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PERSPECTIVES ON FARM PRODUCT MARKETING

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October 1966

## PERSPECTIVES ON FARM PRODUCT MARKETING

By O. P. Blaich and L. F. Herrmann  
Agricultural Economists

The 20 years following the Agricultural Marketing Act of 1946 brought many changes in the size and structure of the economic system that processes and distributes the abundance from American farms to consumers at home and abroad. It is a big system.

In 1965, American consumers spent more than \$70 billion for food originating on domestic farms and for food services. Out of this, the marketing system absorbed nearly \$50 billion.

Over the years, this system has been challenged to handle an ever-increasing volume of goods and services and has achieved an efficiency that is probably unsurpassed. This has coincided with equally remarkable developments on American farms. Farms and marketing firms together provide an abundance and variety of food and related services at a cost of 18 cents from every dollar of disposable income. <sup>1/</sup> But the system continues to change as producing and marketing firms try to improve their efficiency and competitive advantage in meeting the demands of a growing and increasingly affluent population.

Farmers and businessmen responding to prices choose what products and services to offer, and then bid for the resources needed. Performance improves as firms try new ideas and use the knowledge gained from research and experience. But misallocation recurs as the system grows and is influenced by economic, social, psychological, legal, and political forces. New problems arise which require still more knowledge and further readjustment.

### THE MARKETING SYSTEM IN PERSPECTIVE

The agricultural marketing system is generally referred to as an entity, but the bounds that define it are largely arbitrary. In the broadest sense,

...today's marketing system does much more than transmit products through the various steps between the producer and the ultimate consumer. It is an integral part of the entire productive process. The scope of marketing extends beyond the sequence from farms to consumers; it includes the processing and distribution of feeds, fuels, fertilizer, feeder cattle, and many other inputs to farmers. Agricultural production, the supplying of farm inputs, and the marketing of farm products are, therefore, not separate entities, but part and parcel of one continuous sequence of productive processes. <sup>2/</sup>

The agricultural products marketing system is interconnected with every other segment of the national economy through circular flows of goods and services that are measured in national income and product accounts. It is part of a larger "agribusiness" complex which has no well-defined bounds <sup>3/</sup>

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<sup>1/</sup> Estimated to be 18.2 cents in 1965 (14). (Underscored numbers in parentheses refer to Selected References, p. 21.)

<sup>2/</sup> Ogren, K. E. and Blaich, O. P. Coordination Production and Marketing by Contract. Talk presented at National Marketing Service Workshop, Louisville, Ky., November 12, 1964.

<sup>3/</sup> The term "agribusiness" is attributed to J. H. Davis and R. A. Goldberg (10).

In 1958, total output of the agriculture sector was nearly \$50 billion (table 1). <sup>4/</sup> This total output was sold to agriculture, agriculture supply, agriculture processing, and other intermediate sectors as well as consumers. The amount sold to each sector is shown in the row of table 1 labeled agriculture. On the other hand, the agriculture sector purchased inputs from itself and other sectors to produce this output; these purchases are shown in the column labeled agriculture.

The row labeled "value added" shows the net output of agriculture. It is the amount of gross national product originating in the agriculture sector, and includes labor compensation, profits, indirect business taxes, and capital consumption. Agriculture "created" 42 percent of its total output, and purchases of materials and services from itself and other sectors accounted for 58 percent. The largest purchase is from itself in the form of feed, feeder livestock, breeding livestock, and seed. It also purchases machinery, fertilizer, prepared feeds, other goods, and the services associated with the distribution of these inputs to agriculture.

Two other important direct purchase and sales relationships are apparent in table 1:

(1) The "agriculture supply industry" seems to be only slightly dependent on agriculture since only about 5 percent of its output was sold to the agriculture sector (\$4,571 ÷ \$83,016). This did not include the wholesale and retail margins associated with these supplies; they were included in the "other" sector.

(2) Purchases by the agriculture processing sector accounted for 47 percent of agriculture's output (\$23,551 ÷ \$49,717). But these purchases accounted for only 23 percent of the value of the processing industry output (table 2). The agriculture processing sector also purchased heavily from itself (24 percent). Value added was a smaller proportion of total output for processing (29 percent) than for agriculture (42 percent). However, the total dollar value added in processing was greater than the total dollar value added in agriculture.

The interdependence of the agriculture-supply-processing (or agribusiness) economy is illustrated by the data in table 2. Because of these relationships, a change in demand for products of one sector has repercussions in every other sector. For example, if final demand for agricultural products increases by \$100, then to meet this demand the agriculture sector will need to buy \$27 of inputs from itself, \$9 from supply, \$6 from processing, and \$16 from other industries. But, if the other industries are to supply these added inputs, they must buy more inputs. In turn, their suppliers must also purchase more inputs. After a period of time all of the industries will be producing more to satisfy the \$100 increase in demand for agricultural products. The

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<sup>4/</sup> The data for 1958 are the latest available; later data would show similar relationships. See Survey of Current Business (24, p. 33) for more detailed data. Agriculture sector includes livestock and crop producers; agriculture supply includes agricultural services, chemical and fertilizer mining, maintenance and repair, construction, chemical products, petroleum and related products, rubber and miscellaneous products, farm machinery and equipment, motor vehicles and equipment; agriculture processing includes food and kindred products, tobacco manufactures, broad and narrow fabrics, miscellaneous textile goods, apparel, miscellaneous fabricated textile products; "other" includes all other intermediate sectors (including imports); final demand includes personal consumption expenditures, gross private fixed capital formation, net inventory change, exports, Federal, State, and local Government purchases.



Table 1.--Interindustry transaction, 1958 1/  
(Producer prices)

Producing sector	Purchasing sector					Total :output
	:Agriculture	:Agriculture : supply	:Agriculture :processing	:Other	:Consumers	
	-----Million Dollars-----					
Agriculture.....	13,166	780	23,551	3,692	8,528	49,717
Agriculture supply.....	4,571	14,258	1,346	29,151	32,689	82,016
Agriculture processing..	3,050	1,142	24,529	5,847	66,515	101,084
Other.....	8,084	35,363	22,743	248,602	339,602	654,573
Value added.....	20,846	30,473	28,915	367,100	---	447,334
Total input.....	49,717	82,016	101,084	654,573	447,334	---

1/ Latest available data.

Source: (24, p. 34).

amount of increase in output for each industry can be determined from table 3. 5/ This table (column 1) shows that if final demand for agricultural products increases \$100, then the agriculture sector will have to increase its output \$141, agriculture supply \$19, agriculture processing \$12, and other industries \$54. Similarly, a \$100 increase in final demand for processed agricultural products will require the following increase (column 3): agriculture \$44, supply \$11, processing \$137, and other \$69. The additional amount of value added will be \$29 (table 2); in the preceding example additional value added was \$42.

Thus, increases in final demand for agricultural products (both processed and unprocessed) have a large impact not only on agriculture, but also on other sectors. This increase in demand might come from increased consumer purchases of food and fiber products, increased exports, or increased Government purchases.

Agriculture on the other hand is not affected greatly by increases in demand for other products. It would be required to increase output only \$2 to satisfy a \$100 increase in final demand for "other" products.

These relationships hold for decreases as well as increases. A decrease in final demand would call for corresponding decreases in output by other industries.

Because of the interdependence of the many sectors and subsectors of the economy, there are no precise criteria marking out the bounds of the agricultural products marketing system. For present purposes, the popular notion of the system will serve. It is defined as that segment of the economy which lies between the farm gate and the ultimate consumer and performs the functions of handling, transporting, processing, and distributing all food and fiber products. 6/

5/ Let table 2 (excluding value added row and final demand column) be called matrix A. Then table 3 is the matrix  $[I-A]^{-1}$ . For further exposition see W. H. Waldorf, (36).

6/ Aggregate data which include the marketing of fiber products are sparse and difficult to obtain, so the principal emphasis will be on the food marketing system from the global view.



Table 2.--Direct purchases per dollar of gross output, 1958 1/

Producing sector	(Producer prices)			
	Purchasing sector			
	Agriculture	Agriculture supply	Agriculture processing	Other
	Dollars	Dollars	Dollars	Dollars
Agriculture .....	0.27	0.01	0.23	0.01
Agriculture supply .....	.09	.18	.01	.04
Agriculture processing .....	.06	.01	.24	.01
Other .....	.16	.43	.23	.38
Value added .....	.42	.37	.29	.56
Total output .....	1.00	1.00	1.00	1.00

1/ Derived from table 1 by dividing each cell by the corresponding column total.

Table 3.--Total requirements per dollar of final demand, 1958 1/

Producing sector	Sector delivering to final demand			
	Agriculture	Agriculture supply	Agriculture processing	Other
	Dollars	Dollars	Dollars	Dollars
Agriculture .....	1.41	0.03	0.44	0.02
Agriculture supply .....	.19	1.26	.11	.09
Agriculture processing .....	.12	.04	1.37	.02
Other .....	.54	.90	.69	1.69

1/ Each entry represents the value of output required, directly and indirectly, from the industry named at the beginning of the row to fulfill 1 dollar of delivery to final demand by the industry named at the head of the column.

This view of the farm products marketing system does not deny interrelations with other segments of the economy. As the marketing system receives inputs of goods and services from farms and other sectors, it adds to their value by changing their form and redistributing them to meet the demands of consumers.

### VALUE ADDED IN MARKETING

The value that the marketing system adds to the products sold by farmers has increased considerably in the 20 years following World War II (table 10, p. 25). It has increased partly because of rising prices, but also because of added goods and services. The rise in real value added has been in response to a growing demand for more services from an affluent society (fig. 1). From 1947 to 1965, the population of the United States increased by one-third to about 195 million persons. During the same period, disposable income increased about \$1,200 per person. Some of this added income was reduced in value by inflation, but stimulated the purchase of more services from the farm products marketing system (table 10).

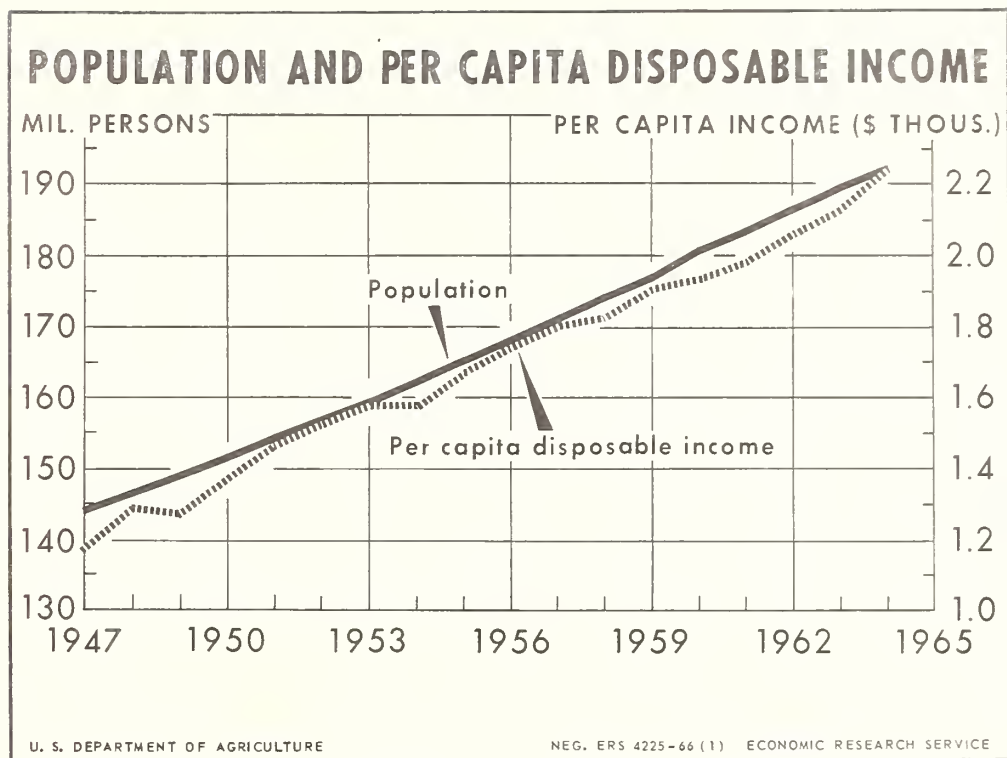


Figure 1

Increases in population and consumer income have resulted in a large increase in total food expenditures. In 1947, consumers spent less than \$40 billion for farm food products, but by 1965 the amount had risen to nearly \$73 billion (fig. 2). Much of the increased expenditure went to firms in the marketing system either for added services or for their increased cost. <sup>7/</sup> The total marketing bill rose from under \$21 billion to nearly \$48 billion, while the farm value of the food to which these services were related rose only from about \$19 billion to about \$25 billion. Thus, the expenditure for food services increased 1 1/4 times in this period, while the expenditures for food per se increased only by a third.

The much faster growth of dollar volume in the food marketing sector than in the farm sector suggests that the demand for food services, and also the supply, may have expanded approximately two to three times as rapidly as the demand for the food alone. There are many factors associated with this phenomenon, so this ratio is only a crude approximation.

#### Factors Affecting the Marketing Bill

In past years, work on price spreads has been limited mainly to measuring them and giving detailed statistics. Recently, attention has shifted to economic analysis of the forces affecting spreads (39). Most attempts to understand and to measure the

<sup>7/</sup> For example, the index of labor costs per unit of food marketed increased from 74 in 1963 (1957-59 = 100) to 105 in 1964 (15, p. 15, table 6).

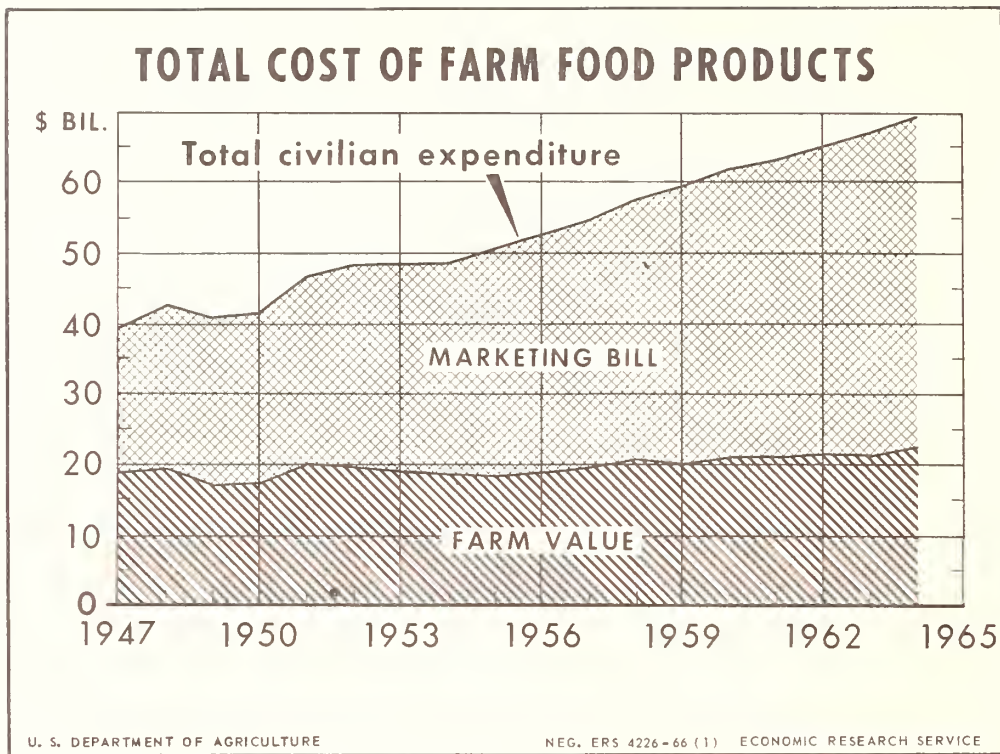


Figure 2

relatively rapid growth of the marketing bill, although less than satisfactory, have supported the general hypothesis that with rising income, consumers spend more for food services than for food (4, 9, 37, 39).

Currently the total marketing bill is regarded as the product of a quantity of services times a price or margin. This view takes analysis of the marketing margin beyond simply classifying the expenses in marketing. Some analysts in the last 10 years have tried to measure the rates of change in supply and demand for food services much as they have been determined for commodities. Their successes have been moderate.

Nearly all current studies agree that income elasticity for food services is considerably larger than for food. Estimates of the income elasticity for services range widely, with most exceeding 0.70; that is, a 10-percent increase in real income will induce an increase of at least 7 percent in food services demanded, other influences being constant (4, 9, 37, 39). This compares with an estimate of the income elasticity of around 0.2 for food at the farm level (3). Thus, when incomes increase the farmer's share of total consumer expenditures on food declines.

Kinds and quantities of foods purchased by households have changed considerably in the last 20 years. Changes in the marketing bill not resulting from changes in the mixture of foods which consumers buy can be assessed by a device known as the "market basket" (fig. 3 and table 10). The basket measures the month-by-month cost of food purchased by households. Quantities and kinds of foods contained in the basket are held constant for long periods of time. The basket, by holding constant

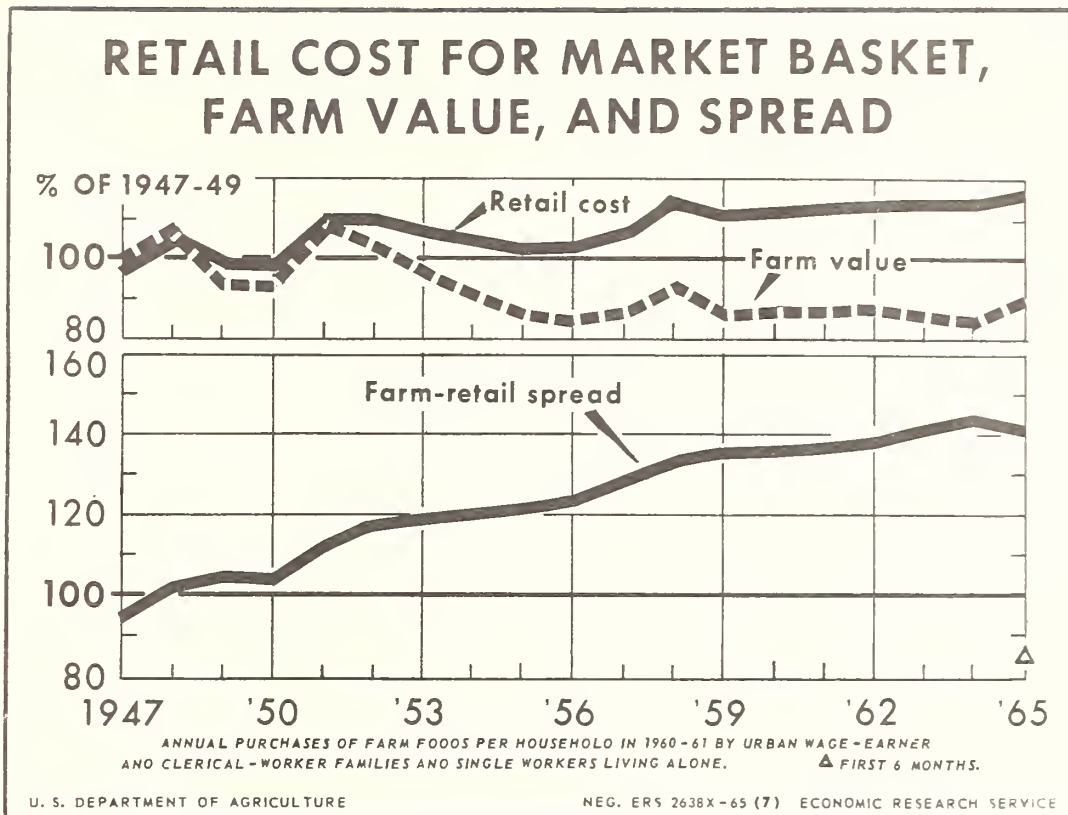


Figure 3

the influence of the changing mixture on food marketing costs, enables a better assessment of the effect of other factors.

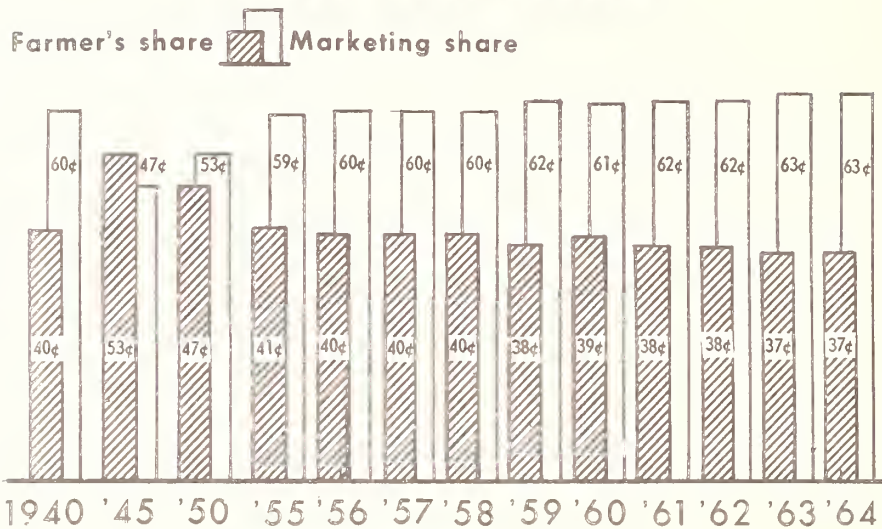
After World War II when wartime price controls were discontinued, the farmer received \$441 for food in the market basket (table 10). This was 51 percent of the retail cost. The balance, \$421, went for marketing services. By 1965 the farmer received only \$409, about 39 percent of the retail value of the market basket. The cost of marketing services had risen to \$633 in 1964, an increase of 50 percent (16). Thus, while the retail cost of the market basket rose 21 percent from 1947 to 1965, the average expenditure for food rose 44 percent. The difference between the two trends is primarily due to the increased portion of more expensive foods, additional marketing services, and the fact that a greater percentage of food was moving through the marketing system (fig. 4).

The addition of food service has increased the cost of food marketing by about one-fourth per unit of food since 1940. Much of the increase is due to increases in the amount of food consumed in public eating places, which typically carry a margin 60 to 65 percent above the wholesale price of the foods. Margins for the same foods in a retail store average about 20 percent. It is estimated that \$1 out of every \$4 spent for food is spent away from home (1).

The built-in services included in convenience foods purchased at retail are available in greater quantities than they were 20 years ago. Thus, they logically would add to the total marketing bill. In the case of many individual items this is so, but not always. In a list of some 115 convenience items, only 77 were found to



# FARM AND MARKETING SHARES OF RETAIL FOOD DOLLAR \*



\* DATA FOR MARKET BASKET OF FARM FOODS BASED ON ANNUAL AVERAGE 1960-61 PURCHASES PER HOUSEHOLD.

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Figure 4

cost more; costs of these averaged 27 percent more than equivalent portions would have cost in fresh or unprocessed form. On the other hand, 38 of the items cost less processed than in unprocessed form (20). Outstanding among this last group of items were frozen orange juice, canned or frozen peas, and frozen lima beans. These had lower transportation costs because of elimination of inedible waste and bulk, and lower retail margins due to reduced perishability and reduced storage costs. The consumer saved about 40 percent of the cost in fresh form of these 38 convenience foods as a result of their having been processed. Thus, while additional processing may add to the marketing bill, the amount can be offset by savings which reduce the cost.

In the last 20 years, the cost of factors used in processing and distributing farm food products has increased as marketing firms have had to compete with other industries for labor, supplies, etc. (fig. 5 and table 10). Wages in food manufacturing industries have doubled (table 4). Prices of new plants and equipment were 55 percent higher in 1965 than in 1947. Interest rates on short-term business loans had more than doubled, while the prices of materials exclusive of ingredients used by food marketing firms had risen 30 percent.

It is estimated that increases in prices of factors accounted for approximately 45 percent of the growth in the marketing bill from 1940 to 1964. Increases in factor prices did not cause proportional increases in the marketing bill because efficiency of factors increased. No aggregate measure of efficiency is available, but output per man-hour in several industries gives some indication. The index of output per man-hour in food manufacturing rose from 76 points in 1947 to 123 points in 1964 (table 10) (35). In food distribution, the output per man-hour increased by one-quarter

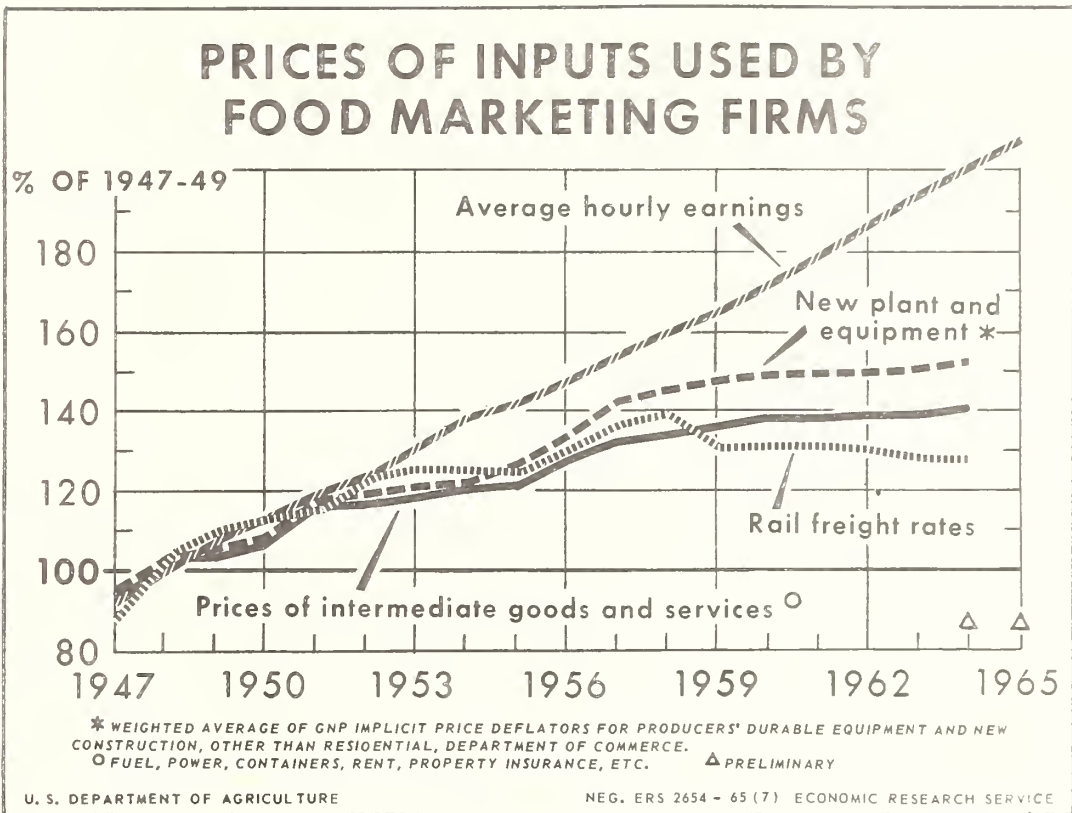


Figure 5

Table 4.--Prices of resources used by food marketing firms, United States, selected years, 1947-65

Year	Interest rates on: short-term bank loans to business <u>1/</u> Percent	Materials used by food marketing firms <u>2/</u>	Index (1947-49=100) New plant and equipment <u>3/</u>	Hourly earnings of food manufac- turing workers <u>2/</u>
1947-49 .....	2.1	100	100	100
1950 .....	2.7	104	107	111
1955 .....	3.7	117	125	141
1960 .....	5.2	130	148	171
1964 .....	5.0	129	153	201
1965 .....	5.0	130	155	207

1/ (41, p. 266).

2/ (17).

3/ Implicit price deflator for nonresidential fixed investment sector of gross national product, converted to 1947-49=100 base (41, p. 214).



in 1948-58 (table 10) (38). There have been similar gains in efficiency in other segments of food marketing which will be discussed in succeeding chapters.

### The Farmer and the Marketing Bill

The rapid growth of the marketing bill relative to the growth in the farm value has caused concern among farm interests. These groups hypothesize that if the marketing bill could be reduced, the farm value would be enhanced by a similar amount. This is difficult to prove, however, as the factors involved are difficult to measure and their relationship to farm returns is difficult to discern.

When a housewife budgets the family expenditures, she decides, sometimes quite indirectly how much to spend for food and how much for food services. Prices and income are critical factors in this decision. While some food services are considered essential and are purchased along with food, others the consumer may choose. For example, a consumer in New York City has little alternative to paying the cost of handling and transporting potatoes from Idaho or Maine, but she need not buy frozen French fried or "instant mashed" potatoes. Thus, as the price of food services changes, the consumer responds by taking more or less, depending upon the direction of change. But the consumer will also respond differently to different kinds of services; for some the demand will be quite elastic, for others it may not.

Prices and incomes also influence the quantity of farm food that consumers purchase. As with services, consumers react in relation to the type of food considered; it has been estimated that in the aggregate the farm level demand for food has a price elasticity such that a 5-percent change in price will generate an opposite change of about 1 percent in the quantity of food purchased, when other factors remain constant.

The separate price responses for food and for food services indicate that a degree of substitution must exist between them as the consumer allocates a limited income. But, the saving attained through the reduced price of services may be allocated to purchase other items. In some cases the substitution effect may be very small, for others it may be quite significant. What the consumer does depends on her particular views and her economic situation.

With the possibility of various degrees of substitution between food and associated services, a reduction of the farm-retail spread will not necessarily give farmers a compensatingly greater return. In some instances it may approach this, in others the effect will be negligible. Of the many factors influencing the size of the marketing bill, changes in those that relate to the cost and price of services affect the farmer's portion of consumers' food expenditures; changes in those that relate to quantity of food services may alter the farmer's relative share, but not necessarily his absolute return. Factors in the cost and price group include changes in the price of resources used in marketing functions, changes in the efficiency with which the resources are used, changes in the degree of monopoly in the food marketing sector, and other changes that influence the supply of food services. The quantity of services demanded is affected by changes in population, demographic structure, income levels and distribution, and consumer preferences.

In addition, a change in the kind of foods marketed might affect the size of the marketing bill and the size of the farmer's share. Such would be the case if the food mix included greater amounts of animal products, which generally require less processing and therefore have a smaller marketing margin.

In the past 20 years most of the foregoing variables have had some effect on the size of the marketing bill and the farmer's share of consumer food expenditures. The

past relationship between the marketing bill and the farmer's share of consumers' food expenditures may be summed as follows:

With rising incomes, consumers will continue to expand their purchases of food marketing services much more than their purchases of food products. Food processors and distributors have made marked gains in efficiency, especially in recent years, but increases in labor and other costs have more than offset these gains. Some further cost increases are likely. There are more rigidities built into the marketing-cost structure--on the downward side--than at any previous time.

Thus the failure of agriculture to share fully the post-World War II gains in income may not be a temporary situation. The food-marketing bill probably will increase further--at least so long as consumer incomes continue to rise. Also, farmers likely will pay a higher proportion of their gross returns for non-agricultural services as nonfarm inputs are expected to increase relative to farm inputs. Prices of these services also are becoming more rigid (40).

## THE STRUCTURE OF MARKETING INDUSTRIES

### Size and Number of Firms in Food Marketing Industries

Firms in the food marketing system are in general becoming larger in an absolute sense, if not in relation to the total output of the industries to which they belong. This has resulted chiefly from new technologies in production and management, which often enabled firms to reduce costs by increases in the scale of operation. Some firms expanded so much in relation to total demand that they forced other firms out of business--those that lacked technology being most likely to fail. In some industries, however, demand increased sufficiently to permit increases in the number of firms as well as in the average size of firms. In other industries, certain marketing activities became obsolete, which forced reductions in the number of firms.

### Food Processors

The total number of plants (establishments) processing farm-originated food declined more than 21 percent from 1947 to 1963. Decreases occurred in more than three-fifths of the 27 farm-food processing industries and ranged from 2 to 60 percent. The larger decreases were in industries in which output decreased or increased only slightly, such as the creamery butter, condensed and evaporated milk, and flour and meal industries. In some industries, however, plant numbers declined sharply in spite of substantial gains in output. Among these were the natural cheeses, ice cream and frozen desserts, and canned fruits and vegetables industries.

Most industries in which the number of plants increased had larger than average increases in output. The meatpacking and poultry industries were outstanding examples (table 5). Others produced relatively new products such as frozen fruits and flour mixes.

The average value added per plant increased from 1947 to 1963 in all but a few of the food manufacturing industries. In most of these industries, it more than doubled. Value added by manufacture is roughly the difference between the value of output and the total cost of raw materials, packaging materials, supplies, fuel, electric energy, and contract work. Hence, it is also affected by changes in the volume and prices of products and prices of inputs.

Table 5.--Selected food manufacturing industries: Number of establishments and average value added, United States, 1947 and 1963

Selected industry	Establishments		Average value added per establishment	
	1947	1963	1947	1963
	<u>Number</u>	<u>Number</u>	<u>1,000 dollars</u>	
Meatpacking .....	2,154	2,992	454	610
Poultry dressing .....	553	968	123	427
Creamery butter .....	1,904	766	72	171
Flour and meal .....	1,243	617	331	621
Bread and related products .....	6,796	5,003	162	474
Soybean and cottonseed oil mills :	448	289	469	872
Sugar <u>1/</u> .....	181	164	1,293	3,573

1/ Includes beet sugar mills, raw cane sugar mills, and cane sugar refining mills (33).

The changes in numbers of plants per industry and in their average size reflect the play of many forces. It was concluded that--

Technological change was a major cause of the decrease in number of plants. Many food processing firms have built new plants or have installed new equipment and modernized and enlarged existing plants. In some instances improved new equipment and processes were suitable only for a relatively large plant. Moreover, since a company generally builds a plant or installs equipment to accommodate an expected increase in output, new or modernized plants were often bigger than the plants they replaced.

Many older and smaller plants were closed because they could not compete successfully with the newer and larger plants. Generally, the newer plants had lower unit costs of production than the older ones and sometimes their products were superior in quality. Though large plants generally would ship products farther than small plants, apparently economies of scale in most instances more than offset greater distribution costs. Overcapacity in some industries, caused by building and modernization of plants, made competition for the smaller, older plants more difficult. Shortage of capital, an inadequate or uncertain supply of raw materials, and other unfavorable prospects caused many plants to be closed rather than modernized.

Mergers of companies accounted for part of the reduction in plant numbers. Companies formed by mergers often concentrated production in their most efficient plants and closed their least efficient plants, frequently the smaller ones....

The number of plants in many food processing industries probably will decrease in the next few years accompanied by an increase in average plant capacity. Changes in technology and the need to reduce costs by economies of scale will cause many firms to build large plants and to modernize and enlarge old ones. Many small plants will be closed because they are obsolete or cannot compete successfully with newer ones (27).



Assembly of Farm Products

The number of establishments engaged in assembling poultry and milk and cream from farmers declined by more than a fourth from 1948 to 1963 (table 6). However, total dollar sales of these establishments increased slightly, although prices of these products declined. Thus, average sales per establishment increased by more than three-fifths. The number of establishments decreased mainly because (1) production of eggs and poultry largely shifted to specialized producing areas where farmers sold directly to poultry-processing plants and egg-packing plants rather than assemblers, (2) the decline in sales of farm-separated cream caused the closing of many cream-receiving stations, and (3) increased hauling of milk by tank trucks from farms directly to processing plants lessened the need for country milk assembly plants.

Establishments assembling grain also declined in number from 1948 to 1963. Dollar sales, however, increased by nearly 30 percent, although prices of grains declined during that period. Many large country elevators replaced a larger number of small elevators.

Table 6.--Number of establishments and average sales in selected wholesale food trade, United States, 1948 and 1963

Industry	Establishments		Average sales per establishment <sup>1/</sup>	
	1948	1963	1948	1963
	Number	Number	1,000 dollars	1,000 dollars
Merchant wholesalers:				
General grocery. . . . .	4,260	2,530	1,360	4,630
Specialty grocery. . . . .	5,460	7,840	500	690
Meats. . . . .	3,200	5,170	620	1,040
Dairy and poultry. . . . .	4,840	4,940	560	770
Fresh fruits and vegetables. . . . .	6,130	5,120	520	580
Grain. . . . .	378	1,427	8,071	6,153
Livestock. . . . .	207	463	1,966	1,380
Agents and brokers:				
Grocery. . . . .	2,400	2,630	1,880	3,260
Meats. . . . .	60	130	9,840	6,040
Dairy and poultry. . . . .	150	310	2,440	4,210
Fresh fruits and vegetables. . . . .	800	1,080	1,610	1,920
Grain. . . . .	293	253	5,017	3,806
Livestock. . . . .	1,745	1,997	4,111	4,412
Manufacturers' sales branches and offices:				
Grocery. . . . .	2,590	2,340	1,720	3,080
Meats. . . . .	750	580	3,660	4,240
Dairy and poultry. . . . .	730	1,090	1,340	1,920
Assemblers:				
Dairy and poultry. . . . .	2,520	1,850	370	600
Fresh fruits and vegetables. . . . .	2,030	2,110	540	720
Grain. . . . .	8,120	7,586	508	653
Livestock. . . . .	1,221	1,237	1,680	1,120

<sup>1/</sup> Includes the effects of price increases.

Source: (30, 31).

## Food Wholesaling

Both number of establishments and average sales per establishment increased from 1948 to 1963 in most lines of food wholesaling (table 6). Increases in average sales per establishment generally resulted mainly from expansion in the physical volume of products handled, as prices for most of these products averaged about the same in both years.

Improvements in space arrangements and materials-handling equipment stimulated the building of new and larger establishments. Also, improvements in motortrucks and highways extended the distribution areas serviced by many firms, enabling them to utilize a large plant.

Establishments of merchant wholesalers carrying a general line of groceries decreased sharply in number from 1948 to 1963, but average sales per establishment more than tripled. Although the total number of merchant wholesalers declined, a slight increase occurred for those which sponsored retail stores or which were owned cooperatively by groups of retail stores. The decline in the number of establishments operated by unaffiliated wholesale firms probably resulted mainly from increased performance of wholesale functions by more chains and large supermarkets. This development probably accounted for much of the decline in the number of merchant wholesalers of fruits and vegetables. More large retailers bought directly from country assemblers and farmers. Also brokers and agents handled an increasing share of these products.

The number of manufacturers' sales offices and branches handling groceries and meats also declined (table 6). This probably resulted from (1) increased distribution to large buyers directly from manufacturing plants to retailers' warehouses or stores, and (2) more extensive use by manufacturers of public warehouses and the services of food brokers.

## Food Retailing

In 1963, retail food stores of all types numbered more than 319,000 and their sales totaled \$57 billion. Of these, 245,000 were grocery stores with total sales of \$53 billion. The remainder were meat and fish markets, bakeries; and other specialty food stores. Average sales per store were much smaller for these stores than for grocery stores.

The number of grocery stores declined 32 percent from 1948 to 1963, and the number of specialty stores, 27 percent. For grocery stores, all of the decrease was among stores having annual sales of less than \$100,000. Stores in the larger sales-size groups increased in number (table 7).

Average sales per store tripled from 1947 to 1963. Most of this increase resulted from the closing of many small stores and the opening of many supermarkets. Also the rise in retail prices of food by about a fifth moved some stores into a larger size group without any increase in physical volume.

Stores belonging to retail food chains operating 11 or more units had 47 percent of the total grocery-store sales in 1963 compared with 34 percent in 1948. Sales per store averaged considerably larger for these chain stores than for other grocery stores.

Table 7--Distribution of grocery stores by volume of sales,  
United States, 1948 and 1963 1/

Annual sales	1948	1963	Change
	<u>1,000 stores</u>	<u>1,000 stores</u>	<u>1948 to 1963</u> Percent
Less than \$100,000 . . . . .	276.5	148.7	-46
\$100,000 - \$299,000. . . . .	36.2	39.0	3
\$300,000 - \$499,000. . . . .	6.2	9.1	47
\$500,000 - \$999,000. . . . .	5.4	11.1	106
\$1,000,000 or more . . . . .	1.9	14.5	663

1/ Includes only stores operating the entire year.

Source: (32).

During the 1950's food retailers achieved more vertical integration by manufacturing food products. A survey of 165 food chains revealed that nearly 38 percent of them were engaged in such activity in 1954. The most notable increase was in the number of chains which manufactured their own bakery products, an increase of more than 18 percent in the 4-year period (table 8). Increases in other activities were minor.

In 1958 the corporate food chains manufactured less than 8 percent of the food which they sold through their stores. Nonetheless, they were engaged in a wide variety of product processing.

Table 8.--Food processing plants operated by 165 corporate  
food retail chains, 1954 and 1958

Kind of processing plant	Number of chains operating in--	
	1954	1958
Meat packing . . . . .	5	5
Prepared meats . . . . .	9	10
Poultry dressing . . . . .	2	4
Dairy (except milk). . . . .	18	19
Concentrated milk. . . . .	5	5
Fluid milk . . . . .	9	12
Canning and freezing . . . . .	5	7
Bakery products. . . . .	38	45
Confections. . . . .	6	7
Miscellaneous foods. . . . .	11	10
Coffee . . . . .	21	20
Total. . . . .	51	62

Source: (34).



## Geographic Concentration and Transportation

To appraise changes in market structure and their influence on competition, it is necessary to consider the geographic dispersion of firms in the food marketing system and the structure and competitive interaction that is peculiar to a subgeographic market. Of course, there is also a degree of competitive interaction between geographically separated markets but this is limited by the cost of transportation.

Thus national figures on the number and relative size of firms in an industry are not always meaningful. Most meaningful competition takes place when firms interact directly with one another.

Transportation costs can be a barrier to competition in a geographic submarket. A single isolated firm could exploit its purchasers or its suppliers to the limit of the cost of bringing in substitutes. In the food industries, there is usually a considerable overlap of submarkets and subsupply areas of individual firms so that the incidence of monopoly is low. However, it is difficult to generalize about the extent of overlap of geographic submarkets, for there are as many cases to consider as there are firms and combinations of firms in related activities.

In general, a firm in a local market has more competitive importance than it has in the national market, because its relative size is greater. To illustrate, if nationally the number of firms in competition is reduced from 10,000 to 5,000, the remaining number is still large according to market structure theory and still compatible with the notion of atomistic competition--that each firm is likely to disregard the actions of others when setting prices or deciding how much to produce. However, in a specific locality, the number of firms may be reduced from two to one. This would be a significant change in structure and could change competitive behavior.

Changes in cost of transportation have probably influenced competition in local markets as much as changes in total number and size of firms in the Nation. In general, the real cost of transporting farm food products per unit per mile, has been reduced since the late 1950's. This means that in a geographic submarket, the area of competitive overlap for a given outlay on transportation has increased. Thus in industries where the number of firms decreased, implying weaker competition, transportation improvements have tended to offset the decline by extending each firm's potential area. In industries where the number of firms increased, improvements in transportation would tend to enhance the trend toward greater competition.

At the retail level, the most significant transport development for food marketing has been increased mobility of the consumer (with improved vehicles and more extensive road systems) and the suburban shopping center with adequate parking facilities. In major cities of the United States there are probably few food shoppers who do not have reasonable access to five or more retail food stores. And even in rural areas consumers may have a similar choice within a 20- to 30-mile radius.

Changes in the bulk movement of agricultural products have reduced transportation costs and brought the farmer significantly "closer" to the processor, and the processor "closer" to the wholesaler and retailer.

There have been spectacular innovations in railroad technology. The shift from steam diesel to locomotion has helped maintain the low-cost movement of farm products. In 1947, more than 80 percent of all railroad locomotives used steam; by 1960 no major railroad was using it in regular service. Railroad cars have been designed to fit the special needs of shippers. In addition to ice-bunker cars,

mechanically refrigerated cars have come into use. In 1950 there were only 6 refrigerated units in use; by the end of 1965 there were over 13,000. The ownership of covered-hopper cars, often used for bulky agricultural commodities, increased from 20,000 in 1950 to more than 100,000 by December 31, 1965. In addition, maximum load capacities of cars increased from about 40 tons to over 100 tons.

Similar changes have been adopted by truckers also. For example, mechanical refrigeration units have replaced the ice-blower method of cooling truck trailers. Capacity has been increased through the use of "double bottoms," which haul two trailers with one power unit. By the mid-1960's many states had no restrictions on trailer length, although they have had restrictions on the length of tractor-trailer combinations. 15 years earlier trailer lengths were usually about 30 feet.

Water transportation also has changed. Hauling grain in river barges with a capacity of close to 1,500 tons has become increasingly common. Barge service has been closely linked with trade service for collection and delivery. In 1953, only 3.3 million tons of farm products were shipped on the Mississippi system, but by 1963, this had quadrupled to more than 14.3 million tons (8). The St. Lawrence Seaway which was opened in 1959 has enabled ocean vessels to sail into the midcontinent. The United States shipped during the 1964 navigational season nearly 7 million tons of grain through this system (7).

The recent use of van containers suitable for movement by rail, truck, barge, or ship lends more flexibility to the transportation system than was formerly possible. "Piggyback," the more popular version, is available on all major railroads; a piggyback flatcar can carry two 40-foot semitrailers. "Fishyback" is a similar innovation for ocean transportation. Uniform "containerization"--uniform sizes of pallets, lift vans, and such--enables the integration of land and water transportation. Shipments can be loaded on trucks in the field, transported to a railroad or ship, and delivered to a buyer without further handling. This reduces labor costs, thefts, and damage in handling, and increases the speed of delivery.

While technological advances in transportation have tended to increase the extent of submarkets, costs of materials and labor have also risen, offsetting part of these gains in efficiency. Railroad rates indicate the trend, though factors other than costs are involved. From 1949 to 1958 rail rates for agricultural products increased progressively, rising from an index (1957-59 = 100) of 81 points to 102 points. Since then, the index of rail rates has fallen moderately, to 95 points in 1964 (28). Considering that the main components of transportation costs--the prices of labor and materials--have risen at least as much as rail rates, in real terms the cost per ton-mile of food products moved apparently has declined.

### The Nature of Products and Advertising

Competition includes the efforts of sellers to bring their wares to the attention of prospective buyers. Currently, farmers and the firms in the farm products marketing system probably spend more than \$2.5 billion for advertising and promotion.

The aim of the entrepreneur is to--

...maximize over a period of time the total dollar units of positive difference between the return from sales of goods and services and the cost of producing them. To achieve this end, advertising attempts to build a monopolistic position with respect to some special set of attributes that sets the particular product apart

from all other products. That is, advertising seeks to implant the notion of uniqueness in the mind of the potential consumer by changing the position, images or characteristic of the product in time and space. 8/

The purpose of promotion is to yield maximum benefit to the promoter with minimum spillover to those producing related products. Most advertising and promotion in the food industries appear to be done by food processors; they are in the best position to introduce new products or change the form or characteristics of the old ones. In 1963 processors carried an advertising budget of more than \$1.2 billion. This was about two-thirds of the total expenditures by all food marketing firms for this purpose. The remaining expenditures for advertising were made by wholesalers and retailers in the proportions of 5 and 32 percent, respectively. The relative shares of the advertising budget changed little from 1947-49 to 1963, although the total increased to more than three times its former size (table 9).

Marketing firms promote their own labels; in effect, a number of firms may advertise the same commodity but claim differences in brands. However, a broader approach is used by a number of organized farm and industry groups who laud the special characteristics of a commodity or groups of related commodities. Currently, some 1,200 such groups in the United States spend over \$90 million annually in promoting milk, Idaho potatoes, Oregon broilers, Washington apples, and the like, using a wide range of techniques and slogans.

Some advertising and promotion may feature trifling or even illusory characteristics to persuade purchasers, but much has a substantial basis for its claims. Many private firms in the marketing system and public agencies spend considerable sums in food research to develop new products, new ways of using old ones, and ways to improve or maintain quality of products in handling and storage.

In the past 20 years there have been important advances in food-plant sanitation. Control of odors, texture, taste, and tenderness has made many foods more appealing. Development of processes to synthesize and incorporate vitamins and trace nutrients in foods have made them more nutritious. Additives help to maintain quality in food during storage and while on the store shelf. New methods of canning, freezing, and dehydration also preserve foods longer and better. Quality of fresh fruits and vegetables is maintained in storage through atmosphere control, sprout inhibitors, and other techniques.

New processes have been developed for natural fibers, as well as for foods. The processes impart to natural fibers some of the superior qualities of synthetics, thereby slowing down the inroads these have made on the traditional farm-fiber market.

### The Effect of Structural Changes

Countless changes have altered the structure of our food marketing industry, but whether or not these changes have altered the degree of monopoly (or monopsony) is not certain. The effect which these changes have had upon the food marketing bill, consumer costs, and producer returns is even less certain.

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8/ Hoofnagle, W. S. The Role of and Limitation to Advertising and Promotion in the Solution of the Agricultural Problems. Paper presented at Workshop on Agr. Mktg. Devlpmt. and Promotion, Univ. Calif., Berkeley, June 21, 1965.



Table 9.--Advertising expenditures by food marketing firms,  
United States, 1947-49, 1962, 1963

Type of firm <u>1/</u>	Average 1947-49	1962	1963
	-----Million Dollars-----		
Processors.....	387	1,150	1,202
Wholesalers.....	53	98	102
Retailers.....	132	583	600
All.....	572	1,832	1,904

1/ Corporate and noncorporate.

Research on the food marketing system has shown that many segments may contain elements of monopolistic dominance. In some segments, there are firms that have grown very large and may have superior power in determining buying or selling prices. In other segments, there are firms that apply more and more of their resources to monopolistic power. In still other segments, the cost of entry is so high that competition from new firms may be virtually precluded.

These structural changes have created the suspicion that monopolistic elements have been exploiting American agriculture. For instance, the antimonopoly legislation of the late 19th century was strongly supported by farmers. Allegations of industrial monopoly were among the forces that impelled farmers to form cooperatives in the 1920's; they were among the principal reasons for legislating the Agricultural Marketing Act of 1946; and they underlie the principal terms of reference of the 1964 National Commission on Food Marketing. 9/

However, the fact that evidence of monopolistic structures exists in some food marketing industries is no proof that any of the firms are in fact exploiting producers, consumers, or anyone else. Research has attempted to show that a relationship exists between monopoloid structures and profits of firms. But inadequate data and insufficient methods have led to inconclusive and even contradictory results. 10/ If progress is to be made, new approaches, new concepts, and perhaps new data will have to be generated. This is the challenge for the future.

### SUMMARY AND CONCLUSIONS

The marketing system for foods and fibers grown on American farms is big and dynamic. It handles a growing volume of goods, adds new services continuously, and has become progressively more efficient. Changes in the system are shaped by decisions that are less than perfect, because the future is uncertain and the system itself is not fully understood.

The farm products marketing system brings to focus all the activities of the national economy that directly or indirectly provide consumers with an abundance of

9/ The National Commission on Food Marketing was formed in 1964 by a resolution of Congress to study the changes that would be appropriated in the food marketing system "...to achieve a desired distribution of power as well as desired levels of efficiency..." This commission will complete its assignment by July 1, 1966.

10/ Compare, for example, the contradictions in the conclusions of Lanzilotti, R. F., "Market Power and Farm Problem," Journal of Farm Economics, Vol. XLII No. 5, December 1960, with those of Collins, N. R., and Preston, L., "Growth and Turnover of Food Process Firms," Western Farm Economics Association Proceedings, 33rd Annual Meeting, Stanford, California, 1960.

food and fiber. It is an integral part of the Nation's productive system, supplying the goods and services associated with farm products. Demand for these services has grown with increases in incomes and population. More and more resources are used by the marketing system with increasing efficiency to supply these services.

The farmer is concerned with the cost of marketing his products since this influences his price and income. However, it is a complex question; demand for farm products and demand for their associated services are by and large inseparable at retail. Thus, it is difficult to determine the effect of a change in price of one upon the other.

Many changes have occurred in the structure of the farm products marketing system in the past two decades or more. There have been changes in the size and concentration of firms and in the way in which they compete; their advertising budgets have grown. Theoretically, these changes could alter the competitive relations between marketing firms and farmers or between marketing firms and consumers. In some instances competition may have been weakened through mergers, consolidations, and other forms of power concentration. However, there have been innovations in products and processes; the geographic extent of markets has widened; market intelligence has improved; and marketing methods have become standardized. These events point to the competitive vitality in the system.

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APPENDIX

Table 10.--Statistical data related to changes in food marketing costs, 1947-65

Year	: Total marketing : : bill :		: Civilian : : expendi- :		: Per : : capita :		: Market basket of farm food : products 2/ :			
	Current	1957-59	Farm	tures for	food	dispos-	Retail	Farm	Farm-	Farmer's
	prices	prices	value	: farm	: expendi-	: able	cost	value	retail	share 3/
	Bil.	Bil.	Bil.	Bil.	dol.	dol.	1957-59=	1957-59=	1957-59=	Percent
	do1.	do1.	do1.	do1.			100	100	100	
1947.....	20.7	28.5	18.7	39.4	303	1,178	88	114	71	51
1948.....	22.9	28.7	19.3	42.2	316	1,290	95	121	77	51
1949.....	23.9	29.7	16.9	40.8	300	1,264	89	106	79	47
1947-49 average..	22.5	29.0	18.3	40.8	306	1,244	91	114	76	50
1950.....	23.9	30.1	17.6	41.5	303	1,364	89	105	78	47
1951.....	26.4	30.5	20.0	46.4	338	1,469	99	121	84	49
1952.....	28.3	30.5	19.8	48.1	349	1,518	100	117	88	47
1953.....	29.2	32.2	19.1	48.3	348	1,583	97	109	89	44
1954.....	30.0	33.0	18.4	48.4	348	1,585	95	103	90	43
1955.....	32.0	34.8	18.3	50.3	352	1,666	93	96	91	41
1956.....	33.7	36.2	18.7	52.4	359	1,743	94	95	93	40
1957.....	35.2	36.4	19.5	54.7	373	1,801	97	98	96	40
1958.....	36.8	36.3	20.8	57.6	382	1,831	103	105	101	40
1959.....	39.2	38.4	20.0	59.2	386	1,905	100	97	102	38
1957-59 average..	37.1	37.0	20.1	57.2	380		100	100	100	39
1960.....	41.0	40.1	20.9	61.9	388	1,937	101	99	102	39
1961.....	41.9	40.6	21.0	62.9	392	1,983	101	98	104	38
1962.....	43.2	41.5	21.7	64.9	399	2,064	102	99	105	38
1963.....	45.3	42.5	21.6	66.9	404	2,132	103	97	107	37
1964.....	47.3	44.2	22.5 4/	69.8	416	2,268	10	96	108	37
1965.....	48.2	45.2	24.5 4/	72.7	436	2,391	106	95	106	39

Year	: Market basket of : : farm food products 2/ :		: Farmer's share of retail cost, selected food groups 2/ :								
	Retail	Farm	Farm-	Meat	Dairy	Poultry	Bakery &	Fruits and		Fats	
	cost	value	retail	products	products	and	cereal	vegetables	Sugar	and	
	Do1.	Do1.	Do1.	Pct.	Pct.	Pct.	Pct.	Pct.	Pct.	Pct.	
1947.....	862	441	421	68	56	70	36	38	---	50	45
1948.....	929	470	459	66	55	71	32	36	---	54	44
1949.....	878	411	467	64	50	68	26	36	---	48	30
1947-49 average..	890	441	449	66	54	70	31	37	---	51	41
1950.....	870	409	461	65	50	66	26	35	---	46	38
1951.....	969	470	499	66	52	68	27	35	---	48	42
1952.....	978	455	523	62	52	67	25	37	---	48	34
1953.....	949	421	528	59	49	69	25	33	19	47	38
1954.....	933	398	535	59	46	64	25	33	19	46	39
1955.....	917	373	544	53	46	66	23	33	19	45	33
1956.....	920	369	551	51	46	64	23	33	20	46	36
1957.....	953	380	573	53	46	62	22	31	19	45	34
1958.....	1,009	407	602	57	44	62	20	32	19	44	28
1959.....	985	377	608	53	44	57	19	31	19	43	27
1957-59 average..	983	388	595	54	45	61	21	31	19	44	30
1960.....	991	383	608	52	44	61	19	33	18	43	29
1961.....	997	380	617	52	44	58	20	31	19	42	35
1962.....	1,006	384	622	53	43	57	20	32	18	44	28
1963.....	1,013	374	639	50	43	57	20	32	18	41	30
1964.....	1,014	374	640	48	44	56	7/ 20	33	21	43	29
1965.....	1,042	409	633	54	44	57	7/ 21	33	23	42	31

Continued--

Table 10.--Statistical data related to changes in food marketing costs, 1947-65--Continued

Year	Costs and profits in marketing farm products				
	Hourly earnings 8/	Rail freight rates	Intermediate goods and services	New plants and equipment 9/	Yields on high grade long-term bonds 10/
	1957-59=100	1957-59=100	1957-59=100	1957-59=100	1957-59=100
1947.....	58	65	70	64	2.61
1948.....	63	76	77	71	2.82
1949.....	67	81	77	73	2.66
1947-49 average..	63	74	75	69	2.70
1950.....	69	83	79	74	2.62
1951.....	74	84	87	80	2.86
1952.....	77	90	87	83	2.96
1953.....	82	93	89	84	3.20
1954.....	87	93	90	85	2.90
1955.....	89	92	91	87	3.06
1956.....	92	96	95	92	3.36
1957.....	97	101	98	98	3.89
1958.....	100	102	100	100	3.79
1959.....	103	97	102	102	4.38
1957-59 average..	100	100	100	100	4.02
1960.....	108	97	103	103	4.41
1961.....	112	97	103	103	4.35
1962.....	117	96	104	104	4.33
1963.....	121	95	104	105	4.26
1964.....	126	5/ 95	106	106	4.40
1965.....	130	95	108	107	4.59

Year	Costs and profits in marketing farm products						
	Net profits of leading food companies 11/						
	Percentage of stockholders' equity:			Percentage of sales			Advertising expenditures by corporations marketing food 12/
	48 food processing companies	5 wholesale food distributors	8 retail food chains	43 food processing companies	5 wholesale food distributors	8 retail food chains	Million dollars
	Percent	Percent	Percent	Percent	Percent	Percent	
1947.....	13.8	18.8	17.8	2.6	1.8	1.4	---
1948.....	11.3	16.0	16.2	2.2	1.8	1.3	---
1949.....	10.0	12.5	15.7	2.1	1.5	1.4	---
1947-49 average..	11.7	15.8	16.6	2.3	1.7	1.4	---
1950.....	11.5	10.0	14.0	2.5	1.2	1.3	500
1951.....	8.5	9.4	10.1	1.7	1.1	.9	600
1952.....	8.2	5.8	10.0	1.6	.7	.8	13,673
1953.....	9.2	7.6	11.4	1.9	1.0	1.0	2,200
1954.....	8.9	7.5	11.3	1.9	1.0	1.0	200
1955.....	10.2	6.7	11.2	2.2	.9	1.0	800
1956.....	10.3	7.6	13.1	3.3	1.0	1.1	300
1957.....	9.6	7.6	14.2	2.1	.9	1.2	1,335
1958.....	10.1	9.7	13.8	2.3	1.2	1.2	1,333
1959.....	10.7	8.1	12.9	2.4	1.1	1.2	1,301
1957-59 average..	10.1	8.5	13.6	2.3	1.1	1.2	1,101
1960.....	10.3	9.9	12.5	2.4	1.2	1.2	1,308
1961.....	9.7	8.6	11.3	2.3	1.1	1.2	1,488
1962.....	9.9	5.5	11.0	2.4	.7	1.2	1,671
1963.....	10.5	9.1	10.8	2.5	1.2	1.2	1,888
1964.....	11.3	9.2	10.7	2.7	1.2	1.2	1,872
1965.....	---	---	---	---	---	---	---

Table 10.--Statistical data related to changes in food marketing costs, 1947-65--Continued

Year	Factories processing farm food <sup>15/</sup>				Food distribution		
	Production	Man-hours	Production	Unit labor	Output	Man-hours	Output
	<sup>16/</sup>	<sup>17/</sup>	per man-hour	cost <sup>18/</sup>	<sup>19/</sup>	<sup>20/</sup>	per man-hour
	1957-59=100	1957-59=100	1957-59=100	1957-59=100	1958 = 100	1958 = 100	1958 = 100
1947.....	80	105	76	74			
1948.....	77	103	75	81	81	103	79
1949.....	79	102	77	82			
1947-49 average..	79	103	76				
1950.....	81	103	79	84			
1951.....	83	105	79	91			
1952.....	85	106	80	95			
1953.....	88	100	88	<u>21/</u> 92			
1954.....	89	100	89	94	90	101	89
1955.....	92	101	91	96			
1956.....	97	103	94	97			
1957.....	98	101	96	99			
1958.....	99	99	100	101	100	100	100
1959.....	103	100	103	100			
1957-59 average..	100	100	100	100			
1960.....	105	100	105	102			
1961.....	109	100	109	101			
1962.....	112	99	114	101			
1963.....	114	97	118	100			
1964.....	119	97	123	NA			
1965.....	---	---	---	---			

<sup>1/</sup> Computed from data of the Department of Commerce.

<sup>2/</sup> The market basket contains the average quantities of farm-originated foods purchased annually per household in 1960-61 by wage-earner and clerical-worker families and single workers living alone.

<sup>3/</sup> Computed from unrounded data.

<sup>4/</sup> In calculating the farm value of wheat products, the cost of domestic wheat marketing certificates to wheat processors was added to the market price of wheat, starting in the second half of 1964. This more than offset the reduced market price of wheat.

<sup>5/</sup> Preliminary. <sup>6/</sup> Includes Government payment to farmer.

<sup>7/</sup> Starting July 1964, the farm value and the farmer's share for bakery products are based on the market price of wheat received by farmers plus the cost of the marketing certificate to millers and the value of the domestic marketing certificate received by farmers complying fully with the Federal Wheat Program (70 cents per bushel, July 1964-June 1965; 75 cents beginning in July 1965).

<sup>8/</sup> Estimated by dividing total labor cost by total man-hours for all workers. These data include proprietors and family workers not receiving stated remuneration. They also include supplements to wages and salaries.

<sup>9/</sup> Implicit price deflator for investment in nonresidential structures and producers' durable equipment, gross national product, U.S. Department of Commerce.

<sup>10/</sup> Economic Report of the President, Jan. 1966 (41). <sup>11/</sup> Compiled from Moody's Industrial Manual and company annual reports. <sup>12/</sup> Compiled from Source Book, Internal Revenue Service. <sup>13/</sup> Estimate.

<sup>14/</sup> Preliminary estimates. <sup>15/</sup> Excludes processing of fluid milk, cream, and eggs.

<sup>16/</sup> Measures physical output of manufacturing establishments processing domestically produced farm food products; includes food byproducts.

<sup>17/</sup> Based on all employees and average hours worked, as defined in Bureau of Census, Census of Manufactures. <sup>18/</sup> Total payroll divided by production.

<sup>19/</sup> Includes net output by wholesalers, retailers, and away-from-home eating places in handling farm-originated foods. Excludes for-hire transportation and assembling of farm products.

<sup>20/</sup> Based on number of persons engaged in handling farm-originated foods in wholesaling, retailing, and away-from-home eating establishments, and an average number of hours paid for, including vacations and sick leave.

<sup>21/</sup> Revised sampling plan in Bureau of Census, Annual Survey of Manufactures, beginning in 1953, somewhat affects comparability with earlier years. Comparison of employment data reported in Annual Surveys and by the Bureau of Labor Statistics suggests that average annual rate of growth in output per man-hour from 1947 to 1959 was not significantly affected by the revision.





