

University of Michigan Journal of Law Reform

Volume 14

1981

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House of Representatives

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Recommended Citation

Neal Smith, *The Monopoly Component of Inflation in Food Prices*, 14 U. MICH. J. L. REFORM 149 (1981).

Available at: <https://repository.law.umich.edu/mjlr/vol14/iss2/4>

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THE MONOPOLY COMPONENT OF INFLATION IN FOOD PRICES

Honorable Neal Smith, M.C.*

Inflation is one of America's most serious problems. Since about one in every five dollars spent by Americans is for food, inflation hits us particularly hard in our food prices. The price index of food items has risen more than the overall consumer price index since the beginning of 1973.¹ During this period, producers' prices for raw farm products have not kept pace with cost increases or inflation, so the consumer food price increases have occurred after food leaves the farm.

Many supposed causes of inflation are often advanced—excess demand, excess growth of the money supply, excess government spending, government regulation, lagging productivity, excess wage demands, the high cost of imported oil, price decontrol, and monopoly power—to name a few. I would like to focus on monopoly power,² an increasingly important cause of inflation, that I believe has not received enough attention. In particular, I would like to focus on the increased price spread between agricultural producers and final consumers which results from the power of shared monopolies in the food manufacturing sector of the United States economy. A strong case can be made that this phenomenon is a direct result of increasing monopoly power in the food manufacturing sector. As Willard Mueller put it for the economy in general: "The crux of the matter is that market power creates an inflationary bias in our economy."³

Part I examines monopoly power in the food industry, paying close attention to the increased economic strength of monopolies

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¹ COUNCIL OF ECONOMIC ADVISORS, *ECONOMIC INDICATORS* 23 (1980).

² I define "monopoly (monopsony) power" as the ability of a firm to exercise control over the price it charges (pays) for the goods or services it produces (inputs it buys) to the extent that such prices are higher (lower) than an equilibrium point where the firm's marginal cost (value of the marginal physical product) equals marginal revenue (marginal revenue product).

³ W. MUELLER, *THE SOCIAL CONTROL OF PRIVATE ECONOMIC POWER* 7 (N.C. Project 117, Working Paper No. 44 University of Wisconsin, 1980).

and the economic costs caused by monopoly power. Part II details the problems resulting from monopoly power in one segment of the food industry—the meatpacking industry. Part III calls upon the Congress to undertake new antitrust initiatives to reverse the food industry's trend toward increasing concentration. It cannot be said with certainty that food price inflation would totally disappear if the consumer loss due to monopoly were removed from the food manufacturing and retailing sectors. Doing away with these losses, however, would be the equivalent of a major reduction in unnecessary industry costs. Such a cost reduction, along with an industry restructuring aimed at workable competition,⁴ would result in substantially lower food costs.

I. SHARED MONOPOLY POWER IN THE FOOD INDUSTRY

A. *The Costs of Shared Monopoly Power*

Pure monopoly power is seldom found in the real world, just as the theoretical ideal of pure competition is seldom, if ever, found. In reality, there are degrees of monopoly power or degrees of competition. There are many examples of domestic industries which have a few large sellers handling the majority of the product—the auto industry, the steel industry, aircraft manufacturing, food manufacturing, and the like. Economists call these industries “oligopolies.” There are also examples of domestic industries where a few large buyers such as grain exporters and meat packers buy the majority of the raw product; economists call these industries “oligopsonies.” A most descriptive term which I will use for all of these industries is “shared monopolies.” With respect to the potential for economic abuse, the distinction between pure monopoly and shared monopoly is only one of degree and not one of substance.

1. *Direct impact of shared monopoly power on inflation*—The shared monopolists, via jointly beneficial mutual action, have a great deal of freedom and independence over either the selling price or the buying price of the products in question. Generally, in our society we exalt freedom and independence, both personal and economic, as long as that freedom and independence does not harm others. Via the antitrust and restraint

⁴ I define “workable competition” as a situation where the price of products or inputs reflect the true cost of production in terms of foregone alternative production possibilities. See P. SAMUELSON, *ECONOMICS* 529 (9th ed. 1973).

of trade laws, however, society has decided to limit the freedom and independence of monopolists because their economic actions are harmful to the rest of society.

Shared monopoly selling power⁵ results in higher consumer prices since buyers have no viable alternative in terms of lower priced substitutes. Shared monopolists are motivated to charge the highest price the market will bear, and to avoid price competition at all costs. These pricing policies result in higher short-run net revenue and higher long-run net profits for the shared monopolists. Economic models show clearly that a monopolist will charge a consumer price which exceeds costs plus a competitive profit, and hold production at a level which is less than would be the case in a competitive industry. Thus, society loses in several ways: consumers pay more than necessary, a smaller amount of the product is available and because of restricted production levels there may be fewer jobs available than would be the case if the product were produced in a competitive industry. Because shared monopolists do not face stiff price competition from other firms, they are not strongly motivated to keep production costs at a minimum. Thus, unnecessary production costs are added into the price of the product, new innovative and cost-efficient production methods are not utilized and productivity may be seriously eroded. Economic theory tells us this will be the case. The reality of the American economy of the 1980's—high inflation, high unemployment, lagging productivity and stiff competition from innovative foreign producers—tells us that the results of shared monopoly power in our economy must be dealt with firmly and swiftly.

When markets are free of shared monopoly power, competition minimizes the need for the government to intervene in private decision-making to achieve the goals of price stability, full employment, and economic growth. Workable competition insures that necessary adjustments in production and consumption are rapidly and efficiently made in response to changes in demand and supply. Monopoly power, however, results in increased government regulation. One economist has estimated that for the whole economy, consumer loss to monopoly power amounts to nine percent of the gross national product—about

⁵ The case of shared monopoly *buying* power has similar results except the buying prices of inputs (such as raw agricultural products) are lower than would otherwise be the case and the producers selling these inputs are harmed. Consumers do not benefit from these lower input prices because the monopsonists do not pass on the lower prices, rather they reap higher profits.

\$200 billion in 1979.⁶ With such amounts at stake, the underlying reasons for our antitrust laws should be clear.

2. *Indirect impact of shared monopoly power on inflation*—Besides the direct impact of shared monopoly power on inflation, there is a potent indirect effect on inflation which comes from an upward price and wage spiral.⁷ This happens because of the interaction of shared monopoly power in industries with strong labor organizations. The problem is caused when labor attempts to share in the high profits of shared monopoly industries as new wage settlements are being drawn.⁸ Collective bargaining is the process we use to divide returns between capital and labor, and profit levels have a direct impact on both wage settlements and dividends. If high shared monopoly profits are partially passed on in wage settlements that are larger than justified on a comparative basis with services rendered, those increases cause further problems as they "spill-over" into other industries. Wage negotiations in a monopolistic industry are not entirely independent of settlements in other industries because there is some labor mobility and in a time of low unemployment, the less profitable, more competitive industry must pay higher wages, whether it can afford it or not, or lose its good employees. When spill-over causes high wage increases to be achieved in more competitive industries the result is "cost-push" inflation.

In the key shared monopoly industries, the high wage settlements are often welcomed by management as excuses for raising prices not only to pass on the higher wage costs but to add more in order to boost profit rates. When this is done, more fuel is added to the inflation fire and the stage is set for a new round of wage and price increases as part of a never-ending spiral.

Traditional government anti-inflation policies using monetary and fiscal tools are frustrated because shared monopoly industries have the power to raise prices even when they face declining demand. They raise prices in order to make up for the higher unit costs associated with falling rates of output. Traditional anti-inflation policy dampens demand with cuts in government spending, increased taxes, high interest rates, and tight money. Unfortunately, the battle lines of shared monopoly-caused inflation can march right through all but the most severe of these government policies.

⁶ F. SCHERER, *INDUSTRIAL MARKET STRUCTURE AND ECONOMIC PERFORMANCE* 408 (1970).

⁷ STAFF OF THE CABINET COMM. ON PRICE STABILITY, *INDUSTRIAL STRUCTURE AND COMPETITION POLICY* (1969).

⁸ Parsley, *Labor Union Effects on Wage Gains: A Survey of Recent Literature*, 18 J. ECON. LIT. 1 (1980).

These problems of shared monopoly power create an intense squeeze on the farmers of this country. In the purchase of machinery, tractors, trucks, tires, plows, herbicides, and many other products, farmers face some of the most concentrated United States manufacturing industries. For the energy and petroleum based chemicals that are so vital to farm efficiency, farmers are at the mercy of the OPEC oil monopoly and the shared monopoly in United States petroleum product refining. When the farmer sells his products, he faces food processing industries whose degree of shared monopoly power on average, significantly exceeds that of other manufacturing industries. In such a setting, the farmer loses on both sides. The exercise of oligopsony buying power over the price paid to farmers keeps commodity prices low at the farm, and the exercise of oligopoly selling power by farm suppliers means that farmers must pay high prices for their supplies. If major new antitrust steps are not taken soon, the small business, family farm in this nation is doomed for reasons unrelated to efficiency or the ability to produce.

B. *The Concentrated Food Industry*

The losses due to monopoly power in the food industry have a staggering impact upon all Americans. The consumer loss due to monopoly in food manufacturing alone represents about 9.5 percent of the industry's payroll and material costs, eight percent of the value of shipments, twenty-six percent of the value added, and \$290 per United States family per year. When the overcharge due to monopoly power in food retailing, which has been estimated to be \$942 million, is added to the loss to monopoly power in food manufacturing, the cost is \$307 per United States family per year.⁹ The farmers in the United States have certainly felt this impact as well. On the average over the years 1973 through 1979, the consumer loss due to monopoly in food manufacturing represented fifty-two percent of the net farm income of all farmers.

⁹ Parker & Connor, *Estimates of Consumer Loss Due to Monopoly in the U.S. Food-Manufacturing Industries*, 61 AM. J. AG. ECON. 626 (1979) [hereinafter cited as Parker & Connor]. See also *The Profit and Price Performance of Leading Food Chains 1970-74*, *Hearings Before the Joint Comm. in Economics*, 95th Cong., 1st Sess. (1977) (statement of Bruce W. Marion and Willard F. Mueller) [hereinafter cited as *Joint Econ. Comm. Hearings*]. Comparisons on a per family basis are calculated using 57.2 million U.S. families as reported by BUREAU OF THE CENSUS, U.S. DEP'T OF COMMERCE, STATISTICAL ABSTRACT (1979).

The economic power of shared monopolies in both food manufacturing and food retailing has increased dramatically since World War II.¹⁰ In 1947, there were over 40,000 firms in food manufacturing and about 350,000 firms in food retailing. There are now less than 20,000 firms in food manufacturing and about 155,000 firms in food retailing.

After World War II, firms were leaving the food manufacturing sector at an annual rate of about one percent—that rate of exit has now tripled to three percent. Similarly, the average annual rate of decline in the number of food retailers from 1947 to 1958 reached 2.8 percent. This time period covers the era of the “supermarket revolution” when thousands of small grocery stores went out of business. The current rate of exit from food retailing is even higher, now standing at 3.2 percent per year. Other economic indicators reflect the same alarming trend. The percent of food manufacturing assets held by the fifty largest companies has jumped from forty-two percent in 1947 to sixty-four percent in 1978, and the USDA estimates that it could rise to one hundred percent by the year 2000. This estimate means that almost 20,000 firms could drop out of food manufacturing by the year 2000. It has been estimated that these trends have already resulted in concentration powerful enough to elevate wholesale food prices an average of ten percent.¹¹ At the retail level, the percent of national sales held by the twenty largest retail chains has jumped from twenty-seven percent in 1947, to thirty-seven percent in 1975. Concentration of sales in individual metropolitan area grocery retailing markets has also grown from forty-five percent in 1947 to fifty-three percent in 1972.¹²

It is clear from these statistics that there are still a large number of independent firms in the food manufacturing and retailing sectors. The clear trends toward fewer and bigger firms, however, must be viewed with increasing concern. Most importantly, attention to the relative size of firms within the food manufacturing sector reveals a significant decrease in the number of firms engaged in direct competition in the production of many specific product lines. The relative size of the largest firms, moreover, clearly shows potential for the abuse of shared monopoly power.

The overcharge to consumers due to monopoly power in food

¹⁰ See Table 1 in Appendix, *infra*.

¹¹ J. CONNOR, THE U.S. FOOD AND TOBACCO MANUFACTURING INDUSTRIES: MARKET STRUCTURE, STRUCTURAL CHANGE, AND ECONOMIC PERFORMANCE (Economics, Statistics and Cooperatives Service, U.S. Dep't of Agriculture, Ag. Econ. Rep. No. 451, 1980).

¹² See Table 1 in Appendix, *infra*.

retailing was estimated to be \$662 million in 1974.¹³ Inflated by the consumer price index for food, the estimate for 1979 is \$942 million lost by consumers because of monopoly overcharges¹⁴ at the retail level. Estimates for the food manufacturing sector recently appeared in an article by Russell Parker of the Federal Trade Commission and John Connor of the United States Department of Agriculture.¹⁵ This article presented some truly startling research results. The average of the Parker-Connor estimates for one year, 1975, is \$13 billion lost by consumers due to monopoly power in the United States food manufacturing sector of our economy.¹⁶ This estimate, moreover, does not include monopoly overcharges paid by farmers for machinery and other inputs or monopoly overcharges in food wholesaling and retailing, or in any of the industries that provide inputs and supplies to food marketing firms.

How does this \$13 billion annual figure compare with the amount consumers lose due to inflation in wholesale food prices? Over the years 1973 through 1979, the annual increases in wholesale food prices from all causes of inflation totaled \$99.3 billion.¹⁷ Over the same period, consumers lost \$98.5 billion due to monopoly at the food manufacturing level.¹⁸ In other words, the loss due to monopoly power was ninety-nine percent as large as the increase in food costs due to all causes of inflation. It is no wonder that Parker and Connor concluded:

¹³ See *Joint Econ. Comm. Hearings*, *supra* note 9, at 4.

¹⁴ The terms "monopoly overcharge," "consumer overcharge," "consumer loss due to monopoly," and "monopoly loss due to market power" are often used interchangeably. As Parker and Connor point out, the term "consumer overcharge . . . is properly used to mean only the income transfer from consumers to the monopolist." See Parker & Connor, *supra* note 9. Total loss due to monopoly power encompasses not only this income transfer, but also what economists call "X-inefficiency" due to excess costs incurred by monopolists and deadweight social welfare loss due to monopoly underproduction. Loss due to monopoly can also be viewed as a loss of what economists call "consumer surplus." I use the term "*monopoly overcharge*" in a general sense to refer to the broadest of these concepts, with the understanding that specific estimates most likely underestimate the totality of such loss.

¹⁵ See Parker & Connor, *supra* note 9.

¹⁶ "Three independent methodological approaches and data sets are used to estimate the consumer loss due to monopoly in the U.S. food manufacturing industries for 1975. They include estimates (a) built up from previously estimated components of consumer loss, (b) derived from a regression analysis of the relationship of market structure to industry price-cost margins, and (c) derived from regression analysis of the market structure determinants of national brand-private label price differences. All three estimates converge to the \$12 to \$14 billion range. Virtually all of the consumer loss is attributed to income transfers; 3% to 6% is due to allocative inefficiency." *Id.* at 626.

¹⁷ See Table 2 in Appendix, *infra*.

¹⁸ *Id.*

There are significant implications of our monopoly loss estimate for public policy. The annual 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 [for food].¹⁹

The food manufacturing sector ranked fourth among the twenty major industry groups in our economy based on 1977 value added. Food manufacturing, furthermore, ranked first in 1977 value of shipments.²⁰ Obviously, this is one of the largest sectors of our economy. But in this sector, only fifty firms out of about 20,000 firms accounted for sixty-four percent of food manufacturers' assets in 1978, up from forty-two percent in 1947. "Concentration of profits, sales promotion activities, and the holding of leading positions by these fifty firms is substantially higher, ranging upward to ninety percent."²¹

II. AN EXAMPLE OF SHARED MONOPOLY POWER IN FOOD MANUFACTURING: THE MEATPACKING INDUSTRY

Sixty years ago there were major monopolistic problems in the meat industry with meat being sold under manufacturer's national brand names. As part of the actions taken to re-establish competition in the industry, a 1920 consent decree²² was entered which prohibited the "big five" packers from engaging in retailing and certain nonslaughter activities. The consent decree and the widespread acceptance of federal grade labeling—which helped insure non-brand-name, generic sales of fresh meat—were major contributors toward a return to workable competition in the meat industry. These measures helped to insure ease of entry into meatpacking which resulted in a dramatic decline in industry concentration.

¹⁹ Parker & Connor, *supra* note 9, at 637.

²⁰ See BUREAU OF THE CENSUS, U.S. DEP'T OF COMMERCE, 1977 CENSUS OF MANUFACTURERS, Standard Industrial Classification (SIC) 20: Food and Kindred Products (1979).

²¹ Parker & Connor, *supra* note 9, at 627.

²² *United States v. Swift and Co.*, Equity No. 37623. (D.C. Feb. 27, 1920). See *United States v. Swift and Co.*, 286 U.S. 106 (1932) for a summary of a complaint and relief obtained. For a history of the Consent Decree, see *United States v. Swift and Co.*, 189 F. Supp. 885 (N.D. Ill. 1960).

A. *The Struggle of Small Businesses in the Meatpacking Industry*

I have a special concern about the problem of shared monopolies because the economic power of shared monopolies has been derived at the expense of the thousands of small businesses in this nation. When an industry is composed of thousands of small businesses, where no one business can exercise power over buying or selling prices, we have a situation that goes a long way toward approximating the ideal of pure competition. Unfortunately, American economic history demonstrates that more often than not small businesses either grow into giants or are driven out of business by larger businesses—this represents the paradox of development in our free enterprise system. While firms are fighting for territory in an industry, consumers seem to benefit. Once an industry is controlled by a few large firms, however, the efficiency gains from economies of scale are lost to society in the form of shared monopoly costs and profits.

Within the broad problem of shared monopoly power in food manufacturing, the House Committee on Small Business has focused on the problem in the meat industry. The ongoing Committee investigation has included two major studies of meat industry structure, a study of futures trading, and a computer analysis of pricing behavior. Some of the results of this investigation are discussed below.

1. *Increasing concentration*—Nationally, the top four firms slaughtering steers and heifers²³ accounted for about thirty-two percent of the total slaughter in 1978. This is not a particularly high level of industry concentration. One should keep in mind, however, that moving live animals great distances is very costly both in shrink, *i.e.*, animal weight loss due to stress and limited access to feed and water, and transportation. Thus, concentration levels in local marketing areas are of much greater importance than national concentration levels, which are more relevant with non-perishable products. In a special study prepared for the Small Business Committee, the USDA reported that in the twenty-three states that accounted for over ninety-six per-

²³ Slaughter of cattle is generally divided into two major categories: 1) steers and heifers, which account for about seventy-five percent of all cattle slaughter and end up as cuts of fresh meat at the retail level and 2) cows and bulls, which account for about twenty-five percent of all cattle slaughter and end up in hamburger or other processed meat products. See ECONOMICS, STATISTICS, AND COOPERATIVES SERVICE, U.S. DEP'T OF AGRICULTURE, LIVESTOCK AND MEAT STATISTICS, STATISTICAL BULLETIN No. 522, 81 (1978 SUPP.).

cent of the total fed cattle marketings in 1978, the top four firms in each state had over sixty-six percent of the steer and heifer slaughter.²⁴ This sixty-six percent figure is a statistically significant increase over the fifty-six percent concentration level in 1969.

It is generally accepted that shared monopoly effects begin appearing in an industry when four-firm concentration ratios go above forty percent. When the four-firm concentration ratio reaches sixty percent, the industry is considered to be quite monopolistic.²⁵ What has happened in the steer and heifer slaughtering industry over the last decade is that the large firms have concentrated at the source of the animals, driving out the competition—a classic case of oligopsony buying power.

We have not yet observed, however, in all cattle producing areas, the final result of oligopsony buying power—lower prices paid to producers for live animals. The industry is still in the final transition to shared monopoly. What has occurred is that large packers move into an area and pay higher prices for live animals than the existing competition. Thus, the large “new generation” packers are able to operate their plants at or near capacity throughout the cattle cycle while existing packers go bankrupt in the face of cost increases. During the initial stage of this type of industry structural change, cattle producers may not perceive the problem because, in the short run, some are receiving higher prices for their animals. Cattle producers fail to realize that in five or ten years there will be so few small and medium size packers left in the business that the price of live animals will be determined totally by what the remaining oligopsonists want to pay. When the crunch comes producers, unfortunately, will bear the burden.

2. *Conglomerate control*—Thirteen of the twenty-five largest cattle feeders in this country are now owned or controlled by either meatpacking companies or grain companies. These thirteen cattle feeders already represent a one-time capacity of two million head or about twenty percent of the total national feed lot capacity.

The wave of conglomerate takeovers and vertical integration in the grain-livestock-meatpacking complex is a telling sign of the monopoly profits to be made by those with economic power.

²⁴ See Table 3 in Appendix, *infra*.

²⁵ *Small Business Problems in the Marketing of Meat and Other Commodities (Part 7—Monopoly Effects on Producers and Consumers): Hearings before the Subcomm. on SBA and SBIC Authority and General Small Business Problems of the House Comm. on Small Business, 96th Cong., 2d Sess. 114 (1980) (testimony of Russell Parker).*

The medium sized packer has little chance to survive when the vast resources of international conglomerates are brought to bear to subsidize giant meatpackers. These conglomerates furnish capital and sell grain at favorable prices to conglomerate feed lots who in turn sell fed animals at favorable prices to the conglomerate packer. Instances of conglomerate control are rising. For example, Cargill, Inc., a privately-held company, is the world's largest grain merchandizer with fiscal 1979 sales estimated at \$12.6 billion.²⁶ Cargill in turn owns Caprock Industries, America's largest cattle feeder and MBPXL, America's second largest boxed beef producer and third largest steer and heifer slaughterer in 1978. A further example is Continental Grain, among the world's top five grain merchandizers and also among America's top ten cattle feeders. Esmark, on the other hand, a conglomerate which owns Swift (America's second largest steer and heifer slaughter in 1978) has retreated from the slaughter business as have Armour (owned by Greyhound) and Wilson (owned by LTV).

A recent USDA study reported:

. . . cattle feeding has shifted to very large commercial feedlot operations using: (1) highly specialized skills and technology and (2) industrialized approaches to management, financing, and marketing. Large commercial feedlots have developed so rapidly that . . . more than half of all fed cattle are now fed in 422 feedlots, each of which averages over 30,000 head marketed a year, and . . . half of the cattle are fed in 131,500 smaller feedlots, each of which averages only 90 head marketed annually. . . .²⁷

The three largest groups trading in live cattle futures are grain companies, meatpacking companies and commercial feedlots. These groups accounted for up to thirty percent of the total short open interest in cattle futures during the period January 1978 through April 1979, and held enough cattle to potentially control up to one hundred percent of the short open interest. These figures are significant because control of short positions in cattle futures can have a substantially depressing effect on cattle prices throughout the country.

3. *Declining competition and employment*—As concentration has increased in cattle slaughter, the USDA reports a signif-

²⁶ BUSINESS WEEK, Apr. 16, 1979, at 68.

²⁷ L. Schertz, *et al.*, ANOTHER REVOLUTION IN U.S. FARMING? (U.S. Dep't of Ag., Ag. Econ. Rep. No. 441, 1979).

icant decline in slaughter plants.²⁸ From 1969 through 1977, 270 firms each purchasing more than \$500,000 worth of livestock per year left the steer and heifer slaughter business.²⁹ This is an average drop of about four percent of the firms each year, amounting to thirty percent over eight years. During 1978, moreover, at least twenty-two major plants discontinued steer and heifer slaughtering.

Meatpacking traditionally has been an industry where small businesses can effectively compete. In 1978, for example, of the 622 steer and heifer firms buying more than \$500,000 worth of livestock per year, 602 slaughtered less than 300,000 head per year. The remaining top twenty firms, however, slaughtered over sixty-two percent of the national total with individual slaughter totals ranging from 300,000 to over 4,000,000 head per year. The majority of firms which can be expected to go out of the steer and heifer slaughter business, if present trends are left unchecked, will almost certainly come from the group of 602 small and medium sized firms and/or those firms operating in only one location.

The economic vitality of an industry depends on the vigorous competition supplied by new, innovative firms. The giant packers of today were such firms ten or twenty years ago. But when a few firms become large and industry concentration reaches high levels, barriers are placed in the path of new firms trying to enter the industry. Thus, the competition from new entrants is stifled, existing small and medium firms fail, and concentration becomes worse. As these trends grow, efficient medium sized firms become acutely aware that they could be eliminated and become reluctant to risk further investments to update or expand their capacity. Present economic trends—inflation, record high interest rates, the recent low point in the cattle cycle, and increasing concentration—have combined to cause a crisis situation for all but the giant firms in the meatpacking industry.

4. *Price spreads*—Other economic indicators tell the same story. The USDA recently reported that the farm-to-retail price spreads for choice beef and pork were seven cents and five cents per pound greater than justified by costs during March-April 1979.³⁰ Since the farm-to-retail spread measures the difference

²⁸ U.S. DEP'T OF AGRICULTURE, CONCENTRATION IN THE MEAT PACKING INDUSTRY 6 (1979).

²⁹ USDA does not have reliable data on the smallest livestock slaughterers. Firms slaughtering \$500,000 or more worth of livestock (approximately 1,000 head) per year are required to report to USDA.

³⁰ See ECONOMICS, STATISTICS, AND COOPERATIVES SERVICE, U.S. DEP'T OF AGRICULTURE,

between the retail price and the payment to producers for their animals, these spreads are an indication of the excessive returns to the middle sector. The USDA, furthermore, recently reported that the middle spread for all food had widened nearly twelve percent in 1979, the largest increase in five years.

5. *Impact on farmers*— Increasing concentration in meatpacking means farmers have fewer buyers for their animals and are more and more at the mercy of the remaining large buyers. Large commercial feedlots may have eight to ten buyers or a financial tie or contract with a major packer, but the farmer/feeder may have as few as one or two buyers who will negotiate for delivery to a point that does not involve unbearable transportation cost and shrink. Studies of livestock buying practices document the power to depress farm prices concentrated in the hands of a few buyers.³¹ Unfortunately, it is only a matter of time until this power is used against all farmers in cattle producing areas.

B. Future Trends in the Meatpacking Industry: The Advent of Boxed Beef

Not since the major antitrust intervention in the 1920's have advertised manufacturer's national brands been used to sell beef in retail food stores. Until relatively recent years, beef moved from slaughterers to retailers in carcass form. Most carcasses were broken at or near the retail outlets and sold generically. A significant proportion of all carcasses are now broken into primals and/or subprimals and vacuum packed by the slaughterers. This boxed beef is now shipped directly to retailers, cutting out the costs associated with shipping unnecessary bone and fat and eliminating the costs of breaking near retail outlets. Retailers then cut the boxed beef into individual portions.

The idea of boxed beef is not new and was used to some extent in the 1950's. During the last decade, however, it has spread rapidly with about fifty percent of all fed beef currently being shipped in the box. Major efficiencies have been associated with the boxed beef revolution, but a USDA study shows:

. . . that cost savings from boxed beef may have been overrated. Stores which fabricate carcass beef into consumer cuts at central warehouses can save as much as 15

AN EXAMINATION OF PRICE SPREADS FOR BEEF AND PORK, (1979).

³¹ U.S. DEP'T OF AGRICULTURE, *supra* note 28, at 20-22.

percent in retailing costs. On the average, boxed beef costs the same as if a retailer cut a carcass to primals and subprimals at his regional warehouse. However, as retailers and packers are further apart, 1,000 miles instead of 125, boxed beef becomes more attractive.³²

There is a marketing danger with boxed beef. Once retailers convert to boxed beef, laying off meat cutters skilled at breaking carcasses and closing down local breaking facilities, they become locked into boxed beef. Buying carcasses as an alternative to boxed beef is no longer feasible. Thus, carcass beef is no longer a substitute for boxed beef to retailers. Those who hold shared monopoly power over boxed beef production, therefore, are now the ones who can extract shared monopoly prices.

At this point in time, all the major boxed beef firms have not started product differentiation³³ via national advertising, a phenomenon associated with increasing concentration. The second largest boxed beef firm, however, the Cargill-owned MBPXL, is marketing branded "portion-controlled" fresh beef under the brand name "Excel." MBPXL provides retailers with local newspaper and radio advertising materials, and has embarked

³² L. Duewer & T. Crawford, *summary* to ALTERNATIVE RETAIL BEEF-HANDLING SYSTEMS, (Economic Research Service, U.S. Dep't of Agriculture Rep. ERS-661, 1977).

³³ Parker and Connor, in estimating the consumer loss due to monopoly, relied upon the observation that when a firm grows big and achieves some degree of market power, it tends to spend more and more on advertising to insulate its product from the competition of other firms by creating perceived differences in the mind of the consumer. Obviously, a particular product is no better than any other product simply because of advertising. If the consumer thinks the advertised product is better, however, then the seller has power to increase the product price above the competitive level. This technique of trying to create perceived differences which in reality do not exist, is referred to as *product differentiation from advertising*. See Mueller & Rogers, *The Role of Advertising in Changing Concentration of Manufacturing Industries*, 62 REV. ECON. STATISTICS 89, 90 (1980). "Advertising-created product differentiation is a major source of market power for an individual firm and of industry entry barriers. Because the payoff from successful product differentiation is large, firms have a strong incentive to engage in the level of advertising necessary to achieve the optimal degree of differentiation." *Id.*

Once large scale advertising takes hold of an industry, a major barrier is placed in the path of new small businesses trying to start up and in the path of existing small businesses trying to survive. Quite simply, small businesses cannot afford such large scale advertising expenditures. "IRS data indicate that in 1975 total U.S. advertising expenditures . . . by food manufacturers were \$4.1 billion . . ." Parker & Connor, *supra* note 9, at 627. However, ". . . the bulk of promotional activities currently used for food products . . . are largely self-cancelling and simply add to distribution costs." *Id.*

One of the most cut-throat battles in any retailing industry occurs over shelf space in retail food stores. Thus the firm that spends more on advertising can demand more shelf space for its product and more shelf space means more sales. The small or medium sized manufacturer faces nearly insurmountable odds in the battle for shelf space. *Id.* at 634.

on an intensive advertising campaign with television, radio and newspaper ads in certain test markets.³⁴ This meatpacker is taking charge of everything from killing the animals to consumer packaging the meat for retail display. Branded, portion-controlled meats are coming to the retail store just like boxes of breakfast cereal, requiring no further processing. Dominant firms in the production and distribution of portion-controlled meat, aided by the merchandizing power which emanates from a nationally advertised brand name, are positioning themselves to take control of beef retailing and to force retailers to display their products or even to take control and operate retail meat shops in supermarkets.

National brand advertising is already established in poultry, pork products and processed meats. Once portion-control is fully achieved in beef, an advertising battle among giant packers will ensue which will end the medium sized packer's role in steer and heifer slaughter—unless we do something to prevent this.

The United Brands Company "Chiquita" brand banana has shown that nationally advertised brand names can be successful in most any fresh product. United Brands Company even tried to promote a "Chiquita" brand lettuce, attempting to raise the price of lettuce thirty to fifty percent through national advertising. The attempt in lettuce was forestalled, at least in part, by Federal Trade Commission action.³⁵ Thus, the sixty year history of unbranded fresh beef by no means insures that nationally advertised, brand-name fresh beef will not be attempted in the near future.

Sixty years ago, before the 1920 consent decree against the "big five" packers, fresh meat was being sold under national brand names. Nationally advertised, brand-name, portion-controlled beef is on its way again. If these shared monopoly trends are not forestalled, it is only a matter of time before a few boxed beef packers will totally control the market.

C. Detailed Breakdown of Loss Estimates

A detailed look at the results of the Parker-Connor estimate leaves little doubt regarding the extent of the shared monopoly problem. The percent of national sales controlled by the four

³⁴ *The National Provisioner*, January 3, 1981, p.8.

³⁵ See *In the Matter of United Brands Co.*, Docket No. 8835 (1974) (Thompson, Comm., concurring), reprinted in Scanlon, *Brand Advertising and the FTC: "Catching the Seed, Ignoring the Weed,"* 7 ANTITRUST L. AND ECON. 21 (1974).

largest firms (four-firm concentration ratio) for the forty-three industries within the food manufacturing sector range as high as ninety percent.³⁶

The 1975 Parker-Connor estimate for meatpacking shows a monopoly overcharge from zero to \$7 million.³⁷ This estimate is based on minimal advertising levels and a national four-firm concentration ratio of twenty-two percent. When the boxed beef four-firm concentration ratio is used, along with advertising expenditures commensurate with manufacturer national brand names, the estimate increases dramatically.

Russell Parker of the FTC made a special estimate of consumer loss due to monopoly power in the boxed beef segment of the meatpacking industry that is comparable to the overall 1975 Parker-Connor estimates. He assumed that boxed beef was an industry with the same advertising characteristics as broilers and hams. Parker used 1975 data on boxed beef production and market shares gathered by the USDA. In 1975, the top four firms had sixty-one percent of the boxed beef production. Poultry and ham advertising rates were used in order to explore the consequences of boxed beef producers moving to portion-control and starting advertising campaigns to differentiate their products, based upon the 1975 level of shared monopoly power of boxed beef producers. Parker assumed that if national advertising of brand name beef occurs, expenditures would be the same percent of value of shipments as occurred in broilers and hams during 1975. Understanding that individual segment estimates within the food manufacturing sector are subject to greater error than the estimates for the entire sector, Parker concluded that the shared monopoly overcharge would be 4.9 percent of the value of all boxed beef shipments and 8.2 percent of the value of manufacturer brand boxed beef shipments. In dollar terms, these estimates indicate that in 1975 the consumer loss due to shared monopoly overcharge could have ranged from \$107 million to \$143 million.³⁸ Inflating these estimates to 1979 dollars

³⁶ For the sector as a whole, the "... food industry concentration ratio was 52 percent, indicating a significant degree of oligopoly and potential for competitive problems." Parker & Connor, *supra* note 9, at 627. In dollar terms, the largest consumer loss in 1975 occurred in processed meats, fluid milk, breakfast cereals, bread, cookies, crackers, refined cane sugar, soybean oil, shortening, margarine, beer, soft drinks, flavoring extracts, syrups, roasted coffee and other prepared food. *See also* R. PARKER & J. CONNOR, ESTIMATES OF CONSUMER LOSS DUE TO MONOPOLY IN THE U.S. FOOD-MANUFACTURING INDUSTRIES, (NC-117, Working Paper No. 19, Dep't of Ag. Econ., Univ. of Wisconsin, 1978) 59, 61 [hereinafter cited as R. PARKER & J. CONNOR, (NC-117)].

³⁷ R. PARKER & J. CONNOR, (NC-117), *supra* note 36, at 59, 61.

³⁸ *See* Table 4 in Appendix, *infra*.

gives a range of \$133 million to \$178 million potential loss to shared monopoly overcharge in advertised, portion-controlled boxed beef—a truly startling conclusion.

III. THE URGENT NEED FOR NEW DIRECTIONS AND BOLD INITIATIVES

Antitrust law is founded on economic principles of preserving competitive markets and on a social policy that small businesses should be preserved regardless of the economic results.³⁹ New antitrust initiatives, founded on these same economic and social considerations, must be undertaken: to reverse the ever increasing shared monopoly power in food manufacturing; to return this sector of our economy back to workable competition among efficient smaller and medium sized businesses; and to make the entire system more market sensitive so that periodic surpluses result in the kind of reduced consumer prices which move the product.

Recent press reports⁴⁰ claim our ninety year old set of anti-trust laws and enforcement policies lack validity in today's economic environment. These types of reports, while conceding that outright monopoly is socially unjustifiable, claim that in many cases the economies of scale gained in industries with shared monopolies outweigh any adverse social costs. Accordingly, such reports call for a major relaxation of antitrust efforts.

I interpret our current economic environment in an entirely different light. I believe that basic economy theory, which has evolved from Adam Smith to the present day, accurately predicts the consequences of shared monopoly power. Shared monopolies vehemently resist price competition, resulting in a major structural contribution to our current inflation problem throughout the economy. Shared monopolies also restrict output which results in a smaller supply, thereby keeping prices higher than would otherwise be the case and acting as an underlying structural force contributing to our unemployment problem. In addition, rather than lowering prices to move their product, shared monopolies place the burden of a recession on their employees by cutting output and laying off workers in an effort to

³⁹ *United States v. Aluminum Co. of America*, 148 F.2d 416, 427-29 (2d Cir. 1945); *Brown Shoe Co. v. United States*, 370 U.S. 294, 344 (1962).

⁴⁰ *BUSINESS WEEK*, Jan. 12, 1981, at 90.

maintain their shared monopoly profit margins.⁴¹ Shared monopoly power, furthermore, creates an environment where cost-push inflationary wage gains spill over to the rest of the economy. Unquestionably, shared monopolies construct barriers to the entry of new firms, thus stifling price competition and innovation. These actions result in outmoded production techniques and lagging productivity. And finally, this combination of shared monopoly created circumstances in our domestic economy—higher prices, restricted output, barriers to entry, stifled innovation, lagging productivity—invites competition from innovative, productive foreign firms and results in our chronic balance of payments problem.

Parker and Connor concluded from their research that to correct the problem of shared monopoly power, industry restructuring may be necessary. They in turn suggested divestiture and compulsory licensing of major trademarks as possible remedies.⁴² Such approaches may be necessary in industries such as steel and automobiles where there are no small firms left. Another approach (which I have proposed for the meatpacking industry) involves two components: first, to define the rules of conduct in advance for actors in the marketplace and second, to specify firm size limitations before undesirable concentrations of shared monopoly power are allowed to develop. This two-prong approach would eliminate the need to break-up shared monopolies via divestiture. Businessmen would have a clear statement of how far they can go in extending their control over the market.⁴³ For meatpacking, the principal elements of this two-prong approach would prohibit vertical integration by proscribing meat retailing by firms which exceed a fixed share (for example, five percent) of the national slaughter of steers and heifers, cows and bulls, or hogs; insure a competitive market structure by limiting a packer's slaughter in any one year to a fixed share (for example, twenty-five percent) of the national slaughter of the appropriate classifications of livestock; and protect small businesses by prohibiting the unreasonable use of economic power or pricing practices intended to eliminate or impair the marketing ability of small business meatpacking concerns.⁴⁴

⁴¹ Current labor union policies to maximize per hour wages and benefits rather than to maximize the number of members employed also contribute to this problem.

⁴² Parker & Connor, *supra* note 9, at 637-38.

⁴³ See H.R. REP. NO. 7197, 96th Cong., 2d Sess. (1980) and H.R. REP. NO. 5733, 96th Cong., 1st Sess. (1979).

⁴⁴ Small business meatpacking concern is defined as any packer which has less than a five percent share of the national slaughter of steers and heifers, cows and bulls, or hogs.

The imposition of limits on individual firm size or market shares may be criticized by some on the grounds that it would discourage the development and adoption of cost-reducing technology. Such limits, it may also be argued, impede aggressive competition and protect individual competitors rather than the competitive process. When an industry, however, is composed of a large number of small or medium sized businesses where no one business can exert power over buying or selling prices, we have a situation that begins to approximate the ideal of pure competition.

In free competitive markets, unlike in a concentrated industry, decentralized decision-making allows for more rapid changes and flexible responses to changing economic conditions.⁴⁵ Currently, firms can and do take advantage of new technologies in the meat industry at firm sizes far smaller than the maximum firm size limits proposed. For example, slaughter houses and breaking plants with less than one percent of the national production can and do employ all the latest technology. Because the proposed market share limitations are so much larger than any company could practically slaughter at any one or several locations, a market share limiting approach would in no way stifle innovation; in fact, more decentralized decision-making should encourage it.

Similarly, the integrity of the competitive process would not be impaired by market share limitations. This approach neither limits the number of firms in an industry nor restricts the entry of new firms or the expansion of smaller existing firms.⁴⁶ In fact, in an environment where it was known with certainty that no one firm could grow beyond a certain size, innovation and investment in new plant and equipment by small and medium sized firms would be encouraged because unfair competition from industry giants would not exist.

Market share limitations would impact on aggregate market behavior and affect the size of firms or the independence of individual business decisions only if the firms reached a size which approached the limit. The social benefits to be derived from decentralized and independent decision-making in an industry

H.R. REP. No. 7197, *supra* note 43, at Section 3.

⁴⁵ Scitovsky, *Can Capitalism Survive?—An Old Question in a New Setting*, 70 AM. ECON. REV. 1 (1980); Hayek, *The Use of Knowledge in Society*, 35 AM. ECON. REV. 519 (1945).

⁴⁶ The spread of product differentiation, especially if fortified by large scale advertising or promotional expenditures, has a far greater potential to operate as a barrier to new entry than market share limitations.

which does not limit the entry of new firms or the expansion of smaller existing firms far outweighs the social loss resulting from the imposition of fixed market share limits.

The costs of our present antitrust system may not be justifiable. It has been estimated that American Telephone and Telegraph Company has spent from \$350 million to \$500 million in its antitrust battle with the Justice Department, and International Business Machines Corporation is expected to spend as much as \$1 billion in its battle with the Justice Department.⁴⁷ Such expenditures as well as enforcement expenditures by the Justice Department would be unnecessary under a market share limitation approach. Also, the government welfare program for shared monopolists such as Chrysler would be unnecessary. In an environment controlled by the market share limitation approach, the failure of any one firm would not produce the ripple effects that the bankruptcy of a firm the size of Chrysler could have in today's shared monopoly business world.

CONCLUSION

Unfortunately, as the studies now show, the meat industry is returning to a state of concentrated shared monopoly power. Once again, the industry is returning to highly advertised, needlessly differentiated national brand marketing of fresh meat. The names of the actors have changed but the script is the same. As these shared monopoly practices occur, increased efficiencies resulting from boxing and portion-control are not passed back to the producer or on to the consumer, but rather they are wasted on needless advertising and shared monopoly profits—causing losses to both farmers and consumers.

For the benefit of both livestock producers and consumers, further concentration of shared monopoly power in meatpacking should be prohibited. It is not yet too late to keep the meatpacking industry from turning into the biggest shared monopoly of the 1980's, but time is running out. The need for a market share limitation approach is clear in the meatpacking industry. This antitrust approach, furthermore, should be carefully considered for other segments of our economy.

⁴⁷ See BUSINESS WEEK, Jan. 12, 1981, at 90.

APPENDIX

Table 1
*Number of Companies and Concentration in
 Food Manufacturing and Retailing 1947-1977*

<i>Food Manufacturing</i>					<i>Food Retailing</i>			
Census Years	Number of Companies	Average Annual Percentage Decline of Number of Companies from Previous Census Year	Percent of Food Manufacturing Assets Held by 50 Largest Companies	Average 4-Firm Share of Sales in Food and Kindred Products Industries	Number of Companies	Average Annual Percentage Decline from Previous Census	Percent of National Sales by 20 Largest Chains	Average 4-Firm Share of Sales in Metropolitan Areas
1947	41,147	NA	41.6 (1950)	NA	350,000 estimate 1948	NA	26.9	45.4 (1954)
1958	36,545	- .9	45.8	47	238,000 est.	-2.8%	34.1	49.3
1967	27,706	-2.5	52.7 (1969)	50	187,293	-1.9	34.4	50.9
1972- 1978*	23,326 (1972)	-3.0	63.7 (1978)	52 (1972)	155,235 (1972)	-3.2	37.0 (1975)	52.9 (1972)

* Data only available for year indicated in each column.

SOURCE: Federal Trade Commission.

Table 2
Comparison of the Annual Costs to Consumers of
Monopoly in Food Manufacturing and Food Price Inflation,
1973-1979

	(1)	(2)	(3)	(4)
	Value of Shipments from Food and Kindred Product Manufacturing Plants ¹	Consumer Loss Due to Monopoly in Food Manufacturing ²	Annual Percent Change in the Average Wholesale Price for Food Products ³	Annual Dollars Increase in Consumer's Food Costs Due to Wholesale Price Increases ⁴
Year	\$ Billions	\$ Billions	Percent	\$ Billions
1973	\$135.5	\$10.3	22.5%	\$25.9
1974	160.6	12.2	13.0	17.6
1975	171.0	13.0	5.5	8.8
1976	180.9	13.7	-2.5	-4.3
1977	193.1	14.7	6.6	11.9
1978	218.4	16.6	11.9	23.0
1979	237.4	18.0	7.5	16.4
		TOTAL \$98.5		TOTAL \$99.3 ⁵

¹ Value of shipments of food and kindred products manufacturing plants, *1977 Census of Manufacturers, Industry Series (MC 77-1-20)*, U.S. Department of Commerce, 1979. 1978 and 1979 amounts are estimates derived by multiplying the 1977 census total value of shipments by the average annual deflated growth rate of value of shipments between 1972 and 1977 (1.2 percent) and the percentage increase in the Bureau of Labor Statistics producer price index for finished food products (the wholesale price index).

² The dollar amounts are equal to 7.6% of value of shipments shown in Column 1. 7.6% is the ratio of the dollar amount of consumer loss estimated by Parker and Connor for 1975 (\$13 billion) expressed as a percent of 1975 total food industry value of shipments. This method of extending the Parker-Connor estimate to other years assumes the ratio of consumer loss to value of shipments stays constant. The 7.6% is not the total possible consumer loss due to monopoly included in consumer food purchases. Not included are monopoly loss amounts in wholesaling or retailing of food products or monopoly overcharges by farm input supply industries.

³ Annual percent change (from December to December, unadjusted) in producer prices for finished goods (foods). Source: Department of Labor, Bureau of Labor Statistics. These inflation (deflation) rates apply to food and kindred product prices as charged by the manufacturer to the retailer. Since the Parker-Connor's estimate does not include possible consumer loss due to monopoly at the retail level, inflation (deflation) rates for consumer food prices were not used.

⁴ These values represent the dollar changes in value of shipments (Column 1) which are due to inflation (deflation). Assuming these inflation charges are passed on by retailers on a dollar for dollar basis, the total of Column 4, \$99.3 billion, can be considered as an estimate of the total "consumer loss due to inflation" over the 1973 through 1979 period. Percentages were taken of the previous year's value of shipments. Value of shipments in 1972 total \$115 billion.

⁵ Part of the price increase represents an increase in the dollar amount of the monopoly loss between 1973 and 1979. Subtracting the increase in the annual monopoly loss (7.7 billion) leaves a total due to non-monopoly price increase of \$91.6 billion.

Table 3
**Four-Firm Concentration Ratios,
Steers and Heifers, By State¹**

State ^a	Percent of Slaughter Accounted for by Top 4 Firms			1978 Level of Concentration ^b
	1969	1977	1978	
Arizona	83.7%	85.9	87.6	Very Highly Concentrated
California	20.5	22.7	26.5	Unconcentrated
Colorado	63.3	65.4	63.8	Moderately Concentrated
Iowa	53.4	57.2	61.9	Moderately Concentrated
Idaho	77.3	86.0	89.0	Very Highly Concentrated
Illinois	63.1	72.0	70.2	Highly Concentrated
Indiana	64.3	78.9	82.1	Very Highly Concentrated
Kansas	54.3	74.0	74.7	Highly Concentrated
Nebraska	51.1	50.2	57.8	Moderately Concentrated
Michigan	53.4	59.4	56.0	Moderately Concentrated
Minnesota	59.7	84.2	84.7	Very Highly Concentrated
Missouri	67.9	80.5	85.9	Very Highly Concentrated
Montana	92.9	100.0	100.0	Very Highly Concentrated
New Mexico	95.9	95.3	96.7	Very Highly Concentrated
N. Dakota	100.0	99.0	100.0	Very Highly Concentrated
Ohio	40.9	44.6	44.7	Low-Grade Concentration
Oklahoma	72.9	86.6	89.0	Very Highly Concentrated
Oregon	62.0	74.2	73.9	Highly Concentrated
Pennsylvania	73.6	73.8	79.3	Very Concentrated
S. Dakota	91.3	94.4	96.6	Very Highly Concentrated
Texas	43.2	64.6	65.2	Highly Concentrated
Washington	66.5	87.1	91.6	Very Highly Concentrated
Wisconsin	79.6	84.7	89.3	Very Highly Concentrated
23 State Total	55.9	63.2	66.3	Highly Concentrated

¹ SOURCE: "Concentration in the Meat Packing Industry," P&S, AMS, USDA, in Hearings Before the Subcommittee on SBA and SBIC Authority and General Small Business Problems of the Committee on Small Business, House of Representatives, 96th Congress, 2nd Session, "Small Business Problems in the Marketing of Meat and Other Commodities," (Part 7—Monopoly Effects on Producers and Consumers), Washington, D.C., April 29, May 5 and 9, 1980.

^a These 23 states accounted for over 96% of the total fed cattle marketings in 1977.

^b Classification developed by Joe S. Bain and reported by USDA, *Ibid.*, p. 9.

Table 4
Overcharge Estimates for Boxed Beef, 1975

1972 SIC Code	Industry	% of National Sales Controlled by Four Largest Firms (CR ₄)	% Overcharge from:		Dollar Overcharge from:	
			National Brand- Private Label Model ¹	Price-Cost Equation (3) ²	National Brand- Private Label Model	Price-Cost Equation (3)
		<u>Percent</u>	<u>Percent</u>		<u>Millions of Dollars</u>	
2011	Meatpacking	22 (1972)	0	0	\$ 7	\$ 0
	Boxed Beef With Advertising* (Special Estimate)	61 (1975)	8.2	4.9	143	107

¹ Percent overcharge applies only to the value of consumer product sales shipped under manufacturer brands.

² Percent overcharge applies to the value of all product shipped by food manufacturers, including producer goods. The denominator includes both manufacturer brand and private label sales of consumer products.

³ Boxed beef estimates are based on the following variable values: CR₄=61, ADS₄= .75% (same as for broilers and hams), Size=\$2.2 billion (derived from USDA estimates of 1975 boxed beef production), and Firms=50 (estimated from USDA survey of boxed beef firms). All other variables in the equations are held constant. It is assumed that net imports of boxed beef are zero and that all boxed beef is sold for final consumption, i.e. producer sales are zero.

SOURCE: R. PARKER & J. CONNOR, (NC-117), *supra* note 36, at 59, 61.