ESTIMATES OF CONSUMER LOSS DUE TO MONOPOLY IN THE U.S. FOOD MANUFACTURING INDUSTRIES

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I. Introduction

The essence of market power is the ability of a firm to raise the price of its product above the level that would obtain if its market were more competitive. Of the numerous, still tenable theories of oligopoly developed by economists over the last 140 years, all predict higher long-run average prices where seller concentration is high (Weiss), product differentiation is effective (Comanor and Wilson), and/or barriers forestall the entry of new businesses into the market (Bain). The major empirical tests of these hypotheses have generally established statistical relationships between the aforementioned market imperfections and higher profits, the *indirect* effect of raising prices.[1]

The empirical estimation of the *direct* losses to consumers due to monopoly prices has heretofore been quite imprecise because of inherent methodological difficulties and lack of appropriate data. The processed foods industries may be an exception.

Most major industrial groups are composed of industries which produce mixtures of high and low priced products of varying durability and which employ diverse channels of distribution. Food and kindred products manufacturing, on the other hand, is characterized by low-unit-priced, high-turnover consumer products sold mainly through grocery stores. To the extent that some of the food industries sell to other industries, such as flour and sugar, customers are mainly other food industries. These characteristics, plus the fact that imports and exports are not important, mean that the food and kindred products industries as a group are largely self-contained.[2]

The central purpose of this paper is to compute and compare annual "consumer loss" estimates for the U.S. food manufacturing industries, using three different and independent methodological approaches.[3] These procedures also make use of widely different data bases, two of which have never previously been employed for computing monopoly losses. The estimates display a significant convergence, $12-13 billion for 1975. These large dollar amounts suggest a high payoff for increased public policy attention to competitive problems in the food manufacturing industries.

The remainder of the text is divided into five parts. Section II provides a very brief review of the structure and profit performance of food manufacturing. Section III explains the underlying theory of monopoly loss, while Section IV summarizes earlier efforts at computing monopoly loss. Section V discusses our methodology and empirical results. A summary of our estimates and policy implications are given in the last section.

II. A Brief Review of Industry Structure

A review of indexes of market structure and performance of the food manufacturing industries provides ample evidence of substantial departures from pure competition. Not only are market shares, sales concentration, advertising, other product differentiation expenditures, and profits high, but they have been increasing steadily over the last three decades. The processing and manufacturing of food products occurs in some 47 four-digit industries whose competitive structures are quite varied but increasingly each is dominated by a few large companies with high market shares. The individual industry shares have increasingly been consolidated, through merger, in the hands of a few very large conglomerate enterprises. Just

50 firms accounted for 56 percent of food manufacturers' assets in 1974, up from 41 percent in 1950. Concentration of profits, sales promotion activities, and the holding of leading positions with these 50 firms is substantially higher, ranging upward to 90 percent (Parker 1976a).

The weighted average four-firm concentration ratio for all national-market food-processing industries in 1972 was 43 percent, which is slightly higher than the average of national market industries in the remainder of manufacturing. Adding local-market industries and substituting published local for national concentration (fluid milk, ice cream, animal feeds, bread, and soft drink bottling), the shipments-weighted average food industry concentration ratio was 52 percent (in 1958 weighted concentration was only 47 percent), indicating a significant degree of oligopoly and potential for competitive problems.[4] The comparable weighted average concentration ratio for the rest of the manufacturing industries (also including local markets such as ready-mix concrete) is 43 percent.

Scherer, in his review of the effects of concentration on market performance, concluded that "...when the leading four firms control 40 percent or more of the total market, it is fair to assume that oligopoly is beginning to rear its head" (p. 60).[5] Average concentration in food manufacturing has increased significantly since World War II, spurred by a high disappearance rate of firms and an active merger movement (Parker 1976a). Over the period 1963-1972, for example, the number of food manufacturing companies has declined by over 3 percent per year. Moreover, the intercensus company disappearance rate has been increasing since 1947.

Increasing promotional activities have accounted for a significant increase of the costs of food manufacturers since World War II. Some methods of sales promotion are simply ways of directing price discounts to certain groups of consumers for limited periods (free sample, "price-paks", premiums, and coupons, for example). Other promotional devices involve the provision of payments or free services by manufacturers' representatives to retailers or wholesalers (cooperative advertising allowances, special in-store displays, stock rotation services, delivery, and information), some of which may be passed on to consumers in the form of lower prices. Some of the largest food manufacturers employ as many as 2,000 to 3,000 field sales personnel to carry out in-store promotion. Several provide expensive shelf space allocation services for grocery departments in which they have a leading brand. But the bulk of promotional activities currently used for food products simply adds to distribution costs: market surveys and test marketing, package design and elaborate packaging materials, point-of-sale advertising, direct mailings, and media advertising. IRS data indicate that in 1975 total U.S. advertising expenditures (which include some non-advertising promotional outlays) by food manufacturers were $4.2 billion.[6]; media advertising of food (TV, radio, magazines, newspapers, and outdoor) typically accounts for over 60 percent of total food advertising expenditures (Connor). Media advertising of processed foods has risen by an average of 10 percent per year over 1950-75; since advertising expenses have increased at a much faster rate than sales, the advertising-to-sales ratio of food processors has increased also, from only 1.1 percent in 1947 to about 2.5 percent in 1975, with most of the increase accounted for by television advertising.

Persistently high profit rates are another index of monopoly pricing. The profits after taxes as a percent of stockholder equity of food manufacturers have experienced a quarter-century increase of over 50 percent. They have also risen relatively to profit rates in the rest of manufacturing, itself hardly a model of competition (Table 1). Moreover, Table 1 understates the profitability of food manufacturing because, inter alia about

Table 1. Profits after taxes as a percentage of stockholders' equity, 1951-76.

5-year Period	Food manufacturing	All manufacturing	Food profit rate as a percent of all manufacturing profit rate
1951-55	8.3%	11.2%	74%
1956-60	8.9	10.3	86
1961-65	9.5	10.7	89
1966-70	10.9	11.6	94
1971-76	13.0	12.3	106

Source: Federal Trade Commission, Quarterly Financial Reports.

8 percent of sales registered in the FTC reports are by non-profit agricultural cooperatives, whereas in the rest of manufacturing, cooperatives account for about one-tenth of a percent of sales. A detailed discussion of the adjustments necessary to compare food manufacturer profits with all manufacturer profits is given in Appendix B.

III. Monopoly Loss Theory

Analysis of the welfare effects of monopoly extends back to Dupuit (1844). Marshall (1930) applied the concept of consumer surplus, and Lerner (1934) generalized Marshall's analysis to monopsonists as well as monopolists and to different cost conditions.

Following the framework established by this literature, consumer loss due to monopoly is defined here as the area under the demand curve DD' between the competitive price P_c and the monopoly price P_m (Figure 1).[7] The total monopoly loss to consumers is represented by the trapezoid P_mP_cCM. The trapezoid has two basic areas: a rectangle P_mP_cRM which is the sum of overcharges on quantities actually purchased and the triangle MRC which is a deadweight or allocative loss incurred by consumers for quantities they would have purchased had the price been the competitive price. Were there a competitive price, consumers would have purchased the additional quantity R to C and would have enjoyed the additional consumer surplus MRC. At the monopoly price P_m consumers are given price signals that are higher than the opportunity costs for this additional quantity. Thus, consumers are led to consume products they would have regarded as less desirable substitutes at competitive price levels. The loss of MRC is a net loss to society as a whole. No part of it is a transfer as in the case for the overcharge rectangle (P_mP_cRM).

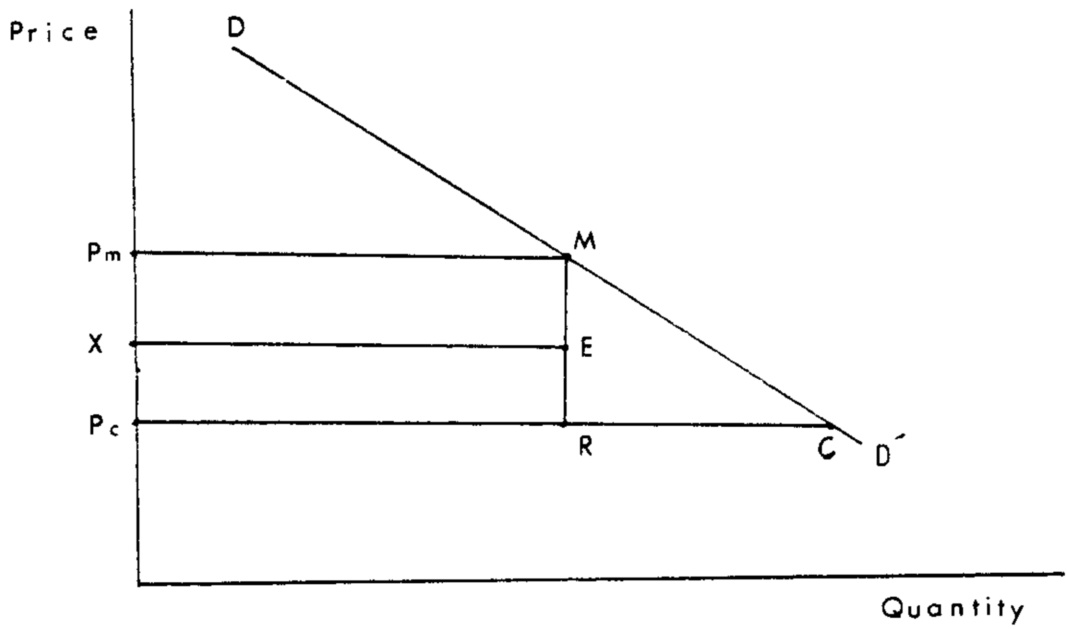

Figure 1

Just how much of the overcharge rectangle P_mP_cRM is an income gain to the monopolist depends on how much higher the monopolist's average costs (X) are compared to the competitive level (P_c). Over 200 years ago Adam Smith described monopoly as the great enemy of good management; by that he meant that monopolists do not have as strong incentives to minimize their costs of products as do competitive firms. More recently Comanor and Leibenstein (1969) have referred to the monopolists higher costs (rectangle XP_cRE) as "X-inefficiency". These higher costs reflect not only lax management but excessive expenditures on advertising, excess plant capacity, or other costly strategies which protect the monopolist's position from encroachments by competitors. The monopoly profit rectangle (P_mXEM) that remains after covering the higher costs should correspond to reported before-tax profits in the monopolist's profit and loss statement. However, as suggested by Levinson (1960) and Bell (1968) the correspondence is often reduced when firms earning monopoly profits share their gains with their employees through higher wages.[8] Moreover, monopolistic firms often allow managerial withdrawals in the form of fancy offices, corporate jets, and other inessential perquisits.

A more rigorous explanation of monopoly loss would relate the area P_mP_cCM to a social welfare loss, defining that as a loss of consumer surplus. No attempt will be made here to reproduce steps and caveats of the traditional proof that the loss of consumer surplus equates to a loss of consumer welfare (see Currie, <u>et al.</u>). A rigorous calculation of monopoly welfare loss requires assumptions above interpersonal comparisons of consumer utility functions, consideration of the welfare gain of the monopolist, and knowledge of production functions of the products and of their substitutes. However, ignoring the income transfer to monopolists is correct only if income redistribution has no weight in the social welfare function or if there were costless means of offsetting the income distribution effects of market power (Comanor and Wilson).

A full economic articulation of monopoly welfare loss would adjust the welfare loss of consumers (as consumers) by the welfare gain of the monopolist (as consumer) to derive a net welfare loss. Data required for this exercise would include the income distribution of consumers of various products, the income distribution of the various claimants on a firm's rents (owners, managers, government, and possibly workers), and a scale for making interpersonal utility comparisons.

In making the following estimates, the increased welfare of the monopolists is ignored, though the ommission may not be important if one believes that social equity is served by not increasing material inequality. Food is a basic necessity (a wage good) consumed by all roughly in proportion to dietary needs regardless of income or wealth. On the other hand, the income transfers to monopolies go to a relatively few, higher-income individuals whose increased welfare would likely be small in comparison with the welfare loss to all. Indeed, a charter member of the "Chicago School", Richard Posner (1975), has developed a model that assumes that all expected monopoly rents are transformed into gross social costs.

Our estimate of X-inefficiency is overstated by the value received by consumers because of food manufacturer's advertising on information and entertainment media. The value received by consumers from these media is not directly measurable because it is not expressed in a market. Expenditure levels and content are not made in accordance with consumer preference -- rather, they are chosen by companies to maximize advertising effectiveness. Although advertising expenditures may be efficient in producing private benefits for this purpose, they are likely very inefficient in producing social benefits. Therefore, the authors have made no attempt to adjust their X-inefficiency estimates.

Our framework for estimating consumer loss assumes that food product advertising affects only intra-industry preferences for brands and the condition of entry. It ignores all effects on shifting demand between product categories. The authors have substantial reservations regarding this assumption. Comanor and Wilson (1974) have found that consumer product demand functions are more responsive to changes in advertising expenditures than changes in relative prices. When changes in interindustry demand functions occur, additional considerations ought to be introduced for measuring allocative inefficiency and X-inefficiency which are not evaluated in our framework. The advertising of soft drinks has likely reduced the consumption of milk and fruit juices; the advertising of breakfast cereals has probably caused a decline in the consumption of traditional breakfasts; and the advertising of snack foods and processed foods in all likelihood has caused them to be substituted for fresh products and commodity-type processed foods. Each of these interproduct shifts could well be raising processing costs for food as a sector above minimum necessary levels and may be imposing costs on consumers due to health problems related to poor nutrition. It has been alleged that food product advertising may be responsible for an overconsumption of food generally as well as an overconsumption of specific ingredients more common to advertised products, e.g., sugar, saturated fat, cholesterol, salt, and preservatives, coloring agents, and synthetic additives. According to recently released dietary goals (U.S. Senate) for the United States the overconsumption of these ingredients is causing significant national health problems. The unnecessary production costs caused by the shift in demand to processed products and the cost of poor health could amount to several times estimates of consumer loss calculated below.[9]

IV. History of Estimation Attempts

There have been very few empirical studies of the loss to consumers due to monopoly, probably because of the general reluctance of economists to deal with questions of equity and technical efficiency. Harberger (1954) appears to have been the first to employ the concept of consumer's surplus to quantify the welfare effects of monopolies. Because he considered only the "deadweight" loss triangle (triangle MRC) and did not estimate X-inefficiency or the profit transfer to monopolists, his estimate was quite small, about 0.1 percent of U.S. national income.[10] Subsequent estimates of the "deadweight" loss for the U.S. came to similarly small amounts.[11] Scherer (1970), however, argues that Harberger's approach subsumes several questionable and restrictive assumptions; more reasonable assumptions would raise the U.S. deadweight loss to 0.5 to 2.0 percent of GNP, with a best-guess estimate of about 1.0 percent (p. 404).

Scherer (1970) estimated total consumer loss for the entire U.S. economy. His estimate included not only allocative or deadweight loss and income transfer but various X-inefficiency components as well. He suggested that the combined total of the X-inefficiency loss to be 10 percent of costs in some highly insulated industries (p. 405). Leibenstein (1978a) himself in an interview cited several industry studies that found excess costs of about 10 percent, and for all stages of production combined he ventured that he "...would be amazed if X-inefficiency wasn't around the 20 percent level for the economy as a whole" (p. 209). With the addition of monopoly profits and deadweight loss, therefore, it is quite possible that the consumer loss could exceed 10 percent of sales in many industries.

There have been a few estimates of consumer loss in selected industries. Comanor and Wilson (1974) applied the results of a profit-market structure regression analysis to a sample of broadly defined industries in the consumer-goods manufacturing sector for the 1954-57 period. Their approach yielded an estimated monopoly overcharge to consumers of 5.5 to 6.0 percent of value added (p. 242). Marion, et al. (1977) using a structure-price model of metropolitan-area food-retailing markets calculated a 1974 loss to consumers of $662 million nationally due to monopoly in the food retailing industry. Unlike all the aforementioned studies which use accounting cost and profit data as their starting point, there are a number of estimates of overcharges arising from price-fixing in specific products. Though limited in coverage the estimates are sometimes based on excellent price data. For example, Parker (1969) using Bureau of Labor Statistics price data calculated a 15 percent price-fix overcharge which for the decade 1955 to 1965 cost consumers of bread in western Washington state $30 million annually.

V. Consumer Loss in Food Processing

We have calculated the monopoly loss to consumers of processed foods using three different approaches. These are: (1) the Scherer-type estimates of categories of consumer loss for the whole economy, adapted to the special conditions in the food manufacturing industries; (2) Collins-Preston (1968) price-cost margin estimates; and (3) monopoly-competitive price differentials, proxied by national brand-private label food prices.

The three overcharge estimation methodologies differ widely and make use of distinct data sets. About 60 percent of our estimate based on Scherer categories is excess profits and excess advertising costs. These are calculated from estimating models specific to the food manufacturing industries and use census sales concentration, measured media advertising, company profits, and other published data for the food manufacturing industries.

The remaining 40 percent of our Scherer type estimate consists of extrapolations of his estimates for the whole economy applied to food manufacturing. This 40 percent is considered the least reliable of our estimates and is included mainly for heuristic reasons.

Our second estimating method is an adoption of an exemplary structure-performance analysis of food manufacturing. The analysis, by Collins and Preston, is not unimpeachable but is nevertheless the best currently available. It utilizes price-cost margins developed from Census statistics for manufacturing establishments. These data are highly regarded for their completeness and accuracy.

The third approach is an original one and is therefore explained in some detail. It is based on price differentials between "national brands" and "private labels" of grocery store products.[12] These data were collected by SAMI (1977), a leading proprietary marketing service company. Thus, the data we used for our three different methods were drawn from three different units of observation (companies, plants, and individual products) and were collected by unrelated insitutions.

The Scherer-Type Estimates

F. M. Scherer's preeminent textbook in the field of industrial organization presented a set of estimates of the total consumer loss due to market power in the U.S. economy circa 1966 that have been widely quoted. Admitting it to be inherently "iffy" and subjective, his "conservative best-guess estimate ... of the efficiency losses attributable to collusion, the exercise of market power, and related breakdowns of competitive pricing process" was 6.2 percent of U.S. GNP (Scherer, p. 408). In addition, he estimates that the redistribution loss of consumers due to monopoly profits is on the order of 3.0 percent of GNP (ibid., p. 409).

Scherer's estimation categories and some of his percentages were adjusted for the U.S. food manufacturing industries for 1975 (see Appendix A for details). A summary is shown in Table 2. Two category of losses were omitted because they do not apply to food processing: deadweight losses in the regulated industries and deficient cost controls in the defense and space industries. The first component, the income transfer from consumers to monopolists, was calculated by making use of prior regression estimates of market structure-profit relationships for food manufacturing (FTC 1969), substituting, however, the most recent structural data and value of shipment weights. A competitive profit rate was for an industry with 40 percent four-firm concentration, equal market shares among the top four, and an advertising-to-sales ratio of 0.5 percent. The category of wasteful promotional activities in food was based on estimates calculated from actual food advertising data for 1975. The procedure involved calculating a competitive advertising-to-sales ratio, defining competitive as industries with 40 percent or less four-firm concentration. The competitive rate was then subtracted from actual rates and the remainder defined as excess. The competitive rate thusly derived is 0.5 percent of sales. The remaining categories of loss due to X-inefficiency are adjusted upward on the assumption that X-inefficiency is proportional to the relative degree to which average concentration in the food manufacturing industries exceed that of all manufacturing industry. On the basis of both weighted concentration and relative advertising intensities, food manufacturing is more oligopolistic. The last component, the "dead-weight" loss is insignificant compared to the other categories. We have deflated Scherer's estimate by assuming a much less elastic demand for food (-0.5) than he did for other industries in the economy (-1.0). The

Table 2 -- Summary of the Scherer-approach estimates of total consumer loss due to market power in the U.S. food manufacturing industries, 1975

Type of loss	Consumer loss due to market power in food and kindred products, 1975	
	Percent of shipments (adjusted)	Dollar amounts
	Percent	Million dollars
1. Income redistribution due to monopoly profit transfers	2.1	3,613
2. X-inefficiency due to excess advertising and promotional expenses	2.3	4,000
3. X-inefficiency due to lack of cost controls, chronic excess capacity, and other sources	2.7	4,480
4. Deadweight social welfare loss	0.3	430
Total	7.3	12,523

aggregate of component estimates is a consumer loss amount that represents 7.3 percent of industry shipments, or $12.5 billion in 1975.

Scherer himself placed a confidence band about his estimate of consumer loss that implied a range of about 5 to 18 percent of GNP. We feel that because of the various direct estimates made (61 percent of the overcharge amount), the total estimate presented in Table 2 potentially contains less variability. In particular, the monopoly profit estimate based on an econometric study of the structure-profit relationship in food manufacturing and the estimate of excess promotional expenses based on measured media advertising data specific to 5-digit census product classes, are less conjectural than the rest; we would place a confidence band on only ± 25 percent on those two categories.

The other forms of X-inefficiency contain more points on which reasonable men might differ. It is extremely unlikely that the levels of X-inefficiency are less than 1.2 times those of the rest of manufacturing (3.7 percent of value added or $1,800 million). Pricing-fixing is rife in many local market food processing industries; in fact, among price-fixing cases brought by the Department of Justice, the milk and bread industries head the list. The soft drink industry has territorial restrictions that effectively segment markets. Cross-hauling and nonoptimal location decisions are characteristic of several food industries, such as milk. And excess capacity for strategic reasons is known to be serious in the beer industry and others with high fixed costs. For these reasons, we are quite confident that this approach yields a total consumer loss estimate accurate to within $3 billion of the expected value.

Price-Cost Margin Estimates

In a 1968 monograph, Norman Collins and Lee Preston examined the relationship between market structure and price-cost margins in food manufacturing (Collins and Preston). They found a close statistical relationship between the lack of competition and high price-cost margins in 32 food and kindred products manufacturing industries using 1958 Census data. Since higher margins are included in the prices purchasers pay, the present authors have defined the excess in margins due to the lack of competition as the consumer overcharge.

Price-cost margins (PCM) are the total dollar amount of value added in an industry less payroll and other direct costs (BOC 1972). Therefore, included within the price-cost margins are returns to capital, executive salaries, and expenditures for advertising and other contract services. The overcharge portion of a price-cost margin would include monopoly profits, high executive salaries, excessive advertising, and costs due to inefficient utilization of capital equipment and contract services.

Collins and Preston used the four-firm industry concentration ratio (CR) as an index of monopoly in their model. The present authors accept this role for concentration and define monopoly overcharge as the amounts of interindustry variation in the price-cost margins explained by variation in concentration, other factors held constant. In computing overcharges from the regression models, industries with four-firm concentration levels up to 40 percent are considered effectively competitive (p. 3 supra). As with the Scherer-type approach, only margin amounts greater than that which corresponds to the competitive level of concentration are considered overcharges.

The variables used to control for other factors in the Collins-Preston model were a capital-output ratio (K/Y) and a geographic-market index (GEOG). The capital-output ratio was introduced to adjust for differences in capital intensity between industries. The geographic-market index was introduced to take account of the fact that national concentration ratios understate actual levels of concentration in industries whose markets are local or regional in character.

When the model was fitted to the data using multiple regression analysis, the coefficients in the Collins-Preston equation all had the expected signs and were statistically significant. The best fit of concentration was the nonlinear form involving both CR and CR^2. The equation shows that the lowest price-cost margin occurs when CR equals 20 percent which is half the level the present authors assume as the competitive level. The least-squares estimates are shown in equation (1), with t-values given in the parentheses.

$$(1)\ PCM = 15.699 - \underset{(-1.45)}{.274\ CR} + \underset{(3.75)}{.007\ CR^2} - \underset{(-4.62)}{.121\ GEOG} + \underset{(3.68)}{.250\ K/Y}\ .$$

The present authors refitted the Collins-Preston model to 1972 Census data for 41 food manufacturing industries (Appendix Table C.1). The coefficients again had the expected signs and were statistically significant except for the linear term of CR.[13] The refitted equation also shows that the lowest PCM occurs when CR equals 20 percent.

$$(2)\ PCM = 22.096 - \underset{(-.69)}{.211\ CR} + \underset{(1.78)}{.00054\ CR^2} - \underset{(-3.16)}{.117\ GEOG} + \underset{(3.52)}{.178\ K/Y}\ .$$

In addition to refitting the Collins-Preston model in its original form, the present authors augmented the model by adding several variables suggested by more recent research (Rhoades and Cleaver 1973, Weiss 1974, Strickland and Weiss 1976, and Kwoka 1978). The Parker-Connor model is shown in equation (3). Variables for advertising as a percent of sales (ADS4) of the four largest firms in each industry and for industry growth (GROW) were added. The coefficients of all of the variables in the equation had the expected signs (see Appendix C). In addition, the coefficient of an economies of scale variable (MES) was negative, and the coefficient for the intensity of TV advertising (TVADV) was positive. However, because they were not statistically significant structural variables, they were not included in the estimating model.

$$(3)\quad PCM = 4.48 + \underset{(3.49)}{.191\ CR} + \underset{(3.64)}{3.695\ ADS4} - \underset{(-1.80)}{.168\ ADS4^2} - \underset{(-3.07)}{.085\ GEOG}$$

$$+ \underset{(5.97)}{.232\ K/Y} + \underset{(.90)}{.0638\ GRO}\ .$$

Each of the three equations was used to derive percentage overcharge estimates. The coefficients of the structure variables in the equations were used to calculate the extent to which a price-cost margin for an industry was above that predicted for a competitively structured industry. The dollar value of overcharge for the industry was calculated by multiplying the percentage overcharge by the industry's 1975 value of product shipments. The total overcharge for all food and kindred products industries was the sum of the individual industry estimates (Appendix Table C.3). Table 3 summarizes these estimates.

Table 3 -- Total dollar amounts of monopoly overcharge in the food manufacturing industries, estimated from three price-cost margin regression equations, 1975

Regression models	Estimated total overcharge amounts when the competitive level of 4-firm industry concentration is:		
	35%	40%	45%
	-----------------Billions of dollars-----------------		
(1) Collins-Preston Equation (1958 Parameters)	15.1	13.0	10.4
(2) Collins-Preston Equation (1972 Parameters)	13.8	12.2	10.2
(3) Parker-Connor Equation	15.0	13.6	12.7
AVERAGE	14.6	12.9	11.1

In order to show the sensitivity of the estimates to the choice of competitive level of concentration, three estimates were calculated from each equation. The estimates in the first column of Table 3 correspond to a 35 percent assumption, the estimates in the second correspond to a 40 percent "competitive level", and the estimates in the third correspond to a 45 percent assumption. In each of the equations GEOG is set at 100 which is its modal value for industries that have not been identified as local market industries (NCFM 1966a). The competitive value of ADS4 was set at 0.5 percent. K/Y and GROW are held constant at their sample means since they are not market structure variables. The predicted values of overcharge therefore abstract from differences among industries due to different levels of capital intensity and growth.

The total overcharge estimates from three estimating equations, using 40 percent as the competitive concentration ratio, range from $12.2 billion to $13.6 billion. The highest estimate is from equation (3). Equation (3) is the most completely specified and also shows the least variability in overcharge amounts due to the choice of the level of concentration defined as competitive. Although the authors believe that the estimate from equation (3) is superior, they wish to maintain a conservative stance by choosing the sample average of the 3 estimates, $12.9 billion. The deadweight loss that is added to it to arrive at an estimate of total consumer loss is based on the further conservative assumption that demand elasticities in each industry are -0.5. With this assumption the deadweight loss calculates to $473 million and brings the total consumer loss amount to $13.406 billion. This deadweight loss estimate, because it is calculated from the average of all industries rather than for each industry separately, is an underestimate; the latter method yields an average deadweight loss of $823 million.

National Brand-Private Label Price Differential Estimate

In this method prices of food chain private labels are considered to approximate competitive prices; the amounts by which manufacturer brand prices exceed private label prices for the same items are considered to be estimates of monopoly overcharges. The dollar overcharge for a product category is the percent overcharge times the wholesale value of manufacturer brand sales. The overcharge is attributed to manufacturers. Only to the extent that retailers might pyramid or absorb the manufacturers' overcharge would retailers effect the value of the overcharge. It is assumed that over-pricing by retailers due to local market monopoly positions held (Marion) would apply equally to national brands and private labels.

The private label-national brand price estimating method cannot be applied outside of the grocery products area. Besides the availability of comparable private label-manufacturer brand price data for a large number of different products, the analyses of the data is made possible by the fact that both national brand and private label products move through market channels in a parallel manner and encounter few differences in transportation, inventory, warehousing, or merchandising.

Manufacturer brands are generally sold nationwide and supported by large-scale national advertising. Hence, these brands are often referred to as national brands. It is assumed that national brands sell at premiums which manufacturers set in accordance with the strength of preference created by advertising and other promotion. Their ability to achieve such prices is enhanced when sales of the products are concentrated within a few firms. Advertising appears to be the principal barrier to entry into food manufacturing markets. The blockading effect of the advertising barrier is buttressed when the advertising is mainly on television and when it is controlled by big-budget firms who can coordinate it with the activities of large field sales forces. An important problem related to advertising and promotion is the difficulty faced by smaller food manufacturers in obtaining shelf space. Heavy introductory advertising and couponing can pre-sell the products of large manufacturers to consumers, forcing retailers to carry the product. Retailers, who control shelf space, can freely allocate it to their own private labels. In the struggle over shelf space the small manufacturer is the sure loser (Walzer et al.).

While large chains have considerable manufacturing capability, most private label is purchased. Suppliers are mainly medium-sized and smaller food manufacturers and purchases are made with price as the main factor. Food chains have considerable information concerning quality and most of their purchases are bought strictly on a specification basis (NCFM 1966b, p. 133). It is assumed that retailers can obtain private label items at or near the minimum necessary costs of production.

Private labels are not usually advertised except in newspapers, with these ads generally featuring price. The average advertising-to-sales ratio for private label products is judged by the authors to be substantially less than the total food chain advertising-to-sales ratio of about 1 percent, which includes advertising for non-manufactured products, the company name, coupons, and other store merchanising programs. The actual private label advertising-to-sales ratio would probably be in the neighborhood of the 0.5 percent calculation used above as the competitive level of food advertising for national brands.

To the extent there are physical quality differences between private labels and national brands the differentials in their prices would imperfectly reflect monopoly overcharges. Available studies comparing quality have concluded that average quality differences are minimal (FTC 1933; BEBR; Jafri and Lifferth; and NCFM 1966b). A painstaking review of several quality tests concluded that "...distributors' and manufacturers brands are essentially equal in quality" (Applebaum and Goldberg, p. 47). Most of these studies are rather dated, and Jafri and Lifferth is based on a rather small sample. Also, in the present authors judgment, the studies have been biased toward commodity-type products, like canned fruits and vegetables, leaving open the possibilities that quality differences between private labels and national brands are more significant for highly processed products or that private label products have more variability in quality.

The authors believe the magnitude of such a potential bias is limited by the fact that the food industries are generally low-technology industries whose plants are not significantly affected by scale requirements (Appendix Table B.1). Thus, entry by larger retailers is not forestalled by scale barriers. Further, studies of actual private label policies have found that a high quality image for private label merchandise is considered important: "normally retailers' top-line private label merchanise is intended to be of a quality equal to or better than the quality contained in national brands with which they compete in their marketing area" (NCFM 1966b, p. 133).

This finding still leaves the possibility that second-line private label products are of somewhat lower average quality. The very recent introduction by grocery chains of so-called generic products, which are of distinctly lower grades, illustrates this possibility (Walzer, et al.).

The combined sales of truly national brands and private labels account for nearly all food product sales througn grocery stores (NCFM 1966c, p. 35). The only significant exceptions are several food processing industries which are organized through local markets because of high perishability of products or high transportation costs. For products like fluid milk and bread there are often one or two local brands which have "consumer franchises" as strong as the leading national brands of the product.

The data used as measures of the price differences between private labels and manufacturer brands, and also private label market shares, are from a Special Study of 1976 prices by Selling Area-Marketing Inc., which is a subsidiary of Time, Inc. (SAMI). From SAMI data it was possible to tabulate average manufacturer brand price premiums and private label sales shares for 41 5-digit food product classes.[14] These data and details on all the other variables discussed can be found in Appendix D. By multiple regression techniques the authors fitted an equation relating manufacturer brand price premiums to market structure variables measuring the degree of monopoly in product classes. The price difference values predicted by the structural variables in the equation are monopoly overcharge percentages. Random variation and that deriving from the nonstructural varables does not enter into the overcharge estimate.

In constructing the price differential model, the private label-national brand price difference (DIFF) was hypothesized to be greater: the greater the advertising-to-sales ratio of the 4 leading firms (ADS4) in the product class; the more important TV advertising was to total advertising (TVADV); and the greater the proportion of advertising done by big firms (200 ADV).

In this case big firms were the 200 largest food and tobacco manufacturing companies in 1975 (Connor 1978a). Concentration (CR4) were hypothesized to increase the price differential, however, it was introduced as a non-linear term to reflect the general findings of structural-performance studies (Weiss). The Collins-Preston variable measuring geographic distribution of production relative to the distribution of the population (GEOG) was introduced to adjust the concentration ratio to market size (Collins and Preston, p. 120). A low value of the variable means similar distributions and a likelihood that national concentration ratios understate true concentration. A net import variable (NETIMP) was also introduced as a correction to concentration. Imports are the equivalent to adding additional domestic products to the denominator of a concentration ratio. Therefore, its sign in regression should be the opposite of that of the concentration ratio. Real growth (GROW), consumer sales of the product class (LNSIZE), and number of manufacturers (LNFIRMS) were introduced to capture other differences affecting the price differential. Since private labels are generally considered "me to" type brands, a rapidly growing produce area should see manufacturer brand prices high, riding the tide of brisk demand, and private labels at low introductory prices. Large total sales of the produce class, on the other hand, signal a mature product area, and the likelihood of well established private labels. A large number of potential suppliers is also posited to signal a likelihood of well established private labels or a large number of potential competitors for the national brand manufacturers; if the first effect dominates the second, the expected sign of LNFIRMS is positive.[15]

The estimated price difference regression equation supported the hypothesized predictions for each of the variables (Equation 4.1). All the terms were statistically significant (except for GEOG) and the fitted equation explained nearly three-fourths the variation in the private label-

Table 4 -- Regression results explaining the market structure determinants of national brand-private label price differences and the private label market share in 1975.

$$(4.1)\ DIFF = \underset{(.252)}{3.362} + \underset{(2.443)^{***}}{.630\ CR4} - \underset{(-2.443)^{***}}{.0051\ (CR4)^2} - \underset{(-1.035)}{.0394\ GEOG} + \underset{(1.626)^{*}}{.909\ ADS4} + \underset{(2.941)^{***}}{17.194\ TVADV} + \underset{(2.665)^{***}}{.179\ 200ADV} + \underset{(1.624)^{*}}{6.824\ GROW}$$

$$- \underset{(-2.510)^{***}}{2.426\ LNSIZE} - \underset{(-2.238)^{**}}{2.038\ LNFIRMS} - \underset{(-2.156)^{**}}{17.362\ NETIMP},\ R^2 = 0.72,\ F = 7.73^{***}$$

$$(4.2)\ SHARE = \underset{(9.605)^{***}}{36.003} - \underset{(-3.781)^{***}}{.2156\ CR4} - \underset{(-4.331)^{***}}{2.312\ ADS4},\ R^2 = 0.94,\ F = 94.88^{***}$$

Note: Both equations were run using 41 5-digit product classes as observations. Numbers in parentheses are t-values. Asterisks indicate increasing order of statistical significance: * = 10 percent level; ** = 5 percent level, and *** = 1 percent level. The share equation was corrected for heteroscedasticity. The variable definitions (and data sources) are as follows:

DIFF	The percentage that average private label price is lower than average manufacturer brand price (SAMI).
SHARE	Average private label share of grocery store sales of product class (SAMI).
CR4	Four-firm concentration ratio of product class (BOC 1972).
GEOG	Index used to correct CR4. A low value means production is distributed according to population and markets are regional or local rather than national (BOC 1972).
ADS4	Advertising expenditures on eight measured media, supporting brands of four largest firms, divided by their estimated consumer sales, 1975 (Connor).
TVADV	National network television advertising expenditures as a proportion of total measured media advertising (Connor).
200ADV	Percent of four-largest-firm advertising done by firms ranking among 200 largest food and tobacco manufacturing companies, 1975 (Connor).
GROW	Real growth in output 1967 to 1972 (BOC 1972).
LNSIZE	Natural log of 1975 domestic consumer sales of product class (BOC 1975).
LNFIRMS	Natural log of 1972 companies in industry (BOC 1972).
NETIMP	Net imports minus exports as a percent of value of shipments (BOC 1971).

national brand price differences. The good fit strongly supports our model that national brand price premiums are related to competitive conditions in food manufacturing industries, and because of this we feel it provides a means for calculating reliable and disaggregated estimates of monopoly overcharges.

SAMI private label sales shares were regressed on advertising-to-sales ratios and concentration ratios. More complete share equations were fitted with the coefficients of the independent variables generally showing the correct (opposite) predicted signs.[16] However, variables other than concentration and advertising were statistically insignificant. The simplest equation was therefore selected.[17] The share equation was then used to predict private label shares from which their complements, manufacturer brand shares, were calculated, for those product classes where SAMI data were missing. The estimated manufacturer brand sales used in calculating monopoly overcharge are 1975 census value of shipments for the product classes, adjusted for exports and imports, reduced by estimated sales to non-grocery retailers, and reduced by private label sales.

Thus, the overcharge for a product class is manufacturer-brand domestic sales times the percent overcharge. By definition, producer goods and imported goods generate no overcharge. The estimate of the overcharge rectangle (P_mP_cRM in Figure 1) for all food and kindred product industries is the sum of the overcharges for all 5-digit product classes. Using the predicted values of the percent overcharge and manufacturer brand sales, estimates were made for all product classes except "not specified by kind" (see Appendix Table B.1). The amount of consumer loss attributed to the deadweight loss triangle (MRC on Figure 1) was calculated using the conservative assumption that demand curves had an average elasticity of -0.5.

The total consumer loss due to monopoly in food and kindred products industries, based on the private label-manufacturer brand price differential model, was $11,564 million. This included $11,252 million estimate for the overcharge rectangle and $312 million deadweight loss. This estimate is verv conservative since it encompasses only food product sales through grocery stores. It ėxcludes the approximately 30 percent of food manufacturer sales through restaurants and other mass feeding institutions, animal feeds, and sales which become inputs in more highly processed foods. The overcharge in these transactions eventually get passed on to consumers, but are not captured by our analysis. We have not applied our regression coefficients to estimate overcharges in non-consumer transactions because we feel that buyers in these markets are much better informed than ordinary consumers and often their monopsony power partly countervails the monopoly power of sellers. The use of those coefficients would have overstated the effect of concentration, advertising, and other variables on the overcharge. By leaving non-grocery store sales out altogether we have admittedly erred in the other direction, understating our total consumer loss estimates by significant amounts.

Another source of underestimation error involves our assumption that private label prices are proxies for competitive prices. Private label prices are probably higher than competitive levels, particularly when competing manufacturer brands are highly advertised. Not only is there a possibility that retailers may enjoy higher net profits from their private label sales, but a substantial likelihood that retailers' procurement prices may contain elements of monopoly overcharge (Parker 1976a). In addition, private labels generally have higher retail gross margins to cover their greater allocation of shelf space and slower turnover rates. To counter the advertising support behind manufacturer brands, retailers generally merchandise private labels by assigning them larger quantities of scarce and expensive-to-maintain shelf space (Walzer 1976).

Dispite these caveats relating to the use of DIFF as a proxy for consumer overcharge, we believe the results are sufficiently reliable to warrant its consideration as a basis for formulating competition policy with respect to grocery products. Moreover, the method permits the computation of consumer overcharges of finely defined product lines, unlike most previous approaches.

VI. Summary and Conclusions

A summary of the three estimates is shown in Table 5. The authors believe the estimates are conservative. However, because of the data sets used and because of the estimating procedures employed, a considerable degree of error is likely in each of the estimates. Scherer, for the whole economy, thought that the maximum error would fall within the range of 50 percent less to 100 percent greater than his estimate. The present authors have used statistically fitted structure-performance relationships and data specific to food manufacturing to estimate Scherer categories comprising about 60 percent of the total consumer loss estimate. The estimated values of these components are believed to be more reliable than Scherers' original values and should tend to reduce the error range of the overall loss estimate. The authors have no method for estimating the likely error range of their two additional methods. They feel, however, that a 25 percent error on the individual estimates is the most that would reasonably be expected. The extent of convergence of all three essentially independent estimates gives strength to the conclusion that consumer loss due to monopoly in the U.S. food manufacturing industries in 1975 was at least $10 billion, but possibly as high as $15 billion.

The authors have made no estimate of the trend in the amount of consumer loss due to monopoly in food manufacturing. However, general inflation in the economy and worsening competitive structure of the food

Table 5. Summary of monopoly loss estimates in U.S. food manufacturing, 1975

Type of consumer loss	Scherer-type (adjusted)	Price-Cost margin	Private label differential
	Millions of dollars		
Monopoly profit	3,613	12,933 (combined monopoly profit and X-inefficiency)	11,252 (combined monopoly profit and X-inefficiency)
X-inefficiency	8,480		
Allocative	430	473	312
TOTAL	12,523	13,406	11,564

manufacturing industries would indicate that an estimate of consumer loss for 1978 would be at least one to two billion dollars greater than the estimate for 1975.

Twelve billion dollars is indisputably a lot of money. Previous estimators of the social losses due to monopoly have spoken in terms of a steak dinner per capita (Siegfried and Tiemann). Our results, at over $55 per consumer in 1975, would fund a lavish epicurean feast in one of the country's most expensive restaurants. For a family of four with an income at the federally defined poverty level, in 1975, it would constitute 10 percent of their food budget. Alternatively, it represents about a month's rent for an average family of modest means.

To put these estimates in perspective, recall that Scherer ventured that the monopoly loss to consumers in the whole economy was 9 percent of GNP; with U.S. GNP running at $1,500 billion in 1975 (Economic Report of the President 1976),this implies an overcharge of some $135 billion (or $120 billion if he meant to include only the private sector of the economy). For food manufacturing our estimate is equal to one-fourth of the total GNP (value added) attributed to the sector. However, put another way, our monopoly loss estimate for processed foods represents only 1.1 percent of U.S. personal disposable income and about 5.7 percent of household food expenditures in 1975.

But we do not wish to minimize the implications of our monopoly loss estimates, particularly for public policy. The loss to consumers in food manufacturing alone is 250 times the combined antitrust budgets of both U.S. antitrust agencies and several thousand times that part of federal antitrust expenditures spend on antitrust matters in food manufacturing.

Besides indicating that food processing ought to have a high priority for the antitrust agencies, the findings of our national brand-private label price model suggested that advertising represents an important problem area for consumer products.[18] Furthermore, the problem is most serious when TV is the primary medium and when the advertisers are large firms. This suggests that consideration be given to limiting advertising in industries where it is already intense and to formulating stricter policies that would discourage product extension mergers where differentiated consumer products are involved. This latter suggestion is further supported by evidence that food manufacturing mergers on average exhibit a subsequent doubling of advertising outlays, often accompanied by a shift toward greater use of TV (NCFM 1966a).[19] An antitrust policy, or a new law, that reduces food company mergers, especially takeovers by conglomerates and leading grocery product firms, would be expected to moderate the market power of sellers by its effect on both concentration and advertising. However, we recognize that neither advertising restrictions nor merger prohibitions may erode this existing market power at sufficient speed to achieve workable competition in all food manufacturing industries. Under these circumstances, therefore, more direct restructuring may be necessary. Such restructuring could take the form of divestiture of portions of the physical assets of leading firms, compulsory licensing of major trademarks, or other affirmative programs to encourage the entry of firms into the affected markets.

APPENDIX A

DERIVATION OF THE SCHERER-APPROACH MONOPOLY OVERCHARGE ESTIMATES

The basis for this estimate is an analysis of the consumer losses due to market power into ten different categories (Scherer, pp. 400-11). Nine of the components are losses in economic efficiency due to collusion, other forms of behavior resulting from the possession of market power, or "related breakdowns of competitive pricing processes." These nine efficiency losses are listed in sections 1 to 4 of Table A.1; two of the "related breakdowns" of pricing do not apply to the food processing industries and are combined into one item (number 4). The original Scherer estimates for the entire private sector of the U.S. economy are shown in the first column of Table A1. Gross National Product (GNP) is the aggregate of the "value added" (not shipments) of all industries. The tenth category of consumer loss is Scherer's estimate for the income redistribution effect of monopoly. This is, as we have emphasized in the text, not entirely a social loss since it is a transfer from consumers to the claimants on a firm's monopoly profits, some of whom are themselves consumers.

What follows is an explanation of the origin, item by item, of the assumptions and methods of calculation used for the other three columns of the table, which refer only to the "food and kindred products" major industry group (SIC 20). In the year 1975, there were $172,510 million in shipments by plants primarily classified in SIC 20, and they produced a gross value added of $48,142 million. However, due to minor products classified outside SIC 20, only $161,301 million in processed food products were shipped; roughly $122 billion of those products were sold to consumers, the rest being purchased as intermediate products for further production (e.g., feed grains and hides).

1. Monopoly Profit Transfer

The calculations for this component of consumer loss were probably the most precise and least replete with assumptions. In order to estimate the monopoly profits accruing to food manufacturers in 1975, we utilized an unusually well-specified regression analysis (FTC 1969) that explained the

Table A.1 The Scherer-Approach Estimates of Total Consumer Losses Due to Market Power in the U.S. Food Processing Industries, 1975

Type of loss	Scherer's original estimated as a percent of U.S. GNP, circa 1966	Scherer-type estimate for the food manufacturing industries, 1975		
		Percent of value added (adjusted)	Percent of shipments	Consumer losses
	Percent	Percent	Percent	Million dollars
1. Income redistribution due to monopoly profit transfers.	3.0	7.5	2.1	$ 3,613[1/]
2. X-inefficiency due to excess and wasteful advertising and promotional expenses.	1.0	8.3	2.3	4,000[2/]
3. X-Inefficiency due to:				
a. lack of cost controls in firms insultated from competition.	2.0	6.0[3/]	1.7	2,890
b. production at suboptimal scale.	0.3	0.9[3/]	0.3	430
c. cross-hauling costs and non-optimal location decisions due to collusive pricing.	0.2	0.6[3/]	0.2	290
d. chronic excess capacity due to cartelization, collusion, or other monopolistic behavior.	0.6	1.8[3/]	0.5	870
4. Deadweight and X-inefficiency in the regulated and defense industries.	1.2	0.0	0.0	0
5. Deadweight social welfare loss due to monopolistic overpricing and underproduction, unregulated sectors.	0.9	0.9[4/]	0.2	430
Total	9.2	26.0[5/]	7.3	$12,523

1/ Estimate for 1975-based regression equation from FTC (1969).

2/ Again assuming CR4 = 40 percent as a rough competitive standard, food industries meeting that standard had a media advertising-to-sales ratio of 0.40 percent (or 0.53 percent for a total advertising-to-sales ratio). After netting out 0.53 percent of total domestic sales of consumer processed foods from total advertising expenditures for processed foods, the result is $2,800 million in excess advertising. It is known that advertising accounts for about 70 percent of all promotional expenditures, which leads to the $4,000 million figure.

3/ All inefficiency components are assumed to be proportional to excess concentration. All of manufacturing has a weighted four-firm concentration ratio (CR4) of 44 percent, or 10 percent above the assumed competitive standard of 40 percent. However, food manufacturing's CR4 is 52 percent, which is 30 percent above the competitive standard, or three times the rest of manufacturing.

4/ Scherer assumed that the long-run price elasticity of demand for an industry's output was -2.5. Studies of comparable elasticities for manufactured food products defined at approximately the four-digit SIC level range from -.3 to -2.8, but most fall within the -.5 to -.8 range. A conservative assumption is -.5.

5/ Expressing consumer loss at a proportion of industry value added because it is the best value measure generally available for comparing the relative economic importance of manufacturing among industries (BOC 1972). Yet the authors realize that some of the sources of the overcharge are not part of industry value added. Examples would include purchased advertising services, packaging materials, cross-hauling by independent truckers, and all of the allocative loss.

profitability of large food firms in terms of several elements of market structure and other controls. Though the regression coefficients are estimated for a period in the early 1950s (and used with 1972 and 1975 data to estimate excess profits for 1975), this is a conservative approach because the early 1950's (1951-54) was a period of strong demand, during which structural relationships were known to be weaker.

The regression relationship employed (FTC 1969, Table 3-4, Equation 1 (b)) was: $\hat{\pi} = -19.6 + 0.858\, CR_4 - 0.006\, CR_4^2 + 1.13\, A/S$, where $\hat{\pi}$ is predicted after-tax profits as a proportion of stockholders' equity. For the 1975 estimates, CR4 is the 1972 four-firm sales concentration ratio, and A/S is the 1975 media advertising-to-consumer-sales ratio for the four largest firms (from Connor 1978). Our measured media definition of advertising is less inclusive than the weighted (by shipments) total advertising-to-sales ratio used in the original FTC study, so A/S was adjusted to IRS totals by multiplying by a factor of 1.503. Finally, all the other variables (market share, change in demand, firm diversification, and firm asset size) are held at their respective mean values; these values are then added to the original constant to yield the adjusted constant term above.

To calculate the dollar value of excess profits in the various food industries, the following steps were taken. First, a competitive return of 5.7 percent of equity was netted from $\hat{\pi}$, the predicted industry profit rate.1/ This rate is the average profitability of all food manufacturing industries meeting the competitive concentration and advertising standard in the FTC equation. Second, the excess profit rate was multiplied by 1975 value of shipments and the products summed. Third, the sum was divided by 4.23, the historical average ratio of sales to equity in the food manufacturing industries, in order to convert excess profits from an equity to sales equivalent. Finally, after-tax excess profits were converted to a pre-tax basis by multiplying by a factor of 1.82, the average ratio of before-tax to after-tax profits in the food processing industries. These last two adjustment factors were taken from the FTC's Quarterly Financial Reports for 1956-76. The excess profits are detailed in Table A.2. The estimates are conservative in that they are real rates and do not reflect the influence of the higher inflation rates of the 1970s. Between the early 1950s and early 1970s food manufacturers' average profit ratios increased 57 percent (Over 40 percent more than other manufacturing industries; see Table 1).

1/ A rate of return on equity of 5.7 percent was also discovered by Shepherd (1978:271), for 245 large U.S. industrial firms over 1960-69, holding firm size and growth constant at their means, and all the structural variables at zero levels (pp. 178, 196).

Table A.2 -- Estimated excess profits in the U.S. food manufacturing industries 1975

SIC Code	Industry	Predicted excess profitability	Predicted excess profits
		Percent of equity	Million dollars
2011	Meatpacking	0.00	0.0
2013	Sausages, etc.	0.00	0.0
2016	Poultry dressing	0.00	0.0
2017	Poultry and egg	0.00	0.0
2021	Butter	2.01	6.6
2022	Cheese	1.60	31.4
2023	Canned milk	0.12	1.3
2024*	Ice cream	6.56	57.2
2026*	Fluid milk	7.09	315.0
2032	Canned specialties	9.59	92.8
2033	Canned fruits & vegs.	0.0	0.0
2034	Dehy. fruits & vegs.	6.19	27.1
2035	Pickles, sauces, dressings	2.75	22.5
2037	Frozen fruits & vegs.	0.0	0.0
2038	Frozen specialties	3.76	91.5
2041	Grain mill products	0.0	0.0
2043	Breakfast cereals	17.53	127.8
2044	Rice milling	4.78	29.8
2045	Blended flour	14.89	75.1
2046	Wet corn milling	5.04	43.2
2047	Dog, cat, pet food	15.54	171.9
2048*	Other animal feeds	6.53	192.7
2051*	Bread, cake, etc.	6.57	218.7
2052	Cookies, crackers	7.85	87.5
2061	Raw cane sugar	0.84	3.8
2062	Refined cane sugar	5.13	74.6
2063	Beet sugar	5.26	38.6
2065	Candy, confections	2.26	33.3
2066	Chocolate	10.3	50.2
2067	Chewing gum	24.51	56.5
2074	Cottonseed oil	0.5	2.0
2075	Soybean oil	3.48	184.1
2076	Other veg. oils	5.36	11.9
2077	Animal fats & oils	0.0	0.0
2079	Shortening & cooking oils	6.11	111.5

SIC CODE (1972 Basis)		Predicted excess profitability	Predicted excess profits
		Percent of equity	Million dollars
2082*	Beer	9.15	124.8
2083	Malt	2.06	5.2
2084	Wines & brandy	10.27	54.8
2085	Liquor	16.92	132.2
2086*	Soft drinks	19.84	629.4
2087	Flavoring, extracts & syrups	10.99	118.6
2091	Canned & cured fish	6.65	21.3
2092	Fresh & frozen fish	0.0	0.0
2095	Roasted coffee	11.22	136.3
2097	Ice	0.0	0.0
2098	Pastas	5.59	14.1
2099*	Other prepared foods	11.29	267.3
	Total food		3,612.6

*These industries are local markets (2024, 2026, 2048, 2051, 2086) or require special estimates of four-firm concentration. Concentration ratios for the local market industries are taken from NCFM (1966a); the ratio for beer was 59 percent and is taken from recent testimony of Mueller (1978); the ratio for SIC 2099 was calculated by taking the weighted five-digit SIC four-firm ratios.

Ten of the 47 industries have zero predicted monopoly profit transfers, but 12 have expected monopoly profits exceeding $100 million in 1975. Most of the high excess profit industries are known to exhibit oligopolistic behavior. The predicted figures may appear somewhat high for fluid milk, considering the low to moderate profits of independent milk processors. However, the substantial recent investment of food chains into the slow-growth milk processing industry is reason to believe that profits are there (Parker 1973). The reported profits of the independent processors are low because that segment is experiencing significant declines in sales. It would appear that food chains see fluid milk prices as being greater than marginal costs which is our measure of overcharge.

See Appendix B for a discussion of the relationship of the above estimate with an estimate infered from a comparison of corporate profit rates.

2. Excess Advertising and Promotional Expenses

Data are available on the total advertising expenditures 80 of the 200 largest food processing firms in 1975 (Connor). Their expenditures of $4,089 million were on total sales of $136,690 million and on U.S. food manufacturing sales of $55,849 million. On the assumptions that (1) food processing advertising is as equally intensive as non-food processing advertising and that (2) U.S. advertising is as equally intensive as foreign advertising, we calculated that these 80 firms spent $1,672 million on advertising for processed foods in the U.S.

By placing the remaining 120 companies among the top 200 in their respective major industries, we can estimate their total advertising by applying the advertising-to-sales ratios of firms in the same industry with known ratios. This projection yields an estimated total U.S. food advertising amount of $2,495 to $2,643 for the 200 largest.

Finally, an estimate was made for all food processing companies. Under the assumption that the ratio of total advertising of those companies below the top 200 to those in the top 200 has remained constant since 1964, the IRS Source Book shows that the smaller firms accounted for 25.4 percent of total U.S. food manufacturing advertising (and 45.3 percent of sales). Thus, U.S. food advertising by all firms in 1975 amounted to $3,345 to $3,543 million, or 2.08 to 2.20 percent of U.S. food processing product class shipments to consumers. In 1975, however, only $120 billion in domestic sales to consumers took place, making the advertising-to-consumer sales ratio 2.79 to 2.95 percent.

The next step was to determine a competitive level of advertising-to-sales in food manufacturing. A simple method was adopted: competition was assumed to exist in product classes with 35, 40, or 45 percent of less four-firm concentration ratios. Those standards yielded media advertising-to-sales ratio of 0.71, 0.90, and 0.94 percent. Media advertising accounts for about 75 percent of total advertising in the U.S. (Connor and Mather), so the standards then become 0.95, 1.20, and 1.25 percent. However, in several of these "competitive" product classes there are certain items that are clearly not homogeneous. By removing all advertising and sales of these few 7-digit products from the competitive (CR_4 = 40% or less) product classes (specifically, sliced bacon, yogurt, canned pineapple, dehydrated potatoes, and canned tuna), the competitive media advertising-to-shipments ratio was reduced to 0.40 percent (or 0.53 percent for total advertising-to-sales).

After netting out 0.53 percent of domestic consumer sales from total U.S. advertising on processed foods, the excess advertising expenditures were found to total $2,710 to $2,907 million in 1975.

Scherer estimated that other forms of wasteful promotion are equal to excess advertising. But in food manufacturing media advertising accounts for about 61 percent of total promotional expenses among the 200 largest food manufacturers (Connor). Assuming that advertising is 70 percent for all food manufacturers promotional expenses, then total excess advertising and promotional expenses for 1975 were $2,800 ÷ 0.70 = $4,000 million. Since the 70 percent assumption is likely on the high side, the $4,000 million figure a conservative one, even though it does represent some 80 to 85 percent of all promotional expenditures.

To put our $4.0 billion estimate of excess advertising in perspective, we draw on an annual survey of total advertising expenditures commissioned by the trade magazine Advertising Age (September 4, 1978, pp. 32-33). This survey, a fairly accurate compilation of all U.S. advertising expenditures generally billed through advertising agencies, has been carried out annually since 1940 and shows eighteen different categories of expenditures. Nine of those categories are directly comparable with data developed by Connor (1978) for eight-media advertising of food products for 1975. A comparison revealed that $1,835 million was expended on nine-media food advertising in the U.S.; this was 25.0 percent of all advertising in those media in 1975.

The remaining nine advertising categories that were not directly comparable are all methods commonly employed to advertise food products: special magazines, such as trade magazines, with small circulations; local newspaper advertising by retailers; business newspapers, farm publications; local radio and television advertising; local outdoor advertising; direct mailings; and such "miscellaneous" advertising as free samples, prizes, coupons, and point-of-sale displays. There seems to be no reason to expect these forms of promotion to be used any less intensively by food manufacturers than by other businesses (even "local" media advertising is partially paid for by manufacturers on a cooperative basis). Thus, it is estimated that, among these other forms of advertising, food advertising also accounts for 25.0 percent, or $4,280 in 1975.

Therefore, a total of at least $6,100 million was expended on food advertising in the U.S. in 1975. This is probably an underestimate because it excludes such sales promotion activities as market testing, direct sales forces, and packaging design. However, it does imply that our $4,000 million excess advertising estimate is at most 65 percent of the total (cf., above). Were we to apply the 0.53 percent competitive standard to the larger $6,100 figure (which implies a 5.08 percent promotion-expenses-to-domestic-consumer sales ratio for the food processing sector as a whole), we would have arrived at a $5,475 million excess advertising level.

This alternative method of estimating excess advertising and promotional expenses associated with food processing depends rather crucially on the assumption that 25.0 percent of all the non-eight-media outlays were associated with processed food products. If this factor were to be inaccurate by as much as 10 percentage points, the excess advertising amount would vary from $4,400 to $7,800 million.

3. X-Inefficiency

If, as Leibenstein (1978a) apparently believes, X-inefficiency really approaches 10 percent of some industries' costs, that would be equivalent to 25 percent of the value added of the typical food processing industry (though not all those costs are part of value added). Scherer estimated that these four types of inefficiency due to market power (other than in the regulated or defense industries) amounted to 3.1 percent of GNP, circa 1966. The components of X-inefficiency are likely to be higher in manufacturing than nonmanufacturing because of the former's higher concentration levels; moreover, both sales concentration and product differentiation have increased over the 1966-75 period, particularly in food manufacturing (Connor 1978).

We assumed that the overcharge for all four inefficiency components was proportional to excess concentration and that a reasonable standard of competition was a four-firm concentration ratio (CR_4) of 40 percent. Now, the weighted average CR_4 for food manufacturing in 1972 was 52 percent or 30 percent above the competitive standard. The rest of manufacturing has a weighted average CR_4 of only 43 percent, or about one-third as much as excess as food manufacturing (Table A.3). Therefore, X-inefficiency is three times as prevalent in food as in the rest of manufacturing, given our two assumptions. We should also note that advertising, another source of insulation from cometitive cost pressures, was 2.5 times as intensive, relative to value added, in food as in the rest of manufacturing. Finally, food processing is the fourth most concentrated major industry group in manufacturing (Table A.4).

4. Inefficiencies in Regulated and Defense Industries

Most regulation affects the transportation, power, and communications sectors. Much of the regulation in the food system probably improves performance (e.g., through grading or encouraging farmer cooperatives to enter) or applies mainly to fresh or raw farm products. Regulation that does apply to food manufacturing (e.g., market orders for milk) appears to have slight retail price effects. Perhaps the major form of government intervention that raises consumer food prices are fairly modest tariffs and import quotas. For example, the tariff on sugar is currently estimated to cost U.S. consumers about $700 million annually. While most of the benefits of trade barriers accrue to the producers of food, higher domestic prices can protect inefficiency in the manufacturing stage as well.

For simplicity, we assume that this source of consumer loss is negligible.

5. Deadweight Loss

Most researchers have chosen a long-run elasticity of demand with respect to price of -1.0 as a compromise or average figure to cover most

Table A.3 -- Weighted, four-firm, sales concentration ratio (CR4), 1972

Industries included, concentration ratios used	Food and kindred products (SIC 20)		The rest of manufacturing (SICs 21-39)	
	Shipments 1/	Weighted CR4	Shipments 1/	Weighted CR4
	Million dollars	Percent	Million dollars	Percent
1. All industries, national CR4s	91,035	36.01	641,474	39.21
2. Local market industries, national CR4s 2/	31,318	25.10	34,081	13.57
3. "N.E.C." (Not Elsewhere Classified) industries (2099, 2299, ... etc.), national CR4s	3,648	26.00	14,138	17.37
4. National market industries, excluding N.E.C. industries, national CR4s (i.e., 4 = 1 - 2 - 3)	56,069	42.76	593,255	41.20
5. Local market industries, local CR4s 2/	31,318	66.71	48,219	66.04
6. "N.E.C. industries, using component product class national CR4s	3,648	60.26		
7. All industries, national CR4s for national markets and local CR4s for local markets (7 = 4 + 5 + 6)	91,035	51.70	641,474	43.07

1/ Values of shipments are those reported in Bureau of the Census, 1972 Census of Manufacturers, Concentration Ratios in Manufacturing, Table 5. For certain industries, value added or value of production is substituted for value of shipments.

2/ The local markets industries in food are SICs 2024, 2026, 2048, 2051, and 2086. The local market concentration ratios for these industries can be found in NCFM (1966a, Table 8 and p. 31). Because we are trying to arrive at a weighted CR4 index for 1975 and because the beer industry (SIC 20820 has been undergoing a rapid increase in concentration, we substituted the 1975 CR4 for beer of 58.6 percent (Mueller 1978); beer also may be local market industry, with some sources placing its local market sales concentration at about 80 percent. Using this last figure would raise the final weighted CR4 for food to 52.14 percent.

There were 17 local market industries outside of food; each of them had a CR4 and a geographic dispersion level of less than 30.0 (which was the maximum level of the local food industries). No local market CR4s are available for these industries, so the average local market CR4s for the food industries was used as a proxy.

Table A.4--Manufacturing major industry groups, ranked by their weighted and adjusted four-firm sales concentration ratios, 1972.

Rank	SIC	Industry Group	Value of Shipments[1/]	Weighted concentration ratio[2/] Unadjusted	Adjusted
			Million dollars	------Percent-------	
1.	21	Tobacco manufactures	5,920	77.3	77.3
2.	37	Transportation equipment	94,705	73.0	73.3
3.	38	Instruments	8,107	52.1	52.1
4.	20	Food and kindred products	91,035	35.0	51.7
5.	32	Nonmetallic minerals	21,538	35.9	50.0
6.	36	Electrical machinery	53,433	47.3	47.3
7.	34	Fabricated metal products	51,739	30.8	42.6
8.	28	Chemicals	57,350	40.0	41.9
9.	39	Miscellaneous manufactures	12,186	28.1	38.8
10.	26	Paper	28,262	31.4	38.8
11.	35	Nonelectrical machinery	65,821	33.5	36.4
12.	27	Printing and publishing	30,132	19.7	33.1
13.	29	Petroleum	28,695	31.3	32.9
14.	22	Textiles	28,072	32.2	32.7
15.	33	Primary metals	58,430	30.6	30.8
16.	30	Rubber and plastic products	20,924	30.6	30.6
17.	31	Leather	5,769	28.3	29.7
18.	25	Furniture	11,309	19.1	29.0
19.	24	Lumber and wood	23,816	21.5	27.3
20.	23	Apparel	27,810	22.9	24.5

[1/] As reported in Table 5 of Concentration Ratios in Manufacturing, 1972 Census of Manufactures.

[2/] The unadjusted CR4 includes all industries using the national CR4s shown in the source above. The adjusted ratio raises all local market industries and all N.E.C. industries ending with "99" to the average concentration ratio for those industries in food manufacturing (66.04 percent). See Table A.3 for details.

manufacturing industries. Scherer (1970) argues that this underestimates long-run substitution possibilities and that a more realistic elasticity is -2.5. Studies of comparable own elasticities (usually covering annual periods) for manufactured foods at approximately the four-digit SIC level range from -0.3 to -2.8, but most lie within the -0.5 to -0.8 range (Fox; George and King). We adopted a conservative -0.5 elasticity for our claculations. The dollar value of the deadweight loss triangle is, therefore, the sum of categories 1 through 4 (percent of shipments), times one-half of that total (0.5 elasticity of demand), times total food and kindred products value of shipments in 1975.

APPENDIX B

ESTIMATES OF EXCESS PROFITS INFERRED FROM A COMPARISON OF CORPORATE PROFIT RATES

The aggregate of $3 billion excess profits (Table 2), as derived from the structure-profits estimating equation and summed for all food manufacturing industries, is roughly the same as the excess profits implicit from a comparison of publically reported corporate profit rates for all food manufacturers and all manufacturers. Such profit series cannot, however, be directly compared. We attempt here to show as many necessary adjustments as can be made from the available data.

The problems that must be addressed in using a comparison of corporate profit rates in food manufacturing and all manufacturing to estimate the amount of excess profits included in the former are:

(1) possible abnormalities in the time period used for the comparison,

(2) the exclusion of unincorporated companies,

(3) the heavy incidence of nonprofit "farmer" cooperatives among food manufacturing corporations,

(4) food retailer backward vertical integration into food manufacturing,

(5) diversification into and out of food manufacturing which causes problems in using data for corporations classified on a primary industry basis,

(6) the relative incidence of monopoly profits in non-food manufacturing industries, and

(7) differing degrees of growth, innovation and risk between food and non-food manufacturing industries.

Abnormalities in the Time Period Used for the Comparison

It is hazardous to use any single year's data for the purpose of estimating excess profits. The year 1975 is no exception. Whereas 1975 was a relatively normal year for food manufacturing corporation profits, it was a relatively poor year for other manufacturing corporations. Food manufacturing corporation profits as a percent of stockholders' equity averaged 30 percent greater than the before-tax rate for all manufacturing corporations and 24 percent after taxes (Federal Trade Commission, Quarterly

Financial Report, First Quarter 1976). A comparison over a longer time period is more appropriate. Also, the trend should be considered. The average profit rates, in Table 1, for the period 1971 through 1976, show a differentially higher rate of return for food manufacturing corporations of 6 percent (0.74 percentage points of stockholders' equity after taxes). Since the year of the concentration data used in the estimates in 1972 and the advertising data are from 1975, the period 1971 through 1976 would appear to be appropriate.

The procedure for reducing the impact of the abnormalities in the year 1975 was to calculate trend values. These values were calculated from the average profit rates, shown in Table 1, for the periods 1966 through 1970 and 1971 through 1976. Using the average annual rates of change of the average profit rates of the periods to adjust the averages of the latter period, trend values for the year 1975 were determined. The new trend values profit-to-stockholders'-equity ratios were: 13.00% + .58% = 13.58% for food and 12.30% + .19% = 12.49% for all manufacturing. The differential in average profit rates is 1.09 percentage points of stockholders' equity after taxes or 8.2 percent.

The most appropriate comparison for determining excess profits is difference between the profit rate of food manufacturers and profit rate of all other manufacturers rather than the profit rate of all manufacturers including food. This restatement results in a 1.29 percentage point difference in stockholders' equity after taxes (13.58 percent minus 12.29 percent) or 9.5 percent.

A final calculation to arrive at an initial estimate of excess profits in food manufacturing is to convert the after-tax comparison to a before-tax comparison. Before-tax profits are the total amounts of profits actually received and therefore represent the amount that food prices could be cut (ceteris paribus) before manufacturers' suffer losses. The before-tax equivalent of 1.29 percentage points of stockholders' equity is 3.57 percent (23.41 percent minus 19.84 percent). The rather large increase in differential is due to the fact that effective tax rates are higher in food than in the rest of manufacturing. This is consistent with the finding of Siegfried (1975) that higher effective tax rates are characteristic of concentrated industries. Since stockholders' equity of food manufacturing corporations in 1975 was $37.3 billion, 3.57 percentage points of differentially higher food corporations profits would amount to $1.33 billion. We shall consider this amount as the beginning point in our estimation of excess profits. We now shall proceed to consider adjustments.

The Exclusion of Unincorporated Companies

The exclusion of unincorporated companies from the comparison has little effect on the excess profit estimate. The reason for the exclusion is the Federal Trade Commission's (until 1972 prepared jointly with the Securities and Exchange Commission) Quarterly Financial Report (QFR) is limited to corporations. The ommission is unimportant because Bureau of the Census data for 1972 show sales of proprietorships and partnership accounting for 1.7 percent of total food manufacturing company sales and only 1.1 percent of all other manufacturing company sales. Besides the very small sales impact, there is no reason to expect the average profits of these unincorporated companies to be above competitive levels, or for that matter, significantly different between food and non-food manufacturing. In both areas, unincorporated companies on average are much smaller and probably occupy weaker market positions.

The Heavy Incidence of Nonprofit "Farmer" Cooperatives Among Food Manufacturing Corporations

The cooperative problem is considerably more serious. Cooperatives qualifying under the Capper-Volstead Act are given a tax break in that they are permitted to distribute their profits back to owners who in turn treat the distribution they receive as ordinary income. These distributions are subtracted from operating income before net reportable profits are calculated. Thus, the profits and loss statements of cooperatives that are doing well in their operations show zero or near zero profit rates. Since some cooperatives incur losses, the average reported profit rate of all cooperatives could be negative.

In excess of 85 percent of the sales of all cooperative corporations in manufacturing are in food and kindred products. Based on data from Census Enterprise Statistics, the U.S. Department of Agriculture, and the Internal Revenue Service, an estimated 8 percent of sales of food manufacturing corporations are cooperative sales. Only about 0.1 percent of sales in the rest of manufacturing are made by cooperatives. If one assumes that cooperatives as a group are equally successful as all other food manufacturing corporations as a group, but on average report zero profits, one can add 8 percent to the aggregate profits of food manufacturers. This addition causes an increase in the overcharge estimate of an equal amount. Employing these admittedly hazardous assumptions the average before-tax profit rate of food manufacturing corporations is increased from 23.41 percent of equity to 25.45 percent of equity (an increase equal to 8% ÷ 92% = 8.74%). Excess profits as a percent of equity would increase from 3.61 to 5.65 percentage points or, in dollar amounts, from $1.33 billion to $2.11 billion.

Food Retailer Backward Vertical Ingetration into Food Manufacturing

Financial data relating to the vertically integrated food manufacturing plants of grocery retailers are not included in QFR financial series for food manufacturers. This means that both the profits and equity amounts in the series are less than those that would reflect total food manufacturing activity in the United States. The 40 largest corporate grocery chains of 1963 manufactured in their own plants 3.7 percent of the wholesale value of all manufactured food product sales (NCFM 1966a, Table 4-3). The importance of vertical integration declined with grocery chain sales size so that chains ranking below the 40 largest likely manufactured proportionally smaller percentages of their sales. Voluntary and cooperative grocery chains also supplied very modest percentages of their retail sales from their food manufacturing plants. The latter two groups are general-line wholesalers who supply independent stores and smaller corporate chains. Based on an estimate of the total amount supplied from vertically integrated plants in 1963, projected by trend to 1975, it is calculated that about 4.5 percent of the wholesale value of all manufactured food products were supplied from vertically integrated manufacturing plants operated by grocery retailing organizations (Ibid., Chapter 4).

The National Commission on Food Marketing (Ibid.) identified the sharing of profits in oligopolistic supply industries as a principle motive of food chain integration into food manufacturing industries. The typical industry in which food chains had plants was about as concentrated as the average of all food and kindred products industries but showed a slightly higher upward trend. In 1958, the weighted average CR_4 of industries in which large food chains operated plants was 46.6 percent. In 1963 it was 48.7 percent and in 1967 it was 52.0 percent. An estimate for 1972 based on projections of production and 1972 CR_4s is 52.7 percent (Ibid; Parker (1973) Appendix Table 3; and BOC (1972) Table 5). Multiple correlation analysis showed that 75 percent of the variation in the extent of large food chain vertical integration in 14 principal products produced in plants of large food chains was explained by variations in the level of four-firm concentration in the industries (Ibid., p. 93). This statistical finding agreed with a previous conclusion of Professor Heflebower from his study of mass distribution: that the failure of large retailers to integrate into a product area "is prima facie evidence that the supply industry is competitive and efficient ... unless the product is unimportant or consumers are so strongly wedded to established brands that a large volume cannot be sold advantageously under a distributor brand" (Heflebower 1957, p.281).

Adjustment of the QFR food manufacturer average profit rates to account for food chain integration is risky. It would seem clear that the QFR sales universe should be increased about 4.5 percent. It seems equally clear that profits should be increased by possibly more than 4.5 percent, but by just how much is unclear. Some insight into the matter might be possible by entering the concentration ratios for the principal integrated products in the structure-performance estimating equation used above. We have not elected to do this because the assumptions that would have to be made. Nevertheless, it is quite conceivable that vertical integration could be generating excess profits to food retailers, and voluntary and cooperative food wholesalers which could be as much as $100 million annually.

Diversification Into and Out of Food Manufacturing

Diversification of non-food firms into food manufacturing and diversification of corporations which are primarily food manufacturers into other industries is important when working with QFR profit rates. Diversification causes non-food sales to be reported as food manufacturing sales and visa versa. These amounts are very large. QFR profit rates are therefore likely to be different from those that would be reported if all manufacturing corporations were undiversified.

Much of the diversification into food manufacturing by others involves leading positions in concentrated industries. This implies that substantial amounts of food manufacturing excess profits are recorded in other industries. It is also true that corporations primarily classified in food manufacturing hold leading positions elsewhere. Adequate data do not exist to make adjustments for these effects of diversification, and it would be very hazardous to make guesses. The authors have the general impression, however, that on balance more leading positions in food manufacturing are held by others than visa versa. If true, this would lead to an under-reporting of food manufacturer profit rates.

A factor that probably operates in the opposite direction in international geographic diversification. Dividends paid on the profits earned from the foreign direct investments of U.S. food manufactuers are reported as profits in the QFR. In 1975 about 10 percent of U.S. food manufacturers' sales were made abroad, a proportion which is only slightly above the average of the rest of manufacturing (Connor). Counterbalancing this potential overstatement of excess profits is the fact that foreign direct investment into the U.S. food manufacturing industries is about 37 percent of the investment out of that sector. Again, adequate data are not available on the relative incidence of monopoly profits attributable to these foreign investments, but the net effect on our estimate of excess profits is probably less than 5 percent.

The Relative Incidence of Monopoly Profits in Non-Food Manufacturing Industries

The relative incidence of monopoly profits in non-food manufacturing industries significantly affects our estimates of excess profits in food manufacturing. The profit rate differential, resulting from the comparison of average profits of food manufacturers and other manufacturers, is in fact a differential in excess profit rates. For every one percent of excess profits (as a percent of stockholder equity before taxes) included in the non-food manufacturing average profit rate, the amount of excess profits in food manufacturing is $373 million greater. Were the rate of excess profits in non-food manufacturing half as great as in food, total excess profits of the latter would range from $2 billion upward to well over $3 billion dependent on the adjustments made in calculating excess profits. If no adjustments are made for cooperatives, food chain vertical integration, or diversification, the minimum estimate of $2 billion would pertain. An adjustment only for cooperatives would increase the estimate to $3.21 billion.

The actual level of excess profits present in the average profit rates of other manufacturing industries is difficult to appraise. Scherer's estimate of excess profits for the whole economy would place the rate well above the "one half as great" assumption made above. Industry structure data on the other hand tend to support a low proportion. The average amount that industry concentration ratios exceed a critical level of 40 percent, in food, versus other manufacturing industries would suggest that the excess profit rate in non food would be about a third the level of food (Table A.2).

The authors recognize that these comparisons are imprecise and, indeed, the proceedure we use in this section of comparing profits is very intricate and asummption-laden in order to deal with the many unknowns. Nevertheless, there appears to be a sufficiency of hard data to suggest a reasonable likelihood that a $3 billion excess profit figure for food manufacturing is within 25 percent of the true figure (Table 2).

Differing Degrees of Growth, Innovation, and Risk Between Food and Non-Food Manufacturing Industries

The final consideration listed at the outset of this discussion is that food manufacturer profit rates may differ from those in other manufacturing industries because of differing growth patterns, rates of innovation, and risk levels. Profits are the economic engine which directs resources into fast-growing industries. The very modest growth rate of food processing would not indicate a need for high profits. The further fact that real growth has declined over the last 25 years would suggest declining profits. Both of these is quite contrary to the observed profit path in food manufacturing (Table 1) and would suggest that something other than growth is responsible for the high profits. An innovation hypothesis faces a similar fact barrier. R and D expenditure intensity in food is the lowest of any industry surveyed by the National Science Foundation (Table B.1). Basic and applied research is declining and being supplemented by development expenditures (Table B.2). The latter is often difficult to distinguish from product differentiation activities in consumer products industries.

Riskiness is mainly in the eyes of the beholder. This is not to say there are not substantial risks faced by food processors, it only means that it is difficult to get an objective assessment. One measure often

Table B.1 -- Research and development funds by industry, 1975

Industry Group (listed by increasing order & R&D intensity)	Total R&D as a percent of net sales	Company R&D as a percent of net sales	Total R&D funds	Company R&D funds
	Percent		Million dollars	
Food and kindred products	.4	.4	324	323
Textiles and apparel	.4	a	64	a
Other transportation equipment	.5	a	28	a
Petroleum refining and extraction	.6	.6	700	699
Lumber, wood products, and furniture	.7	a	68	a
Primary metals	.7	.7	365	356
Other manufacturing industries	.8	a	189	a
Paper and allied products	.9	a	253	a
Fabricated metal products	1.2	1.2	311	296
Stone, clay, and glass products	1.5	1.5	186	184
Rubber products	1.7	a	283	a
Motor vehicles and motor vehicle equipment	3.5	3.0	2,339	2,003
Chemicals and allied products	3.6	3.3	2,650	2,410
Machinery	4.1	3.5	2,658	2,286
Professional and scientific instruments	5.3	4.4	1,034	854
Electrical equipment and communication	7.1	3.9	5,530	3,016
Aircraft and missiles	13.8	2.9	5,729	1,200
Total	3.1	1.9	23,540	14,776

Source: U.S. National Science Foundation, Research and Development in Industry, 1975 (Washington, D.C.: Superintendent of Documents, 1977).

a = Not available.

referred to is the variability of sales and profits. Food, because it is a basic good, is consumed in roughly equal amounts in good times and bad. This indicates a low degree of cyclical kinds of risk faced by other industries. This cyclical stability in demand plus the relatively unchanged membership of leading firms (except through mergers) has lead studies of the stock markets to categorize food company stocks as low-risk investments. Achieved levels of product differentiation in more highly concentrated consumer product food industries protect leading market share positions from encroachment both from smaller established competitors and would-be new entrants.

Table B.2 -- Research and development expenditures of food and kindred products companies, 1965-1975

Year	Company R&D	Expenditures as a percent QFR corporation sales	R&D spent on basic and applied research	R&D spent on development
	Million dollars	---------------------Percent---------------------		
1965	156	.23	55	45
1966	161	.20	48	52
1967	181	.22	48	52
1968	185	.22	50	50
1969	205	.22	51	49
1970	232	.23	51	49
1971	244	.23	52	48
1972	259	.22	48	52
1973	267	.19	48	52
1974	294	.18	45	55
1975	323	.19	44	56

Source: U.S. National Science Foundation, Research and Development in Industry 1965 and subsequent years, Washington, D.C. Superintendent of Documents, 1968-1977. Company sales data Federal Trade Commission Quarterly Financial Reports.

APPENDIX C

DATA FOR THE PRICE-COST MARGIN APPROACH

This appendix contains the data used in the price-cost margin regression models (equations 1 through 3 in text) from which the overcharge estimates in table 3 were computed. The variables are listed below in the same order and with the same abbreviations as they appear in appendix table C.1 which gives the actual observations on the variables. The discussion of each variable gives data sources and information relevant to the modeling of the variables.

SIC Four-digit Standard Industrial Classification Codes define industries. The codes and definitions are from the 1967 Standard Industrial Classification Manual published by the Executive Office of the President for use in U.S. Government data collection. In this research codes for the 1972 Census year were translated into 1967 codes. Forty-one 4-digit SIC industries were used in the regression analyses. These were all 1967 SIC industries except "not elsewhere classified" industries which are 2087, 2093 and 2099.

PCM The price-cost margin for an industry is derived from manufacturing plant data collected in the U.S. Bureau of the Census quinquenial Census for 1972 (BOC 1972). Price-cost margins are value added by manufacture less payroll and other direct costs. Included within the price-cost margin are gross profits, interest on capital, depreciation, advertising costs, executive salaries, and contract services. The PCM variable used in regression is the dollar value of the price-cost margin divided by value of shipments. The ratio is an approximation of price minus average variable cost over price which is equivalent to the Lerner coefficient for degree of monopoly $\frac{P-MC}{P}$ in instances where variable cost per unit of output does not change greatly as output changes (Lerner 1934). The amounts of an industry's price-cost margin attributable to non-competitive market structures, referred to here as overcharge, includes both equity transfers from customers to producers and the operating cost inefficiences incurred because of a lack of competition. In addition to the overcharge included in PCM there may also be noncompetitive labor costs in monopolized industries (Ball 1958 and Levinson 1960). Except for labor costs, the excess price-cost margin that we have defined as overcharges should approximate the area PmPcPM in Figure 1.

CR — Four-firm, four-digit SIC national sales concentration was used as an index of monopoly and of the ease of collusion. Collins and Preston hypothesized that concentration would be positively related to the level of PCM. They introduced it both as a linear variable and as a nonlinear variable CR^2. A positive coefficient for CR^2 would mean that price-cost margins increase more than proportionally as concentration levels increase. The source of the concentration data used in all regression equations and in all overcharge estimates is the U.S. Bureau of the Census (BOC 1972a).

GEOG — The geographic market index (GEOG) was used to adjust national concentration ratios in order to reflect the higher actual levels of concentration in industries having markets that are local or regional in character. The index is crude but has the advantage of enabling the use of Census concentration data which are available for all food and kindred products industries. The GEOG index is based on the assumption that demand for an industry's output is distributed among four Census regions in proportion to the distribution of population. If production is clustered into a single or few regions the industry is considered to operate in a national market. If, on the other hand, production is distributed among Census regions in about the same proportions as population, the markets of the industry are believed to be more local in character. The index is constructed by summing for all regions the absolute percentage point differences between the distributions of population and production. The expected regression coefficient for GEOG is negative. This means a low value of GEOG, which would indicate a likelihood of local markets, would predict a higher level of PCM. Thus, GEOG is a correction to CR since it has the same effect in a local market industry as would occur if CR were entered in the equation at a more appropriate higher value.

K/Y — The capital-output variable measures the ratio of the gross book value of assets to value of shipments (BOC 1975). Its purpose in the equation is to correct for differences in capital intensity among industries. Industries with high capital intensity should have higher measured price-cost margins because PCM includes normal returns to capital and depreciation. The expected sign for the capital output coefficient is positive.

GROW — Growth is measured as the increase in the physical output of an industry between 1967 and 1972 (BOC 1972). Where physical output changes could not be measured, increases in the deflated value of industry shipments were used. Industries with high GROW levels were theorized as needing higher price-cost margins in order to attract capital and other resources necessary for expansion. Therefore, the expected sign for GROW is positive.

ADS4 Product differentiation is measured by the 1975 advertising expenditures in eight media of the four largest advertisers in the market, expressed as a percentage of the value of product shipments of the four largest firms (Connor 1978). The latter is estimated from the 1972 CR and 1975 industry value of product shipments (BOC 1972a, BOC 1975). ADS4 is a structural variable and is expected to have a positive impact on PCM.

Table C.1 - - Data Used in Price Cost Regression Models

SIC 1967	PCM 1972	K/Y 1972	GROW 1967-72	GEOG 1972	MES 1972	CR 1972	ADS4 1975	Value of Shipments 1975
2011	6.241	6.981	32.35	44.028	.29	22	.02	31310
2013	12.039	12.885	35.07	19.443	.26	19	1.33	6610
2015	11.019	12.864	23.62	72.261	.32	17	.76	5912
2021	6.347	14.982	-18.62	75.210	1.05	45	.50	1011
2022	9.577	8.967	46.55	78.585	.38	42	.88	5253
2023	21.525	17.022	24.27	83.870	1.53	39	.64	2637
2024	22.102	32.675	14.89	31.615	.40	29	.74	1768
2026	15.606	18.035	16.71	12.774	.11	18	1.12	12133
2031	15.167	23.815	27.28	96.555	.89	50	2.38	1001
2032	31.802	26.271	27.43	20.186	2.59	67	2.31	2825
2033	26.342	31.270	14.24	63.373	.17	20	2.40	5817
2034	24.930	30.018	30.71	104.256	2.26	33	5.71	924
2035	24.154	26.116	29.81	15.887	.84	33	3.69	1721
2036	14.327	12.246	47.49	63.709	.59	20	.86	1477
2037	23.448	23.586	45.45	34.893	.92	29	2.57	2664
2041	15.000	20.277	-3.25	46.103	.68	33	.83	4328
2042	19.237	19.497	25.50	35.436	3.02	23	2.49	9615
2043	48.645	30.582	29.54	75.639	9.47	90	8.36	2028
2044	17.249	15.516	19.42	122.065	9.93	43	2.52	1434
2045	32.912	19.728	22.30	66.633	5.01	68	5.64	1139
2046	23.249	94.329	9.73	118.425	7.45	63	.06	2142
2051	29.734	29.415	17.07	11.335	.12	29	1.44	9047
2052	38.673	27.735	22.67	8.816	2.04	59	2.01	2671
2061	21.939	97.495	13.72	121.884	2.60	44	.00	1016
2062	15.172	25.197	21.06	60.601	12.01	59	.07	3474
2063	24.790	56.658	36.30	120.704	1.87	66	.03	1741
2071	28.048	27.511	24.36	21.512	.64	32	3.67	3540
2072	27.097	27.396	29.23	89.165	9.62	74	2.92	1170
2073	45.687	37.219	20.62	58.278	19.82	37	12.10	481
2082	33.070	57.663	27.74	6.457	1.37	59	2.81	5744
2083	15.466	44.498	4.33	103.400	4.30	48	.00	591
2084	36.578	28.520	52.58	119.903	2.06	53	4.09	1376
2085	46.766	27.721	24.12	39.868	2.64	47	8.91	2020
2086	24.836	31.737	42.16	25.652	.08	14	9.47	8508
2091	11.772	37.345	11.51	122.200	1.46	43	.00	970
2092	7.971	13.896	36.01	78.171	.95	54	1.50	6159
2094	24.941	37.863	27.03	29.783	.37	28	.00	1097
2095	29.815	19.633	10.16	44.649	5.82	65	3.59	3182
2096	18.321	19.530	16.56	24.547	1.75	44	3.10	3890
2097	42.182	138.832	14.52	60.259	.21	32	.00	126
2098	27.717	30.149	23.91	37.243	1.82	38	4.09	553

Table C.2 - - Simple correlation matrix of variables used in the price-cost margin regressions

	PCM	K/Y	GROW	ADS4	GEOG	CR	MES
PCM	1.00						
K/Y	0.37	1.00					
GROW	0.11	-0.22	1.00				
ADS4	0.64	-0.15	0.23	1.00			
GEOG	-0.17	0.25	-0.04	-0.17	1.00		
CR	0.49	0.15	-0.07	0.33	0.30	1.00	
MES	0.36	0.05	-0.11	0.45	0.27	0.70	1.00

Table C.3 - - Food and kindred products industry overcharge estimates from price-cost margin regressions, 1975.

1972 SIC	Percent Overcharge from Equation No.: (1)	(2)	(3)	Dollar Overcharge from Equation No.: (1)	(2)	(3)
	Percent			Millions of Dollars		
2011	3.9	4.3	.0	1219	1359	0
2013	6.6	7.2	5.6	471	475	372
2015	.5	1.0	.0	28	61	0
2021	4.6	4.1	3.1	47	42	31
2022	3.2	3.0	3.5	158	156	134
2023	1.7	1.7	1.7	44	44	44
2024	6.0	6.2	4.5	176	116	30
2025	7.7	8.0	5.3	926	969	644
2031	4.0	3.1	8.2	40	31	82
2032	22.5	19.2	17.7	635	543	501
2033	1.5	2.0	5.4	83	119	315
2034	.0	.0	12.1	0	0	112
2035	8.5	8.6	15.3	147	146	264
2036	1.5	2.0	.5	22	30	7
2037	5.6	5.9	10.0	149	156	266
2041	4.9	5.0	4.4	210	215	189
2042	5.0	5.4	8.6	473	517	825
2043	34.7	27.3	29.0	705	554	588
2044	.0	.0	5.1	0	0	74
2045	17.5	14.3	21.9	200	163	249
2046	8.1	5.3	1.2	172	123	27
2051	8.4	8.5	8.6	763	779	775
2052	19.0	16.3	16.3	507	449	435
2061	.0	.0	.0	0	0	0
2062	12.7	10.7	5.4	442	373	136
2063	9.7	6.9	1.5	146	121	26
2071	7.7	7.8	14.6	271	275	517
2072	19.1	15.0	15.0	224	175	175
2073	34.0	27.1	30.9	153	131	148
2082	19.3	17.1	18.8	1107	981	1079
2083	2.3	1.7	.0	14	10	0
2084	2.5	1.4	11.3	34	20	155
2085	9.6	8.8	24.2	194	179	490
2086	6.3	6.6	19.5	535	564	1650
2087	17.0	14.0	17.2	472	332	407
2091	.0	.0	.0	0	0	0
2092	8.0	6.7	7.9	494	412	485
2094	6.1	6.4	1.9	67	70	20
2095	18.2	15.4	18.3	580	489	597
2096	10.4	9.3	15.2	404	361	591
2097	3.0	3.2	.0	4	4	0
2098	7.0	6.9	15.4	39	36	85
2099	13.3	11.2	16.6	747	628	930
TOTAL				12976	12232	13615

APPENDIX D

DATA FOR THE NATIONAL BRAND-PRIVATE LABEL APPROACH

This appendix lists and explains the data used in the national brand-private label price differential and private label sales share regression models appearing in Table 3 above. The list of symbols below is keyed to the 17 columns of the following data listing (and data sources).

SIC — A five-digit Standard Industrial Code (SIC) number of the product class used in the 1972 Census of Manufacturers. Numbers prefixed with an "X" designate the 41 observations employed in the regression analysis. A few product classes were combined because their constituent products differ only in the type of plant from which they are shipped. These categories were given the following special code designations of the regular SIC codes shown on the right.

20106 = 20116 + 20136,
20107 = 20117 + 20137,
20108 = 20118 + 20138,
20657 = 20657 + 20662,
20451 = 20415 + 20455,
20623 = 20620 + 20630, and
20698 = 20668 + 20998.

Some product classes are used to represent consumer products that form only a tiny portion of the class (e.g., 20752, 20970, 20480). Except for 20999, all "N.E.C.", "N.S.K.", and producer good product classes were omitted from the calculation of overcharge.

DIFF — The difference between the average national brand price and the average private label price, expressed as a percentage of the national brand price, average for the year ending April 8, 1977. The 41 product class for which data were available contain observations on 167 individual food items. Items were weighted according to their dollar sales in supermarkets in 1975, as reported in the annual "Supermarket Census." (SAMI; Chain Store Age, July 1976).

SHARE — The average national percentage share of private label food products sold in grocery stores in 1977. Individual item shares were weighted by the same weights used for DIFF (SAMI).

CR4	The four-firm, 1972, sales concentration ratio of the product class. The product class concentration ratios used in the national brand-private label model are value-of-shipments ratios computed by the U.S. Bureau of the Census for the year 1972 (BOC 1972, Table 6) except as follows. Concentration ratios of combined categories designated as 20106, 20107, 20108, 20451 and 20698 are from BOC (1972) Table 7. The CR4 for combined category designated 20623 was computed from individual company data in (Anderson) Tables C-1 and C-2. Five-digit categories in local market industries, 2024, 2026, 2048, 2051 and 2086, take on the same CR4 values as their four-digit industries. These values are from NCFM (1966a) Table 8 and page 31. In addition to the above, CR4 is for SICs; 20322, 20324, 20952, and 20991 were not individually disclosed in 1972 and were estimated from CR4 values for 1967 and CR8 values for 1967 and 1972 (BOC 1972).
GEOG	An index of the geographic dispersion of production of the (four-digit SIC) industry to which the product class belongs. It was originally developed by Collins and Preston (1968). The minimum value of 0 percent means that shipments in 1972 are distributed in the same proportion as population in 1970; the maximum value of 300 percent means that all production occurs in one of the four regions of the U.S. Thus, GEOG is inversely related to the extent to which industries are local rather than national(BOC 1972).
ADS4	The 1975 advertising outlays by the four leading advertisers on eight different media (network and spot TV, network and spot radio, general magazines, newspapers, newspaper supplements, and billboards) divided by the estimated sales of the four <u>largest</u> firms (by sales), expressed as a percentage. Sales of the four largest firms were the product of CR4 and 1975 value of shipments of the product class, adjusted for imports, exports, and producer goods sales (see SIZE below). This proxy ratio is assumed to be proportional to the true total advertising-to-consumer-sales ratio of the product class. On average, ADS4 is about 50 to 60 percent of the actual ratio since media advertising (the numerator) is smaller than total advertising and the sales figure (the denominator) will in many cases be larger than the actual sales of the four leading <u>advertisers</u> (Connor).
TVADV	The ratio of network television advertising expenditures to total eight-media advertising outlays in 1975, among the 200 largest U.S. food processing firms(Connor).

200ADV	The percentage of total eight-media advertising expenditures of the four leading advertisers accounted for by the 200 largest food and tobacco processing companies in 1975 (Connor).
CONS	The ratio of consumer goods to total value of shipments of a product class in 1972. Producer goods were netted out of shipments using two methods: (1) subtracting items like sugar and flour that are widely used as inputs by other processed foods industries (BOC 1972, Table 7A, Industry Report Series) or (2) subtracting shipments made in "commercial size" or very large containers (BOC 1972, Table 6A, Industry Report Series).
DS	The ratio of domestic supply to total value of shipments in 1975. New exports were determined from the most recent edition of U.S. Commodity Exports and Imports as Related to Output (BOC 1971). Note that the variable NETIMP is 1-DS.
SIZE	The domestic consumer sales size of the product class in 1975; that is, SIZE is the product of 1975 value of shipments times CONS times DS (BOC 1975, BOC 1972, BOC 1971).
GROW	Real product class growth over 1967-72, expressed as the ratio of the 1967-72 change to 1972 shipments. Actual physical volumes were used, weighted by value of shipments if the class contained more than one unit of measure, and with N.E.C. and N.S.K. products excluded (BOC 1972).
FIRMS	The total number of companies in 1972 in the industry to which the product class belongs (BOC 1972).
EDIFF	The predicted national brand-private label price difference, estimated from Equation 3.1, holding the nonstructural variables GROW and LNSIZE at their mean values.
ESHARE	The predicted values of the private label sales share, estimated from Equation 3.2.
NBSHR	The predicted national brand sales share, i.e., 1-ESHARE.
OVERCHG	The predicted consumer overcharge due to monopoly in the food manufacturing industries in 1975, where "monopoly" is measured by the relationship of several market structure variables to the national brand-private label price differential. That is, OVERCHG equals EDIFF times NBSHR and is in millions of dollars.

SIC	DIFF	SHARE	CR4	GEOG	ADS4	TVADV	200ADV	CONS	DS	SIZE	GROW	FIRMS	EDIFF	ESHARE	NBSHR	OVERCHG
20106			22	57.1	.25	.341	100.0	1.000	1.000	3717		1209	3.3	30.7	69.3	66
20107			17	57.1	1.45	.341	100.0	1.000	1.000	5055		1209	1.5	29.0	71.0	54
X20108	9.6	10.1	41	57.1	.38	.341	72.6	1.000	1.266	1590	.040	1209	1.9	26.3	73.7	22
20111			30	65.9	.03	.000	39.6	.874	1.063	15264		2291	-16.8	29.5	70.5	0
20112			27	65.9	.00	.460	.0	.809	1.051	237		2291	-6.7	30.2	69.8	0
20113			55	65.9	.00	.000	.0	.961	1.071	399		2291	-10.2	24.1	75.9	0
20114			37	65.9	.00	.000	.0	.619	.994	3679		2291	-17.2	28.0	72.0	0
20115			37	65.9	.03	.460	83.3	.187	.843	52		2291	18.6	28.0	72.0	7
X20161	-11.3	8.7	17	80.0	.83	.273	71.6	.866	.988	3096	.259	407	-2.6	30.4	69.6	0
20162			39	80.0	.00	.273	.0	.866	.984	155		407	-1.2	27.6	72.4	0
20163			40	80.0	.74	.273	100.0	1.000	.919	835		407	14.6	25.7	74.3	91
20164			69	80.0	.05	.273	.0	1.000	.994	86		407	2.6	21.0	79.0	2
20171			34	60.5	.02	.273	100.0	.843	1.005	446		110	15.9	28.6	71.4	51
20172			36	60.5	3.32	.273	95.9	.745	1.005	209		110	20.6	20.6	79.4	34
X20210	8.6	51.5	37	95.9	.50	.000	100.0	1.000	.941	721	-.049	201	9.8	26.9	73.1	52
20221			36	95.9	1.70	.270	100.0	1.000	1.000	2668		739	8.4	24.3	75.7	170
20222			60	95.9	.10	.270	100.0	.989	.997	1653		739	11.6	22.8	77.2	148
20231			45	83.1	.72	.494	98.5	.745	.766	859		172	23.0	24.6	75.4	149
20232			69	83.1	.55	.494	100.0	1.000	.969	543		172	22.3	19.9	80.1	97
20240			68	25.2	.74	.018	88.4	1.000	1.000	2027		561	8.4	19.6	80.4	138
20262			66	13.9	.75	.197	100.0	1.000	1.000	6704		2024	8.6	20.0	80.0	462
20263			66	13.9	1.53	.197	100.0	.959	1.000	489		2024	15.7	18.2	81.8	63
20264			66	13.9	3.70	.197	100.0	1.000	1.000	562		2024	17.3	13.2	86.8	84
20321			95	28.9	.83	.460	100.0	1.000	.988	335		178	19.7	13.6	86.4	57
X20322	18.6	8.3	95	28.9	2.16	.460	100.0	1.000	.996	952	.169	178	18.2	10.5	89.5	155
X20323	21.3	13.2	50	28.9	2.48	.460	100.0	.559	.998	289	-.037	178	26.1	19.5	80.5	61
20324			83	28.9	7.22	.460	100.0	1.000	.996	444		178	25.1	1.4	98.6	346
X20331	9.9	38.0	35	49.9	1.12	.400	100.0	1.000	1.069	1365	.017	765	12.0	25.9	74.1	122
X20332	17.0	34.7	35	49.9	1.09	.400	100.0	.995	1.085	1680	.046	765	11.2	25.9	74.1	139
X20333	16.0	23.3	39	49.9	3.31	.400	43.1	1.000	1.085	118	.590	765	10.5	19.9	80.1	10
X20334	18.2	30.8	29	49.9	5.29	.400	100.0	.971	.945	866	.433	765	17.2	17.5	82.5	123
X20335	20.5	22.2	62	49.9	2.85	.400	100.0	1.000	.978	236	.306	765	23.2	16.0	84.0	46
X20336	13.5	18.8	56	49.9	3.36	.400	100.0	.841	1.023	978	.104	765	19.2	16.2	83.8	153
X20338	5.8	29.2	40	49.9	2.40	.400	58.5	1.000	1.004	476	-.045	765	10.7	21.8	78.2	40
X20341	21.2	13.7	32	115.1	6.81	.490	83.1	.537	.883	384	.147	133	22.2	13.4	86.6	74
20342			75	115.1	4.84	.490	.0	1.000	.991	205		133	8.9	8.6	91.4	17
X20352	8.6	20.3	38	17.1	1.85	.322	55.3	1.000	.990	447	.154	429	10.7	23.5	76.5	37
X20353	25.0	9.3	50	17.1	4.71	.322	100.0	1.000	1.019	260	.632	429	24.3	14.3	85.7	54
X20354	25.0	14.3	52	17.1	4.00	.322	93.6	1.000	.992	1133	.291	429	19.6	15.5	84.5	188
X20371	21.6	16.1	41	63.8	3.73	.289	96.9	.845	.939	762	.461	136	20.0	18.5	81.5	124
X20372	13.4	48.1	35	63.8	1.88	.289	100.0	1.000	.996	1484	.318	136	14.8	24.1	75.9	167
X20381	24.0	12.4	51	32.3	2.68	.289	100.0	1.000	.996	738	.588	388	19.7	18.3	81.7	118
20382			58	32.3	1.85	.289	100.0	1.000	.996	859		388	18.9	19.2	80.8	131
20383			35	32.3	1.10	.289	100.0	1.000	.996	794		388	14.8	25.9	74.1	87
X20411	20.0	16.0	37	60.8	1.24	.579	100.0	.196	.947	499	.024	340	21.6	25.0	75.0	81
20412			37	60.8	6.36	.579	100.0	.076	1.000	34		340	31.8	13.3	86.7	9
20413			60	60.8	.27	.579	95.5	.802	1.000	442		340	22.4	22.4	77.6	77
20416			51	60.8	.00	.579	.0	.881	.993	163		340	7.0	25.0	75.0	9
20430			84	86.1	8.36	.600	100.0	1.000	.970	1643		34	29.5	.0	100.0	485
X20440	28.8	16.9	42	103.9	2.52	.213	100.0	.927	.506	690	-.040	48	26.7	21.1	78.9	145
X20451	25.9	5.3	61	59.7	5.64	.579	100.0	.722	.997	1020	.076	340	26.2	9.8	90.2	241
20460			63	56.7	.06	.000	100.0	.464	.950	878		26	17.7	22.3	77.7	121
X20471	27.1	5.4	54	56.5	6.06	.530	100.0	.931	.992	2077	.606	147	25.6	10.3	89.7	476
20472			26	56.5	.00	.530	.0	.931	.992	239		147	1.1	30.4	69.6	2
20480			63	36.1	.94	.000	77.2	.020	.991	130		1579	10.8	20.2	79.8	11

SIC	DIFF	SHARE	CR4	GEOG	ADS4	TVADV	200ADV	CONS	DS	SIZE	GROW	FIRMS	EDIFF	ESHARE	NBSHR	OVERCHG
20511			57	7.3	1.31	.092	81.3	1.000	1.001	3896		2801	4.8	20.7	79.3	149
X20512	17.7	16.2	57	7.3	1.51	.092	93.6	1.000	1.010	1444	.354	2801	9.5	20.2	79.8	109
20513			57	7.3	.23	.092	100.0	1.000	1.010	704		2801	11.2	23.2	76.8	60
20514			57	7.3	3.04	.092	99.5	1.000	1.010	737		2801	13.5	16.7	83.3	83
20515			57	7.3	.85	.092	100.0	1.000	1.010	322		2801	13.6	21.7	78.3	34
X20516	16.2	12.2	57	7.3	7.51	.092	100.0	1.000	1.010	21	-.111	2801	26.3	6.3	93.7	5
20517			50	7.3	.00	.092	.0	1.000	1.010	288		2801	-5.3	25.2	74.8	0
X20521	23.2	20.5	68	22.8	2.48	.695	100.0	1.000	1.010	1113	.119	257	26.7	15.6	84.4	251
20522			55	22.8	1.56	.695	100.0	.948	1.010	1406		257	25.2	20.5	79.5	282
X20623	6.0	33.0	48	39.9	.22	.000	100.0	.299	1.300	2714	.139	22	9.0	25.1	74.9	183
20651			66	30.6	4.03	.540	81.1	1.000	1.015	705		912	20.3	12.5	87.5	125
20652			51	30.6	2.23	.540	80.4	1.000	1.015	338		912	19.8	19.9	80.1	54
20653			37	30.6	6.58	.540	100.0	1.000	1.015	1137		912	21.7	12.8	87.2	215
20654			31	30.6	.32	.540	100.0	1.000	1.015	177		912	18.8	28.6	71.4	24
20655			34	30.6	.00	.540	.0	1.000	1.015	70		912	3.8	28.7	71.3	2
20657			44	30.6	4.89	.540	100.0	1.000	1.015	179		912	26.2	15.2	84.8	40
X20658	18.2	18.6	47	30.6	1.74	.540	96.8	1.000	1.015	481	.367	912	20.9	21.8	78.2	78
20670			84	6.5	12.10	.249	99.0	1.000	.992	531		15	33.9	.0	100.0	180
20698			69	8.0	1.38	.552	90.2	1.000	1.086	613		39	26.0	17.9	82.1	131
20752			53	82.5	5.36	.446	36.7	.572	.720	1075		54	19.4	12.2	87.8	183
X20791	20.6	14.2	50	27.9	2.17	.446	100.0	.418	.952	1263	.110	64	24.9	20.2	79.8	251
X20792	34.5	23.6	54	27.9	5.44	.446	100.0	.980	.998	1039	.063	64	28.0	11.8	88.2	256
20821			59	14.5	2.70	.450	100.0	1.000	1.020	3230		108	22.1	17.0	83.0	594
20822			46	14.5	2.70	.450	.0	1.000	1.020	2005		108	4.2	19.8	80.2	67
20823			51	14.5	2.70	.450	.0	1.000	1.020	412		108	8.7	18.8	81.2	29
20824			73	14.5	5.56	.450	84.4	1.000	.981	99		108	30.5	7.4	92.6	28
20840			52	111.1	4.09	.263	100.0	1.000	1.272	1577		183	12.2	15.3	84.7	163
20853			51	39.4	8.91	.000	100.0	.982	1.360	2135		76	14.3	4.4	95.6	292
20860			88	10.0	9.47	.291	100.0	.885	1.000	6525		2271	14.8	.0	100.0	969
X20871	25.7	23.9	23	15.3	2.50	.291	100.0	.214	.934	43	.062	350	21.1	25.3	74.7	7
20872			65	15.3	5.32	.291	52.3	.214	.855	36		350	24.6	9.7	90.3	8
X20874	27.0	6.7	68	15.3	3.38	.291	100.0	.915	.983	1095	.088	350	20.7	13.5	86.5	196
X20910	15.2	13.5	38	101.1	2.38	.571	100.0	1.000	1.222	907	.072	258	15.4	22.3	77.7	109
20922			28	46.4	.00	.000	.0	1.000	.914	152		471	-6.8	30.0	70.0	0
20923			42	46.4	.49	.000	73.3	1.000	.914	440		471	8.0	25.8	74.2	26
20924			32	46.4	1.54	.000	20.0	1.000	.914	487		471	-3.3	25.5	74.5	0
X20951	14.0	17.6	60	30.1	3.51	.348	89.0	1.000	.999	1899	.102	162	19.4	15.0	85.0	313
X20952	18.9	5.3	88	30.1	3.68	.348	100.0	1.000	1.073	973	.198	162	18.5	8.5	91.5	165
20970			29	44.7	3.52	.562	61.7	1.000	1.000	116		610	16.2	21.6	78.4	15
X20980	21.3	14.9	34	51.5	4.09	.396	70.2	1.000	1.021	599	.409	179	14.8	19.2	80.8	71
X20991	15.4	8.9	78	10.5	5.53	.562	100.0	.869	1.014	409	-.060	1856	24.9	6.4	93.6	95
20992			49	10.5	3.61	.562	100.0	1.000	.999	1573		1856	20.5	17.1	82.9	268
X20993	25.2	9.9	53	10.5	4.58	.562	100.0	1.000	.972	317	-.119	1856	26.2	14.0	86.0	72
20994			89	10.5	.82	.562	77.3	1.000	.989	114		1856	17.7	14.9	85.1	17
X20995	30.0	15.9	79	10.5	3.52	.562	93.3	1.000	1.014	483	.196	1856	21.3	10.8	89.2	92
X20996	22.2	30.2	48	10.5	.91	.562	93.9	.789	1.000	86	.128	1856	23.9	23.5	76.5	16
X20999	16.7	20.9	24	10.5	4.33	.562	100.0	.770	1.014	1654	.445	1856	14.3	20.8	79.2	187
																12113

FOOTNOTES

[1]"Oligopoly theory really predicts high prices and not necessarily high profits" (Weiss, p. 199). Because the market demand curve is downward-sloping for normal goods, higher prices translates into higher profits unless there is so much excess capacity as to draw down profits to normal levels.

[2]Net imports of processed foods and beverages totaled about $400 million in 1975. About 80 percent of all food manufacturing shipments consisted of consumer products (Connor).

[3]We use the terms "total consumer loss due to monopoly", "monopoly loss due to market power", and similar variants interchangeably. "Monopoly" is intended to encompass not only the 1-firm case but oligopoly as well. The phrase "consumer overcharge", however, is properly used only to mean only the income transfer from customers to the monopolist. Although consumer overcharge excludes the so-called deadweight loss, our estimates indicate that in the food industries that between 96 and 97 percent of the total consumer loss consists of consumer overcharge (Table 4).

[4]Local market industries are more important in food manufacturing because of product perishability or high weight relative to value. There is really a continuum from completely national to highly local markets, but based on an index of geographic dispersion these five industries are all clearly more dispersed than the other food industries (except for beer). Shepherd makes even more extreme adjustments;for all manufacturing he calculates a weighted 4 - firm concentration ratio of 59 percent (p.200).

[5]An accumulating body of statistical analyses shows high concentration to be linked with higher price and profit levels. A critical level of concentration beyond which prices and profits are significantly higher than competition levels is when 4 firms account for 40 to 50 percent of sales in appropriately defined markets (Weiss 1978). Shepherd also chooses a 40 percent level for 4-firm concentration as the borderline for "loose oligopoly" (p.201). Another standard that has been used to justify a certain level of concentration in an industry is to calculate the minimum efficient scale (MES) plant size, expressed as a percentage of the total national market. If each firm in the industry operates just one MES plant (i.e., there are no multiplant economies of scale), then the "optimal" level of four-firm national sales concentration (CR4) is 4MES. Using 1972 midpoint plant estimates of MES, the optimal CR4 for food manufacturing is only 6.6 percent. Even allowing for 3 MES plants per leading firm for multiplant economies (see Scherer, et al. 1975) raises the optimal CR4 to only 19.8 percent, or half our competive standard.

[6]This figure includes nonfood advertising by the companies but excludes a substantial amount of food advertising by soap and drug companies, other manufacturers, conglomerates, food wholesalers and retailers, and others.

[7]To simplify this analysis we assume that (1) the demand schedule DD' is linear, (2) the monopolist does not price discriminate, and (3) there are constant average costs of production AC. With increasing marginal costs, both the social-welfare-loss triangle and the monopoly-profits-transfer rectangle are enlarged.

[8]If in a given food industry workers have relatively low incomes and equity is a societal goal, then this will further reduce the loss to society that arises from the profit transfer from consumers to the monopolist. However, their incomes must be low relative to both the other claimants on firm monopoly profits (owners and managers) and the consumers of their product to ensure a movement toward greater income equality. Perhaps canned truffles is a product that meets these specifications.

[9]Changes in eating habits recommended by the Dietary Goals (U.S. Senate) have been estimated to enable a family of four to save an annual average of up to $400 on food purchases. See: Betty B. Peterbin, "The Dietary Goals and Food on the Table," a paper presented at the November 17, 1977 USDA Food and Agricultural Outlook Conference and What Price Nutrition?: Feeding a Family of Four in Canada Today, Food Price Review Board, Canada, February 1974.

[10]Stigler (1956), commenting on Harberger's study, wrote: "If this estimate is correct, economists might serve a more useful purpose if they fought fires or termites instead of monopoly" (p. 34).

[11]Kamerschen (1969) estimated a loss of 6 percent of national income, but his calculations contain a serious arithmetic error. The most recent deadweight loss estimates for manufacturing (on a disaggregated basis) are given by Siegfried and Tiemann (1974).

[12]We use the terms "national brand" and "manufacturer's brand" interchangeably. We also regard "house brands", "private labels", and "retailer brands" as equivalent. Generic products are a form of private label but did not exist in U.S. grocery stores in 1975. Some private lables are distributed nationally, and some manufacturing brands only regionally.

[13]The coefficients for CR and CR^2 in Equation (2) that is fitted to 1972 data, are both somewhat smaller and less highly significant than in the 1958 equation. This result is likely due to the differing rates of inflation in 1958 to 1972. The price levels for both food and the overall economy were nearly stable in 1958. In contrast, 1972 saw considerable inflationary pressure in the whole economy and particularly in food products. For the period 1972 through 1974 food prices rose at an annual rate five times greater than for the previous 20 years. The surge in food prices was mainly due to several dramatic events which began in 1971. These were: worldwide feed grain and other commodity shortages, the higher cost of Mid East petroleum following the embargo which not only increased energy costs but the price farmers had to pay for petroleum based fertilizers, and the declining relative value of the dollar (which made U.S. food cheaper to foreigners and increased exports from the United States) and a much higher general rate of inflation in the U.S. economy.

Structure-performance relationships during inflationary periods, especially as they are beginning, have been found to be weaker (Weiss 1974). Concentrated industries generally have slower price responses to cost increases than competitive industries.

The year 1972 was also affected by New Economic Policy (NEP) price control program which was instituted by the Nixon Administration in August 1971. The system of price controls was designed to put greater downward pressure on prices in more concentrated industries. To the extent NEP did restrain price increases by a greater amount in concentrated industries,it would have muted the relationship between concentration and price-cost margins.

The year 1975 was not affected by price controls. Inflation in 1975, particularly in food prices, was more moderate and should have had a much smaller dampening effect on the role of concentration in a structure-performance relationship. This would suggest that the overcharge estimate computed from 1975 data would be larger than that computed from an equation fitted to 1972 data.

[14]Selling-Areas Marketing, Inc. was organized to collect grocery price and volume information from leading corporate and voluntary food chains for sale in a tabulated form to food manufacturers who use the information in their marketing activity. SAMI has contracts with the 25 largest corporate food chains (except Safeway) and the 25 largest voluntary chains whose warehouses send computer tapes to the SAMI data processing center every four weeks. The 50 chain organizations do about 80 percent of the business in the 39 metropolitan areas covered. As a group, these metropolitan areas account for about 75 percent of U.S. grocery store sales. Private label price and share data were available for 167 food items (SAMI). Prices are collected 13 times a year; the study averaged the price over the year thus eliminating some disturbances due to "specials". These items were aggregated to 41 census 5-digit product classes using sales data from Chain Store Age 1976 Sales Manual.

SAMI share data are appropriate in that they include imports and exclude exports, sales to institutions, and sales to other non-grocery store outlets. In a review of the potential of SAMI data for industrial organization, John Siegfried characterized SAMI data as reliable and objective, attributing his conclusion to both the broad base of SAMI survey and to the obvious incentive having the sale of the information depend on its accuracy (Siegfried).

One disadvantage of the SAMI data is that some of the item categories contain nonidentical items. The introduction of the special study gave as an example the "instant potatoes" category which contains some "au gratin" varieties by national brand manufacturers, but which contains primarily plain mashed potato flakes by retailers. Thus, to the extent that national brand products are actually more valuable products, the SAMI data will over-predict the consumer overcharge. However, much physical differentiation in food products involves no additional costs of production. More to the point is the fact that by far the preponderance of the SAMI item categories ("catsup", "canned peas", etc.) are so specific as to preclude the likelihood of its containing national brand items superior in quality.

That the SAMI price difference data are accurate is supported by a recent Cornell study of national brand-private label data on ten items sampled over a 10 week period in New York City in 1975 (Jafri and Lifferth).

Though the latter study was based on only one city, the sample correlation between the two price difference series was a highly significant 0.783. Unlike the case for the SAMI data, Jafri and Lifferth also found a substantial decline in the average differential over time; for 9 comparable products, the NCFM reported a 20 percent differential in 1965 while the Cornell study found only a 13 percent difference. Our predictive model indicates an average 20.1 percent price differential, weighted by 1975 domestic consumer sales (the simple average was 19.0 percent).

Nevertheless, the authors intend to address any potential defects in the SAMI data by obtaining some superior private label-national brand price and share data and repeating the experiment.

[15]Various reviewers of earlier versions of this paper have suggested some possible omitted factors in our analysis: (1) cost of production, (2) technological progressiveness, and (3) product variety. By not controlling for unit costs of production, the argument runs, we may be overstating the X-inefficiency component of the overcharge; for example, in industries with high concentration, the leading firms may be able to achieve all economies of scale, produce at lower unit costs, and pass on the savings to customers. In this instance, the estimated CR4-DIFF relationship would be overstated unless a variable representing economies of scale were included (Obviously, to admit a variable representing unit costs into the analysis would only uncover a spurious relationship).

Similarly, both technological progressiveness and product variety can confer consumer utility; both are often the result of successful R & D programs, and R & D is known to be related to market structure. Again, if R & D input or output is correlated with CR4, the CR4-DIFF relationship is biased upward.

Both of these points are variants of the familiar defenses of oligopolistic market structures: greater efficiency and progressiveness. Both will be addressed in a further paper by the authors.

[16]The authors considered the possibility that price differences (DIFF) and private label share (SHR) were mutually determined, but experiments with simultaneous equation models did not prove fruitful. Moreover, heteroskedasticity was found in one equation (the share equation), and the authors are not aware of any econometric methods that permit a weighting scheme to be applied to a system of simultaneous equations.

[17]From an examination of the residuals, e_i, of the ordinary-least-squares (OLS) regression of the private label share equation, we found that both CR4 and ADS were quite clearly related to increasing variance of the e_i. To correct this heterskedasticity, let $e_i^2 = \alpha(CR4)^{\beta_1}(ADS)^{\beta_2}$, $e_i^2 = \alpha(CR4)^{\beta_1}$, or $e_i^2 = \alpha(ADS)^{\beta_2}$ and estimated by OLS its double log transform. The last model was found to perform best and $\hat{\beta}_2 = 1.812$ was significantly different from zero. Hence, the appropriate weight to impose homoskedasticity on

the share equation is $(ADS)^{-\beta_2/2}$ or $ADS^{0.906}$. A reëxamination of the pattern of the residuals of the weighted equation confirmed the validity of this scheme. It should be noted that, prior to weighting, the private label share equation explained 59 percent of the variation.

[18]On this point, we concur with Comanor and Wilson. Television advertising also has been found to have significantly increased concentration in the manufacturing industries over 1947-72 (preliminary research of Willard F. Mueller and Richard T. Rogers, "The Role of Advertising in Changing Market Concentration", manuscript, May 1978).

[19]Preliminary research findings for a different time period also support this occurrence (Loys L. Mather, "The Impact of Acquisitions by Diversified Firms on Product Differentiation Activity", manuscript, August 1977).

REFERENCES

Anderson, Keith B. Michael P. Lynch, and Jonathan D. Ogur. The U.S.
1975 Sugar Industry, a staff report to the Federal Trade Commission. Washington: U.S. Government Printing Office.

Applebaum, William and Ray A. Goldberg. Brand Strategy in United States
1967 Food Marketing. Boston: Harvard Graduate School of Business Administration.

Bain, Joe E. Barriers to New Competition. Cambridge: Harvard.
1956

Bell, Frederick W. The Effect of Monopoly Profits and Wages on Prices and
1958 Consumers' Surplus in U.S. Manufacturing. Western Econ. J. 6:

BEBR (Bureau of Economic and Business Research). Manufacturer and
1955 Distributor Brands. Urbana: University of Illinois.

BOC (Bureau of the Census, Department of Commerce). U.S. Commodity Exports
1971 and Imports as Related to Output 1971 and 1970. Washington: U.S. Government Printing Office.

1972 Census of Manufacturers 1972. Washington: U.S. Government Printing Office.

1975 Annual Survey of Manufacturers. Washington: U.S. Government Printing Office.

CCPS (Cabinet Committee on Price Stability). Studies by the Staff of the
1969 Cabinet Committee on Price Stability. Washington: U.S. Government Printing Office.

Collins, Norman R. and Lee E. Preston. Concentration and Price-Cost Margins
1968 in Manufacturing Industries. Berkeley: Univ. of California Press.

Comanor, William S. and Harvey Leibenstein. Allocative Efficiency, X-
1969 inefficiency, and the Measurement of Welfare Losses. Economica 36: 392-415.

Comanor, William S. and Thomas Wilson. Advertising and Market Power.
1974 Cambridge: Harvard University Press.

Connor, John M. Concentration and the Role of the Largest Firms in the U.S.
1978 Food and Tobacco Industries. ESCS-USDA (forthcoming).

Connor, John M. and Loys Mather. Directory of the 200 Largest Food and
1978 Tobacco Processing Companies 1975. Washington: USDA (forthcoming).

Currie, John M., John A. Murphy, and Andrew Schmitz. The Concept of Economic
1971 Surplus and Its Use in Economic Analysis. Econ. Journal 81: 741-99.

Dupuit, J. On the Measurement of Utility of Public Works. Annales des Ponts
1844 et Chaussees 8.

FTC (Federal Trade Commission). Chain Stores: Chain Store Private Brands.
1933 Washington: U.S. Government Printing Office.

1969 The Influence of Market Structure on Profit Performance of Food Manufacturing Companies. Washington: U.S. Government Printing Office.

Fox, Karl A. Factors Affecting Farm Income, Farm Prices, and Food Con-
1951 sumption. Ag. Econ. Res.. 3: 65-82.

George P.S. and G.A. King. Consumer Demand for Food Commodities in the
1977 United States with Projections to 1980, Gianini Foundation Monograph 26. Calif. Ag. Exp. Station.

Harberger, A.C. Monopoly and Resource Allocation. Am. Econ. Rev. 44: 77-87.
1954

Heflebower, Richard G. Mass Distribution: A Phase of Bilateral Oligopoly
1957 or of Competition, Am. Econ. Rev. (Proceedings) 46: 274-95.

Jafri, Syed Hussain and Dennis Lifferth. Prices and Quality Comparisons
1977 of National Brand and Private Label Food Products. Ithaca: Dept. Ag. Econ., Cornell Univ., Staff Paper 77-11.

Kwoka, John E. The Effect of Market Share Distribution on Industry
1978 Performance. Rev. Econ. and Stat. (Forthcoming).

Leibenstein, Harvey. How Inefficiency Saps Corporate Profits. Fortune
1978a June 19: 209-10.
1978b X-Inefficiency Xists. Am. Econ. Rev. 68: 203-11.

Lerner, Abba P. The Concept of Monopoly and the Measurement of Monopoly
1934 Power. Rev. Econ. Stud. 1: 157-75.

Levinson, H.M. Postwar Movement in Prices and Wages in Manufacturing, in
1960 Study of Employment, Growth and Price Levels, Study Paper No. 21 of the Joint Economic Committee, U.S. Congress.

Marion, Bruce, et al. The Profit and Price Performance of Leading Food
1977 Chains 1970-1974. Washington: Joint Economic Committee, U.S. Congress.

Marshall, Alfred. Principles of Economics. London: MacMillan.
1930

Mueller, Willard F. Statements Before the U.S. Senate Subcommittee on
1978a Antitrust and Monopoly, Hearings on Conglomerate Mergers, May 12.
1978b The Celler-Kefauver Act: 27 Years of Enforcement, a report to the Sucommittee on Monopolies and Commercial Law, Committee on the Judiciary, U.S. House of Representatives (forthcoming), Appendix D.

NCFM (National Commission on Food Marketing). The Structure of Food Manu-
1966a facturing, Technical Study No. 8. Washington: U.S. Government Printing Office.

1966b Organization and Competition in Food Retailing, Technical Study No. 7. Washington: U.S. Government Printing Office.

1966c Private Label Products in Food Retailing, Special Studies in Food Marketing, Technical Study No. 10. Washington: U.S. Government Printing Office.

Parker, Russell C. The Baking Industry. Antitrust Law & Econ. Rev. 2: 111-22.
1969

1973 The Dairy Industry, Federal Trade Commission Staff Report, Chapter 6.

1976a The Status of Competition in the Food Manufacturing and Food Retailing Industries, Working Paper No. 6, Madison: NC-117.

1976b Vertical Integration in Food Marketing, in The Management of Food Policy, ed. Builo Pontecorvo. New York: Arno Press.

Posner, Richard A. The Social Costs of Monopoly and Regulation. J. Political
1975 Economy 83: 807-27.

Rhoades, Stephen and Joe Cleaver. The Nature of the Concentration -
1973 Price/Cost Margin Relationship for 352 Manufacturing Industries: 1967. So. Econ. J. 39:90-102.

Scherer, F. M. Industrial Market Structure and Economic Performance.
1970 Chicago: Rand McNally.

Scherer, F. M. (et al.). The Economics of Multiplant Operation. Cambridge:
1975 Harvard University Press.

SAMI (Selling Areas-Marketing, Inc.). Special SAMI Study: Difference
1977 Between Price per Pound Nationally for Private Label and Advertised Brands in Selected Product Categories.

Shepherd, William G. The Economics of Industrial Organization. Englewood
1978 Cliffs: Prentice-Hall.

Siegfried, John J. and Thomas K. Tiemann. The Welfare Cost of Monopoly:
1974 An Inter-industry Analysis. Economic Inquiry 12: 190-202.

Siegfried, John. Market Structure on the Effect of Political Influence.
1975 Industrial Organization Rev. 3: 1-17.

1978 Selling-Area Marketing, Inc. Market Share Data, presented at the Industrial Organization Society session of the Allied Social Sciences Association meeting, Chicago, August 29-31.

Stigler, George J. The Statistics of Monopoly and Merger. JPE 64:213-16.
1956

Strickland, Allyn B. and Leonard W. Weiss. Advertising, Concentration, and
1976 Price-Cost Margins. JPE 84:1109-21.

U.S. Senate, Select Committee on Nutrition and Human Needs. Dietary Goals
1977 for the United States, January.

Walzer, Ed., et al. The "Brand Power Study" series, Progressive Grocer,
1976 October and November.

Weiss, Leonard. The Concentration Profit Relationship and Antitrust, in
1974 Harvey J. Goldschmidt, *et al*. (eds.), *Industrial Concentration: The New Learning*. Boston: Little, Brown.

1978 The Structure-Conduct-Performance Paradigm and Antitrust. *Univ. Penn. Law Rev.* (forthcoming).

Worcester, Dean A. Innovations in the Calculation of Welfare Loss to
1969 Monopoly. *Western Econ. J.* 7: 221-37.