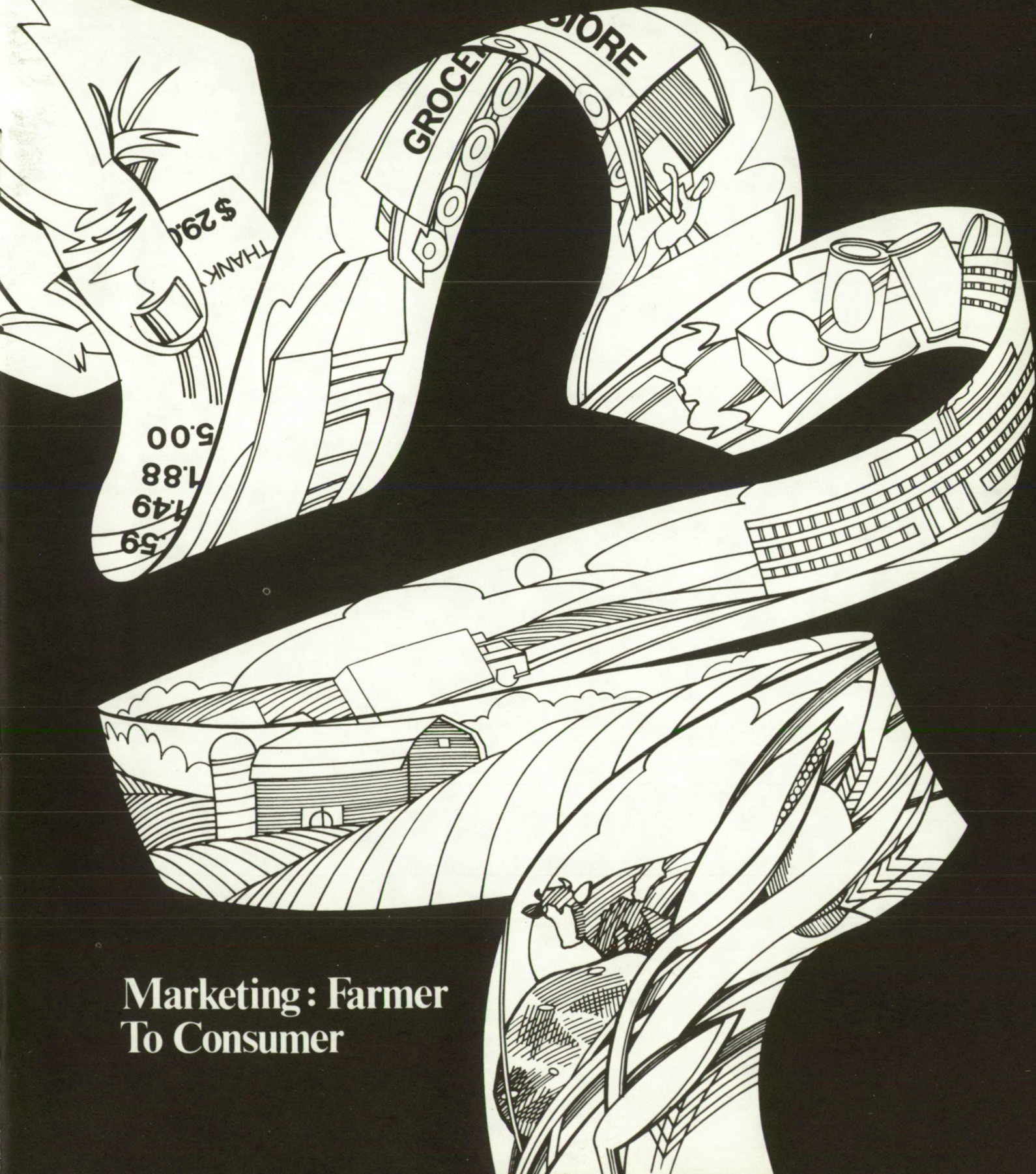


National Food Review

United States
Department of
Agriculture

Economic
Research
Service

NFR-23



**Marketing: Farmer
To Consumer**

The Marketing System...Farmer to Consumer

The cash register tape stuffed in our grocery sack really starts at the farm gate, with charges added throughout the marketing system...that intricate and highly efficient mechanism that moves raw products from farm fields to processors to store shelves, and to our tables at a reasonable price.

The articles in the marketing section provide excellent examples of how the system changes and adapts new techniques and activities to hold costs in check, develop new products, improve management practices, and sell commodities. As a case study, "Wheat—From Farmer to Consumer," follows the raw product through the system, giving an insight into what makes up the marketing chain, and who gets what share of our food dollar.

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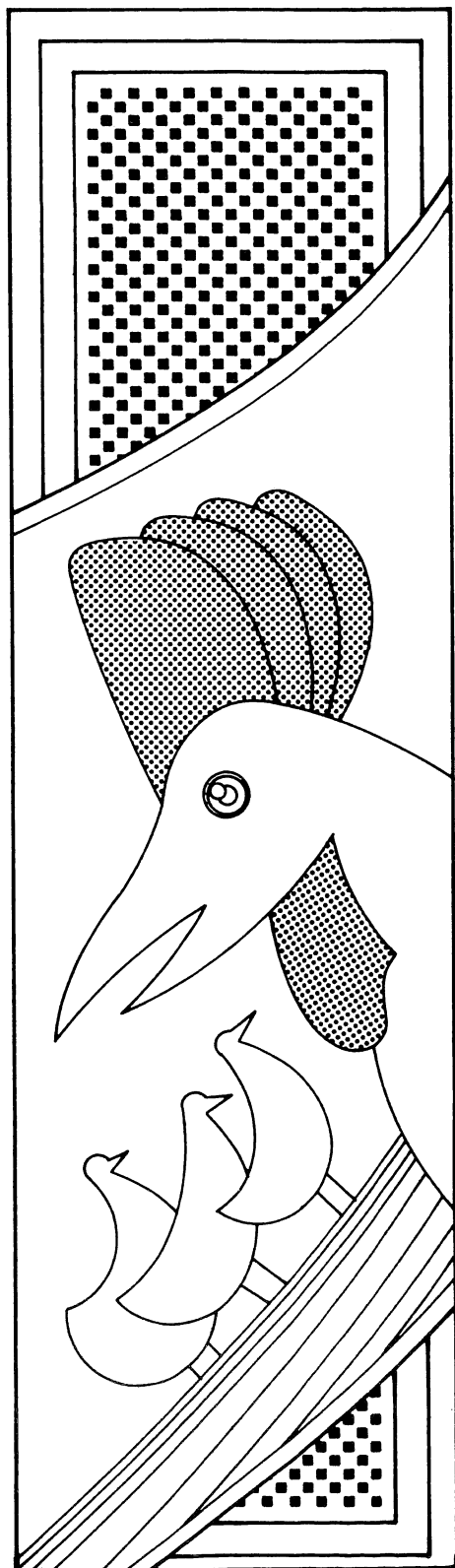
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Consumers Gain from Progress in the U.S. Poultry Industry

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U.S. food industries greatly improved technical efficiencies in production and marketing during the past quarter century. The poultry industry has been a leader both in making physical and organizational improvements and in passing these benefits on to consumers.

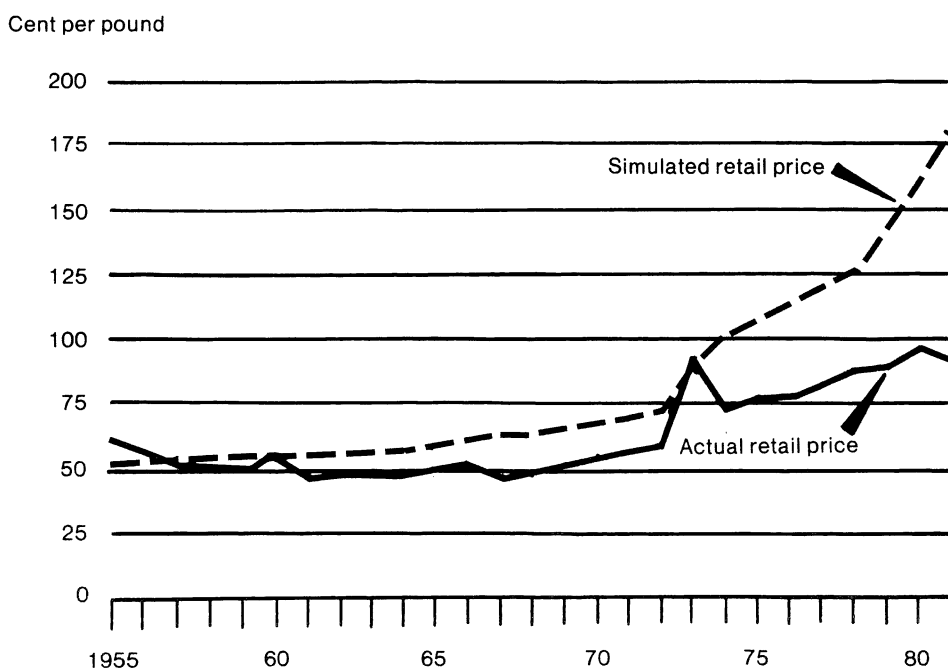
Improved productivity has enabled the poultry industry to produce and market chicken, turkey, and eggs at prices which have not risen as fast as overall consumer prices or prices of production inputs such as labor, feed, and energy. While the Consumer Price Index (CPI) has more than tripled since 1960, retail prices for chicken rose only 74 percent, turkey 67 percent, and eggs 59 percent. If the poultry industry were currently using the same technology as in 1960, retail prices for poultry products, in general, would need to be about double current levels to cover costs of production and marketing.

Advances in breeding, nutrition, housing, equipment, rearing, disease control, and management have all helped reduce the real (adjusted for inflation) cost of production. The same is true in slaughter and processing, which benefited from uniform, high-quality birds, larger lots of birds, more stable production throughout the year, plant specialization, and new labor-saving equipment. Improvements in transportation and refrigeration have enabled processors to economize by shipping larger amounts at one time.

Consumers Realize Gains

Consumers paid an average of 42.4 cents per pound for chicken in 1960, a price which varied by only 5.1 cents on an annual basis over the next 12 years. Prices of production inputs, however, rose almost 30 percent during those years. If producers had continued to use the same technology as in 1960, and if

Figure 1. Simulated¹ and Actual Retail Prices for Turkeys



¹ Assuming the industry is using the same technology as in 1960 and that all input price increases were reflected in retail prices.

the input price increases had been passed on to consumers, by 1972 retail prices for chicken would have been about 12 cents more per pound than the actual average price of 42.7 cents.

Prices of production inputs increased more rapidly from 1972 to 1981, especially for feed and energy. However, consumers still gained from advances in production and marketing. The estimated retail price in the absence of technological improvements would have been \$1.30 per pound in 1981—56 cents above the actual retail price.

Similar advances occurred in turkey production. Improvements in producing and processing turkeys meant that consumers paid only 93 cents per pound for turkey in 1981, instead of the \$1.77 that would have been necessary to cover the costs of production under the 1960 technology. Figure 1 shows a comparison of actual retail prices for turkey with estimations of prices that would have occurred if technology had remained constant since 1960.

The gap between actual retail prices and those which would have occurred had full production and marketing cost increases due to higher-priced inputs been passed through to retail is even wider for eggs: a dozen eggs cost 91 cents at retail in 1981, compared with \$1.72 cents without industry improvements.

Efficiencies in Production

Greater efficiency in poultry feed and labor have been major contributors to holding down the costs to produce a pound of chicken or turkey, or a dozen eggs.

Improvements in poultry feed, and in the capability of birds to utilize it, have increased the yield per ton of feed. One ton of feed now produces about 37 percent more pounds of chicken, 54 percent more turkey, or 39 percent more eggs than in 1955. Efficiencies in feed use reduce both feed costs per unit of production and the amount of labor and equipment associated with handling feed.

Poultry farm labor has also become more productive. The labor required to produce 100 pounds of chicken fell from

Table 1. Production Efficiency Factors for Eggs, Broilers, and Turkeys

	1955	1960	1965	1970	1975	1980
Eggs per hen per year	192.0	209.0	218.0	218.0	232.0	242.0
Pounds feed per:						
Dozen eggs	5.83	5.27	4.95	4.55	4.25	4.20
100 pounds, broilers	285.0	251.0	236.0	217.0	210.0	208.0
100 pounds, turkeys	470.0	505.0	476.0	405.0	333.0	305.0
Broiler average market weight (pounds)	3.1	3.4	3.5	3.6	3.8	4.0
Days required to reach market weight	73.0	67.0	N/A	N/A	56.0	52.0
	1945-49	1955-59	1965-69	1976-80		
Hours labor per 100 hens	240.0	175.0	97.0	53.0		
Hours per 100 eggs	1.5	.9	.4	.2		
Hours per 100 broilers	16.0	4.0	2.0	.5		
Hours per 100 pounds, broiler	5.1	1.3	.5	.1		
Hours per 100 pounds, turkey	13.1	4.4	1.3	.4		

N/A = data not available.

5.1 hours between 1945 and 1949 to an average of only 8 minutes between 1976 and 1980. A hundred pounds of turkey required 13.1 hours between 1945 and 1949, and less than 30 minutes between 1976 and 1980. Meanwhile, labor used to produce 100 eggs dropped from 90 minutes to about 14 minutes.

Table 1 summarizes the production efficiency gains in the poultry industry. The average market weight of broilers has increased from 3.1 pounds in 1955 to 4 pounds in 1980. In addition, the days required to reach market weight have declined from 73 in 1955 to 52 in 1980.

More eggs per hen have also reduced average production costs. The rate of lay has increased steadily from 174 eggs per hen per year in 1950 to 242 in 1980 because of more productive strains of layers, advances in feeding and management, more effective disease control, and

improved housing. This higher productivity has enabled producers to meet the demand for eggs with fewer hens: 300 million in 1950, compared with 288 million in 1980.

Poultry producers have become increasingly specialized. The number of producers has declined while the size of farms has increased dramatically. For example, the number of farms raising turkeys dropped from 162,244 in 1949 to only 26,638 in 1978, of which only 7,271 reported selling turkeys commercially. A fourth of these farms sold 95 percent of all turkeys and each sold more than 16,000. Almost half of the turkeys were sold by the 304 farms selling more than 100,000 each. Specialization and the increasing size of farms has facilitated the rapid adoption of superior technology and, in general, helped to lower costs of production.

Marketing and Product Form

Increased productivity in marketing has also meant gains for consumers. While prices for marketing inputs (labor, energy, packaging) more than tripled between 1960 and 1980, unit marketing costs advanced by only 77 percent for chicken, 76 percent for turkey, and 78 percent for eggs.

Total costs of assembling, processing, transporting, wholesaling, and retailing comprise the farm-to-retail price spread. Increases in the size of farms, more regular use of facilities, less seasonality in production—particularly for turkeys—and improved and more uniform quality birds and eggs have minimized farm-to-processor price increases. In addition, shorter hauls from fewer and larger-volume producers, and mechanization in processing and handling poultry and eggs, have held assembly and processing costs to small increases.

Wholesaling, which includes all activities between processing and retailing, has been shortened and made more direct. Processors now perform more of the functions formerly done by wholesalers, such as cutting, packaging, weighing, pricing, and moving large volumes directly to retail warehouses.

Poultry producers are increasingly performing all functions from farm to retail. Egg producers, for example, are grading and packing eggs in cartons at the farm and transporting them directly to retail warehouses. Chicken and turkey are now cut up, packaged, and transported to retail by producers. These products are then sold under the producer's brand name in retail food stores. In this manner, producers directly assume responsibility for product quality.

Vertical integration, the coordination of all aspects of production and marketing by the producer, has moved poultry enterprises from a farm sideline to a highly developed business. It has also reduced costs of producing poultry products by improving the use of facilities, reducing and controlling financial risks, and assuring continuing supplies of the necessary inputs into each stage of marketing, as well as by providing steady outlets for the

products. Vertical integration has reduced the number of profit-maximizing centers—"middlemen"—between farm and retail.

Rapid adoption of technology, vertical integration, and vigorous competition among firms have kept prices near and closely related to the cost of producing poultry products. Farm, wholesale, and retail prices have tended to move closely together. In fact, it is estimated that between 85 and 90 percent of the annual changes in both wholesale and retail egg, chicken, and turkey prices are explained by changes in feed costs.

Changes in poultry production and processing have also meant new types of products being marketed. Cut-up and further-processed poultry products, such as frozen breaded parts, account for an increasing share of total marketing. More than 42 percent of total chicken slaughter is now cut up, and more than 10 percent is further processed. Cut-up turkey constitutes 17 percent and further-processed more than 36 percent of turkey slaughter.

Cutting up and further processing can increase both sales volume and price per unit. In addition, it provides a means of servicing outlets such as fast food chains, which use only specific parts of the bird, or those using parts in a proportion different from the whole bird.

Lower real prices for poultry products in relation to other meats have encouraged greater consumption of these foods. Per capita consumption of turkey, for example, has more than doubled since 1955. Consumption now averages 10.8 pounds per person annually, an increase of about 2 pounds per person since 10 years ago.

Chicken consumption has exhibited an even more dramatic growth. Annual per capita consumption is now 52 pounds, up from 37 pounds in 1975, 30 in 1965, and 14 in 1955. Fryers represent about 94 percent of total chicken consumption. In contrast, egg consumption has not increased, despite declining real prices. In fact, decreases in per capita consumption, along with rapid improvements in productivity, have held egg prices down.

Retail prices for poultry products are well below those of other animal protein foods on a per pound basis. In 1981, consumers paid, on the average, 74 cents per pound for chicken, 93 cents per pound for turkey, and 91 cents per dozen for Grade A large eggs (equivalent to 61 cents per pound). Consumers, in contrast, paid \$2.39 for choice beef and \$1.52 per pound for pork in 1981. Consumers have responded to lower relative prices for poultry by increasing consumption.

Prospects for Further Progress

Looking ahead, improvements in the poultry industry should continue, but productivity gains may come more slowly than in the past—both in production and in marketing. Improvements in feed may be significant but smaller. Machines have become more costly substitutes for labor as energy prices have risen. In addition, most of the major gains from increases in the size of poultry farms have occurred, as have the economies associated with coordination of the production-to-marketing functions. Greater responsibility for meeting social requirements, such as maintaining environmental quality, may also slow productivity gains as measured by units of output.

Poultry producers and processors may continue to shrink in number but grow in output per farm during the 1980's. Both trends, however, should slow considerably from the rate of the past. Further processing of poultry will continue to expand, offering a variety of new products and choices for consumers.

Each sector of the poultry industry has contributed to the gains that enable consumers to buy chicken, turkey, or eggs at favorable prices. No sector, by itself, would have made much difference, but the cumulative effect of changes in all sectors has been dramatic. □

Reference

Lasley, Floyd A. *The U.S. Poultry Industry: Changing Economics and Structure*, U.S. Dept. Agr., Nat. Econ. Div., ERS Staff Report, Agr. Econ. Rep. 502, July 1983.

U.S. Potato Industry Shifts Toward Processed Products

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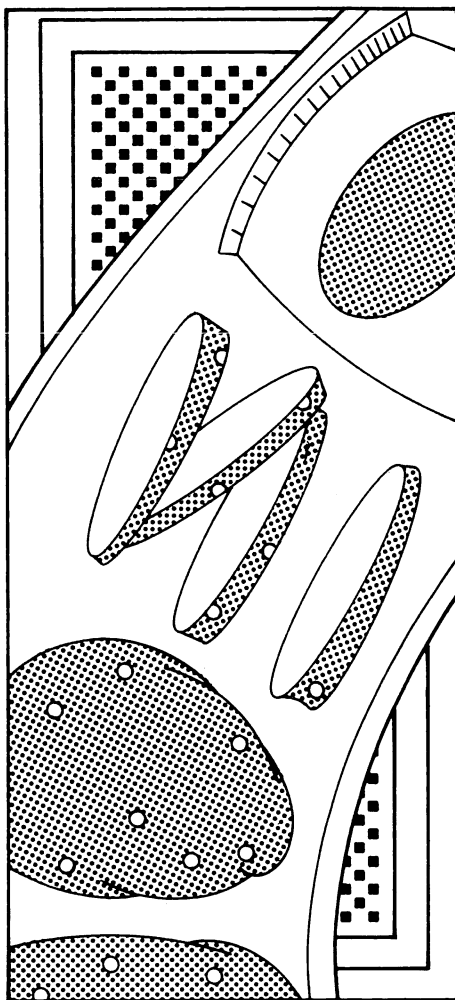
Dramatic changes have occurred in the U.S. potato industry during the past two decades. Technological advances in agriculture, coupled with production shifts to high-yielding regions, have greatly increased potato production. Technology has also increased the availability of processed potatoes through the development of new varieties of potato chips, frozen french fries, dehydrated mashed potatoes, and other products.

The amount of potatoes consumed in processed forms has nearly tripled during the past two decades, while fresh potato consumption has declined by more than one-third. This shift in consumer preference reflects such factors as changing consumer tastes, rapid growth and expansion of fast food establishments, an increasing number of women in the work force, a growing population, and an increasing number of smaller households.

Processed Potato Products

Converting any product from its natural form to several processed ones usually increases total use because of greater variety and increased convenience (figure 1). For example, per capita consumption of potatoes rose from 108.4 pounds in 1960 to 115.8 pounds in 1980. Per capita consumption of fresh potatoes declined from 83.8 to 51.4 pounds and use of processed potatoes increased from 24.6 pounds per person to 64.4 pounds (table 1).

Processed forms were, of course, available long before the recent boom. Chips, first marketed commercially in 1853, led the growth of potato processing until the mid-1960's. Frozen potatoes were introduced commercially in 1947 and per capita consumption of these products surpassed that of chips by 1966 and more than doubled chips by 1975. This 2 to 1 ratio continues. Much of this growth has resulted from the increased use of frozen potatoes in institutional establishments such as cafeterias, restaurants, and other eating places. Although a variety of products are sold (hash browns, diced, and scalloped, for example), french fries constitute over 80 percent of all frozen pota-



atoes and more than 50 percent of all frozen vegetables.

Sales of frozen potatoes increased from \$150 million in 1960 to \$1.7 billion in 1980, while potato chip sales rose from \$391 million to \$1.9 billion during the same period. Production of dehydrated potatoes increased from approximately 190 million pounds in 1960 to an estimated 438 million pounds in 1980. Given this more than twofold increase in production and nearly a tripling of the Consumer Price Index for food, sales of dehydrated potatoes in 1980 were estimated at least four times their 1960 retail value of \$55 million.

An estimated 60 percent of all frozen french fries are channeled through fast food establishments, amounting to nearly

2 billion of the 3.2 billion pounds produced in 1980. Consumption of french fries has paralleled the growth in fast food outlets, which increased fourfold from 251,000 in 1958 to over 1 million in 1977. Frozen french fries currently comprise about 20 percent of fast food sales, accounting for over \$7.2 billion of the \$36.2 billion in total sales in these restaurants in 1982. As a result of the tremendous growth in fast food establishments, the marketing of frozen fries shifted from approximately 57 percent going for institutional use (1956-60) to roughly 78 percent (1976-80).

The Convenience Factor

The convenience of processed potatoes has become increasingly important as the share of the labor force accounted for by women grew from 32.3 percent in 1960 to 43.3 percent in 1982. As a result, the mix of goods consumed by most households has been altered significantly. Food products purchased, in general, include more services such as precooking and premixing to reduce food preparation time at home.

This demand for convenience has also played a significant role in the growth of fast food establishments. According to a May 1982 survey of over 1,500 persons by *Restaurant Business* magazine, convenience—defined as not having to cook, do dishes, wait for service, or travel far—is the major reason why people frequent fast food restaurants.

In addition to greater convenience, changes in consumer incomes and average household size have influenced the increase in consumption of processed potatoes. The average household has fallen from 3.29 to 2.75 persons during the past two decades. Declining household sizes may increase the potential for away-from-home consumption by decreasing the cost of eating out and increasing the inconvenience of eating in. These changing consumption patterns may have encouraged the growth of frozen potato products because of their heavy use by institutions. In contrast, the use of other processed potato products which are primarily in-home products, may decrease.

USDA food consumption surveys conducted in 1955 and 1965 found that low-income households increased their consumption of potatoes as income increased, while higher income households decreased their consumption. These surveys, however, primarily reflect consumption of fresh potatoes, since processed potatoes did not comprise as large a proportion of total potato consumption. Studies by economists at Pennsylvania State and Washington State Universities suggest that consumers of all income levels eat more processed potatoes as income rises, reflecting the increased value of their time and greater purchasing power.

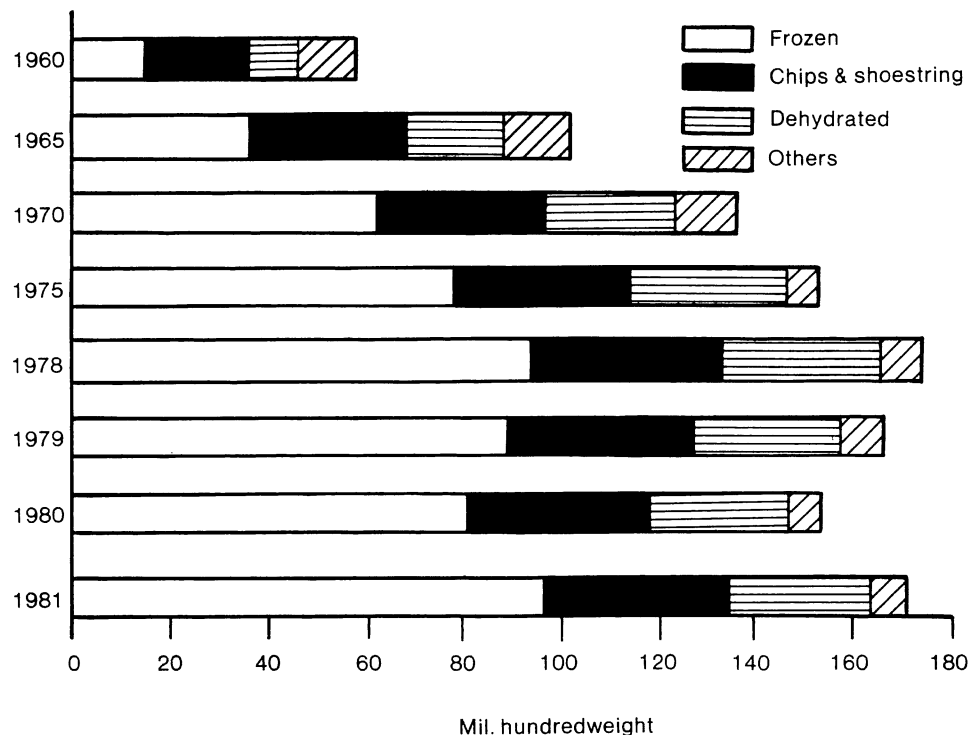
Much of the increase in consumption of processed potatoes may be attributed to consumers' growing taste for these products. Technological advances in potato processing have provided consumers with new products that are both tasty and nutritious. Steam-peeling methods, for example, now preserve nearly all of the protein content of potatoes. New methods of freezing potato products maintain desirable color, crispness, and other "plate appearances." New packaging procedures keep chips fresh longer. Meanwhile, processors have also advertised heavily to influence the preferences of consumers.

Impact on the Marketing Chain

The changing composition of potato consumption from fresh to processed forms has implications for producers, processors, and consumers. Producers, for example, have increased the proportion of their crops sold to processors through contracts before planting. By setting quantity and price early in the growing season, such contracts tend to stabilize market prices from year to year and provide a form of collateral for producers in securing bank loans.

Before the expansion of processing, most potatoes were sold either on the fresh market or to chip manufacturers. Potato farms and "chippers" were concentrated around population centers to reduce transportation costs. Since pro-

Figure 1. Raw Potatoes Used for Processed Potato Products



Source: Potatoes and Sweetpotatoes, USDA

Table 1. U.S. Per Capita Consumption of Fresh and Processed Potatoes, 1960-80

Year	Total fresh and processed	Fresh	Processed	Frozen	Chips	Dehydrated	Canned
Pounds							
1960	108.4	83.8	24.6	6.6	11.6	4.9	1.5
1965	107.0	68.2	38.8	14.3	15.8	7.0	1.7
1970	117.4	58.2	59.2	27.7	17.7	11.8	2.0
1975	120.3	53.9	66.4	34.3	15.7	14.4	2.0
1978	119.0	49.7	69.3	38.8	17.1	11.3	2.1
1979	115.6	51.5	64.1	35.4	17.1	9.5	2.1
1980	115.8	51.4	64.4	33.8	17.0	11.5	2.1

Source: Food Consumption, Prices, and Expenditures. USDA, 1981.

cessed potato products are less expensive to transport per pound, large scale production in more isolated areas became increasingly feasible. The lower costs and greater availability of land in rural areas, along with the declining demand for fresh potatoes has led to significant reductions in the number of potato producers and increases in average farm size. From 1959 to 1978, the number of potato farms declined from 685,000 to only 28,000, but the average size jumped from 1.75 acres to 48.9 acres.

Larger farms were also encouraged by specifications placed on growers by processors. Whereas size, shape, and appearance are the primary characteristics for selection of potatoes marketed as fresh, low moisture and sugar content, and consistent flavor are important for potatoes marketed for processing. Processors provide technicians to assist large producers in growing potatoes with these processing characteristics. Smaller producers, in contrast, are not provided assistance because their limited quantities

are not considered an effective use of technicians' time. Lacking this assistance many smaller farmers were unable to produce potatoes with consistent processing characteristics, and as a result ceased production.

Potato producers now face both fewer and larger processors. Since 1960, the number of plants producing potato chips has fallen from 400 to 177. Plants processing frozen potatoes increased from approximately 30 in 1960 to 91 in 1964, but declined to only 33 in 1980. Plants producing dehydrated potato products increased from an estimated 21 in 1960 to 28 in 1964, but declined to 19 by 1980.

Larger processors meant reduced production cost, improved efficiency of operation, and resulted in better quality and uniformity of processed products. Processors rely increasingly on contract purchases to assure supplies. Since price risk is an element of cost, lower risk means lower production costs. In addition, timely deliveries generated through contracting increase efficiency and lower processors' costs of obtaining raw potatoes.

The fewer-but-larger trend among processors has also improved product quality. Processors must consistently provide uniform quality to attract customers and to secure a larger market share. Smaller potato processors usually lack both the equipment and quality control systems to produce products of consistent quality. Smaller processors have also been affected by the lack of an advertising budget needed to compete with larger processors. This has influenced consumers' purchases and led to a loss of markets for small processors.

The consumer has reaped several benefits as the industry adjusted to higher consumption of processed potatoes: more consistent quality, longer storability, and increased convenience. However, consumers may also face higher costs and a loss of nutrients from increased consumption of processed potatoes.

Most comparisons of cost per serving show that processed potatoes cost more than fresh. However, the differences in

Table 2. Composition of Potatoes and Potato Products, 100 Grams Edible Portion

Potatoes	Water (Pct)	Food energy (cals)	Protein (gms)	Fat (gms)	Carbo- hydrates (gms)	Calcium (mgs)	Iron (mgs)	Thiamin (mgs)	Ribo- flavin (mgs)	Niacin (mgs)	Ascorbic acid (mgs)
Raw	79.8	76	2.1	0.1	17.1	7	0.6	.10	.04	1.5	20
Baked in skin	75.1	93	2.6	0.1	21.1	9	0.7	.10	.04	1.7	20
Boiled in skin	79.8	76	2.1	0.1	17.1	7	0.6	.09	.04	1.5	16
French fried	44.7	274	4.3	13.2	36.0	15	1.3	.13	.08	3.1	21
Fried from raw	46.9	268	4.0	14.2	32.6	15	1.1	.12	.07	2.8	19
Dehydrated mashed (granules, water, milk, fat)	78.6	96	2.0	3.6	14.4	32	0.5	.04	.05	0.7	3
Frozen, cooked, hash-browns	56.1	224	2.0	11.5	29.0	18	1.2	.07	.02	1.0	8
Frozen, french fried, heated	52.9	220	3.6	8.4	33.7	9	1.8	.14	.02	2.6	21
Frozen, mashed, heated	78.3	93	1.8	2.8	15.7	25	0.6	.06	.04	0.7	4
Potato chips	1.8	568	5.3	39.8	50.0	40	1.8	.21	.07	4.8	16
Potato flour	7.6	351	8.0	0.8	79.9	33	17.2	.42	.14	3.4	19

Source: Composition of Foods, Agricultural Handbook No. 8, 1963

Diversification in Food Manufacturing

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labor needed to prepare each form are often not considered. Some studies have found that including as little as 50 cents per hour value for preparation time negates the cost advantage of fresh potatoes. Additionally, the nutritional comparisons of fresh and processed (table 2) are usually for fresh dug potatoes. A 1975 report found that potatoes stored for 3 months—not uncommon for fall potatoes—can lose half of their primary nutrient, ascorbic acid (vitamin C). Processed potato products, on the other hand, are virtually unaffected by storage. Thus, processed potatoes could compare favorably with fresh potatoes when the cost of time and the losses from storage are considered.

Increased potato processing has also improved the quality of potatoes marketed as fresh. As potato processors grew in size and increased in diversity, they began to sort their potatoes after purchasing them from growers. Potatoes most appealing in size, shape, and appearance are marketed as fresh, which benefits consumers at the market.

A Look Ahead

Potato production is influenced more by demand conditions than technology. Even so, potato farms are expected to continue expanding because existing farm technologies generally require large land areas to capture production efficiencies. This most likely will result in fewer farms and a greater concentration of potato production in the Pacific Northwest States because processors are already in this area.

Technological advances in potato processing should make processed potato products increasingly convenient, with quicker preparation, improved taste and nutrition, and longer storability. These aspects will become increasingly important if the percentage of women in the labor force continues to rise. Fast food establishments will also welcome improvements in processed products because of the importance of convenience and taste to their patrons. Technological advances in potato processing could eventually restore, if not maintain, all the nutrients

found in fresh potatoes, which could lead to even greater consumption of processed products.

Potato consumption trends, however, may face some downward pressure from a population increasingly diet conscious: a shift toward more and larger salad bars at fast food outlets or different menu items that preclude the need for potatoes.

Changing socioeconomic conditions—more working women, the growing fast food industry, a greater number of smaller households, more people in the 25-to-44 age group (which has a greater tendency to eat out), and changing consumers' preferences for processed products—will also continue to affect the potato industry. □

References

- "A French Fry Diary: From Idaho Furrow to Golden Arches," *Wall Street Journal*, 8 February 1982, p. 1.
- Bielock, R.A. "A Structural Model and Simulations of the U.S. Potato Industry with Special Emphasis on Examining the Interregional Effects of Changing Energy Costs." Unpublished Ph.D. dissertation, Pennsylvania State University, 1981.
- Conrad, J.E. "Pre-Season Contract Buying—Long-Term Market Stabilizer." *Quick Frozen Foods*, August 1975.
- Gomena, J.E. "Contracting of Potatoes—A Processor's Viewpoint." *Eighteenth National Potato Utilization Conference*, ARS 74-79, February 1969.
- Estes, E.A. "Supply Response and Simulation of Supply and Demand for the U.S. Potato Industry." Unpublished Ph.D. dissertation, Washington State University, Pullman, 1979.
- Summers, L.V. "The Economic Implications of Grower-Processor Contracting in the Potato Industry." *Eighteenth National Potato Utilization Conference*, ARS 74-79, February 1969.
- Talbut, W.F. and Ora Smith. *Potato Processing*. Westport, Conn.: The AVI Publishing Company, Inc. 1975.
- "The American Consumer." *Restaurant Business*, 1 May 1982, pp. 149-175.

Leading food manufacturers have become increasingly diversified in recent years, selling a wide variety of goods and services. Many no longer confine themselves to narrow product lines.

A diversified firm allocates labor, capital, and other resources among its businesses, assuming functions previously handled by outside agents. For example, expansion by a regional dairy into national markets requires the acquisition of substantial amounts of capital, the hiring of many new managers from outside the firm, and the organization of a new distribution system. A diversified firm, in contrast, may reallocate capital directly from one of its businesses to another and use existing management capabilities and distribution systems.

While diversification has obvious impacts in manufacturing and marketing, it may also affect consumers. If diversified firms are more efficient than specialized firms, consumer products may be lower priced, higher quality, or of greater variety than previously.

Early Food Firm Diversification

Product diversification is hardly a new development. In 1919, a sample of 37 large food firms participated in 125 industries, an average of 3 each. In the next 10 years, these 37 firms produced in 167 industries, a 34-percent increase, while mergers also led to the formation of 16 new, large, and relatively diversified food manufacturers. By 1929, 53 food firms produced in an average of more than 5 industries each (a total of 292). A decade later, these same firms were active in an average of 8 industries each and by 1950 in an average of 9.

Prior to 1950, diversification was primarily directed to industries closely related to the firm's principal product. Many companies diversified to effectively use byproducts from the manufacture of the primary product. For example, meatpackers tanned leather, using the hides obtained as byproducts of slaughter. In other cases, existing facilities could be applied to other products: meatpackers canned meats and distributed fresh meats through refrigerated systems. These can-

ning lines were later applied to vegetable packing, while the refrigerated distribution system was used for dairy products and fresh produce.

Diversification was, for the most part, confined to the largest firms during the 1919-50 period. In the 1919 census, less than 1 percent of the firms in the food, beverage, and tobacco sectors were diversified. By 1950, only firms among the 100 largest food manufacturers were likely to be diversified. After World War II, large firms increasingly began to expand into nonfood manufacturing industries, while continuing to diversify within the food industries (table 1).

By 1977, a food manufacturing firm among the 100 largest produced in an average of 12 different manufacturing industries, more than double the number in 1954. Within food manufacturing alone, firms also increased diversification by more than 100 percent between 1954 and 1977. While some highly diversified conglomerates entered food manufacturing during the period, major existing food manufacturers were primarily responsible for this surge in diversification within the food manufacturing industry (table 1).

Diversification tends to increase with the size of a firm because larger firms can support more activities. Firms in the largest 50 were roughly twice as diversified as the 51 to 100 largest in 1977. In recent years, however, relatively small firms have also become diversified to a degree. For example, diversification by those food firms among the 500 largest with less than 2,500 employees increased dramatically over a 5-year period. In 1967, 127 of these firms (41 percent) were undiversified. By 1972, only 73, or 23 percent, were still specialized to one industry. A similar pattern holds for firms of less than 500 employees.

The trend toward diversification by food manufacturers in all size categories slowed abruptly after 1972. This apparent stabilization is consistent with trends among the rest of U.S. manufacturing firms. Several possible reasons exist for this pattern. Firms may enter a new industry by either building new plants or by merging with an existing producer. The

Table 1. Average Number of Industries Per Firm Among the 100 Largest Food Manufacturers¹

Year	All manufacturing	Food manufacturing only
1954	5.09	2.94
1958	6.11	3.51
1963	8.05	4.83
1967	8.41	5.27
1972	11.64	6.19
1977	12.09	6.29

¹"Industries" are defined as the four digit categories of the Standard Industrial Classification, and include such categories as canned fruits and vegetables, fluid milk, and beet sugar refining.

Sources: Special tabulations of the Census of Manufacturing for 1967, 1972, and 1977, performed for the Economic Research Service; earlier data are from Technical Study No. 8, National Commission on Food Marketing, June 1966. Firms are ranked by value added in food manufacturing, except alcoholic beverages.

slowdown in diversification coincides with a decline in merger activity in the early to mid-1970's, following the peak of a conglomerate merger wave during the 1967-69 period. The subsequent decline in mergers, growth in divestitures (or sales of parts of a company), and stabilization of diversification measures may indicate that some of the diversification of that period proved unprofitable.

Further, the size distribution of firms began to stabilize after 1972, after a long period in which larger, more diversified firms grew rapidly. This stabilization may have been the result of increases in the costs of managing large, complex firms or rapid expansion of demand in sectors comprised of small firms, such as services. As smaller, less diversified firms became more important in the economy, the average levels of diversification declined.

Since 1977, merger activity has risen again as many large food firms have diversified more through acquisitions. However, current levels of merger activity are still much lower than in that period. Average levels of diversification due to mergers are unlikely to rise as rapidly as they did in the 1960's because a higher proportion of recent acquisitions consists of sales of units of a diversified firm to another company or to the units management. Average levels of diversification may actually fall as a result of this type of transaction.

Sources of Diversification

Although food firms' diversification into industries that are unrelated to food manufacturing has grown, it is still a minor part of the total. Most food manufacturer diversification continues to be concentrated among industries that are closely related, in production or raw material characteristics, to the firm's original industry. Many food manufacturers, for example, expand their principal activities by further processing their main products and byproducts.

A second important form of diversification occurs among firms producing goods that have similarities in distribution. The marketing skills devoted to pricing, storage, transportation, promotion, and retail distribution of a particular product may be transferred to products with similar distribution characteristics, allowing more efficient use of the firm's marketing organization.

The most likely direction of such marketing-based diversification is toward products that can use the same distribution channels. Major milk processors, for example, typically produce a variety of other dairy products—butter, cheese, and ice cream. New acquisitions may be firms producing other refrigerated or frozen products such as processed meats or frozen fruits and vegetables. Similarly, firms with a distribution system for goods

HFCS: A Sweetener Revolution

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with a relatively short shelf life, such as cookies and crackers, can also use that system to distribute other snack products.

Firms may also apply their marketing expertise to a wider variety of products distributed through grocery stores. A leading soup company, for example, manufactures and distributes a variety of grocery store food products—frozen entrees, specialty baked goods, pickles, cookies, and fresh vegetables—in addition to its canned goods lines. In so doing the company uses its experience in developing and introducing new brand name food products, and its system for high volume production, distribution, and monitoring of such products.

Several food manufacturing companies have also diversified narrowly into processing of such bulk agricultural commodities as wheat, soybeans, and corn into products usually sold to other food processors rather than directly to consumers. However, the skills required to distribute these products are quite different from those required for branded products. Therefore, a group of firms may produce in a variety of commodity food industries and another group in consumer foods industries, but few firms will have major interests in both groups.

Many commodity food producers have diversified into the bulk storage and transportation of grains and oilseeds. With expansion of U.S. agricultural exports since 1969, many large commodity food firms have applied their large storage, transportation, and marketing networks not only to processing but also to domestic and international trade in corn and wheat.

Food firms have increased their diversification into manufacturing industries outside of food. Firms making foods for consumers have generally diversified into other consumer goods industries, such as apparel, toiletries, and games. Some have invested in chemical industries, which use process techniques similar to those of food manufacturing. Other investments have been largely directed to the manufacture of containers and food products machinery—products auxiliary to food manufacturing.

The directions of food firm diversification may change with demand for an industry's products and with technological developments in production and distribution. For example, after 1950 income growth, increasing urbanization and mobility of the population, and the development of television advertising combined to expand national markets for branded consumer food products. Required skills in product development and nationwide distribution systems gave firms with existing large-scale grocery manufacture and distribution systems an advantage. More recently, the expansion of agricultural commodity trade has created opportunities for diversification among existing commodity processors.

Implications

What are the effects of diversification by food manufacturers? If basic economic principles hold true, several developments are likely:

- Diversifying firms may provide new competition in industries where only a few sellers exist. If such firms transfer efficiencies in production, distribution, and product development to their new product lines, they may reduce production costs and, in turn, consumers' costs if competition among firms encourages offering lower prices to attract customers.

- If diversification occurs because of tax incentives, firms with high profits but low depreciation may shelter profits through mergers with low-profit firms possessing high depreciation. Small, rapidly expanding firms and large, capital-intensive firms in depressed industries may be acquired. Such diversification can benefit stockholders, but will not necessarily result in reduced prices or improved products in the firm's new industry.

- In some cases, salaries for a firm's management may be closely tied to company size and growth, rather than profits. Diversification may then be pursued solely to increase the size and growth rate of the firm, and thus managerial rewards, and not because of any skills that the firm may bring to its new industries. □

The development of high fructose corn syrup (HFCS) over the last 10 years has radically altered the conventional process of producing and distributing sweeteners, caused the reformulation of many food and beverage products, and reshaped the sugar industry.

HFCS, a liquid caloric sweetener made from ordinary corn starch, has been substituted for beet and cane sugar in a wide range of processed food products such as beverages, baked goods, dairy products, and jams and jellies since its commercial introduction in 1972. By 1982, HFCS accounted for 55 percent of the caloric sweetener market in beverages, 61 percent in canning, 48 percent in processed foods, 31 percent in dairy products, and 24 percent in baking.

Sweets from Starch

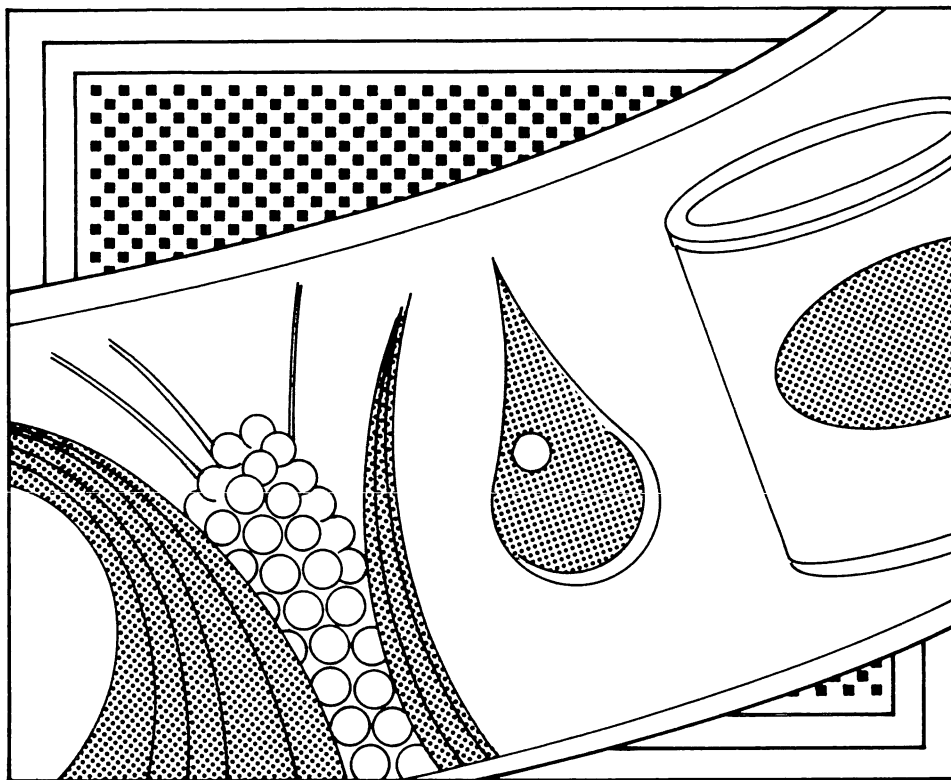
Converting corn starch into sweet substances was discovered as early as 1811. Sweeteners such as glucose corn syrup and dextrose were produced in corn wet milling before 1900. These products, however, were only about 70 percent as sweet as sugar, so they were typically combined with sucrose to derive the desired sweetness.

Initial attempts to convert glucose to fructose, a substance 110 to 170 percent sweeter than sucrose, date back to 1865. By the 1960's, scientists had discovered an effective method for obtaining fructose from glucose, but the high cost discouraged commercial prospects.

A commercially successful HFCS product of 42 percent fructose, about 50 per-

Table 1. HFCS use as percent of total caloric sweeteners use

	1982	Long-term theoretical penetration
Beverages	55	90
Baking	24	25
Canning	61	70-75
Processed foods	48	60-65
Dairy products	31	35
Confections	1	5



cent dextrose, and about 8 percent other saccharides was discovered in the early 1970's. HFCS-42 was approximately 90 percent as sweet as sugar and had other characteristics comparable or superior to sucrose syrups for use in processed food and beverages.

In 1978, a second generation HFCS product of 55 percent fructose, about 40 percent dextrose, and about 5 percent other saccharides was introduced. Compared with HFCS-42, HFCS-55, with its superior sweetness (100 to 110 percent as sweet as sugar) and only slightly higher production cost, had far greater commercial potential. HFCS-55 was especially suitable as a sweetener for soft drinks. Soft drink firms raised their approved rates of substitution of sugar by HFCS from 25 to 50 percent of sweetener content in cola drinks, and up to 100 percent for other soft drinks. In 1979, soft drink use of HFCS rose 34 percent to 680,000 tons, and by 1982 had jumped to 1.8 million tons, 58 percent of all HFCS consumption.

HFCS's main limitation is that it is available only in liquid form, and therefore confined to certain industrial uses. In addition, HFCS-42, with a water content of 29 percent of product weight,

costs more to transport than an equivalent quantity of sugar. Further, HFCS is more difficult to handle, since it must be maintained at 80°-100° F temperature when stored or transported.

Influences on HFCS Growth

The success of HFCS was immediate. It was able to do sugar's job in a wide number of applications more cheaply because of a lower cost of production. Production costs vary with size of plant, operating rates, net costs of corn, and other inputs. A 1977 World Bank study placed HFCS-42 cost, including plant and equipment, at a range of 12 to 17 cents a pound. USDA estimated the cost to produce refined beet sugar at 17.8 cents a pound in 1977-78. Depending on the area, raw cane sugar was estimated at 13.7 to 15.9 cents a pound prior to refining. In a 1979 Purdue University study, the cost of producing HFCS-42 (not including plant and equipment costs) in a plant with the capacity to produce 36,000 bushels a day was estimated at 8.7 cents a pound, dry-basis, assuming corn prices of \$2.26 a bushel and byproducts at 1977-78 average prices.

The rapid adoption of HFCS for commercial use was further encouraged by occurrences in the sugar market. In 1974, the bill to renew the Sugar Act of 1948 was defeated, ending 40 years of Government regulation of domestic sugar production, imports, and prices. Its defeat at a time of world sugar shortages threw the U.S. sugar trade into chaos. Raw sugar prices climbed above 60 cents a pound. HFCS prices also rose, but producers held them to less than 40 cents a pound in order to build a long-term market. HFCS production grew 68 percent in 1975, 44 percent in 1976, and 35 percent in 1977.

The price advantage of HFCS was further enhanced by Federal legislation that assured minimum sugar prices for producers. During the decade of 1972-82, HFCS production costs were below these Federal support prices for sugar, assuring a competitive advantage for HFCS.

Further helping HFCS to penetrate the sweetener market was the easing in 1974 of Food and Drug Administration (FDA) rules on the quantities of corn sweeteners allowed in canned and processed foods. In addition, HFCS profited from the continuing trends toward consumption of processed foods and low-sugar products.

By 1982, HFCS made up 21 percent of all caloric sweeteners used. The total corn sweeteners consumed, including glucose corn syrup and dextrose, accounted for 39 percent of U.S. caloric sweetener use. In 1982, per capita consumption of HFCS was 26.7 pounds; glucose, 18 pounds; and dextrose, 3.5 pounds (figure 1). Corn sweeteners' share of industrial sweetener use doubled from 24 percent in 1972 to 48 percent in 1982.

Production of HFCS

By 1982, HFCS production had reached 3.1 million tons, having increased at an average annual rate of almost 25 percent since 1977. Production gains followed considerable investments in building new corn wet milling plants specifically designed to produce HFCS or by expanding existing facilities. The replacement value of capital investment for

HFCS production had reached an estimated \$2.4 billion in 1982.

Capital investment in HFCS occurred in two major spurts—in the mid 1970's and between 1980 and 1982. The latter reflected the growth in demand after the decision by beverage companies to increase the use of HFCS in cola soft drinks.

HFCS producers were encouraged to risk expansion by the expectation that Federal sugar support prices would be kept at levels above the cost of producing HFCS. Fluctuations in sugar prices, then, were not expected to eliminate the price advantage of HFCS.

The HFCS industry expanded rapidly in the 1972-82 decade. In 1982, 10 corn wet milling firms produced HFCS in 16 plants, compared with only 2 firms and 2 plants in 1972. Production capacity grew from 250,000 tons of HFCS to 4.2 million tons by the end of the decade. Plant capacities to grind corn increased from a range of 4,000 to 50,000 bushels a day in 1972 to a range of 16,000 to 70,000 bushels a day in 1982.

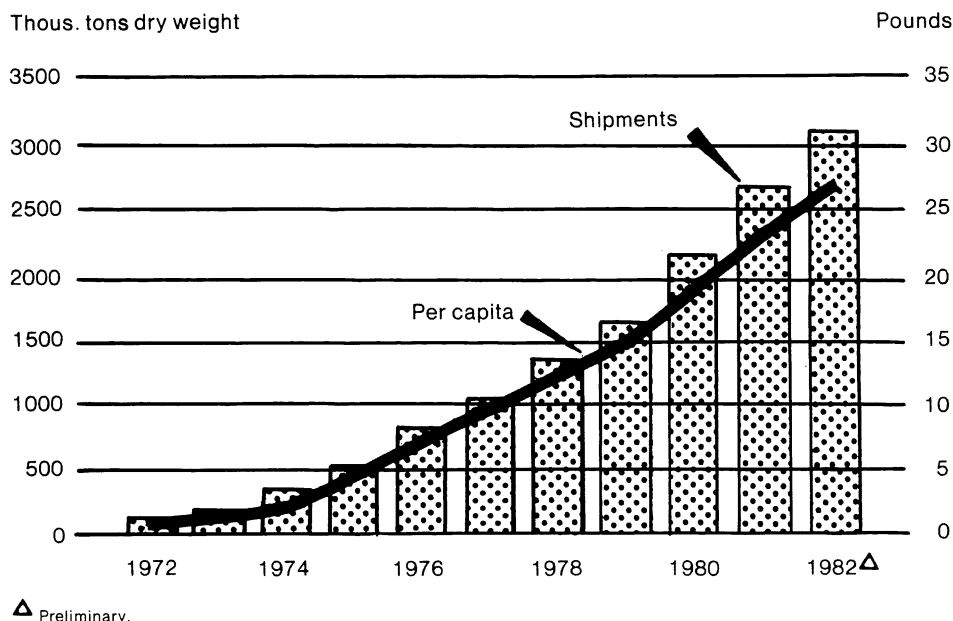
Expansion of the HFCS industry was also helped by U.S. farm policies that kept farm price supports for corn low enough to encourage exports, and by the farm-held grain reserves designed to serve as a large buffer against a corn crop disaster. Because corn accounts for 50 percent of HFCS production costs, these public policies reduced costs and minimized investment risk.

HFCS's Challenge to Sugar

HFCS's gains in many food and beverage uses adversely affected the U.S. sugar industry, including cane mills, beet processing factories, cane refineries, growers, labor, and other suppliers of inputs.

The impact of HFCS can be seen by comparing today's sugar industry with its 1975-76 peak of 7 million tons. Output fell to 5.7 million tons during 1982-1983, with even lower levels likely in the future. Beet sugar production dropped from 4 million tons to 2.8 million and 17 beet factories have shut down. Processing capacity for all sugarbeet plants fell 26

Figure 1. High Fructose Corn Syrup: U.S. Shipments and Per Capita Consumption



percent between 1975-76 and 1982-83.

Output of cane sugar is about the same as 7 seasons ago, 3 million tons. However, the industry has been restructured, with Hawaii production down 11 percent while production in Florida is up 23 percent. Eighteen cane mills representing 18 percent of processing capacity and four refineries accounting for 16 percent of capacity ceased operations between 1975-76 and 1982-83.

While smaller, the sugar industry is also more efficient as a result of improvements in equipment and energy use. On the farm, sugarbeet yields were up to 20.5 tons an acre for the 1978-82 period from 19.3 tons during the 1968-72 period. Output per manhour in beet factories rose faster between 1974 and 1979, increasing at an average annual rate of 3.7 percent, versus rates of less than 3 percent in prior years. Comparable data for raw and refined sugar combined show productivity per manhour increased at 3.2 percent a year, also higher than in earlier years.

Some sugar companies have also diversified their interests into areas outside sweeteners and foods. In addition, four companies entered into HFCS production either independently or in joint venture with a corn wet milling firm.

To the extent that it has been able to compete with sugar in particular uses, HFCS has dominated because of its modern, automated, and efficient plant facilities and highly advanced custom-oriented technology. Also, HFCS facilities can be operated year-round compared with 3 to 5 months for beet factories and cane mills. HFCS supplies are more reliable and predictable, and prices are less volatile than sugar.

Despite dramatic gains by HFCS, cane and beet sugar continue to be important because HFCS's technological limits prevent it from replacing much more than about a third of sugar's volume of use. Sugar accounted for over 60 percent of U.S. caloric sweetener use in 1982.

Other Impacts

While HFCS has hurt the competing sugar industry, it has provided an additional outlet for the rising output of corn. The 3.1 million tons of HFCS produced in 1982 required about 200 million bushels of corn or 2-1/2 percent of the total crop.

The arrival of HFCS has represented a major boon to processors and ultimately to consumers. HFCS has provided processors a greater diversity of sweeteners and associated ingredients to choose from and reduced production costs for foods and beverages. It has led to the reformulation of old products and the creation of new ones.

Part of the success of HFCS stems from aggressive customer service. HFCS suppliers are working closely with sweetener users, providing technical assistance and adapting products to the special requirements of specific classes of customers. HFCS blender-distributor companies are also providing combinations of HFCS, sugar, and other corn sweeteners for specific client requirements. HFCS, because of its lower cost, has encouraged selective use of various sweeteners, each chosen for its special contribution. This allows processors to obtain effective sweeteners at the lowest cost.

The introduction of the lower priced HFCS may also mean cost savings for consumers of processed foods and beverages. HFCS-42 prices ranged from 17 to 48 percent, or 2.7 cents to 14.7 cents a pound less than sugar between 1975 to 1982. Part of these savings could be reflected in consumer product prices.

HFCS has also influenced the international markets. Sugar imports have customarily provided about 45 percent of U.S. sugar needs. As a sugar substitute, HFCS has reduced some of the U.S. dependence on sugar imports. However, imports continued to provide over 30 percent of U.S. sugar use in 1982. Both domestic and foreign sugar have shared in sugar's market loss to HFCS.

While all the HFCS produced in the United States is marketed here, about 85 percent of the corn gluten feed, a bypro-

duct of the wet milling process, is sold in the European Community (EC). The EC is increasingly concerned about the rising volume of such grain substitute feeds, which enter with little or no duty and undermine the EC policy of high variable levies on grain to protect their high-cost grain producers.

The Future of HFCS

The United States produces about 75 percent of the world's HFCS output of over 4 million tons, and will likely continue to be the leading producer because of low-cost and large corn supplies, vast technical resources, and a large consumer market. World corn sweetener production including HFCS is now estimated at about 9 million tons, or 10 percent of the total output of world sugar and corn sweeteners.

Having carved out a sizable sweetener domain, U.S. producers of HFCS now face problems of industrial maturity as HFCS nears the limit of its technological applicability to various uses. Except for the beverage market, HFCS is near market saturation in most uses (table 1). Without further development of HFCS characteristics or new applications, HFCS will lose momentum and settle into a conventional slow growth due largely to changes in population.

Assuming the two major cola firms will permit 100 percent replacement of sugar, HFCS is expected to reach full market potential over the next 2 to 3 years, and HFCS consumption for all uses including beverages should level off at 36 pounds per person. Sugar consumption is expected to average about 67 pounds, and total caloric sweeteners about 126 pounds per person. Sugar will continue to be the dominant sweetener at 53 percent of total use, while HFCS will take 29 percent and total corn sweeteners 46 percent. Corn sweeteners by 1990 are expected to total 7.2 million tons, of which 4.5 million would be HFCS.

Prospects for U.S. consumption of HFCS by 1990 are tentative. The rising popularity of low-caloric soft drinks in the largest sweetener market, beverages, may lower HFCS's growth potential. Much

depends on how low-caloric sweetener use complements rather than replaces demand for caloric sweeteners. □

GLOSSARY

Saccharide: A sugar carbohydrate.

Glucose: The most common monosaccharide or simple, 1-molecule, sugar.

Dextrose: One of three forms of glucose, often used synonymously with glucose. Commercial dextrose, produced by almost complete conversion of starch into dextrose, is usually called simply "dextrose," or "refined corn sugar," or just "corn sugar."

Glucose syrup: A product obtained by partial conversion of starch into dextrose. Usually called "corn syrup" or simply "glucose."

Fructose: A monosaccharide which has the same elements in the same proportions as glucose but whose molecular structure is different, thereby giving a sweeter taste than glucose.

Sucrose: Ordinary sugar from sugarcane or sugarbeets. Sucrose is a disaccharide, made up of a dextrose molecule and a fructose molecule.

Invert sugar: The liquid sweetener that results when sucrose is hydrolyzed (treated with water, and usually some acid), and containing equal amounts of dextrose and fructose.

High Fructose Corn Syrup (HFCS): The liquid sweetener that results when glucose from starch is treated with an enzyme (a protein that speeds up chemical reactions without itself being altered or destroyed) to produce a combination of dextrose, fructose, and small amounts of other saccharides.

REFERENCES

- Brook, Ezriel M. *High Fructose Corn Sirup: Its Significance as a Sugar Substitute and Its Impact on the Sugar Outlook*. World Bank Commodity Paper No. 25, April 1977.
- Cubenas, Gervasio J., Lee F. Shrader, and J.R. Deep Ford. *Cost of Producing High Fructose Corn Sirup: An Economic Engineering Analysis*. Purdue University Agr. Exp. Sta. Bul. No. 239, Sept. 1979.

Generic Advertising of Farm Products

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What do the slogans "The incredible, edible egg," "A day without orange juice is like a day without sunshine," and "Milk—it's fitness you can drink" have in common? These messages are sponsored by producer groups seeking to boost the sales of a type of food rather than a particular company's product.

Advertising strives to expand or maintain the sales revenue of a product either by increasing the quantity consumers purchase or by getting them to pay a higher price for the product. Successful brand advertising partially depends on whether the branded product can be differentiated in consumers' minds from competitors' brands. Generic advertising, on the other hand, promotes purchases without reference to the specific farmer or manufacturer. For most of the agricultural products promoted generically, product differentiation and identification are only possible through labeling. Because producers of a basic agricultural product cannot easily convince consumers to choose one egg or orange over another, they use generic advertising to expand total demand for the product and, hopefully, their own sales as well.

Generic advertising has many purposes. It may attempt to overcome competition from another food product. One purpose of generic milk advertising is to counter soft drink advertising. Producer groups also use generic advertising to increase public awareness of lesser known foods, such as avocados and papayas, or to introduce new uses for traditional foods. The Florida Citrus Commission's new slogan is "Orange juice—it's not just for breakfast anymore." Generic advertising can also be used to alter negative public opinions about a food. The emphasis of the National Potato Promotion Board's advertising campaign is on the nutritional value and relatively low calorie content of potatoes.

Generic advertising can be targeted to retailers or restaurateurs as well as consumers. Producer groups promote ex-

Table 1. Generic Media Advertising by U.S. Agricultural Commodity Associations¹

Commodity	1982	1981	1972
Thousand dollars			
Milk and other dairy products	28,927.2	24,854.5	11,882.9
Citrus fruits and juices	17,756.7	14,484.8	6,682.5
Other fruits	15,205.4	15,138.8	2,184.4
Liquor ²	6,869.6	7,759.3	2,987.1
Red meats	5,972.6	2,467.4	488.3
Vegetables	2,202.0	1,670.5	109.8
Eggs	2,173.5	2,697.0	32.0
Rice	871.6	726.4	180.8
Nuts	87.6	0.0	0.0
Poultry	21.4	0.0	34.1
Seafood	0.6	169.4	49.3
Cereal	0.0	0.0	37.2
Sugar	0.0	0.0	1,136.2
Beer	0.0	0.0	1,415.4
Total food and beverages	80,088.2	69,968.1	27,220.0
Cotton	3,428.7	4,505.2	1,054.7
Wool	660.1	524.7	169.6
Total	84,177.0	74,998.0	28,444.3
Number of associations ³	43	42	35

¹Media include U.S. network and spot (local) television, network radio, major consumer magazines, nationally distributed newspaper Sunday supplements, billboards, and posters.

²Includes expenditures for Puerto Rican rums.

³Number of associations should not be interpreted as the number of commodities being advertised since several associations promote more than one commodity. For example, the American Sheep Producers Council promotes both lamb and wool.

Source: Leading National Advertisers, Inc.

panded use of their products in the food service industry by providing menu and recipe ideas. The Pork Industry Group of the National Livestock & Meat Board, for example, is trying to convince the fast food industry to add pork to their menus.

Overseas market development is another application of generic advertising. Dozens of U.S. commodity groups are trying to maintain existing overseas markets for U.S. farm products and break into new markets. U.S. Wheat Associates, Inc., a foreign market development organization representing U.S. wheat producers, provides market analysis and information for wheat buyers in foreign countries and technical assistance to foreign millers and bakers. As part of

these efforts, U.S. Wheat Associates, in conjunction with local governments and businessmen, sponsors baking schools in many Asian and Latin American countries. These schools help expand the demand for U.S. wheat by improving the quality of foreign foods baked with U.S. wheat.

Media Expenditures

The amount of generic advertising of farm products in consumer-targeted media is small compared with brand advertising of food and beverages. In 1982, American commodity groups spent about \$80 million on such generic advertising (table 1). The total advertising outlay for foods and beverages (including al-

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coholic beverages) was \$3.6 billion.

Since 1972, the portion of all food and beverage advertising accounted for by generic advertising has fallen from 2.3 to 2.1 percent, while the number of commodity associations advertising has increased. Producers of milk and dairy products were the big advertisers throughout the period, followed by producers of citrus fruits and juices and other fruits.

Advertising in consumer-targeted media is only part of the generic promotion effort. For example, the California Avocado Commission spent only \$1.4 million of its \$3.9 million promotion budget in 1982 on consumer-targeted media. Commodity groups also offer discounts to retailers, place advertisements in trade magazines, and sponsor trade shows and contests.

Since a generic message benefits all producers in the industry, this discourages individual producers or marketing firms from conducting generic campaigns and encourages them to join together for an advertising campaign. Producers can do this on a voluntary basis, but this arrangement does not solve the "free rider" problem of other producers gaining benefits without contributing promotion funds. Voluntary producer groups only account for about 15 percent of generic advertising and promotion.

Producer groups generally prefer an arrangement that provides more inclusive and mandatory participation. Federal and State sanctions for generic promotion more effectively guarantee producer cooperation and eliminate free riders. Such programs provide the authority to assess all producers of a specific commodity for generic promotion and research funds. Producers generally pay a fee based on quantity sold.

However, many government programs have participation loopholes that allow producers refunds on request. All of the Federal programs, except those under the fruit and vegetable marketing orders and those for wool and lamb, and about half of the State programs have refund provi-

sions. While refunds allow a producer freedom not to participate, they lessen the money available for advertising and research. Furthermore, nonparticipants benefit from other producers' promotional expenditures. Partially for these reasons, in 1980, producers in 10 southwest Federal milk marketing orders chose not to participate in the federally sanctioned generic advertising and research program. Instead, these producers now make non-refundable contributions through their cooperatives.

Over time, many voluntary groups for widely produced commodities have moved toward Federal programs. There are three types of Federal involvement in generic advertising of agricultural products: legislated research and promotion acts, research and advertising activities under marketing orders, and joint promotion ventures with commodity groups or private firms to develop international markets.

Federal Programs

Activities under the research and promotion acts are administered by boards composed of industry members appointed by the Secretary of Agriculture. USDA's Agricultural Marketing Service supervises these activities to ensure that they comply with the intent of the acts. In addition to generic advertising, funds are also spent on research and nutrition education. Research areas have included ways to improve growing and marketing efficiency, methods to combat plant and animal diseases, and new uses for the product. In 1982, \$22.9 million was spent on promotion and \$7.15 million on research under these research and promotion acts (table 2).

Assessing all producers of a specific farm commodity under the research and promotion acts requires Federal legislation and a favorable vote by some specified percentage of eligible producers choosing to vote. Producers of eggs, potatoes, wheat, lamb, cotton, mohair, beef, and floral products have secured

such legislation. However, producers of beef and floral products have not voted to institute a "check off" program to withhold a small portion of producers' sales revenues for the generic efforts.

Generic advertising of farm commodities also occurs under some of the Federal marketing orders for milk and fruits and vegetables. Advertising and promotion are secondary activities of marketing orders which primarily provide a mechanism for establishing orderly marketing and improving farm prices. In 1982, 6 of the 46 Federal milk marketing orders and 20 of the 47 fruit and vegetable orders had active programs which provided \$28.2 million for advertising and promotion and \$1.6 million for research (table 2). Marketing orders generally cover a particular region's production of a commodity such as California plums, as opposed to the Federal research and promotion acts which advertise the national production of a commodity.

The third way that the Government is involved in generic advertising is through the export market development activities of USDA's Foreign Agricultural Service (FAS). Developing markets for U.S. agricultural exports requires a coordinated, long-term plan which private firms may be unable or reluctant to support alone. Through its Market Development Cooperator Program, FAS and U.S. "cooperators" (agricultural trade associations and producer groups) jointly plan, implement, and finance overseas development activities including generic advertising.

FAS and the U.S. cooperators each contribute 30 percent of the funding, with the rest provided by governments, private firms, or trade associations in the importing countries. In 1982, FAS spent an estimated \$20.4 million on these efforts. Half of this funding was for wheat, oilseed products, and cotton. FAS also spent \$3.1 million on market research, international trade shows, and other activities promoting U.S. branded agricultural products.

Table 2. Research and Promotion Expenditures Under Domestic Federal Programs

Program	Research				Promotion			
	1974	1978	1982	1983 ¹	1974	1978	1982	1983 ¹
	Thousand dollars				Thousand dollars			
Research and promotion acts								
National Wool Act of 1954 ²	0	0	0	0	600	1,800	3,400	3,200
Cotton Research and Promotion Act of 1966	4,000	5,100	6,500	4,300	9,400	15,400	15,000	13,700
Potato Research and Promotion Act of 1971	0	0	0	0	1,600	2,400	1,500	1,700
Egg Research and Consumer Information Act of 1974	600	600	600	70	4,200	4,200	2,900	4,200
Wheat and Wheat Foods Research and Nutrition Act of 1977 ³	0	0	50	0	0	0	100	300
Total	4,600	5,700	7,150	4,370	15,800	23,800	22,900	23,100
Federal marketing orders								
Fruits, vegetable, and specialty crops	179	472	952	1,118	1,828	9,235	15,354	16,069
Milk	600	600	600	600	7,300	8,200	12,800	13,000
Total	779	1,072	1,552	1,718	9,128	17,435	28,154	29,069

¹Budgeted²The National Wool Act does not permit research.³The Wheat and Wheat Foods Research and Nutrition Act only allows research and nutrition education. "Promotion" expenditures are for nutrition education.

Source: Agricultural Marketing Service, USDA.

State Programs

State-legislated programs are also an important source of generic advertising, especially for farm products not covered by Federal programs. Several State promotion programs are part of marketing acts, modeled after the Federal Agricultural Marketing Agreement Act, which also have supply management provisions. Some States establish organizations, such as the California Iceberg Lettuce Commission, that engage solely in demand-expansion activities and are independent of the State department of agriculture. Most State programs devote a portion of their funds to research at the State's land-grant colleges. In 1979, 266 State-legislated promotion and research programs existed (table 3). About three-fourths of the State programs were established in the last two decades. Seven States have not legislated generic advertising programs.

Funding for these programs is primarily through assessments on producers. However, Maryland used about \$60,000 of tax revenues to promote its seafood in cities outside the State during the 1975-81 period. And since 1971, as funding has allowed, Massachusetts has been matching the spending of commodity groups that promote "Massachusetts grown" commodities. In fiscal year 1983, Massachusetts divided \$50,000 among a dozen producer groups.

Through surveys and interviews with officials in the State departments of agriculture, a political scientist at Northern Arizona University found that State-legislated generic programs spent \$91 million on promotion and \$10 million on research in 1979 (table 4). Fruit was the most heavily promoted, followed by dairy products and such field crops as soybeans and wheat. There is some evidence that

the amount collected under State-legislated programs is growing. For example, South Carolina pork producers and Minnesota beef producers recently voted to increase their assessment rate by 100 percent and 230 percent, respectively.

Costs and Benefits

Since generic advertising is designed to achieve market expansion, its effectiveness is particularly important to producers and handlers. Who benefits from and who pays for generic advertising are questions of concern to producers, marketing firms, and consumers.

Evaluation of generic advertising's effectiveness is incomplete. Many programs are relatively new and the level of expenditures low. Furthermore, promotional activities often occur simultaneously with other functions authorized by particular legislation. For example, mar-

keting orders may allow both quality improvement and promotion and education programs, making it difficult to measure the impact of each component. Most generic promotion studies have analyzed short term promotions for specific commodities in specific markets.

Producers who contribute funds for promotional activities want to receive a positive net return on their expenditures—they want the additional sales revenue generated to be larger than advertising costs. A 1980 study conducted for the United Dairy Industry Association (UDIA) evaluated the effectiveness of generic fluid milk advertising expenditures in 10 U.S. milk marketing areas and found that dairy farmers received an average net return of \$2.20 for each dollar spent on generic advertising. A 1965 study conducted by USDA, with support from the American Dairy Association, showed similar results of \$1.68 net return for each dollar invested in generic milk advertising. The Florida Department of Citrus has conducted studies showing the positive sales impact of generic media advertising and couponing for citrus products.

Commodity groups rarely can control output or prices. If demand expansion through generic advertising results in higher product prices, existing producers may increase output and new producers may be attracted to the industry. The resulting increase in supply could force prices down and reduce producers' profits. A University of Maryland study found that generic advertising for Maryland oysters is most profitable when abundant supplies exist and prices are low. The study recommends that advertising be "pulsed"—high levels of advertising when oysters are plentiful followed by low levels of advertising to reduce continued high demand and prices, which could encourage new producers to enter the industry.

Do consumers benefit from generic advertising? Generic promotion programs may help offset the impacts of advertising for nutritionally inferior branded foods or introduce consumers to a greater variety

Table 3. Number of State-Legislated Promotion and Research Programs and Years Adopted, by Region

Region	1930-40	1941-50	1951-60	1961-70	1971-79	Total
Northwest ¹	3	4	17	20	7	51
North Central ²	2	1	1	12	25	41
Great Plains ³	1	2	5	14	23	45
South ⁴	0	7	9	23	22	61
Southwest ⁵	1	5	6	15	18	45
Northeast ⁶	1	2	7	3	10	23
Total	8	21	45	87	105	266

¹Idaho, Oregon, Washington

²Illinois, Indiana, Iowa, Michigan, Minnesota, Ohio, Wisconsin

³Colorado, Kansas, Missouri, Montana, Nebraska, North Dakota, Oklahoma, South Dakota, Texas, Wyoming

⁴Alabama, Arkansas, Florida, Georgia, Kentucky, Louisiana, Mississippi, North Carolina, South Carolina, Tennessee, Virginia

⁵Arizona, California, Nevada, New Mexico, Utah

⁶Delaware, Maine, Maryland, New Jersey, New York, Pennsylvania, Vermont

Source: Garry L. Frank, *U.S. Agricultural Policy and the Federal and State Commodity Check-Off Programs*. Unpublished Ph.D. dissertation, Univ. of Nebraska-Lincoln, 1980, p. 196, revised 1982.

of foods. If the ads provide useful information such as nutritional content or recipe ideas, consumers also benefit. However, advertising expenses are a cost of doing business which may, at least partially, be built into a higher commodity price.

Consumers may also face higher prices for generically advertised products if producers cannot expand supply to meet increased demand. Supplies of agricultural commodities are fixed in the short run because time is needed for crops and animals to grow. Demand expansion through generic advertising, then, may result in higher consumer prices in the short run.

In the long run, the price impact of greater sales due to generic advertising is unclear. If producers expand output to meet increased demand, the associated increase in demand for certain farm inputs could make them more costly, pushing up commodity prices. On the other hand, if the greater output allows producers to take advantage of cost-reducing machinery or enjoy other economies of scale, prices could be lower.

Policy Issues

Because most generic advertising is carried out under Federal or State authority, public policy aspects of the programs warrant attention. One of the major criticisms of generic food advertising is that if the total demand for all food is fixed, persuading people to eat more of one commodity means they will eat less of another. Also, in some instances, prices of substitute foods have a greater influence on sales than advertising. Florida Department of Citrus researchers found that relative prices of U.S. and Brazilian citrus products, not advertising, were the important determinants of export volumes and sales shares in Canada from 1975 to 1978.

If U.S. aggregate food consumption cannot be significantly expanded, can we increase our export of foods to other countries through generic advertising? Both producers and the general public are likely to benefit from international promotion activities. Expanded foreign sales enhance our balance of trade. But for commodities not in surplus, expanded foreign markets may decrease domestic

supplies and force domestic prices up.

If increasing demand for a commodity is not desirable or possible, it may be more beneficial for both producers and consumers to use funds for research on improvements in the commodity or its use rather than for generic advertising. This type of research will likely improve efficiency in production and marketing, resulting in lower costs and better products. Many of the programs currently include only a small amount of research relative to advertising and promotion expenditures (table 2).

Commodity groups and policymakers can use generic advertising to coordinate demand with production to improve producers' incomes and smooth out surpluses and shortages. For example, the fluid milk industry targets June, a time when production is high, for its heaviest promotion to counter declining milk consumption as the school year ends. Likewise, Maryland has promoted oysters during low demand periods.

There is reason to be concerned about equity in the referendums that decide whether to institute a checkoff system for collecting assessments for generic promotion and research. Passage of Federal programs usually requires an affirmative vote of two-thirds of the producers voting or enough of them to represent two-thirds of the output of those voting. Often those voting represent less than one-third of industry participants. For most State programs, a simple majority of those voting is all that is needed for passage.

Distribution of costs and benefits among large and small producers and marketing firms and among low and high-income consumers are unresearched areas. In addition, while much is known about specific generic promotion programs, many unanswered questions remain about the intercommodity effects of widespread generic advertising of farm products. □

References

Armbruster, Walter J. "Advertising Farm Commodities" in *Advertising*

Table 4. Promotion and Research Expenditures by State-Legislated Commodity Programs, 1979

Commodity	Number of Programs ¹	Expenditures	
		Promotion ²	Research
		Thousand dollars	
Fruit	48	42,546	1,625
Milk and other dairy products	20	27,849	715
Field crops ³	50	9,212	4,228
Vegetables	23	4,334	2,205
Red meats	27	3,130	344
Other products ⁴	30	2,028	933
Poultry and eggs	25	1,914	188
Natural fibers ⁵	7	174	59
Total	230	91,187	10,297

¹Includes only State-legislated programs that spent money on promotion in 1979.

²Includes both domestic and foreign promotional expenditures.

³Includes such commodities as wheat, soybeans, and peanuts.

⁴Includes such commodities as tree nuts, tobacco, and honey.

⁵Includes cotton, wool, and mohair.

Source: Garry L. Frank. *U.S. Agricultural Policy and the Federal and State Commodity Check-Off Programs*. Unpublished Ph.D. dissertation, Univ. of Nebraska-Lincoln, 1980.

and the Food System. ed. John M. Connor and Ronald W. Ward, NC-117, Mono. 14. Madison, Wisconsin, November 1982.

Baum, E. L. "Discussion: Commodity Advertising of Farm Products." *Journal of Farm Economics* 41, 1959, pp. 382-386.

Bockstael, Nancy E. and Ivar E. Strand. "Optimal Generic Advertising for a Common Property Resource." Working paper, Dept. of Agricultural and Resource Economics, University of Maryland, June 1983.

Clement, W.E., P.L. Henderson, and C.P. Eley. *The Effect of Different Levels of Promotional Expenditures on Sales of Fluid Milk*. USDA, ERS-259, Washington, D.C. 1965.

Frank, Garry L. *U.S. Agricultural Policy and the Federal and State Commodity Check-off Programs*. Unpublished Ph.D. dissertation, University of Nebraska-Lincoln, 1980.

Kenney, Mary C. "Grades and Promotions in the Food System" in *1982 Year Book of Agriculture*, ed. Jack Hayes, USDA, Washington, D.C. 1982, pp. 159-169.

Tilley, D. S. and J. Lee. *Import and Retail Demand for Orange Juice in Canada*. ERD Report 80-1, Economic Research Dept., Florida Dept. of Citrus, Gainesville, 1980.

Thompson, Stanley R. "An Evaluation of Sales Responsiveness to Fluid Milk Advertising and Producer Returns in 10 U.S. Milk Marketing Areas." Unpublished report for the United Dairy Industry Assn., Ithaca, N.Y., November 1980.

Ward, R. W., S. R. Thompson, and W. J. Armbruster. "Advertising, Promotion and Research" in *Federal Marketing Programs in Agriculture: Issues and Options*, ed. W. J. Armbruster, D. R. Henderson, and R. D. Knutson. Danville, Illinois: The Interstate, 1983.

Wheat—From Farmer to Consumer

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In 1981, approximately 638 million bushels of wheat, or less than one-third of the total 1980/81 U.S. crop, were ground to produce almost 30 billion pounds of flour.

That year American consumers paid more than \$30 billion for products containing wheat, such as bread and rolls, crackers and cookies, breakfast foods, flour and flour mixes, macaroni, spaghetti, and frozen baked goods. Although these products were manufactured primarily from wheat, wheat producers did not receive the bulk of consumers' dollars. Rather, they received an estimated \$2.5 billion, or 8 percent of the total. The remainder went to farmers producing other ingredients, millers, food processors, wholesalers, retailers, and people employed in transportation, packaging, and advertising.

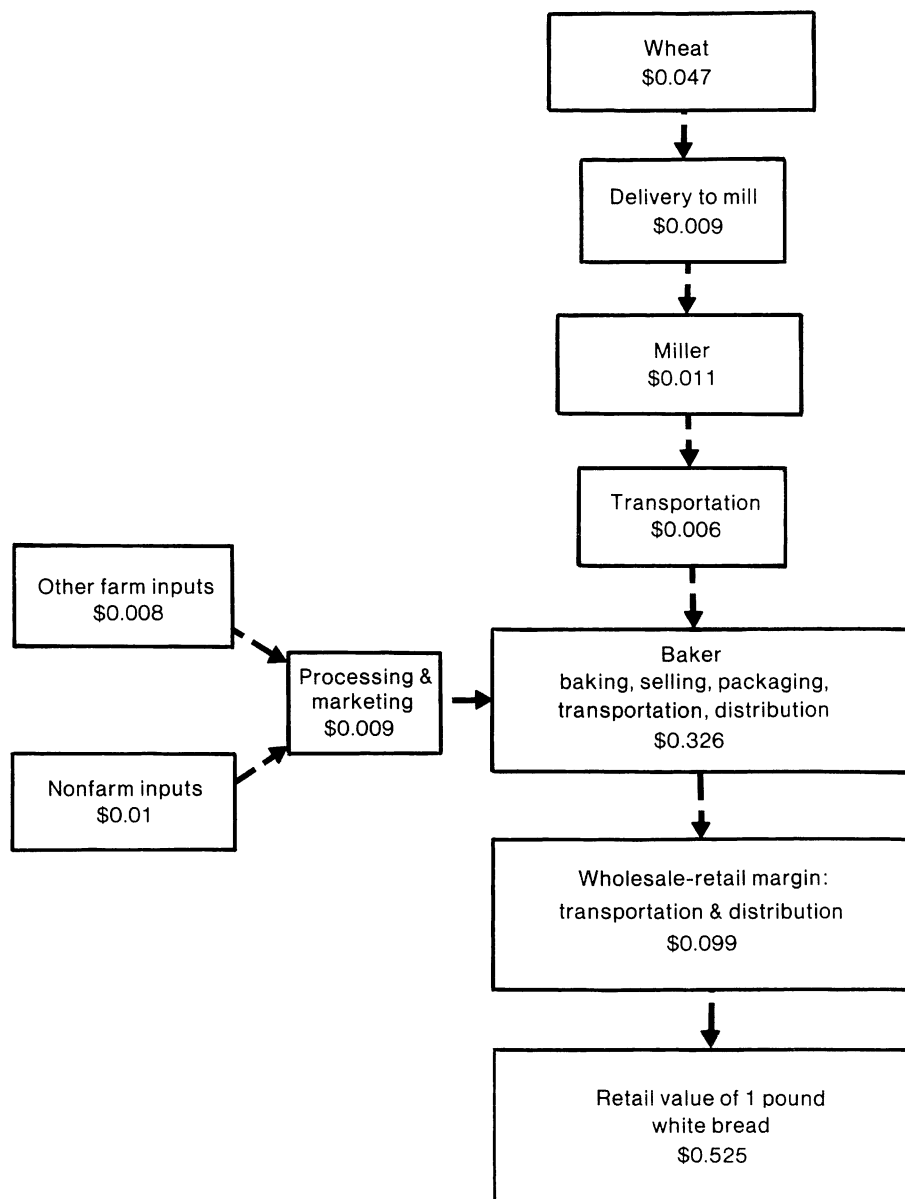
An Acre of Wheat

An average acre of wheat harvested in 1981 yielded approximately 34 bushels weighing about 2,040 pounds. Milling produces 75 percent flour and 25 percent millfeed, a byproduct used for animal feed, or 1,530 pounds of flour and 510 pounds of millfeed per average acre.

In 1981, baked goods from wheat accounted for over \$23 billion—or about 75 percent of the value of total consumption of all grain products. These baked goods used nearly 70 percent of the total wheat flour used for all domestic food. Thus, out of an average acre of wheat producing 1,530 pounds of flour, approximately 1,053 pounds went into baked goods. Bread, rolls, and sweet goods, valued at nearly \$14.5 billion, claimed the bulk of this flour—880 pounds. Cookies and crackers, valued at \$7.7 billion in 1981, required an estimated 11.3 percent, or 173 pounds.

The next largest shares of both wheat flour used and the value of total consumption were accounted for by cereal, flour, and macaroni. In 1981, the value of consumption of these products totaled almost \$7 billion, with cereal accounting for \$3.2 billion, flour \$2.1 billion, and macaroni \$1 billion. The share of wheat flour used in the production of these

Figure 1. Marketing Chain for Wheat Used for White Bread



products was estimated at 27 percent—0.8 percent for cereal, 18.3 percent for flour, and 7.9 percent for macaroni. Of the flour from an average acre of wheat, 12 pounds went for cereal, 280 pounds to flour and flour mixes, and 121 pounds to macaroni.

White Bread

The value of white bread consumption in 1981 totaled \$7.2 billion—almost 25 percent of the value of total grain product consumption. The Bureau of Labor Statistics (BLS) estimated that the average retail price of a 1-pound loaf of white

bread in 1981 was 52.5 cents, indicating that Americans consumed about 14 billion 1-pound loaves, or about 60 pounds per person.

Transforming wheat into white bread involves a large number of participants in the food sector, including farmers who produce ingredients other than wheat, each of whom receives a share of the consumer's expenditure (figure 1).

It takes 0.86 pounds of wheat to produce enough flour for a 1-pound loaf of bread. Based on the average price for a bushel of wheat in 1981, farmers earned 4.7 cents, or less than 9 percent of the total retail value of 52.5 cents.

Transporting the wheat from the farm to the mill costs 0.9 cent, making the cost of wheat to the miller 5.6 cents. Milling the nine-tenths of a pound of wheat into flour costs approximately 1.1 cents. The flour is now valued at 6.7 cents, about 13 percent of the retail value of the bread.

Another 0.6 cent is added to get the flour from the mill to the baker. The baker's cost of his major ingredient, flour, is now 7.3 cents. The baker pur-

chases other ingredients, including lard, soybean oil, high fructose corn syrup, corn syrup, and soy-whey blend, whose farm value amounts to 0.8 cent. Another 0.9 cent is added for processing and delivery of these ingredients.

Nonfarm ingredients include yeast, yeast food, salt, mold inhibitors, malt, enzymes, emulsifiers, and dough conditioners, which cost the baker an additional 1 cent. The cost to the baker for flour and other farm and nonfarm inputs totals 10 cents. At this point, the value of the unbaked bread is less than 20 percent of the final retail value.

Baking, packaging, selling, and trans-

porting the bread from the baker to the wholesaler comprises 62 percent, or 32.6 cents, of the retail value of the loaf. The wholesale price of bread is then 42.6 cents. Wholesalers' transportation costs and operating and labor expenses by wholesalers and retailers totals 9.9 cents, making the final cost to the consumer of a 1-pound loaf of white bread 52.5 cents.

The value of added goods and services is different for every grain product once the flour leaves the mill. Nevertheless, white bread captures more of consumers' spending than other grain products, highlighting the importance of following wheat from farm to retail. □

Table 1. Products of Flour Produced from 1 Acre of Wheat, 1981¹

Use	Wheat flour used ²	
	Pounds	Percent
Baked goods:	1,053	68.8
Bread, rolls, sweet goods	880	57.5
Cookies, crackers, etc.	173	11.3
Frozen baked goods	40	2.6
Cereal, flour, macaroni:	413	27.0
Cereal	12	.8
Flour	280	18.3
Macaroni	121	7.9
Miscellaneous uses	24	1.6
Total	1,530	100.0

¹Assumes all flour produced from an acre of wheat is devoted to domestic food production.

²Based on data obtained from the 1972 Census of Manufactures and other available information.

Table 2. Value of Total Domestic Consumption of Grain Products, 1981

Products	Value of consumption ¹
	Thousand dollars
Baked goods²	\$23,192,180
Bread and rolls:	11,190,960
White bread	7,191,600
Other bread	2,523,330
Rolls	1,476,030
Crackers, cookies ³	7,738,570
Sweet goods ⁴	4,262,650
Frozen baked goods	761,410
Cereal, flour, macaroni ⁵	6,902,300
Cereals ⁶	3,188,590
Flour ⁷	2,100,710
Macaroni:	1,059,800
Macaroni	351,500
Noodles	260,550
Spaghetti	447,750
Total	30,855,890

¹All consumption, whether at home, in restaurants, or institutions, in terms of retail store valuation.

²Includes frozen bread and rolls but not cakes, pastries, and pies.

³Corn chips, crackers, biscuits, cookies, unpopped popcorn, potato chips, pretzels.

⁴Cakes and other pastry, doughnuts, pies.

⁵Includes rice not listed in cereals.

⁶Cold and hot cereals, hominy grits, infant cereals.

⁷Cake flour, corn meal, family flour, pancake flour and waffle mixes, and prepared mixes, including cakes and frosting.

Source: Milling and Baking News, Vol. 61:41, December 7, 1982.



Domestic Food Programs

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Preliminary data indicate that Federal expenditures for food assistance programs rose 15 percent, from \$4.2 billion in the first quarter of 1982 to \$4.8 billion in the first quarter of this year, reflecting the downswing in the economy, higher food prices, and expanded food distribution to low-income persons.

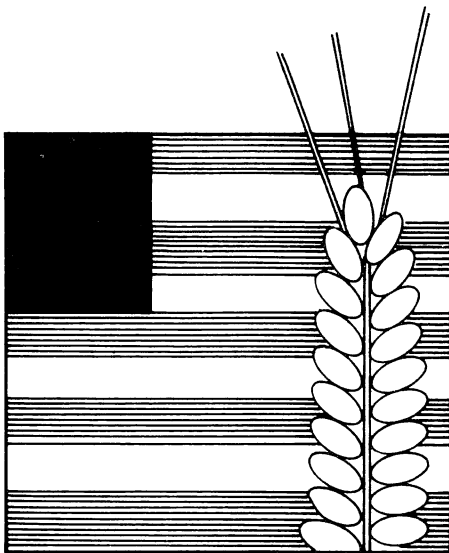
Family Food Programs

Food Stamp Program (FSP) participation reached a record 22.3 million persons per month in the first quarter of 1983, compared with 20.5 million a year earlier. The number of food stamp participants has been as high as 23 million when Puerto Ricans were included. The Omnibus Budget Reconciliation Act of 1981 mandated that Puerto Rico transfer from the FSP to the Nutrition Assistance Program on July 1, 1982 which currently provides direct cash payments (see related story in this issue). The data for the first quarter of 1982 were adjusted to exclude Puerto Rico in order to delineate trends in FSP participation and costs.

The recession was a major contributor to higher participation in the FSP. As workers became unemployed their lower income may have qualified them for participation in the FSP. The unemployment rate increased from 8.8 percent in the first quarter of 1982 to 10.4 percent in the same period in 1983. USDA estimates that a 1-percentage point increase in the unemployment rate results in about 1 million persons joining the FSP.

Food stamps valued at \$2.9 billion were distributed under the FSP in the first quarter of 1983, a 20-percent increase from a year earlier, attributable to greater participation and higher food prices associated with the Thrifty Food Plan (TFP). Food stamp benefits are adjusted annually to changes in the cost of the TFP. Average monthly food stamp benefits rose from \$39.35 per person in the first quarter of 1982 to \$43.52 in the first quarter of 1983, reflecting the cost-of-food increase that FSP participants received in October 1982.

An average of 1.6 million persons received \$196.1 million in cash benefits under the Puerto Rico Nutrition Assis-



tance Program in the first quarter of 1983, about 13 percent fewer than a year earlier under the FSP. During that period, Puerto Ricans received food stamps worth \$222.7 million. Participation and costs are lower than those under the FSP, primarily because the Nutrition Assistance Program is funded at a constant level of \$825 million annually through fiscal 1985, about 25 percent below the 1982 FSP funding level for Puerto Rico.

Under the Special Dairy Distribution Program, initiated December 1981, surplus processed American cheese, butter, and nonfat dry milk are made available to the States for distribution to low-income persons. A total of 258 million pounds of cheese valued at \$401 million was distributed to the States between December 1981 and March 1983, plus 51.4 million pounds of butter worth \$82.3 million and 11 million pounds of nonfat dry milk valued at \$12.1 million. USDA cheese stocks greatly exceed those of butter and nonfat dry milk, explaining the much higher level of cheese distribution. Further, the cheese distribution was nationwide, whereas the butter and nonfat dry milk distributions were pilot projects limited to specified States, although they have since been expanded nationally.

Child Nutrition Programs

Total Federal expenditures for the child nutrition programs (excluding State administrative expenses and nutrition education studies) were \$1.2 billion in the

first quarter of this year, an 11.9-percent increase from the same period in 1982. Contributing to higher expenditures were increased reimbursement rates for each meal served and an increase in the number of meals, especially those served free to students from low-income families.

The largest increase in Federal payments was in the School Breakfast Program. Higher reimbursement rates, increased participation, and additional serving days in the first 3 months of 1983 explain the 12-percent increase between the first quarter of 1982 and the first quarter of 1983, from \$99.9 million to \$111.6 million. During that period, average participation per school day increased from 3.3 to 3.4 million. Children receiving free breakfasts increased by 4 percent, whereas those getting reduced-price breakfasts and paid breakfasts declined by 9 percent and 4 percent, respectively.

Federal cash payments in the National School Lunch Program (NSLP) also increased substantially between the first quarter of 1982 and the same 3 months in 1983, going from \$703.8 million to \$783.7 million. The value of commodities (including cash in lieu of commodities) rose from \$157.2 million to \$174.6 million during the period. NSLP participation in the first quarter of 1983 rose 1.3 percent to an average of 23.4 million children each school day. It appears that higher reimbursement rates for each lunch served, an increase from 1.2 billion to 1.3 billion lunches served, and a greater proportion of free lunches were largely responsible for the 11-percent increase in total Federal expenditures.

Total Federal funds for the Child Care Food Program (CCFP) rose 11 percent from \$77.9 million in the first quarter of 1982 to \$86.3 million in the first quarter of 1983, reflecting more meals served. A total of 139.9 million meals were served in day care homes and child care centers under the CCFP in the first quarter of 1983, compared with 128.6 million a year earlier.

The only decrease in Federal expenditures for child nutrition was in the Special

Milk Program, with a decline from \$5.3 million in the first quarter of 1982 to \$5.1 million in the same 3 months in 1983 probably due to fewer schools and child care institutions participating. The number of half-pints of milk served dropped by 5.7 percent, from 57.2 million in the first quarter of 1982 to 53.9 million a year later. The number of half-pints served free increased during this period whereas the number served at the reduced price decreased. Consequently, free milk as a percentage of all milk served rose from 4.8 percent in the first quarter of 1982 to 5.4 percent in the same period in 1983.

Supplemental Food Programs

USDA operates two food assistance programs for low-income mothers and young children who are at nutritional risk—the Special Supplemental Food Program for Women, Infants, and Children (WIC), and the Commodity Supplemental Food Program [see NFR-16]. Persons may not simultaneously participate in both programs. Average WIC participation increased by 14.8 percent between the first quarter of 1982 and the same period in 1983, from 2.1 to 2.4 million persons per month. Federal expenditures

for the program were \$267.4 million in the first quarter of 1983, of which \$216.3 million (81 percent) represented food costs and \$51.1 million (19 percent) represented local administrative and nutrition education costs.

An average of 144,000 persons participated in the Commodity Supplemental Food Program in the first 3 months of 1983, up 16 percent from a year earlier likely because of the availability of larger quantities of commodities enabling States to serve more participants. In the first quarter of 1983, participants received commodities valued at \$4.4 million or about \$10.10 per person a month. □

Table 1. Federal Cost of USDA Food Programs, Calendar Years, 1980-83

Program	1980	1981	1982	1982 ¹ (quarters)				1983 ¹ (quarters)
				I	II	III	IV	I
				\$ Million				
Food Stamp	9,004	10,968	10,375	2,647	2,601	2,363	2,763	2,911
Puerto Rico Assistance ²	—	—	396	—	—	200	196	196
Food Distribution								
Needy Families	23.5	35.3	46.0	11.5	11.1	11.7	11.7	11.9
Schools ³	967	834	797	265	101	162	269	297
Other ⁴	115	108	180	47	20	57	56	148
Cash in Lieu of Commodities	85	112	118	31	31	29	27	21
Child Nutrition ⁵								
School Lunch	2,395	2,283	2,244	704	531	292	718	784
School Breakfast	311	330	328	100	79	45	104	112
Special Food ⁶	338	401	357	68	81	134	74	79
Special Milk	137	72	19	5	4	5	5	5
Nonfood Assistance ⁷	18	9	—	—	—	—	—	—
WIC ⁸	783	863	1,005	237	242	261	266	267
Total ⁹	14,177	16,015	15,865	4,116	3,701	3,560	4,490	4,832

¹ Preliminary.

² Puerto Rico switched from the Food Stamp Program to a nutrition assistance program on July 1, 1982.

³ Includes child care centers and camps participating in the Child Care and Summer Food Service Programs.

⁴ Commodity Supplemental Food Program, Nutrition Program for the Elderly, and donations to charitable institutions.

⁵ Cash expenditures. Includes money donated for local purchase of food.

⁶ Divided into Child Care Food Program and Summer Food Service Program in fiscal 1976.

⁷ Nonfood assistance was terminated on October 1, 1981.

⁸ Special Supplemental Food Program for Women, Infants, and Children. Includes food and administrative costs.

⁹ May not add due to rounding.

Source: Computed from monthly data supplied by the Food and Nutrition Service.

Food Spending and Income

The U.S. Department of Commerce releases monthly, quarterly, and annual estimates of Disposable Personal Income and its allocation among Personal Consumption Expenditures, Personal Savings, Interest Paid by Consumers to

Business, and Personal Transfer Payments to Foreigners. The monthly and quarterly estimates are adjusted to eliminate seasonal fluctuations so that trends can be readily discerned and put on an annual basis for comparing the three series.

The annual after-tax income of Americans averaged \$9,623 per person during January-March 1983, up \$469 from a year earlier. According to data from the Department of Commerce, the rise in

Table 1.—Per Capita Personal Consumption Expenditures: Seasonally Adjusted at an Annual Rate, 1982-83

Item	1982 (Quarters)				1983 (Quarter)
	I	II	III	IV	I
	Dollars (current)				
Total personal consumption expenditures	8,298.2	8,403.1	8,546.8	8,716.1	8,792.0
Nondurables	3,238.6	3,257.3	3,306.3	3,329.2	3,330.0
Food, beverages, and other groceries ¹	1,943.3	1,978.3	2,003.2	2,030.2	2,049.5
Food exc. alcoholic beverages	1,473.4	1,498.2	1,521.9	1,533.9	1,547.4
At home	1,080.0	1,096.6	1,108.5	1,112.4	1,106.5
Away from home	393.3	401.6	413.4	421.5	440.9
Alcoholic beverages	203.8	206.0	204.7	204.9	207.3
At home	126.8	128.5	125.9	124.8	125.1
Away from home	77.1	77.5	78.8	80.1	82.2
Cleaning and household supplies	94.7	96.6	97.5	98.2	97.7
Toiletries	71.0	72.6	73.1	73.5	75.0
Tobacco	100.4	105.0	105.9	119.6	122.1
Drugs	82.1	84.3	85.1	85.4	89.4
Clothing and shoes	508.0	510.6	512.4	512.3	513.5
Gas and oil	412.0	393.7	405.4	403.6	385.2
Fuel oil and coal	74.7	74.6	79.3	75.6	65.4
Other	218.5	215.8	220.9	222.2	227.0
Durables	1,028.4	1,038.5	1,034.1	1,080.8	1,100.2
Motor vehicles and parts	446.1	445.7	448.8	488.4	490.3
Furniture and household equipment	393.5	402.1	399.0	404.7	411.8
Other	188.8	190.6	186.3	187.7	198.1
Services	4,031.1	4,107.3	4,206.4	4,306.0	4,361.9
Housing	1,359.7	1,382.2	1,412.3	1,439.6	1,460.0
Household operation	611.3	606.9	624.0	644.9	642.3
Transportation	289.2	299.9	307.5	309.6	318.5
Personal care	75.1	74.5	74.4	74.5	74.3
Medical care	805.9	828.9	851.7	867.9	882.6
Personal business services	449.5	460.1	475.0	496.5	504.4
Recreational services	174.8	179.5	182.5	185.1	188.3
Other	265.7	275.1	278.8	287.9	291.5
Savings	601.4	622.5	654.0	572.5	569.6
Other	253.6	256.1	257.5	257.8	262.4
Disposable personal income	9,153.9	9,281.7	9,458.3	9,546.4	9,624.0

¹Contains some items not normally purchased in grocery stores.

Disposable Personal Income (DPI) during the first quarter of 1983 was only \$78, down from the \$88 gain the preceding quarter, a \$177 increase in July-September 1982, and \$128 for April-June last year.

Personal Consumption Expenditures

(PCE) by individuals were almost \$8,792 during the first quarter of 1983, or 91 percent of DPI. Consumer expenditures on goods and services rose from 90.4 percent of DPI in the July-September quarter of 1982 to 91.4 percent in the first quarter of 1983. Savings, in contrast, de-

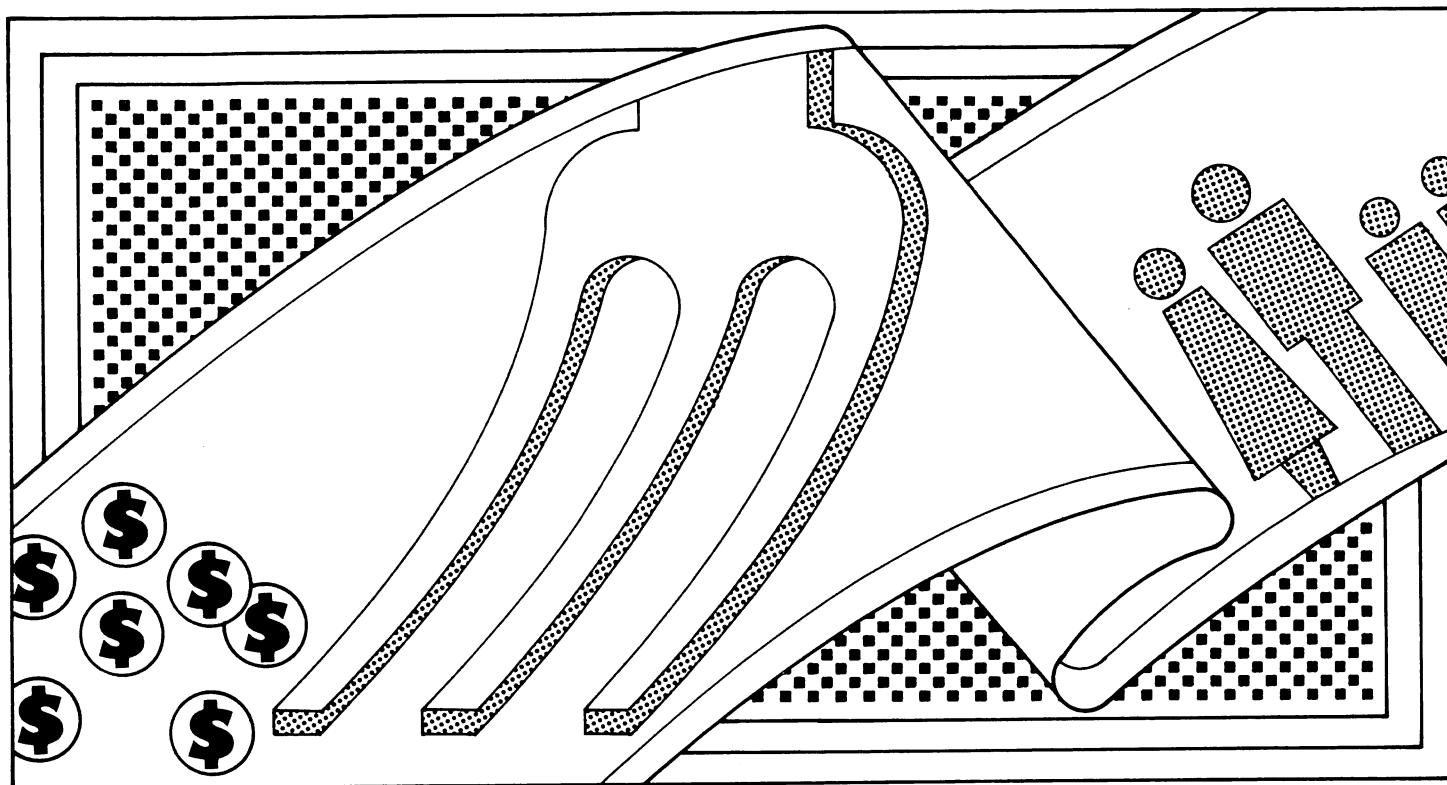
clined from 6.9 percent of DPI to 5.9 percent during the same period.

During the first 3 months of the year, consumers continued to spend about 11 percent of their available incomes on durable goods—furniture, cars, and household equipment—with only slight fluctua-

Table 2. Per Capita Personal Consumption Expenditures: Seasonally Adjusted at an Annual Rate, 1982-83

Item	1982 (Quarters)				1983 (Quarter)
	I	II	III	IV	I
	Dollars (Constant 1972)				
Total personal consumption expenditures	4,103.5	4,119.8	4,115.0	4,150.1	4,166.6
Nondurables	1,565.7	1,572.4	1,574.3	1,577.5	1,584.4
Food, beverages, and other groceries ¹	914.5	919.5	924.4	930.5	931.3
Food exc. alcoholic beverages	670.2	673.7	681.4	687.2	690.6
At home	495.9	497.5	502.4	506.4	503.8
Away from home	174.3	176.1	179.0	180.8	186.9
Alcoholic beverages	115.6	115.9	114.0	113.0	113.2
At home	73.6	74.2	72.3	71.3	70.9
Away from home	41.9	41.8	41.7	41.6	42.3
Cleaning and household supplies	35.8	36.2	36.3	36.2	35.4
Toiletries	34.8	34.6	34.4	34.1	34.3
Tobacco	58.2	59.1	58.4	60.1	57.9
Drugs	43.8	43.8	43.2	42.3	43.5
Clothing and shoes	362.4	362.6	361.6	362.4	362.9
Gas and oil	113.2	117.2	114.0	112.4	116.1
Fuel oil and coal	13.1	13.7	14.1	12.8	12.0
Other	118.6	115.7	117.1	117.0	118.6
Durables	594.3	596.8	587.1	613.1	621.0
Motor vehicles and parts	237.3	234.8	231.6	254.9	253.6
Furniture and household equipment	252.8	256.5	253.5	256.2	260.4
Other	104.2	105.5	102.0	102.0	107.1
Services	1,943.4	1,950.6	1,953.6	1,959.5	1,961.2
Housing	711.4	712.7	713.1	713.7	714.9
Household operation	278.9	273.5	274.2	276.9	273.2
Transportation	137.9	140.3	140.8	139.2	140.1
Personal care	32.4	31.8	31.4	31.0	30.6
Medical care	343.4	347.1	347.4	346.4	347.6
Personal business services	215.9	216.9	219.1	222.1	222.6
Recreational services	104.4	106.2	106.2	106.4	107.5
Other	119.0	122.1	121.4	123.8	121.5
Disposable personal income	4,526.2	4,550.5	4,553.8	4,545.5	4,561.0

¹Contains some items not normally purchased in grocery stores.



tions in the proportion during 1982. Outlays for nondurables, such as food, drugs, and clothing also remained fairly constant at about 35 percent of DPI from January 1982 to March 1983.

In the nondurable goods category, the proportion of income allocated to food remained steady at 16.1 percent throughout 1982 and into the first quarter of 1983. But the share of income allocated to at-home food purchases declined throughout the period from 11.8 percent to 11.5 percent, whereas the percentage of income spent on away-from-home food increased steadily from 4.3 to 4.6 percent in the first quarter of 1983.

Food expenditures were \$26 per person higher in the first quarter of 1983 than in the third quarter of 1982 (table 1). After increasing by \$4 per person in the fourth quarter of 1982, at-home food expenditures dropped by \$6 per person in the first quarter of 1983. Away-from-home expenditures, in contrast, increased by \$8 per person in the fourth quarter of 1982 and increased an additional \$19 per person in the first quarter of 1983.

The changes in food expenditures reflect changes in food prices, the amounts of food purchased, and the distribution of food purchases among more or less expensive foods. The constant dollar series (table 2) indicates changes in food expenditures after adjusting for inflation.

Constant dollar at-home food expenditures increased by \$4 per person in the fourth quarter of 1982. Since this is the same dollar increase as the current dollar series, changes in food prices were not a major factor in the change in at-home expenditures. Rather, an increase in the quantity of food purchased and a redistribution of at-home food expenditures from less expensive to more expensive items may explain the change.

In the first quarter of 1983, constant dollar at-home food expenditures decreased only \$2.60 per person, compared with the decline in current dollars of about \$6 per person, reflecting primarily consumer responses to increases in at-home food prices.

Away-from-home food expenditures, measured in constant dollars, increased at

Table 3. United States Population¹

Year	Quarter			
	I	II	III	IV
Millions				
1982	231.3	231.8	232.4	233.0
1983	233.5			

¹Total, including Armed Forces overseas.

an annual rate of nearly \$2 per person in the fourth quarter of 1982 and an additional \$6.10 in the first quarter of 1983. These increases were about one-third of the respective increases in the current dollar series, indicating that Americans were eating more away from home or were switching to more expensive foods in those quarters despite increases in away-from-home food prices. □

The Outlook for American Gardening

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Nearly half of all American households grew vegetables in 1981, indicating gardening likely has an impact on food expenditures, consumption patterns, and food prices. Although only limited data exist on gardening, a recent ERS study based on the 1977-78 Nationwide Food Consumption Survey (NFCS) provides some insight.

The survey indicated that of each dollar's worth of vegetables used at home, 18 cents worth were produced in gardens. Tomatoes were the overwhelming favorite, with 43 percent of the surveyed households growing them during the year preceding the survey. Only 27 percent reported growing tomatoes in a 1965 survey.

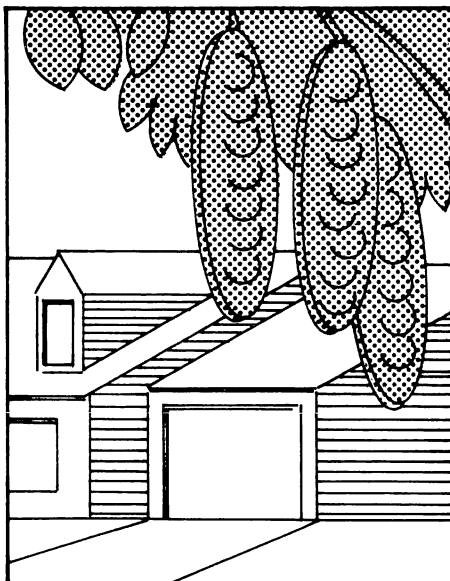
Motivations for home gardening range from reducing food costs to health concerns and social reasons. The survey found that households could save an annual average of 78 cents weekly on vegetables from a home garden. Private opinion polls have found similar motivations and results from home gardening.

Factors Influencing Gardening

The ERS study revealed that households most likely to garden are those that are nonblack with elderly adults and no small children present, located in rural areas of the north-central region, and owning their home. Households most likely to garden also have income from nonlabor sources, such as retirement pensions. A low cost of time and a high potential for savings on vegetable expenditures also encourage gardening.

The decision to garden is also influenced by the cost of gardening inputs, land availability, and climate. For example, households in the north central and southern regions were more likely to garden because of cheaper land and more favorable growing conditions.

Not surprisingly, households in rural areas have a higher probability of gardening than those in urban areas. Rural households typically have more access to necessary land and equipment. Also, many rural residents may have farm experience which can be applied to gardening. These factors tend to lower the rela-



tive price of home-produced vegetables and increase the probability of gardening.

Black households are less likely to garden because of generally lower incomes and asset levels, which constrain the purchase of required gardening inputs. In addition, fewer black households own their homes. Homeownership, in general, encourages gardening primarily because of the proximity to owned land suitable for raising vegetables.

Labor and nonlabor income, such as Social Security benefits and returns on investments, were examined separately in the ERS study in the belief that they may have different effects on the decision to garden. If a household's labor income increases because of more hours worked, for example, the time available for gardening may decrease. Nonlabor income, however, does not affect the availability of time for home gardening. Households with large incomes, regardless of the source, may have less incentive to garden to reduce food costs. Possibly for these reasons, nonlabor income encouraged home gardening, while labor income had the opposite effect.

The wage rates for the household's male or female head were used as the opportunity costs of time; that is, the money the wage earner foregoes by gardening rather than working. The wage rate affects the relative price of store-bought vegetables versus those produced at home. Higher wage rates increase the

price of home-produced vegetables relative to the market price because of the added cost of time devoted to gardening. For these reasons, wage rates were found to have a negative influence on a household's decision to garden—the higher the wage rate for the household head, the less likely he or she was to garden.

Households composed of one adult, particularly a female, engage in home gardening less frequently. Households with preschool age children also are less likely to garden because they have less time and energy available for gardening.

Households headed by an elderly person or with elderly members have a higher probability of home gardening, even after considering the influence of other factors, such as home ownership and the amount of income from nonlabor sources. This may be because gardening is viewed as a leisure or exercise activity by many elderly.

Many trends in demographic and socioeconomic factors can be expected to influence the amount of home gardening in the future. The American population is aging, people are moving to the Sun Belt, and real incomes are not rising rapidly. Given these developments, the prospect is for a continued high, if not increasing, proportion of households that will garden. □

References

- Blaylock, James and Anthony Gallo. "Modelling the Decision to Produce Vegetables At-Home". *American Journal of Agricultural Economics*, (forthcoming, Nov. 1983)
- Gardens For All*. 1981-82 National Gardening Survey conducted by the Gallup Organization, Burlington, Vermont.
- Hatfield, Kim M. "Changing Home Production and Presentation Patterns", *National Food Review*. U.S. Dept. Agr., Econ. Res. Serv. NFR-13, Winter, 1981. pp. 22-25.
- U.S. Department of Agriculture. 1977-78 Nationwide Food Consumption Survey.

Food Stamp Program Effects in Puerto Rico

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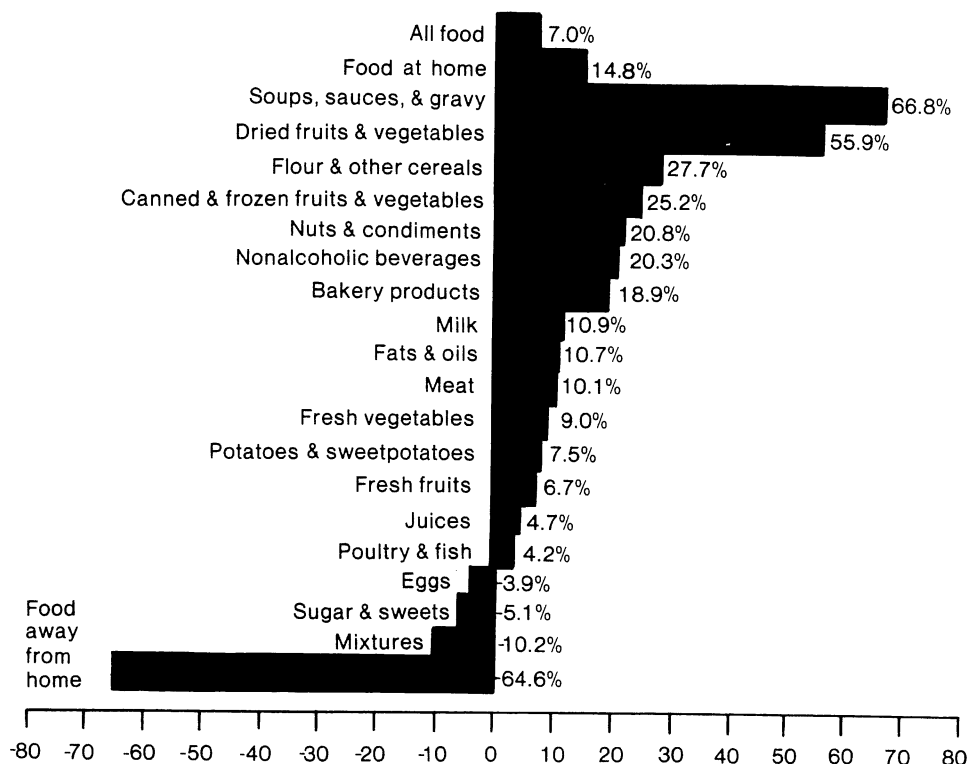
Puerto Rico has traditionally been plagued by low incomes, high inflation, high unemployment, slow economic growth, and limited food supplies which have affected welfare programs and raised program costs to the Federal Government, especially for the Food Stamp Program (FSP). Participation in the FSP in Puerto Rico has grown to over 1.8 million people—about 60 percent of its population. In contrast, less than 10 percent of the total population of the 50 States participates in the FSP.

Recent congressional actions aimed at containing the growth of the Federal budget substantially altered the FSP in Puerto Rico. The Nutritional Assistance Program replaced the FSP on July 1, 1982, and established local administration of food assistance efforts by providing a fixed annual Federal appropriation. In the first year of operation, local authorities replaced food stamps with direct cash payments to recipients. However, since there is no assurance that payments will be used to purchase food, such a program may be less effective in upgrading the diets of the needy.

A recent ERS study compares the effects of the FSP and cash payments on food purchases in Puerto Rico. The study estimates expenditures of households participating in the FSP and those eligible but not participating for 18 food-at-home items, total food at home, food and snacks consumed away from home and total food. The impact of the FSP on household expenditures for these food groups was determined by isolating the influence of bonus stamps, the supplemental benefits received from participation in the FSP. The bonus effect was measured as the difference in the estimated purchases of households participating in the FSP and the simulated purchases of households prior to participation.

The study is based on July-December 1977 data from the Puerto Rican Household Food Consumption Survey, undertaken in conjunction with the 1977-78 Nationwide Food Consumption Survey.

Figure 1. Impact of the Food Stamp Program on Food Expenditures



FSP regulations at that time were different than exist today in Puerto Rico. In 1977, for example, food stamp recipients were still required to pay for a portion of their stamps, a requirement eliminated in January 1979. However, the survey data are the most recent available.

Data were adjusted using adult equivalent scales, which account for the effect of age-sex composition of the household on purchases by converting household members into a standard adult male unit. Thus, variations in household expenditures attributable to differences in household composition are eliminated and all household members are placed on a comparable basis.

Impact of the Food Stamp Program

The ERS study found that households participating in the FSP increased pur-

chases of most foods. Total food expenditures per equivalent adult for participating households increased by \$1.62 per week, or 7 percent more than that of the adjusted eligible nonparticipating households weekly expenditures. Similarly, food-at-home expenditures per adult equivalent for eligible participating households increased by \$3.06 or close to 15 percent. This amount is naturally expected to be higher since food stamps may be used only for food-at-home purchases.

Figure 1 illustrates the impact of the FSP on the food expenditure categories included in the analysis. Besides increases in all food and food at home, expenditures for soups, dried fruits and vegetables, flour and other cereal products, canned and frozen fruits and vegetables, nuts, and nonalcoholic beverages

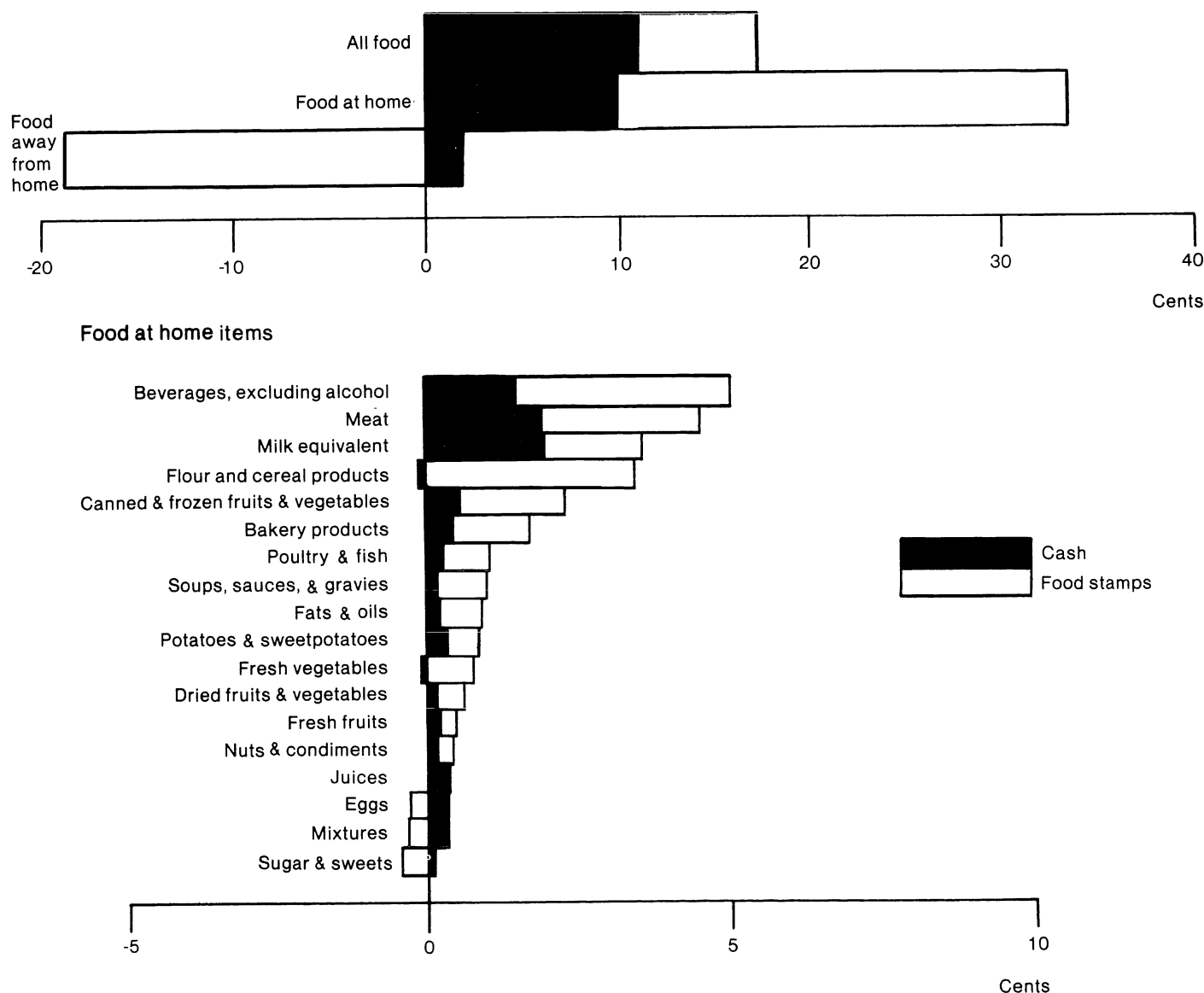
also rose. In addition, expenditures for bakery products, milk, fats and oils, meat, and fresh vegetables showed sizeable gains as a result of food stamp participation. Expenditures for eggs, sugar and sweets, mixtures (including ready-to-eat

items), canned or frozen dinners, dry mixtures, and baby foods decreased. Not surprisingly, food-away-from-home expenditures were lowered by the FSP. Again, this may be due to the restriction of food stamps to at-home purchases.

Effectiveness of Cash Versus Stamps

Figure 2 compares the effectiveness of the FSP to a program that distributes cash. The results indicate that each dollar distributed through the FSP increased food-at-home purchases by 33 cents,

Figure 2. Effects of a Dollar Distributed as Food Stamps Versus Cash in Puerto Rico





Food and Nutrition Legislation

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whereas cash would have increased weekly food-at-home purchases per equivalent adult by 10 cents. From this analysis, food stamps would seem to be more than three times as effective as cash in expanding household purchases of food-at-home.

In contrast, the FSP was slightly less effective in increasing total food expenditures. A cash program would generate nearly 11 cents per equivalent adult in increased food purchases while food stamps generated about 17 cents. This lower value for all food purchases reflects the decline in food away-from-home purchases. Food away-from-home purchases declined by about 19 cents for the FSP and increased slightly for cash.

Conclusions

The ERS study found that, based on the 1977 FSP in Puerto Rico, participants' food expenditures would increase more than under a cash program. However, analysts stress that the present situation is very different from that when the survey data were collected.

In 1982, the Nutritional Assistance Program was initiated with a \$825 million federally funded block grant and local administration replacing the FSP. Puerto Rico chose to distribute program benefits in the form of cash transfers. One month after the new program's initiation, Congress, citing that a cash program provided no assurances that benefits would be used for food, advised Puerto Rican authorities to adopt a food assistance system other than cash beginning next fiscal year. New plans are now being considered. However, further analysis under the new regulations would be required to accurately measure the effectiveness of the different program options. □

References

- Blanciforti, Laura A. *Food Stamp Program Effects in Puerto Rico*. U.S. Dept. Agr., Econ. Res. Serv. Washington, D.C.; Feb. 1983, ERS Staff Report No. AGES830204.

The following are some major bills that were introduced this session in the House of Representatives and the Senate.

Food Safety-Labeling

H.R. 1795—Rep. James Jeffords (VT)

To amend the Federal Meat Inspection Act to allow State inspected meat to be sold interstate. Currently, meat sold interstate requires Federal inspection.

H.R. 1908/H.R. 1909—

Rep. Richard Schulze (PA)

To amend the Federal Food, Drug, and Cosmetic Act to require containers of imported mushrooms and foods containing imported mushrooms to carry labels in English stating the country of origin.

H.R. 2178—Rep. Claude Pepper (FL)

To amend the Community Services Block Grant Act to create a program under which consumers in at least 70 selected cities are provided with information for comparing food prices among the different retail suppliers within the city and to provide nutritionally sound menus incorporating those foods which are found to be relatively low in price at that time. At the discretion of the Secretary of Health and Human Services, implementation of the program and its users will be determined.

S. 881—Sen. Ernest Hollings (SC)

To amend the Federal Food, Drug, and Cosmetic Act of 1950 to eliminate the requirement that the word "oleomargarine" or "margarine" be in type or lettering as large as any other type or lettering on labels. The regulation would remove unnecessary restrictions which have become obsolete and often unenforced.

Food Assistance

H.R. 2023—Rep. Edward Madigan (IL)

To expand and improve the domestic commodity distribution program by using Federal funds to pay expenses incurred

by State agencies in the storage and distribution of commodities, and allowing private companies to reprocess commodities into food products in return for payment-in-kind.

S. 451—Sen. David Pryor (AR)

To appropriate \$50 million to the Federal Emergency Management Agency to award a grant to the United Way of America for the purpose of providing emergency food and shelter to needy individuals through private voluntary organizations. (This bill became part of the Federal jobs bill [H.R. 1718] which was signed into law [P.L. 98-8] on March 24, 1983).

S. 490—Sen. Alan Dixon (IL)

To amend the Agricultural Trade Development and Assistance Act of 1954 to improve certain foreign agricultural commodity donation programs. A certain level of distributed commodities would be required to be in the form of processed and protein-fortified products. In addition, S. 490 would assure that commodities or money from the sale of a commodity will be used at the farm or village level in famine-prone countries.

Trade and Tariff

H.R. 1898—Rep. Delbert Latta (OH)

To provide duty-free entry of water chestnuts and bamboo shoots since no domestic production exists. The current suspension of the duty will soon expire.

H.R. 2265—Rep. Thomas Downey (NY)

To provide for a temporary duty reduction of caffeine until December 31, 1985. Currently, domestic production is limited.

H.R. 2502—Rep. Marty Russo (IL)

To suspend the duty on canned corned beef for 3 years beginning on October 30, 1983, to encourage domestic competition. □

Selected ERS Research Reports

[Single free copies of the following reports are available from EMS Publications, Room 0054-S, USDA, Washington, DC 20250.]

Farmer-to-Consumer Direct Marketing, Selected States, 1979-80, by Peter L. Henderson and Harold R. Linstrom. February 1982. Order Statistical Bulletin No. 681.

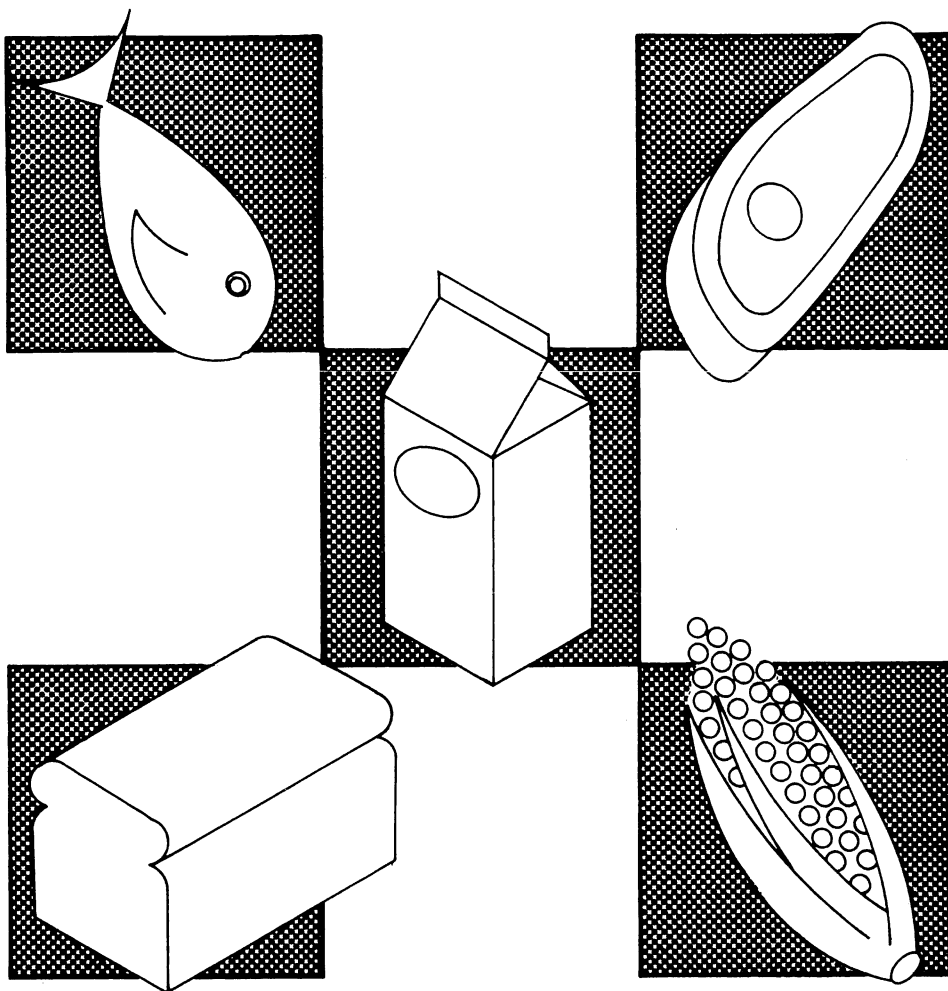
About 21,000 farmers surveyed in seven States in March 1980 reported selling \$126 million worth of farm products directly to consumers. About 44,000 farmers in nine States surveyed in December 1979 reported \$260 million worth of direct sales. The States surveyed in 1980 were California, Illinois, Missouri, Maine, New Hampshire, Vermont, and Texas. Those surveyed in 1979 were Colorado, Connecticut, Delaware, Maryland, Massachusetts, New York, Rhode Island, Tennessee, and Wisconsin. The chief products sold in both years were floral and nursery products, apples, peaches, strawberries, sweet corn, and tomatoes. The chief selling methods were pick-your-own operations, farmers' markets, and roadside stands.

Productivity Potential In Dry Grocery Warehouses, by Gerald Grinnell and Lawrence Friedman. March 1982. Agricultural Economics Research Report No. 484.

Food distributors in the United States could substantially improve their productivity by making better use of existing technology. Direct labor costs could have been reduced by \$700 million in 1981 by changing work assignments, obtaining a more balanced day-to-day workload, using new equipment, increasing use of unitized loads, altering some product handling practices, and partially mechanizing, according to this study of dry grocery warehouses.

[Order the following reports from the National Technical Information Service (NTIS), 5285 Port Royal Rd., Springfield, VA 22161.]

Provisions of The Agriculture and Food Act of 1981, by James D. Johnson, Richard W. Rizzi, Sara D. Short, and R. Thomas Fulton. March 1982. Agricultural Economics Research Report No. 483. Order PB82-165457. Paper copy \$7.50. Microfiche \$4.



The Agriculture and Food Act of 1981 authorizes many farm programs for 4 years. This report summarizes its provisions by title. Commodity program provisions discussed for wheat, feed grains, cotton, rice, peanuts, soybeans, sugar, dairy, and wool and mohair include price supports, loan levels, disaster payments, and program acreage. Other provisions summarized include miscellaneous; grain reserves, the national agricultural cost of production standards review board; agricultural exports and P.L.-480; food stamps, research, extension, and teaching; resource conservation; credit, rural development, and family farms; floral research; and consumer information.

Structural Adjustment of the Food Industries of the United States, by John M. Connor. Staff Report No. AGES820723, July 1982, 159 pp. Order PB82-262080. Paper copy \$15.

The United States has the largest food manufacturing sector of any market economy of the world. The number of food manufacturers declined by 52 percent between 1974 and 1977. On average, the top four firms control over half of sales in processed foods product classes; this concentration rose by 10 percent between 1958 and 1977. Product diversification has accelerated. Total food and beverage advertising and sales promotion expenditures ranged between \$9 billion and \$14 billion in 1979. These elements of market organization affect the food industry's

economic performance: profit margins, manufacturers' prices, and technological change. About half of the food industries exhibit significant performance problems.

Employment Size of Manufacturing Establishments in Metro and Nonmetro Areas, 1969 and 1976. By Herman Bluestone and Daniel G. Williams. Staff Report No. AGES820803, August 1982, 20 pp. Order PB83-101006. Paper copy \$7.

In the densely settled Northeast and in the South, the average manufacturing establishment located in nonmetro areas tended to employ more workers than those located in metro areas. This was particularly evident in low wage, labor intensive industries. Manufacturing establishments in all regions, in metro and nonmetro areas, and most industries declined in employment size between 1969 and 1976. The reduction may have resulted in part from energy-induced increases in transportation costs. These tend to shrink establishments' supply and marketing areas and hence their optimal level of output.

Consumer Demand for Red Meats, Poultry, and Fish, by Richard C. Haidacher and others. Staff Report No. AGES820818, Sept. 1982, 144 pp. Order PB83-106591. Paper copy \$14.50.

Red meats, poultry, and fish are the most important foods in most consumers' diets, and are of major importance to the Nation's agricultural economy. This report contains evidence that the U.S. demand structure for red meats, poultry, and fish is characterized by a high degree of stability, and that an overwhelming part of the variation in U.S. demand for these products can be explained by the economic factors of prices and income. Socioeconomic and demographic factors which are important determinants of individual consumer demand patterns are also identified, and their effects are measured and assessed.

Structure and Performance of Grocery Products Brokers, by Thomas H. Stafford and Gerald E. Grinnell. Sept. 1982, AER-490, 64 pp. Order PB83-101105. Paper copy \$9. Microfiche \$4.

The grocery products brokerage industry is generally competitive. Concentration is low in segments of the industry that primarily sell in local markets, and high for brokers who sell nationally. Entry into the industry is not restricted and other types of wholesalers account for a large share of sales in the more concentrated industry segments. Brokers have been losing business to manufacturers' sales offices, and this trend could continue. Operating expenses and commission rates, which are highly correlated, vary with the type of products handled and establishment size. Large operations have the lowest rates on average.

Developments in Farm to Retail Price Spreads for Food Products in 1981, by Denis Dunham. Sept. 1982, AER-488, 80 pp. Order PB82-242249. Paper copy \$10.50. Microfiche \$4.

The difference between what farmers receive and what consumers pay for food products—farm-to-retail price spreads—has been the main contributor to the rise in retail food prices in recent years. This report contains analysis of the farm to retail spread for a market basket of foods and selected items including beef, pork, milk, poultry, potatoes, and bread. The 1981 farm value averaged 35 percent of the price for a market basket of foods, dropping from 37 percent in 1980, and was the lowest in two decades. In 1981, abundant food supplies held down farm prices; retail prices rose faster because of processing and marketing charges. This report also analyzes food industry labor productivity; profit margins; input costs such as labor, packaging, and energy; and consumer food expenditures.

[Order these reports from the Government Printing Office, Washington, DC 20402.]

Couponing's Growth in Food Marketing, by Anthony E. Gallo, Larry G. Hamm, and James A. Zellner. June 1982. 24 pp. Agricultural Economics Research Report No. 486. Order 001-000-04275-1; \$3.25.

The number of cents-off coupons distributed by manufacturers and retailers rose from 10 billion to 90 billion between 1965 and 1980. About 80 percent of U.S. households redeemed coupons in 1979, making coupons the most rapidly growing form of food advertising. Although coupons still make up the smallest portion of all major food advertising, their value rose from less than 6 percent of total advertising expenditures in 1970 to 11 percent in 1979. This report analyzes the use of coupons by consumers, as a marketing tool by manufacturers and retailers, and in the marketing of farm produce.

The Foodservice Industry: Structure, Organization, and Use of Food, Equipment, and Supplies, by Michael G. Van Dress, Sept. 1982, 168 pp. Statistical Bulletin No. 690. Order 001-000-04288-2; \$6.50.

Nearly 378,000 foodservice establishments purchased 49 billion pounds of food in 1979, up 12 billion pounds from 1969. The total retail value of food served away from home reached \$102.4 billion, spent by a daily average of 169 million customers. Separate eating places, the foodservice industry's largest segment, grossed \$58.4 billion in meal and snack sales in 1979, up 360 percent from 1966. Growth in numbers and revenue of away-from-home eating was spurred by rising incomes, a more mobile population, the trend toward convenience eating, and the increase in franchising and multi-unit firms. □

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