimation results (Marion et al., 1979, Chpt.3).

Anderson argues that one should not accord one chain special treatment and more specifically, that a general theory of noncompetitive conduct is not validated if one controls for chiseling by one or more firms. This is a somewhat curious criticism because the most pervasive critique of structure-profit studies has been the excessive reliance upon broad cross section data sets that have ignored specific firm or industry characteristics. Here, Anderson is critical because the model is too firm specific. I would have expected him to demand the opposite; i.e., that the models be estimated for individual firms and that the models incorporated more, not less dynamics of price competition.

Part of our special treatment of A&P was to estimate an abbreviated version of the model for the 28 observations from A&P (Marion et al., p. 1979, p.201). In my opinion, the results strongly support the structural explanation of profitability. In the years before W.E.O. the model performs pretty much as hypothesized with positive and significant coefficients for relative market share and concentration. However, during the W.E.O. periods and its chaotic aftermath the model completely falls apart. Nothing explains A&P's performance during that period which probably is as it should be.

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