

~~19743~~

STUDY BY THE STAFF OF THE U.S.

116170

# General Accounting Office

## Emerging Issues From New Product Development In Food Manufacturing Industries



116170



GED-81-138  
AUGUST 19, 1981

**Request for copies of GAO reports should be sent to:**

**U.S. General Accounting Office  
Document Handling and Information  
Services Facility  
P.O. Box 6015  
Gaithersburg, Md. 20760**

**Telephone (202) 275-6241**

**The first five copies of individual reports are free of charge. Additional copies of bound audit reports are \$3.25 each. Additional copies of unbound report (i.e., letter reports) and most other publications are \$1.00 each. There will be a 25% discount on all orders for 100 or more copies mailed to a single address. Sales orders must be prepaid on a cash, check, or money order basis. Check should be made out to the "Superintendent of Documents".**

## FOREWORD

Food price inflation and the emergence of very large and powerful firms have raised concerns about food industry structure and performance. We made this study to examine the nature and magnitude of the changes taking place in the industry and to identify issues which relate to them. We did not attempt to provide resolution of the issues nor did we intend for our list to be all inclusive. Rather, we believe the issues will help provide a better understanding of the complex task facing policymakers in analyzing the performance of the food manufacturing industry.

Most of the information presented in our study was gathered from published sources, such as Department of Agriculture and Federal Trade Commission publications, business and economics textbooks and research papers, and articles from professional journals. A bibliographic reference is included as appendix I. Our report synthesizes the material reviewed.

While we did not review specific Federal agencies or programs, copies of this report will be sent to the Secretary, Department of Agriculture, and the Commissioner, Federal Trade Commission.

Questions regarding the content of this study should be addressed to William Gahr, Senior Group Director, Food Coordination and Analysis Staff, (202) 275-5525.



Director  
Community and Economic  
Development Division



D I G E S T

The structure of the food industry has undergone a significant transformation over the past half century. More new products are now being manufactured by fewer firms. (See ch. 2.) The frequency of high market concentration, whereby fewer and fewer firms account for most sales or market production, and its effects on competition, raises a number of questions for Government and society as a whole. However, the ability of the Government and society to analyze industry's performance has not kept pace where the primary focus of competitive activity has been new product development. (See ch. 3.)

FOOD MARKET STRUCTURE

Around the turn of the century, the primary commercial food handlers were small firms serving local markets. These businesses grew in number and size to keep pace with the Nation's expanding population. Increased economies of mass production contributed to the rising importance of large-scale operations for food manufacturers. Changes in technology led to the gradual growth of regional processing plants. Improved transportation and trade opportunities further encouraged commercial growth. (See p. 3.)

Following World War II the industry underwent a significant structural transformation. In some industries, food manufacturing firms began to decline in numbers with the closing of plants of inefficient sizes. The major reason for the decline was the "marketing revolution." Large firms that could spread marketing overhead among many categories of processed foods could achieve cost advantages over the rivals they replaced. As regional processors merged and consolidated different product lines, the stage was set for conglomerate growth and increasing concentration. While the 1947 census reported over 40,000 companies in food manufacturing, in 1977 that number had fallen to about 22,000. (See p. 5.)

Food manufacturers that diversified, in many cases, no longer competed only in markets

where categories of processed food were fairly homogeneous (for example, milk and fresh meat). The structure and behavior of the diversified firms cut across many food and even nonfood markets. Many firms now aim to produce distinctly different processed products (frozen foods, crackers and cookies, prepared desserts, etc.) by experimenting with product characteristics and images (color, flavor, packaging, etc.). New product markets, as a result, are continuously emerging. (See pp. 5 and 6.)

#### IMPLICATIONS OF CHANGING MARKET STRUCTURE

America has always accepted competition as an effective regulator of industry and allocator of resources into channels producing maximum benefits. Our competitive market theory relies on the free interaction of buyers and sellers in the market to determine price and keep food costs at a minimum. A system where many firms sell similar products in a single market and no one firm is large enough to influence market price will result theoretically in a distribution of returns to production resources equal to their productive contribution.

According to traditional economic theory, lack of competition can contribute to lower levels of output, higher costs, higher profits, and poor distribution of productive resources. Consequently, a concentrated market, where a few large firms dominate sales, and its effects on industry's social performance have been a cause for concern. (See pp. 12 and 13.)

But while concentration is occurring, it is taking place primarily in those food manufacturing industries where price competition can be avoided by increasing emphasis on new product development and by experimenting with product characteristics and images. These firms compete by using nonprice strategies in differentiating their products and attempt to influence consumers' buying decisions through advertising and promotion.

However, other significant patterns of food manufacturing are occurring simultaneously. Some food products, not easily differentiated (fresh eggs and fresh meat, for example), continue to offer the consumer traditional, price-competitive, homogeneous products. These industries, in many

cases, are less concentrated and continue to compete on price and efficiency. They provide some balance to the cost-increasing rivalry of differentiated consumer product manufacturers.

Also, smaller independent manufacturers, under a private-label arrangement with food distributors, offer consumers differentiated products (for example, canned soups and snack foods) frequently copied from heavily advertised brand-name products. They stress price competition rather than emphasize new product development and further extend the availability of economy-oriented food products. (See pp. 14 and 15.)

The outcome of the product differentiating activity has a real and direct impact on consumers by exposing them to many new products requiring choices that include factors other than price. Traditional economic concepts, developed for static product markets where firms compete on the basis of price, consequently are not broad enough to address the dynamics taking place in the food manufacturing industries and their value to the public. (See pp. 15 and 16.)

#### PUBLIC POLICY ON PRODUCT EVOLUTION

Public policy through Federal regulations addresses different aspects of the food industry (for example, food quality, product safety, labeling requirements, etc.). But antitrust laws have been the primary laws addressing the elements of market structure and competition to achieve desirable conduct and performance in the industry. These laws can significantly affect the structure of homogeneous product markets, but their effect on markets has been limited where the primary focus of competitive activity is altering the physical characteristics of the product. (See pp. 17 and 18.)

Public interest in product evolution and the nature of product competition is unfocused and undeveloped. The qualitative aspects of continuously changing products (for example, color, flavor, size, design, and packaging) need to be recognized and their value defined before public policy can be developed. (See p. 20.)

Issues facing policymakers are complex and raise difficult questions concerning the balance between

public regulation and consumer choice. Is concentration among firms in the product-differentiated markets a serious concern while the private-label, economy-oriented product markets exist as an alternative? What benefits/costs accrue to society from competition through new product development? Does rapid turnover of products affect the productivity of food manufacturing industries? What resources should be allocated to producing qualitative changes in product characteristics as compared to those allocated to producing conventional products more efficiently? Will an optimum balance between experimentation and economy products be found automatically? Is the availability of products through competition by new product experimentation a measure of how well diverse consumer wants are being satisfied? Does the type of competitive conduct that exists in food manufacturing industries promote the consumption of foods that constitute a nutritious diet?

Policymakers are faced with a complicated challenge. Defining performance measures to determine how well the marketing system serves the aims of society is not an easy task.

## C o n t e n t s

		<u>Page</u>
DIGEST		i
CHAPTER		
1	INTRODUCTION	1
	Objectives, scope, and methodology	1
2	CHANGES IN THE MARKET STRUCTURE OF THE FOOD MANUFACTURING INDUSTRIES	3
	The structural transformation of the food manufacturing sector	3
	Economic motives foster trend toward concentration	6
	The food industry--diversified and conglomerated	7
	Proliferation of food products	8
3	IMPLICATIONS OF THE CHANGING MARKET STRUCTURE	12
	Production resources equal to productive contribution	12
	The influence of market structure on market performance	13
	Homogeneous versus differentiated food processing	14
	The need for an expanded concept of results	15
4	PUBLIC POLICY ON PRODUCT EVOLUTION	17
	Regulation of economic activity	17
	Measuring market performance	18
	Challenge to policymakers	20
APPENDIX		
I	Bibliography	21



## CHAPTER 1

### INTRODUCTION

The food industry is composed of an array of different types of firms that over time have been influenced by cultural, social, and economic changes. Today, the food processing (manufacturing) industry is one of the Nation's largest manufacturing industries. It encompasses a wide variety of products and market structures. While a segment of the industry continues to offer traditional staple food products at competitive prices, the growing trend is toward fewer firms which account for a greater share of sales. These firms tend to specialize in more expensive, highly advertised food products.

Food price inflation and the emergence of very large and powerful firms raise concerns both in Government and society about the structure and performance of the food industry. Also, the tendency of those firms toward a strategy oriented to new product development and advertising poses difficult questions. Is concentration among firms in the product-differentiated markets a serious concern while the private-label, economy-oriented product markets exist as an alternative? What benefits/costs accrue to society from competition through new product development? Does rapid turnover of products affect the productivity of food manufacturing industries? What resources should be allocated to producing qualitative changes in product characteristics as compared to those allocated to producing conventional products more efficiently? Will an optimum balance between experimentation and economy products be found automatically? Is the availability of products through competition by new product experimentation a measure of how well diverse consumer wants are being satisfied? Does the type of competitive conduct that exists in food manufacturing industries promote the consumption of foods that constitute a nutritious diet?

Public concern for a safe and abundant food supply has led to public regulation and intervention in food production and marketing industries since the early 1900s. Most of this experience has dealt with stabilizing the supply of various commodities, ensuring wholesomeness (freedom from adulteration), and meeting the needs of people with below-subsistence income levels. But our current issues are the problems of an affluent society and a complicated and powerful industrial complex. They raise questions concerning the balance between public regulation and consumer choice. It is not entirely clear which agencies have regulatory jurisdiction. It is much more difficult to define the "public interest."

### OBJECTIVES, SCOPE, AND METHODOLOGY

The purpose of this study is to respond to concerns about the food industry's structure and performance raised as a result of food price inflation. The study examines the nature and magnitude

of the "large firm syndrome" in food manufacturing together with Federal regulatory initiatives which relate to it. The central focus is the policy toward competition enforced through anti-trust agencies. Safety and economic regulations in the Food and Drug Administration (FDA) and the Department of Agriculture (USDA) have a direct impact on the conduct of the food industry and an indirect impact on its structure. However, the antitrust authority in the Federal Trade Commission and the Department of Justice is the primary authority addressing the elements of market structure and competition to achieve desirable industry conduct and performance.

It is beyond the scope of this study to provide a clear and broadly accepted resolution to the complex issues identified. It may be possible to focus public attention on issues which are not effectively addressed within present public agencies and to encourage modernization of regulatory patterns.

The objectives of this study were to develop a better understanding of the food manufacturing industries by analyzing (1) how the structure of the food manufacturers has changed over the past half century, (2) the implications of the changes that have taken place, (3) what tools we have to measure and evaluate the changes, and (4) how the Federal Government and its policies are interacting with the food industry as it has evolved.

We gathered information from various USDA and FTC publications; from textbooks and research papers written by academicians in the fields of business and economics; and from articles published in professional journals that addressed the structure of the food industry, the economics of the changes that have taken place, and the theories and norms that have been used to explain the industry's performance. A bibliographic reference is included in this report. (See app. I.) Daniel I. Padberg, Dean of the College of Food and Natural Resources, University of Massachusetts, also assisted us in our assessment of changes taking place in the food industry and their implications.

From the material gathered, we reviewed and analyzed the assessments that have been made regarding the industry's structure, conduct, and performance. Our report synthesizes the material reviewed.

We did not attempt to review specific Federal agencies or programs or particular operations of food firms because we believed this would narrow our focus and understanding of the food industry. We attempted to determine how the food manufacturing industry, in general, has been characterized and how its performance has been measured. By understanding the general nature and scope of the industry, we can plan reviews which would determine how effectively particular Federal agencies and programs interact with it.

CHAPTER 2  
CHANGES IN THE MARKET STRUCTURE OF  
FOOD MANUFACTURING INDUSTRIES

Economic events that influenced this Nation's growth influenced the move toward a commercial system to process and preserve its food supply. 30/ (See bibliography on pp. 21 to 24.) Nearly all food and fiber products are processed in some way after they leave the farm. (See chart on p. 4.) However, a significant transformation has taken place in the structure of the food manufacturing industry over the past half century. While the total quantities of food and the value of food processed in the United States have increased steadily, the number of food manufacturing firms and establishments has decreased substantially since World War II. 11/

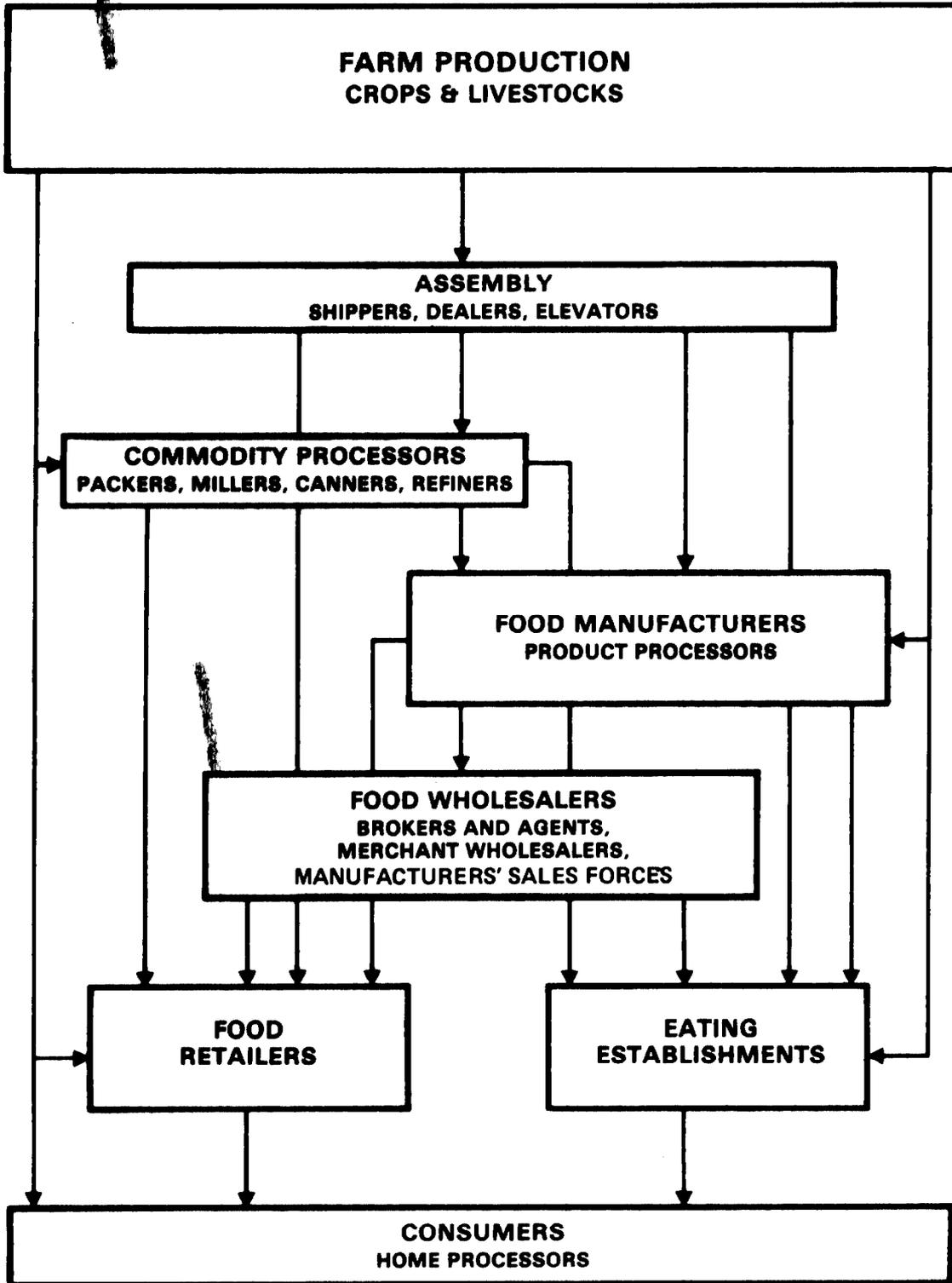
Following World War II, food manufacturing firms entered new dimensions in food processing where the emphasis shifted from processing technology to marketing techniques. The marketing innovations embraced by the food manufacturing industry revolutionized the market structure. Many regional processors merged and consolidated different product lines. This set the stage for conglomerate growth and increasing market concentration. 30/

THE STRUCTURAL TRANSFORMATION  
OF THE FOOD MANUFACTURING SECTOR

The declining number of firms in the food manufacturing industry and the trend toward market concentration, whereby fewer companies account for most sales or market production, evolved from a combination of forces. These forces paralleled economic events and motives that moved this Nation from a rural economy through an urban industrial stage to a service-oriented economy whose manufacturing sector is increasingly product-merchandising oriented. 31/

Until the late 19th and early 20th centuries, small businesses grew in number and size to keep pace with the Nation's expanding population. These small businesses often completed the entire marketing cycle--procurement, processing, and sale--and were the primary commercial food handlers serving local markets. As the population shifted away from farms and rural communities and as growth opportunities in production and trade emerged, larger, more specialized economic organizations developed. In time, manufacturers adopted mechanized food-handling processes. The mass-handling methods led to the growth of regional processing plants and firms. With improvements and growth that took place in the transportation system, these firms began to seek national markets. By the end of World War II, the commercial system processed and preserved the great bulk of the Nation's food supply. 30/, 31/

**THE FLOW OF FOOD SUPPLY  
IN THE  
U.S. FOOD INDUSTRY**



Following World War II, the industry underwent a significant transformation. In 1947, the number of companies reported in the food and kindred products category was about 41,150. 33/ By 1977, the number of firms had fallen to about 22,000.

The number of food companies declined during the 1940's and 1950's for several reasons. Newer and larger processing machines had an influence, as did the emerging interstate transportation systems for hauling raw materials to plants and finished goods to consumers. But an event in the 1950's--commercial television--had an important and different effect on the industry in the 1960's and 1970's. By 1970, real income per person in the United States had about doubled from World War II levels. As a result, consumers made different demands of the market. With more income, consumers did not want to buy twice as much of the basic products their parents had consumed. They wanted food to be more convenient. They wanted variety to be designed in the factory rather than in the kitchen. Television advertising was a powerful instrument for introducing these new foods to consumers. 28/, 29/

The emergence of television advertising both vastly increased the opportunity to explain new products to consumers and vastly raised the cost of introducing new products. While every plant could not afford to use television, conglomerates with national distribution and known brands could justify the high cost of this new marketing medium. The industrial response to this challenge can be called the "marketing revolution." Large-scale firms with substantial sophistication entered new dimensions in food processing by shifting emphasis from processing technology to marketing techniques. Many regional processors began merging and consolidating different product lines, and national firms began to replace many regional firms. 30/

The marketing activities of national firms emphasized new product development and product differentiation based on such product characteristics as color, shape, size, design, packaging, or other characteristics thought to have sales potential. These firms developed staffs with expertise in product research, advertising, consumer research, new product introduction, and physical distribution of food products. By spreading these "marketing overheads" among many categories of processed food, large conglomerate firms achieved a cost advantage over the specialized rivals they replaced. These new firms became the primary channel through which new products--the fruits of science and technology--were made available to consumers. 30/, 14/

In the industry's early growth stages, markets were fairly static because products were generally homogeneous (where consumers do not distinguish one seller's products from others like milk and fresh meat) while growth and technological change were slow. 31/ However, the adoption of processing technology and marketing techniques created a wide variety of food products and services. Today, the market structure for food products may range from

markets with many firms selling homogeneous products to markets with few firms selling highly differentiated products (frozen foods, crackers and cookies, prepared desserts, etc.). 11/ Firms also are still actively trying to improve processes or products to supersede their competitors' products. With the growing trend toward diversification, firms no longer compete in only one market but can pursue a variety of competitive strategies in many diverse markets on a regional, national, or international scale.

#### ECONOMIC MOTIVES FOSTER TREND TOWARD CONCENTRATION

Economies of mass production were among the forces influencing firms to increase their physical plant size. As long as economies of mass production were to be gained by expanding physical facilities, firms grew larger. 11/, 29/ However, as firms began merging and consolidating different product lines, the imperatives of national marketing activities (product research, new product introduction, advertising, etc.) began to have a stronger influence on firm size than scale economies in processing. 30/

The real economies for multiplant firms are not in physical plant production efficiencies but in management, technology, marketing, physical distribution, procurement, information systems, and finance, where the practical limits of size have not been determined. 11/ Thus, economies for multiplant firms have been and should continue to be a major force in the trend toward fewer and larger food processing firms in the United States. 4/

Firms grow larger not only to take advantage of economies for multiplant size but because of other economic motives that also can be achieved through expansion. Reasons typically given for the increase in diversification and conglomeration have been to spread risks, to diversify into more profitable areas, to achieve higher rates of growth, to gain tax breaks, and to gain economic power. 11/ Diversifying to spread risks allows more profit stability, on the average, than nondiversified firms can achieve. With several enterprises, profit variations in one enterprise may be compensated for by those of another enterprise; because profit variation is reduced, access to needed capital can be achieved at less cost. Firms also diversify or conglomerate to enable them to move profits from successful product lines into areas of high growth potential. Through these transitions (closing out product lines as well as adding new ones), manufacturers can respond to popular changes in supply and demand and change their pattern of specialization.

Other reasons make diversification or conglomeration attractive. Tax leverages become available to parent companies that diversify. In many cases, debt securities of the parent company are used to purchase assets of another company. The interest on the debt is tax deductible. Enterprises also can build tremendous economic resources through diversification and in effect can gain potential political and social influence.

## THE FOOD INDUSTRY--DIVERSIFIED AND CONGLOMERATED

The food processing industry is one of the largest manufacturing industries contributing to the production of goods and services in the United States and is itself dominated by a few relatively large firms. In 1976, manufacturing industries contributed about 30 percent of the U.S. gross national product (GNP), and food processing represented as much as 10 percent of all manufacturing GNP. One out of every eight or nine large industrial corporations is a food processing firm. In 1975, 93 out of 809 manufacturing corporations with assets of over \$100 million were food processing firms. These 93 largest food corporations (less than 1 percent of all food firms) controlled 67 percent of corporate assets in food processing and earned 72 percent of the profits. 13/

Firms in the food processing industry have become more and more diversified. The larger firms have diversified by spreading their food processing activities among more and more different categories of food processing (for example, Pillsbury's acquisition of Green Giant). At the same time, these firms are conglomerating by moving into activities outside of food manufacturing which are accounting for a larger and larger share of their total business (for example, Consolidated Foods' acquisition of Hanes, producer of hosiery and knit wear). Similarly, nonfood processing firms have expanded into food processing (for example, tobacco producer R. J. Reynolds' acquisition of Del Monte). With few exceptions, every food industry category has experienced diversification of ownership. The meatpacking, fluid milk, preserved fruits and vegetables, cookies and crackers, candy, soft drink, and alcoholic beverage industries have undergone the most change. 4/

Among the 200 largest processing companies in 1975, for which food and tobacco companies were combined, 38 (representing 8 percent of the 200 firms' total sales) were not primarily food processors, but had food and tobacco sales amounting to 7 percent of their total sales. Of the 162 firms whose primary industry was food processing, food and tobacco sales represented only 61 percent of their total sales. 13/

Before 1950 the extent of product diversification was relatively small in the food processing industry, though several firms had already diversified geographically by selling their major brands nationally. The National Commission on Food Marketing found in its 1966 study that horizontal product diversification among the 200 leading food manufacturing firms increased by 50 percent over 1954-63. The rate of increase was significantly higher among the top 50 firms than among the rest of the top 200. USDA reported in a 1980 study that the movement toward greater horizontal product diversification by food processing companies has continued and the trend toward greater product heterogeneity within major food processing firms appears well established. 4/

The movement toward greater horizontal product diversification has been accompanied by a trend toward increased geographic diversification. Much of the growth of the largest food processing companies in this century can be attributed to the successful national distribution of a popular regional brand. USDA reports that one outstanding trend in geographic diversification over the last two decades is the international spread of production by U.S. food and tobacco firms. 4/ A substantial portion of the food processing industry consists of some of the world's largest multinational conglomerate-industrial firms. A special survey of the 298 largest U.S. multinational corporations in 1970, carried out by the U.S. Tariff Commission, found that the food companies among them had foreign sales amounting to 15 percent of the total domestic and foreign sales of U.S.-processed food products. Investment in the U.S. food and tobacco manufacturing sector by non-U.S. firms has increased even more rapidly than U.S. firms have increased their investments abroad. 4/

Changes in forward and backward vertical integration by food processing companies, on the other hand, have been minimal compared to the horizontal diversification that has taken place. USDA reports the major sources of diversification into food and tobacco manufacturing are backward vertical integration by food retailers and conglomerate diversification. There is little apparent forward vertical integration within food and tobacco processing by companies primary to those industries. Forward vertical integration by food and tobacco manufacturers mainly takes the form of separate wholesale, retail, and sales office establishments, but ownership of food service chains (such as Burger Chef, owned by General Foods, and Red Lobster, owned by General Mills) has become common in the last decade. Backward integration into agriculture has been very modest. 4/

#### PROLIFERATION OF FOOD PRODUCTS

While the numbers of food firms and establishments have declined, new products have increased steadily in the United States since World War II. Most new products were not really considered new as a result of substantially different food processing innovations, but were merely changes in flavor, size, packages, minor variations in formulas, minor product line extensions, etc. 11/

The concept of what is new in food products can vary enormously among manufacturers, retailers, and consumers. In 1978, one survey of all new brands, flavors, and line extensions reported a total of 193 new products. (See table 1.) Another survey in the same year reported as new introductions 2,800 products that included variations in flavor, color, packaging, reformulations, and test marketing. (See table 2.) This represented more than twice the numbers counted in 1964. 3/

Although there is a significant increase in items annually, the numbers reported are gross figures. The net increase in items is more modest. On the average, according to the second survey,

the compound net increase in items per year has been 4.6 percent. For the average supermarket with 15,000 items, this means the store manager or buyer must make decisions on about 100 items each week (if presented with all new products introduced nationally). 3/

Most product proliferation can be attributed to firms that were already well established in food processing. Of the 419 new food and tobacco products introduced during 1977-78, 59 percent were reported to have been introduced by the 50 largest food or tobacco processing firms; 70 percent originated from among the 200 largest firms; and only 11 percent of the products were marketed by firms that appeared to be new entrants into the market. 3/

While the number of "new products" seems large, the extent of new technology they represent is not easy to assess. Many new products represent trivial changes. Yet, over a decade, significant changes in food technology, convenience, and variety have occurred. Little is known about what rate of change in food products is most preferred by consumers. Evidence suggests that distinctly new products are hard to introduce into the market. A level of newness in food product introductions which seems trivial may be reasonably well matched with consumer preferences and behavior. 32/

Table 1

New Packaged Consumer Food and Tobacco Products  
Introduced by Product Category, 1977-78

<u>Product categories</u>	Number of New Products Introduced (note a) <u>in 1978</u>
Nonalcoholic beverages and mixes	38
Alcoholic beverages	28
Pet foods	19
Flour mixes and baking ingredients	10
Frozen foods	12
Tobacco products	7
Canned fruits, vegetables, and specials	12
Candy and chewing gum	16
Breakfast cereals	14
Meat and fish	1
Bread, cakes, crackers, and cookies	11
Dehydrated vegetables and soup mixes	6
Dairy products	4
Chips	11
Margarine and oils	4
Prepared desserts	0
Baby food	0
Canned soups	0
Sauces and dressings	0
Total	<u>193</u>

---

a/ A simple count of all new brands, flavors, and line extensions. Minor changes in packaging, different package sizes, reformulations, and repositionings were not counted.

Source: John M. Connor. Food Product Proliferation: A Market Structure Analysis. North Central Project NC-117 WP-41, March 1980, 17.

Table 2

New Product and New Item Annual Introductions into  
Grocery Stores During 1964-78

<u>Year</u>	<u>New items (note a)</u>
1964	1,220
1965	1,075
1966	1,330
1967	1,520
1968	1,330
1969	1,440
1970	1,380
1971	1,340
1972	1,500
1973	1,390
1974	1,750
1975	1,880
1976	2,180
1977	2,650
1978	2,800

a/ Number of new items, including variations in flavor, color packaging, reformulation, and test marketings, but excluding different package sizes.

Source: John M. Connor. Food Product Proliferation: A  
Market Structure Analysis. North Central Project  
NC-117 WP-41, March 1980, 13.

### CHAPTER 3

#### IMPLICATIONS OF CHANGING

#### MARKET STRUCTURE

The differentiating activity of larger firms has created a wide variety of food products and services. The variety and the convenience built into food products have served consumers well. 27/ Moreover, profits in the food sector have been about average while technological progress continues to be high. 12/ Yet, concern is growing that large food processing firms and conglomerates pose a serious threat to competition and food industry efficiency. The major concern with the trend toward concentration is the effect it has on an industry's social performance--how well is the marketing system serving the socioeconomic goals of society? Economic theory predicts that highly concentrated industries are likely to incur higher costs and earn higher profits than industries with low concentration. Theoretically, this situation leads to inefficient resource allocation. 2/ For this reason, Government and society have been concerned with the performance of the industrial sector.

#### PRODUCTIVE RESOURCES EQUAL TO PRODUCTIVE CONTRIBUTION

America has always accepted competition as an effective regulator of industry and allocator of resources into channels producing maximum benefits. 19/, 9/ Our competitive market theory relies on the free interaction of buyers and sellers in the market to determine price and keep costs of food at a minimum. A system where many firms sell similar products in a single market and no one firm is large enough to influence market price will result theoretically in a distribution of returns to production resources equal to their productive contribution. Further, it theoretically will result in economic efficiency and production of products at their lowest possible costs. 12/

The structure of a competitive market motivates firms to reduce costs by increasing efficiency. Price reductions in line with cost reductions occur because, theoretically, new or existing competitors producing similar products will drive inefficient firms from the market. Such a system also relies on a large number of competitors with limited market power to ensure that the focus of competition is kept on price rather than excessive product differentiation.

Since business firms decide what and how much to produce on the basis of price-cost relationships, the higher price is over costs, the more industry will produce. If too little is produced, price will rise above costs and production will increase in response to profit. If too much is produced, price will fall below costs and productive resources will shift to more highly valued

alternatives. Theoretically, this process will continue until, in the long run, all products are priced at their minimum long-run average cost including a normal level of profit. 12/

Generally, where many firms are selling similar products in a single market, no one firm is large enough to wrest a significant share of the market so as to influence market price. Individual firms react to market conditions independently and in their own interests without concern about how the actions of other firms in the market might affect their profitability. The competitive market consequently results in a distribution of returns to productive resources equal to their productive contribution and in the production of products desired by consumers at their lowest possible cost. 12/

#### THE INFLUENCE OF MARKET STRUCTURE ON MARKET PERFORMANCE

Market concentration is a common measure for evaluating the expected level of competition in an industry. The level of concentration in a product market indicates the extent to which competing sellers are likely to recognize that they are affected by each other's selling strategies. Competitors in unconcentrated markets are so many and the outcomes of their decisions so slight that no one firm is concerned with possible competitor reactions when choosing its marketing strategies. 33/

When concentration is substantial, the interdependence of leading firms is presumed so great that strong communities of interest develop among rivals to identify and avoid those actions most likely to produce competitive reactions which would result in reduced profits for all. This situation is called oligopoly. When coordination is great enough--that is, when firms can act without fear of effective dissent in achieving joint profit maximization--a shared monopoly exists. 33/ Perfect competition and monopoly represent the two extreme models in economic theory. 6/ Monopoly is rarely found in manufacturing in general and still less frequently in the food industry.

Nonetheless, the frequency of high market concentration in some food manufacturing industries and its effects on competition has caused serious concern. According to traditional economic theory, lack of competition can contribute to lower levels of output, higher costs, and higher profits. 12/, 33/ In addition, many socioeconomic ills, although exceedingly difficult to quantify, have been associated with market power. The most familiar are misallocation of resources, wasteful advertising, planned obsolescence or unnecessary innovation. 11/

The food manufacturing industry, however, is regarded as a mixture of workable competition and oligopoly. And while concentration is occurring, it is taking place in those industries where competition is based not on costs and price, but on new product development. 33/, 34/

HOMOGENEOUS VERSUS DIFFERENTIATED  
FOOD PROCESSING

Economic theory predicts that forces that act to concentrate economic market power result in a market organization where individual sellers find that an increase in their output will affect the product's market price. And in highly concentrated markets where few firms compete, price competition can be avoided by increasing emphasis on product differentiation. 12/ Through product differentiation, firms differentiate the quality characteristics (that is, color, flavor, size, design, and packaging) of their products so that they will not be perfectly competitive with other products. The competitive behavior of these firms is toward nonprice strategies emphasizing new product development and the character of the product and services. 14/, 28/ These firms usually establish brand-name products. Product differentiation removes pressure on producers all to sell at a single market price and allows firms that differentiate their products some discretion in setting their own prices. 2/

It is in these differentiated-product industries that products have proliferated, company numbers have declined, and growing diversification and merger activity have increased concentration levels. 4/, 26/, 33/ However, while the growth of conglomerate food manufacturers and their selling activities get the focus of public attention, other significant patterns of food manufacturing occur simultaneously. Some food products, whether because of Government grades (eggs and fresh meat) or the products' intrinsic characteristics (flour, sugar), are not easily differentiated. 11/ Generally these more homogeneous products continue to be offered to the consumer in a traditional price-competitive process. In many cases, industries manufacturing these products are less concentrated 25/--some (meatpackers, for example) have experienced a pattern of deconcentration and regionalization. The competitive forces within these industries continue to be cost reduction and economy. These economy-oriented products give some balance to the cost-increasing rivalry associated with the product differentiation activities of large manufacturers. 27/

The availability of economy-oriented food products, however, is further extended by the private-label and generic products offered by large food distributors (supermarket chains). The private-label products offered by large food distributors are some of the industries' most extensively differentiated products (for example, frozen foods, crackers and cookies, etc.). However, they convey a different meaning from most differentiated brand-name products. Their appeal is economy. 14/ The large distributors find their competitive advantage in sophisticated logistics and product-handling systems (sometimes including manufacturing) that reduce the cost of private-label or economy-oriented products relative to heavily advertised brands. 27/

Where large food manufacturing firms have competitive advantages in introducing and marketing new products, smaller, independent firms, under a private-label arrangement, can specialize in the physical functions of food processing where their competitive advantage lies. Some private-label and generic products are manufactured in distributor-owned plants. But, in the more usual pattern, the distributor develops labels and establishes procurement specifications, and contracts with small independent manufacturing plants. These small, independent firms have little or no marketing capability. Brand development costs are exorbitant for their small volume. Thus small firms generally rely on private-label programs, sales for institutional distribution, and sales to large food manufacturers for sale under their own brand. 14/

There are industries and products where this dual-channel pattern for economy-oriented and differentiated products does not exist. The more homogeneous product industries (such as fluid milk and fresh meat) tend to be price competitive but do not emphasize product progress. Other products, such as breakfast cereals, are highly differentiated, but have not attracted successful private-label competition. 14/

#### THE NEED FOR AN EXPANDED CONCEPT OF RESULTS

The traditional economic theory of perfect competition is predominantly a static theory based on production of specific products. Its application to the dynamics of the differentiated product markets has been limited. 11/, 12/, 19/, 29/ While it may address market performance in homogeneous product markets, it was not designed to deal explicitly with the structure and performance of the conglomerate firms that have evolved. Here, the real competition among firms is in their ability to develop new products and to attempt to influence consumers' buying decisions through advertising and promotion. 12/ Also, while some economists have addressed rivalrous competition through product differentiation, little attention has been directed to the dual-channel pattern existing in the food marketing system.

Conglomerate food processors are generally not organized to be as sensitive to the nature of particular markets because both the structure and behavior of these firms cut across many food and nonfood markets. 5/, 29/ The focus of their competitive activity is the qualitative aspects of products (that is, color, flavor, size, design, and packaging) not the quantitative aspects (for example, price and output). They do not compete by price for repetitive creation of known products, but compete in activities that emphasize experimentation with product characteristics and images. 22/ This process of experimentation changes our lifestyle by making different products available and perhaps by changing our values. These outcomes of present economic activity within the food industry are important to the public welfare. 19/, 29/

They do not particularly fit within the framework of traditional market analysis, but they need to be addressed to determine how well the industry has served society.

## CHAPTER 4

### PUBLIC POLICY ON PRODUCT EVOLUTION

The President, the Congress, and the Federal regulatory agencies are concerned with ensuring an adequate and wholesome supply of food for the Nation. They also aim to balance the interests of both the public and the food processing industry. In order to do so, however, they need to deal with the issues arising from continuous product evolution.

In recent years interest has grown in evaluating market performance. Discussion of performance dimensions in general were at one time inseparable from references to market structure and conduct. 15/ However, while dynamic changes have taken place in the food industry, the ability to measure industry's performance has not kept pace. The nature of industry's performance in the qualitative dimension, where the physical characteristics of a product are being purposely and experimentally altered as a primary focus of competitive activity, has not yet been defined.  
29/

Federal regulations address different aspects of the food industry (for example, food quality, product safety, labeling requirements, etc.). But antitrust laws have been the primary laws addressing the elements of market structure and competition to achieve desirable conduct and performance in the industry. 11/ These laws can significantly affect the structure of homogeneous product markets, but their effect has been limited on markets where the primary focus of competitive activity is altering the product's physical characteristics.

### REGULATION OF ECONOMIC ACTIVITY

Many different policies have been adopted in the United States to deal with the questions of competition and monopoly. Legislation such as the antitrust laws imposes restrictions on elements of market structure and market conduct in order to achieve certain objectives. The Sherman Antitrust Act of 1890, the Clayton Act and the Federal Trade Commission Act of 1914, and their amendments make up the main body of U.S. laws designed to promote competition and prevent monopoly. The main enforcement burden lies with Federal agencies--the Department of Justice and the Federal Trade Commission. 2/ The main economic paradigm for interpreting and enforcing U.S. antitrust laws has been the structure-conduct-performance concept. 21/ This concept holds that there is causality from structure to performance--that the structure of the market strongly influences the conduct of the market's participants, which in turn largely determines market performance. 15/, 36/

The functions of antitrust laws are to inhibit or prohibit certain undesirable kinds of business conduct and channel or shape market structure along competitive lines so as to increase

the likelihood that desirable conduct and performance will emerge from firms' normal profit-seeking decisions. 37/ These laws were designed to preserve competition by preventing monopolies and the concentration of market power. The laws make it illegal for firms to monopolize industry by acquiring their largest competitors or by restraining trade. Through the years the courts have interpreted restraint of trade to mean that firms demonstrated to be in competition with one another could not conspire to fix prices, allocate territories or customers, or share information that stabilizes prices.

Most alleged antitrust violations involved in the Department of Justice's enforcement efforts have been price-fixing in industries handling relatively undifferentiated products. Antitrust laws have very likely helped preserve competition in those industries with relatively low product differentiation. 18/ Antitrust enforcement has stopped numerous potential horizontal and vertical combinations that otherwise would have increased concentration. Beginning in 1958, the courts gave the antitrust agencies a clear mandate to prevent horizontal and vertical mergers threatening competition. However, more important than the actual relief achieved through these actions has been the deterrent effect on others contemplating such mergers. During 1951-58, about 75 percent of all acquisitions by corporations with \$1 billion in assets involved horizontal mergers. This percentage dwindled to below 10 percent by the late 1960's. 24/ Current merger activity is mostly conglomerate in nature.

Notwithstanding the impact of antitrust laws, the characteristics of food manufacturing that raise the most serious questions about the effectiveness of future competition are in those areas where antitrust activity has been relatively slight. While antitrust laws can significantly affect the structure of markets, primarily in homogeneous product markets where market power positions are easiest to deal with, their effect on conglomerates that are less vulnerable to power erosion in differentiated-product markets has been questioned. 18/

#### MEASURING MARKET PERFORMANCE

Market performance is a term that has been used to explain how well the marketing system serves the aims of society. 12/ Performance measures are characteristics resulting from firm and market behavior that are selected as being important criteria of the firm's or market's performance. Performance in our economic system has primarily been measured from the standpoint of its primary market function. 19/ Selected performance measures used for evaluating the market have included technical efficiency, pricing efficiency, progressiveness, level of output, and promotion costs. 1/, 15/ There is no question that these measures can be agreed upon as relevant. However, they are limited chiefly to the market function and largely ignore other performance dimensions not entirely market-oriented but still affecting the public interest.

Defining performance measures consistent with the public interest, both economically and socially, is not an easy task. The market system benefits a broad spectrum of society--workers, consumers, and businesses. The performance of the market system has had second-order effects on the political system, the environment, and on societal values. These have been of greater concern at certain points in time in society's evolution than the effects of the primary function of the economic system. For example, during the late 1960's and 1970's, businesses were made more aware of the shift toward social concerns, such as producing safer, more nutritious products, mitigating environmental pollution, and maintaining ecological balance. As a result, firms made attempts to respond to the preferences and needs of consumers and to society.

In the past 20 years, our lifestyle has changed markedly--higher incomes have resulted in the demand for new types of products and changes in consumer tastes in favor of more highly prepared foods. 29/, 33/ But how does one evaluate the proliferation of food products? Is product proliferation consistent with the public interest and consumer preferences?

Industry performance measures that would be important to consumers may be in conflict with one another, and may be difficult to compare in value to one another. 8/ Consumers may, for example, find the following matters important in their dealings with the food industry.

- Accountability (understanding and trust placed in a complex but important industry).
- Appearance (external show or impression projected).
- Convenience (time saving services).
- Economy (what one gets for the dollar spent, food prices, etc.).
- Nutrition (product sensitivity to health aspects).
- Product safety (wholesomeness as well as the absence of carcinogens and other toxins).
- Taste (perceived or recognized experience of flavor).
- Variety (stimulation from choice among frequently used products).

Some measures of performance are clearly economic while others are more social; and some are measurable by quantitative norms while others are not easily measurable because they are qualitative. Perhaps standard products could be produced and distributed at less cost than is incurred from an intense process of product differentiation in which vast amounts of money are spent on advertising and promotion. On the other hand, the differentiated

product markets have not replaced homogeneous product markets. Consumers still have the opportunity to choose either from product markets that compete by price and deemphasize marketing activities (including private-label versions of differentiated brand-name products) or from markets for highly processed and promoted products. 29/

Despite the availability of an economical alternative, however, manufacturers emphasizing changing product characteristics have a real and direct impact on consumers by exposing them to many new products requiring choices. The choices are based on factors other than just price, and their value to the consumer needs to be explained. Too often, it has been easier to direct attention to the quantitative measures of products, such as economy, and disregard the qualitative factors (variety, for example) even though the consumer expects more from the industry than what is quantifiable. Qualitative measures that deal with product characteristics and images are different in kind from quantitative measures of price and output and require a different array of definitions and concepts. 19/ The public interest in the qualitative dimension, however, has not really been recognized or defined. 29/

While the competitive market is generally thought to be efficient and flexible, Americans rely on the Government to monitor the market system. Public policy needs to be developed that addresses the industry's performance where products are purposely and experimentally altered. But, in order that public policy might emerge, qualitative performance measures will first have to be defined. This poses a considerable challenge to policymakers.

#### CHALLENGE TO POLICYMAKERS

Public interest in product evolution and the nature of product competition is unfocused and undeveloped. Society's ability to measure industry's performance has not kept pace with the changes that have taken place in the food industry. A new framework and new criteria have to be developed to address issues arising from the process of continuously evolving products, and to provide guidance on important antitrust issues.

Economists have developed a substantial body of analysis on the dynamics of differentiated product markets, but even this analysis is insufficient to model some of the industry's unusual features, such as the dual-channel marketing patterns. (See p. 14). While there have been some promising efforts to analyze the welfare economics of product differentiation and product variety, 16/, 38/ much more work needs to be done on this issue, both theoretically, in terms of conceptualizing what the benefits of product variety are, and empirically, in terms of trying actually to measure those benefits.

BIBLIOGRAPHY

- 1/Campbell, Gerald and Emerson, Peter. The United States Food and Fiber System: Selected Aspects of Structure and Performance. Staff Paper #139 February 1978. (Presented for Seminar on United States and Soviet Agribusiness Systems at Harvard Business School, November 16-18, 1977.)
- 2/Caves, Richard. American Industry: Structure, Conduct, Performance. 2d ed., 1967. New Jersey: Prentice Hall, 1967.
- 3/Connor, John M. Food Product Proliferation: A Market Structure Analysis. North Central Regional Project NC-117 WP-41, March 1980. (Publication forthcoming in the American Journal of Agricultural Economics, November 1981).
- 4/Connor, John M. The U.S. Food and Tobacco Manufacturing Industries: Market Structure, Structural Change, and Economic Performance. USDA, Agricultural Economic Report #451, March 1980.
- 5/Cotterill, Ronald W. and Mueller, Willard F. The Impact of Firm Conglomeration on Market Structure: Evidence for the U.S. Food Retailing Industry. North Central Regional Project NC-117 WP-33, May 1979.
- 6/Devine, D. Grant and Marion, Bruce W. The Influence of Consumer Price Information on the Structure, Conduct and Performance of Food Retailing. North Central Regional Project NC-117 WP-25, December 1978.
- 7/Ehrbar, A. F. "'Bigness' Becomes the Target of the Trust Busters." Fortune, March 26, 1979, pp. 34-40.
- 8/Farrell, Kenneth R. Market Performance in the Food Sector. Economic Research Service, USDA, ERS-653, 1977.
- 9/Food from Farmer to Consumer. National Commission on Food Marketing, June 1966.
- 10/Food Price Inflation in the United States and Other Countries. CED-80-24, U.S. General Accounting Office, December 18, 1979.
- 11/Greig, W. Smith. The Changing Structure of the Food Processing Industry: Description, Causes, Impacts and Policy Alternatives. Bulletin 827, Washington State University, College of Agriculture Research Center, September 1976.

- 12/Greig, W. Smith. The Economics of Food Processing.  
Connecticut: The AVI Publishing Co., Inc., 1971.
- 13/Greig, W. Smith. The Size of the Food Processing Industry.  
Washington State University. (Unpublished.)
- 14/Handy, C. R. and Padberg, D. I. "A Model of Competitive Behavior In Food Industries." American Journal of Agricultural Economics, Vol. 53, No. 2, May 1971.
- 15/Jesse, Edwards V. Measuring Market Performance: Quantifying the Non-Quantifiable. North Central Regional Project NC-117 WP-15, March 1978.
- 16/Lancaster, Kelvin. "Socially Optimal Product Differentiation." The American Economic Review, Vol. 65, No. 4 September 1975.
- 17/Mainwaring, Thomas A. Social and Governmental Pressures on the Food Processing Industry. Stanford Research Institute, 1974.
- 18/Marion, Bruce W. "Government Regulation of Competition in the Food Industry." American Journal of Agricultural Economics, Vol. 61, No. 1, February 1979.
- 19/Marion, Bruce W. and Handy, Charles R. "Market Performance: Concepts and Measures." Agriculture Economic Report No. 244, Economics Research Service, USDA, September 1973.
- 20/Marion, Bruce W., et al. "Price and Profit Performance of Leading Food Chains." American Journal of Agricultural Economics, Vol. 61, No. 3, August 1979.
- 21/Marion, Bruce W. and Sporleder, Thomas L. "An Evaluation of the Economic Basis for Antitrust Policy in the Food Industry." American Journal of Agricultural Economics, Vol. 58, No. 5, December 1976.
- 22/Mather, Loys L. Advertising and Mergers in the Food Manufacturing Industries. North Central Regional Project WP-36, July 1979.
- 23/"Monopoly on the Cereal Shelves?" Consumer Reports, February 1981, p. 76.
- 24/Mueller, Willard F. "Antitrust in a Planned Economy: An Anachronism or an Essential Complement?" Journal of Economic Issues, Vol. IX, No. 2, June 1975.

- 25/Mueller, Willard F. and Hamm, Larry G. "Trends in Industrial Market Concentration 1947 to 1970." Review of Economics and Statistics, Vol. LVI, No. 4, November 1974.
- 26/Mueller, Willard F. and Rogers, Richard T. "The Role of Advertising in Changing Concentration of Manufacturing Industries." Review of Economics and Statistics, Vol. LXII, No. 1, February 1980.
- 27/Padberg, Daniel I. Competition and Technology. Series E, Agricultural Economics No. 77 E-7, University of Illinois, June 1977.
- 28/Padberg, Daniel I. "Consumer Protection for a Modern Industrialized Food System." American Journal of Agricultural Economics, Vol. 52, No. 5, December 1970.
- 29/Padberg, Daniel I. "Emerging Effectiveness of Competition and the Need for Consumer Protection." American Journal of Agricultural Economics, May 1975.
- 30/Padberg, Daniel I. "Public Policy for Assuring a Safe, High Quality Food Supply." Food Safety: Where Are We?, committee print prepared for the Committee on Agriculture, Nutrition, and Forestry, United States Senate, July 1979.
- 31/Padberg, Daniel I. and Thorpe, David. "Channels of Grocery Distribution: Changing Stages in Evolution--A Comparison of U.S.A. and U.K." Journal of Agricultural Economics, Vol. XXV, No. 1, 1974.
- 32/Padberg, Daniel I. and Westgren, R. E. "Product Competition and Consumer Behavior in the Food Industries." American Journal of Agricultural Economics, Vol. 61, No. 4, November 1979.
- 33/Parker, Russell C. The Status of Competition in the Food Manufacturing and Food Retailing Industries. North Central Regional Project NC-117 WP-6, August 1976.
- 34/Parker, Russell C. and Connor, John M. Conglomeration and Consumer Loss in the Food Manufacturing Industries. North Central Regional Project NC-117 WP-30, April 1979.
- 35/Redefining Government's Role in the Market System. Research and Policy Committee of the Committee for Economic Development, July 1979.
- 36/Shaffer, James D. Food System Organization and Performance: Toward a Conceptual Framework. North Central Regional Project NC-117 WP-40, December 1979.

- 37/Scherer, F. M. Industrial Market Structure and Economic Performance, 2d ed., Chicago: Rand McNally College Publishing Company, 1980.
- 38/Spence, Michael. "Product Differentiation and Welfare." The American Economic Review, Vol. 66, No. 2, May 1976.
- 39/The Structure of Food Manufacturing. National Commission on Food Marketing, Technical Study No. 8, June 1966.
- 40/Zwerdling, Daniel "The Food Monsters." The Progressive, March 1980.



**AN EQUAL OPPORTUNITY EMPLOYER**

**UNITED STATES  
GENERAL ACCOUNTING OFFICE  
WASHINGTON, D.C. 20548**

**OFFICIAL BUSINESS  
PENALTY FOR PRIVATE USE, \$300**

**POSTAGE AND FEES PAID  
U. S. GENERAL ACCOUNTING OFFICE**



**THIRD CLASS**