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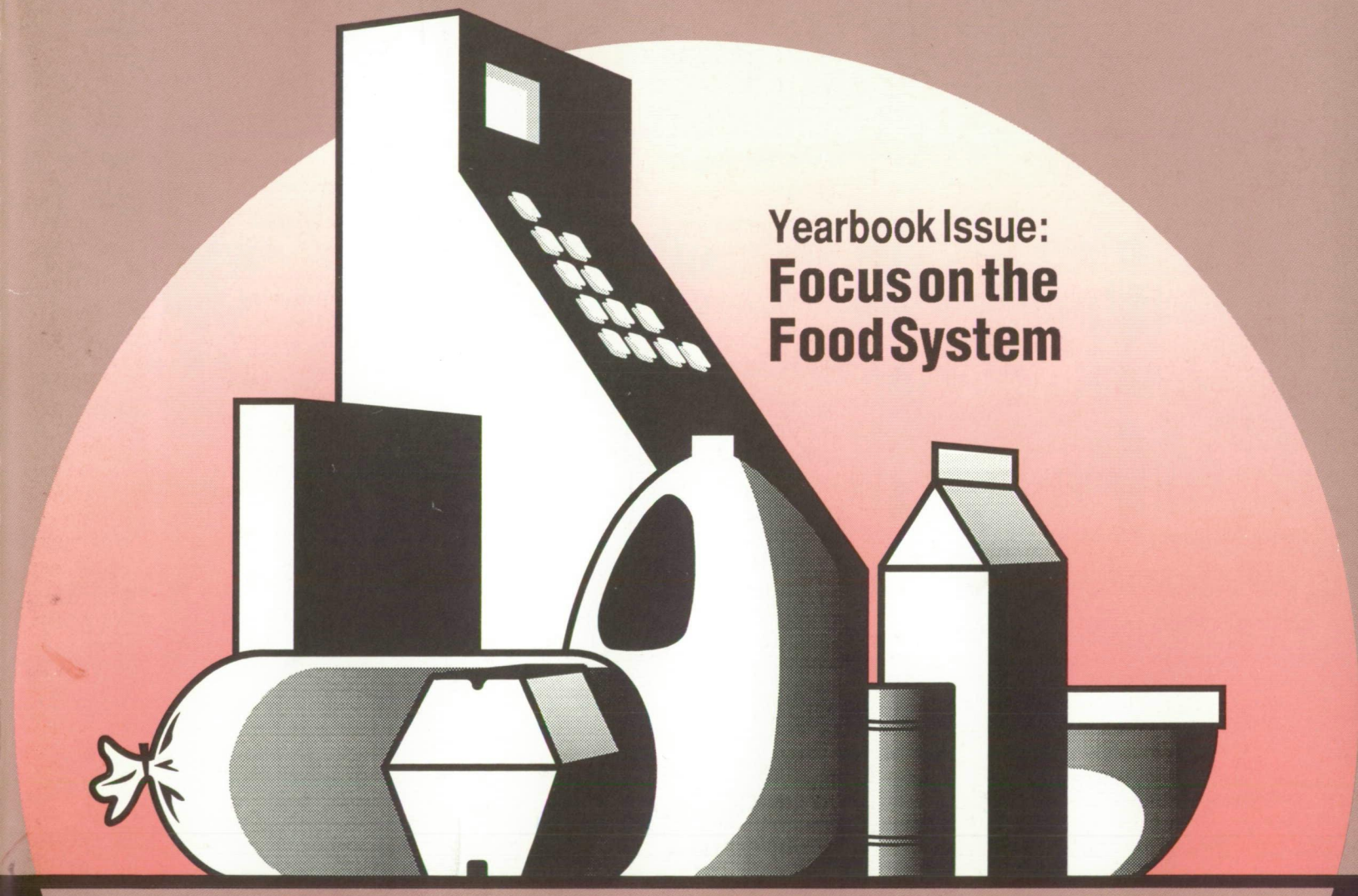

Yearbook Issue: Focus on the Food System

Editor's Notes

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Once again, we present our annual yearbook issue, which looks at what we had available to eat, who supplied it, who prepared or processed it, where we purchased it, who paid for it, and how nutritious it was. The yearbook issue discusses trends in food consumption and food price changes. Some highlights include that Americans are not necessarily successful in changing their diet to lower fat intake; instead, they seem to be merely substituting one fat source for another. Also included is information on the growing spread between farm and retail prices, that Americans are eating out more than ever, and how food assistance programs are helping to feed the less fortunate.

This year's yearbook reports on new topics as well. Information about food consumption has been expanded into available food nutrients. Two articles discuss the revolution in the food marketing industry and report the trends affecting food processors and retailers.

FoodReview analysis doesn't stop at just the trends. This past year, *FoodReview* discussed many food-environmental issues, including food safety. In the last three issues, seven articles discussed food safety and pesticides. Topics ranged from the role pesticides play in our food production system to consumer interest in buying organic, fresh produce.

Waste disposal, especially with diminishing space in the Nation's landfills, poses another environmental concern. The April-June issue reported how innovations in food packaging are reducing wastes. That issue also showed how food manufacturers are recycling byproducts into useful items.

FoodReview also covers foreign trade. Since our economy has become more integrated with the rest of the world, international trade has become important to every aspect of the food system.

Other issues dealt with our wallets. For example, ERS research found no evidence of large supermarket chains using market power to charge excessive food prices. Instead, opportunity for comparison shopping remains.

We hope you enjoy this issue of *FoodReview*. Let us know what you think, so we can continue to provide useful, timely information about the food industry.

Stephen L. Ott
Economics Editor

FoodReview

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Food Consumption, 1970-90

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U.S. food consumption has changed dramatically in the last 20 years. Americans are consuming more food, on the whole, than ever. And, diets have shifted away from meat or animal products as the main entree to a mixture of animal products, vegetables, fruits, nuts, and grains. For example, we're eating more breakfast cereals, pizza, pasta entrees, stir-fried meat and vegetables served on rice, salad entrees, tacos, burritos, enchiladas, and fajitas.

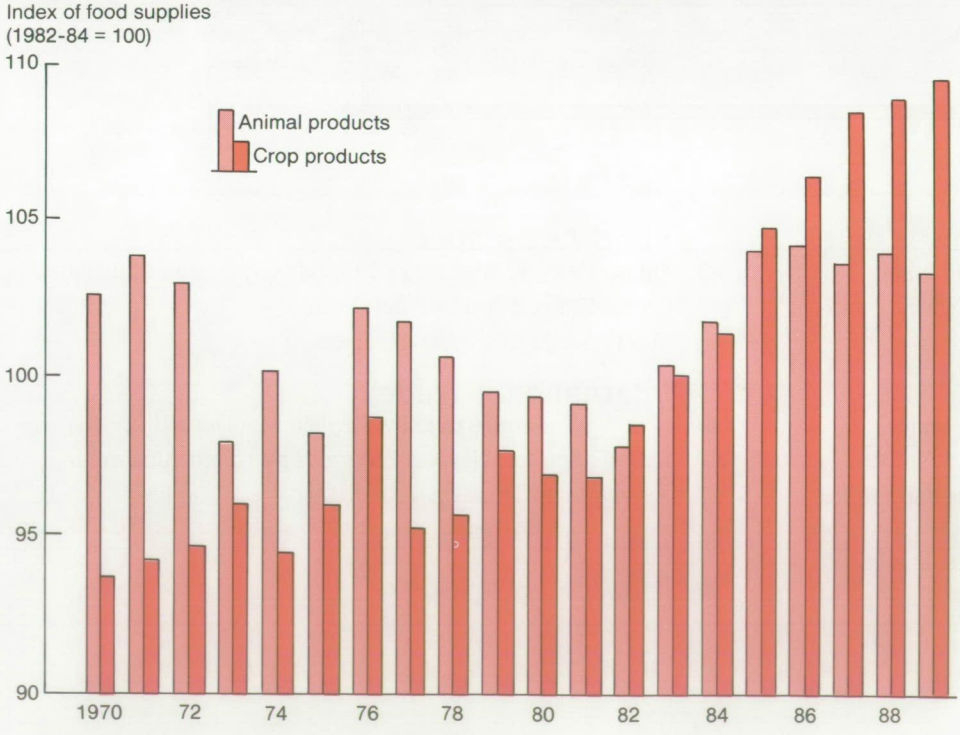
The U.S. per capita food supply, as measured by USDA's price-weighted per capita food consumption index, has increased by about 8 percent since 1970. More than half the increase occurred during 1984-89. Higher consumption of crop products dominated most of this increase, whereas animal products predominated in the 1970's (figure 1).

Spurring the rise in crop foods was the higher consumption of vegetable fats and oils, flour and cereal products, fruits, fresh and frozen vegetables, frozen potatoes, peanuts, and tree nuts. Moderating the increase for crop foods were decreases in consumption of canned vegetables, dry beans and peas, and coffee.

Per capita consumption of animal products in 1989 stayed about the same as in 1970, but the mix differed. We used, on average, less red meat, eggs, whole milk, butter, and lard in 1989, but more poultry, fish and shellfish, lowfat milk products, cream products, and cheese.

No clear benchmark exists for checking the accuracy of food supply data, but periodic surveys of food consumption and food expenditures provide useful checks. The Nationwide Food Consumption Survey shows trends similar to those reported here. For example, the survey showed that between 1977 and 1985 Americans consumed more calories on average, less red meat, and tended to use meats as an ingredient with a mixture of other foods.

Figure 1
Consumption of Plant-based Foods Outpaced Animal Products



Per capita consumption of all foods rose 8 percent since 1970. Consumption of crop products soared 16 percent in those 19 years, while consumption of animal products rose less than 1 percent.

The per capita food consumption index measures changes in overall food consumption. The index is derived by combining pounds of food in retail-weight equivalents with constant retail foodstore prices in a base period. Using a price-weighted quantity index minimizes the problems associated with combining consumption of foods of different concentrations and values. Thus, changes in the quantity of a higher priced item, such as beef, have more effect on an index of this type than does an equal change in the quantity of a lower priced item, such as chicken.

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Calculating Food Consumption

Food "consumption" is actually an estimate of the available food supply. Estimates of the total food supply in the United States, and most other countries, are based on records of commodity flows from production to end uses. This involves supply and use data for each major commodity from which human foods are produced.

Total available supply is the sum of production, beginning inventories, and imports. These three components are either directly measurable or are estimated by government agencies using sampling and statistical methods.

For most commodities, measurable uses include exports, industrial uses, farm inputs (such as seed), and ending inventories. Human food usually is not measured directly or estimated statistically. Consumption, therefore, is a residual component (what's left over) after subtracting other uses from the available total supply. In a few cases, food supplies are measured directly, and one of the other use components becomes the residual category. Such is the case for wheat, where flour production is measurable and livestock feed use becomes the residual. Because consumption is usually a residual, it is sometimes referred to as "disappearance" to indicate that it is only an approximation and not actual ingestion.

Since it is a residual, the estimate of consumption is subject to errors in all the other components. As in many statistical series, these errors may be offsetting, but there is a possibility that errors may accumulate. The primary sources of error are sampling, incomplete reporting, and estimating techniques. As a result, the supply/use data must be interpreted and used with these limitations in mind.

The point in the marketing system where production is initially measured is termed the primary level. Per capita food consumption figures are later converted from primary weight to retail product weight using conversion factors that account for further processing, trimming, shrinkage, or loss occurring during marketing.

Retail-weight equivalents reflect consumption as if all foods were sold through retail stores for home consumption. A large and expanding proportion of food, however, moves through wholesale channels to restaurants, institutions, and other away-from-home eating places.

Primary information used in calculating food supplies comes from a variety of governmental and private sources. Since funds have not been available to measure food supplies directly on a continuous basis, the data used are collected for other purposes. Periodic surveys of food consumption and food expenditures provide useful checks, but no clear benchmark exists for checking the accuracy of the information.

Strengths

- The food supply data series is the only consistent data set; that is, supply and total use balance.
- The series measures use of basic commodities without getting involved with identifying all end-use products and the problems of separating food mixtures into their component ingredients and then converting these ingredients to the equivalent raw agricultural commodity.
- The series measures food supplies for consumption through all outlets, both at home and away from home.
- The data set is the only continuous series that allows for analysis of long-term trends in supply and consumption by major food groups. First published in 1941, the data extend back to 1909 for many commodities.
- The series covers the complete spectrum of primary foodstuffs. Hence, it can be used for measuring interrelationships between foods and for measuring total food supply and apparent use. It is particularly useful for consistently estimating effects of changes in price and income on food consumption.

Weaknesses

- Usually the food supply is a "residual," which makes the commodity supply-use table balance. Hence, the data contain sampling and measurement errors accumulated in the estimation of the other components.
- The food categories tend to be aggregates, according to the basic commodity definition, for example, beef. Final product forms and market channel flows are not usually known.
- Food disappearance includes some spoilage and waste in the marketing system and in the home. Thus, the data can overstate actual consumption.
- The data are national averages for the entire U.S. population. No variations in food consumption due to age, sex, ethnic background, religion, race, urbanization, region, family size, or income level are discernible, even though these factors probably are associated with varying patterns or levels of food consumption.
- Gaps in the data since 1981 regarding commercial production of fresh and processed fruits and vegetables pose a serious problem for estimating per capita disappearance. Such losses are due to Government budget cutbacks, industry disclosure problems, and declines in the number of firms reporting data.

Beef and Poultry Compared

Since 1987, many have reported that Americans, on average, are eating more poultry (chicken and turkey) than beef. Such reports are based on an increasingly inappropriate comparison of a retail weight for beef, which contains proportionately less bone than the ready-to-cook weight for poultry. For example, the per capita boneless, trimmed weight for beef was just 3.6 pounds less than its retail weight in 1990. In contrast, the per capita boneless weight for chicken was considerably less than its ready-to-cook weight, 22 pounds in 1990.

It is clear that not until 1990 did per capita poultry consumption approach the level of beef consumption, once estimates are adjusted for a more level comparison—that is, by converting the data to a bone-removed equivalent (table 1).

However, a cautionary note is in order. In the current data series, the quantity of beef and poultry used in commercial pet foods is not subtracted from these food consumption (disappearance) estimates. Moreover, the portion of broilers used in commercial pet food has increased significantly in recent years, whereas very little beef has been used. As consumer demand for chicken breasts increased, the less desirable parts, such as necks, backs, and giblets, have become increasingly economical ingredients for pet foods.

Biennial processor and distributor survey data by the National Broiler Council show some of the radical changes in broiler product form and market structure, which help explain why renderers and pet food producers have become an expanding market for broilers. Survey data show that whole broilers were the mainstay of retail product, at 87 percent of all processor volume sold in the early 1960's (see table below). Today less than 20 percent of chickens are sold as whole fryers.

Parts, further processed, and shipments to renderers and pet food manufacturers now make up the majority of the broilers sold. The

Cut-up Parts Are the Largest Segment of Chicken Sales

Marketing form	1962	1967	1970	1974	1978	1981	1983	1985	1987	1989
	Percent of processor volume									
Whole dressed bird	87.1	77.0	72.9	65.3	54.7	43.9	37.3	31.4	26.9	18.3
Cut-up or parts	12.9	23.0	27.1	34.7	40.4	46.2	54.2	49.2	52.3	50.4
Controlled atmosphere	N/A	N/A	N/A	N/A	3.2	2.9	1.7	4.7	3.6	4.0
Boneless, unprocessed	N/A	N/A	N/A	N/A	N/A	.9	.4	5.0	5.1	7.6
Further processed	N/A	N/A	N/A	N/A	N/A	5.3	4.1	6.2	8.2	6.3
Pet food, but wholesome [1]	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	3.1	11.6
Other	N/A	N/A	N/A	N/A	1.7	.8	2.3	3.5	.8	1.8
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Total boneless	N/A	N/A	N/A	N/A	N/A	3.8	4.2	9.2	11.5	11.1

N/A = Not applicable; not included in report of survey findings. [1]Includes only products which passed USDA inspection and were certified as wholesome for human consumption.

Sources:"Broiler Industry Marketing Practices," various calendar years, National Broiler Council.For further analysis, see "Market Trends Driving Broiler Consumption," *Livestock and Poultry Situation and Outlook Report*, LPS-44, by Mark R. Weimer and Richard P. Stillman, USDA, ERS, November 1990.

Contact: Judith Jones Putnam (202) 219-0870.

Beef

Beef consumption is at its lowest level since the early 1960's. Per capita consumption of beef (on a boneless, trimmed-weight basis) in 1990 was 15 pounds lower than in 1970-74, and 25 pounds below the all-time high of 89 pounds in 1976, when beef supplies reached record highs after the liquidation of the Nation's beef herd (table 1).

Poultry

Per capita consumption of poultry products has climbed steadily since the 1970's, amounting to 64 pounds (on a boneless basis) by 1990. By weight, chicken consumption has increased the most in the last 20 years, equaling 21 pounds consumed per person in 1990. But on a percentage basis, turkey consumption has risen faster, more than doubling during the past 20 years to 14 pounds per person. (See box for a comparison of beef and poultry consumption.)

Pork

Per capita pork consumption (on a boneless, trimmed basis) has remained fairly stable over time (see box). At 47 pounds per person, average annual consumption for 1985-89 was just 0.5 pound below that in 1970-74 and 2 pounds below 1955-59. There have been minor variations from the trend, however. At 42 pounds per person, average annual pork consumption for 1975-79 was unusually low, because the large beef supplies from the liquidation of the huge beef herd reduced cattle and hog prices and, consequently, pork production.

Although we consume nearly the same amount of pork per person as 35 years ago, that amount contains more — and leaner — meat.

volume of parts marketed rose rapidly through the 1960's and 1970's as fast food chains for fried chicken proliferated. The growing popularity of chicken items on menus of fast food burger chains in the late 1970's and 1980's expanded the demand for parts, unprocessed boneless products, and further processed items. For example, Hardee's Food Systems, Inc., introduced a fried chicken filet sandwich in 1974, and McDonald's Corporation introduced fried Chicken McNuggets in 1983. Today, grilled or broiled chicken filets on oat bran buns and chicken fajitas lure customers to fast food outlets.

Retail grocery stores were still the largest outlet for broilers in 1989. But, their share of total broiler volume sold dropped from 68 percent in 1974 to 51 percent in 1989 (see table). The overall market share for food service, which increased slightly in the 1980's, ranged from a low of 28 percent during the 1981 recession period to a high of 38 percent in 1985. As traditional restaurants lost their share of broiler volume sold, fast food outlets gained market share until 1987.

ERS analysts are investigating such recent market developments. This may lead to revision of the current boneless chicken series and development of a new retail chicken series that excludes use of broilers by the pet food industry and renderers. The boneless consumption series also may need to be adjusted for water seepage that occurs between the ready-to-cook weight at the processor level and the product the consumer unwraps.

Radical Changes in Product Form and Market Structure Help Explain Why Pet Food Has Become an Expanding Market for Broilers

Market outlet or channel	1974	1978	1981	1983	1985	1987	1989
	Percent of total broilers [1, 2]						
Domestic food market	98.4	93.7	91.2	90.6	92.0	87.9	84.9
Retail grocery stores	67.9	64.2	63.6	60.6	53.8	52.4	51.2
Food service	30.5	29.5	27.6	30.0	38.2	35.5	33.7
Eating places	28.0	24.2	23.5	25.9	31.0	30.5	29.6
Fast food outlets	8.2	17.5	15.5	16.1	17.9	22.1	18.2
Other eating places	19.8	6.7	8.0	9.8	13.1	8.4	11.4
Government and institutions	2.5	5.3	4.1	4.1	7.2	3.0	1.9
Brokers [3]	N/A	N/A	0	0	0	2.0	2.2
Exports	1.6	6.3	7.1	4.4	2.8	5.4	3.5
Renderers and pet food producers [2]	N/A	N/A	1.7	5.0	5.2	6.7	11.6
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0

N/A = Not applicable; not included in report of survey findings. [1]Ready-to-cook (r.t.c.) weight basis (r.t.c. broiler weight is the entire dressed bird, including bones, skin, fat, liver, heart, gizzard, and neck). [2]Includes only products which passed USDA inspection and were certified as wholesome for human consumption. [3]Brokers are not a final market: products shipped through brokers were assumed to be shipped to foodservice operators.

Sources: "Broiler Industry Marketing Practices," various calendar years, National Broiler Council. For further analysis, see "Market Trends Driving Broiler Consumption," *Livestock and Poultry Situation and Outlook Report*, LPS-44, by Mark R. Weimer and Richard P. Stillman, USDA, ERS, November 1990.

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Fish

Recent per capita consumption of total fish and shellfish (on an edible-weight basis) has fallen slightly from the peak of 16.1 pounds per person in 1987. But consumption in 1990, at 15.4 pounds per person, was still up 27 percent from 1970-74.

The 46-percent rise in consumption of fresh and frozen fish and shellfish has accounted for most of the growth. While consumption of canned seafood products rose 11 percent, consumption of cured items fell 40 percent. Per capita consumption of canned tuna rose 50 percent from 1970 to 1990, from 2.4 to 3.5 pounds.

The 27-percent rise in average seafood consumption from 1970-74 to 1990 occurred despite the fact that increases in seafood prices outpaced those of other protein sources. The consumer price indexes for fish, red meat, and poultry climbed 369 percent, 193 percent, and 140 percent, respectively, from 1970 to 1990.

Two health concerns likely stimulated growth in seafood consumption. First, many seafood products are low in fats and calories, but high in protein and other nutrients. Second, some seafood products are good sources of omega-3 fatty acids, which are thought to lower cholesterol levels.

Changing U.S. demographics are also behind the increased seafood consumption. During the 1980's, the average age of the U.S. population increased, and minorities represented a growing share of the population. These trends will likely continue in the 1990's. Both older people and minorities traditionally consume more seafood than does the population as a whole.

Revised Conversion Factors for Pork Consumption

ERS has revised two types of pork consumption measures—the retail and the boneless, trimmed equivalent consumption series—to better reflect the amount available for consumption. The revised series show pronounced marketing and consumption changes: pork is now leaner, being trimmed more closely, and being sold with much less bone and with little or no skin. The revised retail series shows that Americans, on average, are purchasing less pork on a retail-equivalent basis than previously estimated. But according to the revised boneless series, the pork purchased since 1971 contains more total meat (retail equivalent minus the bone in retail cuts), more lean meat, and less fat, on average, than previously estimated.

Conversion factors are used to adjust carcass-weight pork consumption (disappearance) to retail and boneless weights. The retail-weight series measures the quantity of all pork consumed domestically, assuming it was all cut and trimmed as done in retail stores (even though much pork is sold as wholesale cuts to prepared-food processors, restaurants, and institutions). This retail consumption series represents the same form of product as the retail price series, but the consumption series includes products sold both at retail and in away-from-home food outlets. The boneless-equivalent series, on the other hand, provides an estimate of the amount of meat (muscle and fat) available to consumers. The boneless-equivalent basis is a better measure of the relative quantities available for ingestion from different types of meat than either carcass or retail equivalents.

Pork production and consumption prior to 1977 were calculated and reported on a pork-excluding-lard basis. Lard was a valuable part of the hog in terms of price and quantity. As a result, lard production and consumption were reported in separate supply and utilization series. But by 1977, lard had become less valuable, hogs were much leaner, and the procedure for determining pork excluding lard needed revision.

The procedure implemented in 1977 switched measures from pork excluding lard to carcass weight of production (as reported by USDA's National Agricultural Statistics Service). Use of carcass weight facilitated comparisons of production among pork and other red meats.

When a boneless-equivalent series was developed in the mid-1980's, a constant factor of 0.67 (which would not change over time) was used to convert from a carcass to a boneless-equivalent basis. But because today's hogs are leaner and pork is sold with a closer trim and very little skin, the constant conversion factor needed to be changed.

When conversion factors were changed, the consumption series for retail weights and boneless weights were revised (see table). The factors for converting pork consumption from carcass weight to retail weight (column I) and to boneless weight (column J) increase over the 1955-90 period, reflecting the longrun trend toward leaner pork carcasses. In 1955, for example, 20.6 pounds of fat were removed from every 100 pounds of pork carcass (column C). By 1990, fat removal was only 5.3 pounds per 100 pounds of carcass, even though the exterior fat on retail cuts has been trimmed more closely in recent years.

Today's pork is marketed at retail with less skin and bone than 35 years ago. In 1955, for example, 3 pounds of skin were removed from every 100 pounds of pork carcass (column D). By 1990, 6.8 pounds of skin were removed. Similarly, in 1955, 1.4 pounds of bone were removed per 100 pounds of pork carcass (column E). By 1990, 10.3 pounds of bone were removed.

The previous retail-weight series (column M) showed relatively stable per capita pork consumption at the retail level from 1955 to 1990. In contrast, the revised series (column K) showed declining per capita consumption at the retail level, reflecting a pronounced trend of declining carcass weight used per capita (column B) and more boneless cuts with less skin remaining on the cuts. The disparity between the previous estimates and the revised estimates is greater in recent years.

The previous boneless-weight series (column N) overstated the amount of pork available for consumption before 1971, but understated it in more recent years. The revised boneless meat series (column L) shows relatively stable per capita consumption of pork, despite the declining carcass weight. That's a clear indicator that today's hogs provide less fat and more lean meat.

— for more information on meat consumption series, contact Lawrence Duewer at (202) 219-0712.

Eggs

Total annual per capita consumption of eggs has declined steadily since the peak 403 eggs at the end of World War II. But consumption did not decline for all products. Between 1970 and 1990, consumption of fresh eggs decreased from 276 to 187, while consumption of egg products rose from 33 to 49. Egg product consumption grew rapidly between 1980 and 1990 (40 percent) along with expanded use as manufacturing ingredients in a number of food products (such as pasta and sweet baked goods) and increased use in fast food outlets and other foodservice establishments.

Dairy Products

Average annual per capita consumption of dairy products (on a milk-equivalent, milkfat basis) for 1985-89 rose 8 percent over 1975-79 because of greater use of cheese and fluid cream products (table 2). Despite this modest increase in the 1980's, average annual per capita consumption for 1985-89 (at 588 pounds per person) was still less than three quarters of what it was during the peak consumption years of 1922-42 (at just over 800 pounds per person). On a per capita basis, Americans consumed roughly 18 pounds of butter and 270 pounds of whole milk in the 1920's and 1930's, compared with less than 5 pounds of butter and 111 pounds of whole milk in the late 1980's.

New Pork Consumption Series Revises Boneless Weight Upwards Beginning in 1972 [1]

(A)	(B)	(C)	(D)	(E)	(F)	(G)	(H)	(I)	(J)	(K)	(L)	(M)	(N)
		Removed per 100 pounds of pork carcass								Revised		Previous	
	Carcass weight per capita			Bone		Total Retail	Total Boneless	Conversion factor		Retail weight	Boneless weight	Retail weight	Boneless weight
Year		Fat	Skin	Retail	Boneless	(C+D+E)	(C+D+F)	Retail	Boneless	(B*I)	(B*J)		(B*0.67)
		Pounds								Pounds per capita			
1955	82.45	20.6	3.0	1.4	15.0	25.0	38.6	0.750	0.614	61.8	50.6	63.1	55.2
1956	83.39	20.5	3.0	1.4	15.0	24.9	38.5	0.751	0.615	62.6	51.3	63.4	55.9
1957	75.75	20.4	3.0	1.4	15.0	24.8	38.4	0.752	0.616	57.0	46.7	57.6	50.8
1958	73.62	20.0	3.1	1.6	15.0	24.7	38.1	0.753	0.619	55.4	45.6	56.9	49.3
1959	82.16	19.6	3.2	1.8	15.0	24.6	37.8	0.754	0.622	61.9	51.1	63.4	55.0
1960	78.29	19.2	3.3	2.0	15.0	24.5	37.5	0.755	0.625	59.1	48.9	61.3	52.5
1961	74.96	18.8	3.4	2.2	15.0	24.4	37.5	0.756	0.628	56.7	47.1	58.6	50.2
1962	75.65	18.4	3.5	2.4	15.0	24.3	36.9	0.757	0.631	57.3	47.7	59.8	50.7
1963	76.97	17.9	3.6	2.7	15.0	24.2	36.5	0.758	0.635	58.3	48.9	61.6	51.6
1964	76.94	17.4	3.7	3.0	15.0	24.1	36.1	0.759	0.639	58.4	49.2	61.6	51.5
1965	68.14	16.9	3.8	3.3	15.0	24.0	35.7	0.760	0.643	51.8	43.8	55.5	45.7
1966	66.58	16.4	3.9	3.6	15.0	23.9	35.3	0.761	0.647	50.7	43.1	55.0	44.6
1967	72.77	15.9	4.0	3.9	15.0	23.8	34.9	0.762	0.651	55.5	47.4	60.5	48.8
1968	74.31	15.4	4.1	4.2	15.0	23.7	34.5	0.763	0.655	56.7	48.7	62.2	49.8
1969	71.96	14.7	4.3	4.6	15.0	23.6	34.0	0.764	0.660	55.0	47.5	61.2	48.2
1970	73.14	14.1	4.4	5.0	15.0	23.5	33.5	0.765	0.665	56.0	48.6	62.4	49.0
1971	79.15	13.4	4.6	5.4	15.0	23.4	33.0	0.766	0.670	60.6	53.0	68.5	53.0
1972	71.32	12.8	4.7	5.8	15.0	23.3	32.5	0.767	0.675	54.7	48.1	62.9	47.8
1973	63.77	12.1	4.9	6.2	15.0	23.2	32.0	0.768	0.680	49.0	43.4	57.4	42.7
1974	68.71	11.4	5.1	6.6	15.0	23.1	31.5	0.769	0.685	52.8	47.1	61.8	46.0
1975	55.86	10.7	5.3	7.0	15.0	23.0	31.0	0.770	0.690	43.0	38.5	51.1	37.4
1976	59.06	10.0	5.5	7.4	15.0	22.9	30.5	0.771	0.695	45.5	41.0	54.1	39.6
1977	60.93	9.4	5.7	7.7	15.0	22.8	30.1	0.772	0.699	47.0	42.6	56.2	40.8
1978	60.84	8.8	5.9	8.0	15.0	22.7	29.7	0.773	0.703	47.0	42.8	56.4	40.8
1979	69.43	8.3	6.0	8.3	15.0	22.6	29.3	0.774	0.707	53.7	49.1	64.3	46.5
1980	73.96	7.8	6.1	8.6	15.0	22.5	28.9	0.775	0.711	57.3	52.6	68.7	49.6
1981	70.48	7.3	6.2	8.9	15.0	22.4	28.5	0.776	0.715	54.7	50.4	65.5	47.2
1982	63.16	7.0	6.3	9.0	15.0	22.3	28.3	0.777	0.717	49.1	45.3	59.1	42.3
1983	66.34	6.7	6.4	9.1	15.0	22.2	28.1	0.778	0.719	51.6	47.7	62.4	44.4
1984	65.89	6.4	6.5	9.2	15.0	22.1	27.9	0.779	0.721	51.3	47.5	61.9	44.1
1985	66.30	6.1	6.6	9.3	15.0	22.0	27.7	0.780	0.723	51.7	47.9	62.4	44.4
1986	62.66	5.8	6.7	9.6	15.0	22.1	27.5	0.779	0.725	48.8	45.4	59.0	42.0
1987	62.97	5.5	6.8	9.9	15.0	22.2	27.3	0.778	0.727	49.0	45.8	59.7	42.2
1988	67.23	5.4	6.8	10.1	15.0	22.3	27.2	0.777	0.728	52.2	48.9	63.7	45.0
1989	66.60	5.3	6.8	10.3	15.0	22.4	27.1	0.776	0.729	51.7	48.6	63.1	44.6
1990 [1]	64.00	5.3	6.8	10.3	15.0	22.4	27.1	0.776	0.729	49.7	46.7	60.7	42.9

[1] The per capita consumption figures in columns B and K-N are based on data from the January 1991 *Livestock and Poultry Situation and Outlook Report*, LPS-45, USDA, ERS. They include shipments to Puerto Rico and the Virgin Islands.

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Within the fluid milk category, there has been a significant and steady substitution with lowfat and skim milks (table 2). During the early 1970's, 77 percent of all the milk consumed as a beverage was whole milk. But by 1989, whole milk had fallen to 44 percent of total beverage milk, and consumption of lowfat milk more than doubled. An increase in milk uses—lowfat milk, skim milk, and yogurt (which is predominantly lowfat and nonfat)—was not, however, high enough to offset the decline in whole milk. Total fluid milk consumption declined 16 percent.

Three factors may be lowering per capita consumption of beverage milk. First, Americans are getting older, and adults drink less milk than children do. Second, increases in snacking and eating away from home, especially in fast food outlets, are prompting Americans to drink more soft drinks and beer. Third, increased concerns about cholesterol and animal fat may be causing Americans to drink less milk. Americans, particularly middle-aged people fighting weight gain, doubled their consumption of low-calorie soft drinks and light beer in the 1980's. Light beer accounted for 27 percent of the U.S. beer market in 1989, compared with 13 percent in 1980. Similarly, diet soft drinks accounted for 27 percent of the soft drink market in 1989, compared with 15 percent in 1971.

Table 1.

Increasing Poultry and Fish Consumption More Than Offsets Decreasing Red Meat and Egg Consumption, Except in 1990

Item	Annual average					
	1970-74	1975-79	1980-84	1985-89	1989	1990*
	Pounds per capita					
Red meat, poultry, and fish [1,2]	177.2	179.4	181.5	190.0	192.6	191.3
Red meats [2,3]	130.4	128.6	123.8	120.0	115.9	112.3
Beef	79.1	82.8	73.1	70.5	65.4	64.0
Veal	1.7	2.3	1.4	1.3	1.0	.9
Pork	47.7	42.4	48.3	47.1	48.4	46.3
Lamb and mutton	1.9	1.1	1.1	1.0	1.1	1.1
Poultry [2,3]	34.7	38.0	44.9	54.9	60.8	63.6
Chicken	27.9	30.7	36.3	43.2	47.3	49.3
Turkey	6.8	7.2	8.6	11.7	13.5	14.4
Fish and shellfish [2]	12.1	12.8	12.9	15.4	15.6	15.4
Fresh and frozen	6.9	7.8	8.1	10.0	10.2	10.1
Canned	4.6	4.5	4.5	5.1	5.1	5.1
Cured	.5	.4	.3	.3	.3	.3
Eggs [3,4]	37.9	34.5	33.5	31.6	29.9	29.6
Peanuts (shelled basis)	5.7	5.8	5.7	6.6	7.0	6.3
Tree nuts (shelled basis)	1.8	1.8	2.1	2.3	2.4	NA
Dry edible beans and peas	7.0	6.7	6.3	6.7	NA	NA

*Preliminary. NA = Not available. [1]Boneless, trimmed weight. [2]May not total due to rounding. [3]Excludes shipments to Puerto Rico and the Virgin Islands. [4]A dozen eggs converted at 1.57 pounds.

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While these factors may be influencing Americans to drink less milk, the same is not true for fluid cream products or cheese. Per capita consumption of fluid cream products (half and half, light cream, heavy cream, commercially prepared eggnog, and sour cream and dips) rose about 50 percent in the past 20 years. Cheese use increased even more—almost doubling. Part of the growth in cheese is in the ingredient and away-from-home markets. Rapidly expanding pizza sales and changes in lifestyles that emphasize convenience foods are probably major forces affecting cheese trends.

Fats and Oils

Quantities of fats and oils in the food supply are measured by the manufacture of products such as shortening, margarine, and salad and cooking oils. Data include all fats and oils except those occurring naturally in food, such as in meats, milk and milk products, and nuts.

Per capita consumption of fats and oils (on a fat-content basis) increased 22 per-

Table 2.

Per Capita Consumption of Milkfat From all Dairy Products Is Slightly Higher Today Than 10 or 20 Years Ago—Despite a Massive Switch From Whole to Lowfat and Nonfat Fluid Milk—Because Americans Now Consume More Cheese and Fluid Cream Products

Item	Annual average					
	1970-74	1975-79	1980-84	1985-89	1988	1989*
	Pounds per capita[1]					
All dairy products, milk-equivalent, milkfat basis	554.3	542.5	559.4	587.7	583.5	567.6
Fluid milk products [2]	265.6	251.3	233.3	229.8	227.0	224.1
Whole milk [3]	205.2	167.9	135.4	110.7	105.7	95.8
Lowfat milks [2]	46.3	69.5	83.9	99.5	100.5	104.2
Plain (1-2 percent fat)	38.4	60.5	74.0	89.0	89.9	94.2
Flavored drink	2.7	4.4	5.7	6.4	6.6	6.4
Buttermilk	5.2	4.5	4.2	4.1	4.1	3.5
Skim milk	12.8	11.6	11.1	15.2	16.1	19.8
Yogurt (excluding frozen)	1.2	2.3	2.9	4.4	4.7	4.3
Fluid cream products [2]	5.2	5.4	6.0	7.5	7.6	7.7
Table creams [2]	3.5	3.3	3.6	4.6	4.6	4.8
Heavy (whipping) cream	.5	.6	.8	1.1	1.2	1.3
Light cream	.4	.3	.3	.4	.4	.4
Half and half	2.6	2.4	2.5	3.1	3.1	3.1
Sour cream and dips	1.3	1.7	2.0	2.4	2.5	2.5
Eggnog	.4	.4	.4	.5	.5	.5
Butter	5.0	4.4	4.6	4.6	4.5	4.3
Cheese (except cottage types) [4]	12.9	16.0	19.5	23.4	23.7	23.8
American [5]	7.7	9.1	10.9	11.8	11.5	11.0
Italian [6]	2.6	3.8	5.0	7.5	8.1	8.5
Miscellaneous [7]	2.6	3.1	3.6	4.1	4.1	4.3
Cottage cheese	5.1	4.7	4.2	3.9	3.9	3.5
Frozen dairy products [8]	28.1	27.5	26.7	28.0	27.7	28.6
Ice cream	17.6	17.8	17.7	17.7	17.3	16.1
Ice milk	7.6	7.5	6.9	7.6	8.0	8.4
Condensed and evaporated milk [2]	10.7	8.1	7.1	7.8	7.7	7.8
Skim milk	4.5	3.6	3.3	4.3	4.3	4.7
Canned whole milk	5.1	3.3	2.7	2.2	2.1	2.0
Bulk whole milk	1.2	1.2	1.2	1.4	1.4	1.1
Nonfat dry milk	4.9	3.3	2.4	2.4	2.6	1.9
Dry whole milk	.2	.2	.2	.2	.2	.2
Dry buttermilk	.2	.2	.2	.2	.2	.2
Dry whey	1.7	2.4	2.9	3.6	3.6	3.5

*Preliminary. [1]Product weight, except as noted. [2]May not total due to rounding. [3]Plain and flavored. [4]Whole and part-skim milk cheeses. Excludes cottage, pot, and baker's cheeses. Natural equivalent of cheese and cheese products. Total product weight is greater than natural equivalent, because processed cheese and cheese foods are made from natural cheese and other dairy products. [5]Cheddar, Colby, washed curd, stirred curd, Monterey, and Jack. [6]Romano, Parmesan, Mozzarella, ricotta, and other Italian cheeses. [7]Swiss, Brick Munster, Cream, Neufchatel, Blue, Edam, Gouda, and other cheeses. [8]Includes sherbet, frozen yogurt, and other frozen products not shown separately.

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cent, from 52.6 pounds in 1970 to 64.4 pounds in 1986 (table 3). This total increase probably resulted from the greatly expanded consumption of fried foods in foodservice outlets and the increased use of oils on salads (consumed both at home and away from home).

The overall increase, however, masks a more recent decline. Fat consumption per person peaked in 1986 and then began to fall, with 1989 consumption off 5 percent from the peak. Leading the decline were animal fats, which peaked in 1985 at 13.3 pounds per person (a level unsurpassed or unequaled since 1972) and then declined to 10.5 pounds by 1989. That movement averages out to a 21-percent decline between 1985 and 1989. Consumption of vegetable fats, on the other hand, increased through 1988 and then fell 3 percent in 1989.

The significant decline in animal fats between 1985 and 1989 reflected both a 1-pound decrease in per capita consumption of edible beef tallow and lower USDA donations of butter to schools and other food assistance programs. Per

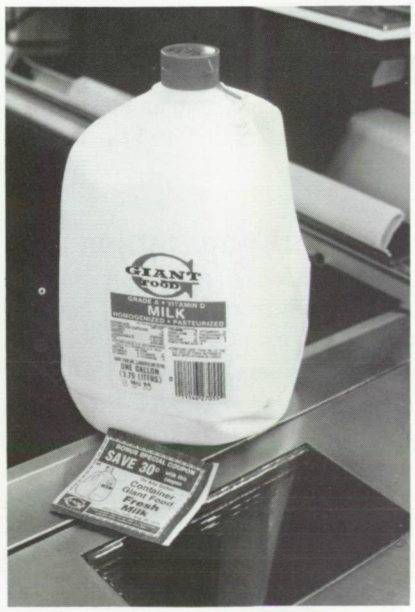

Table 3.
While Fat and Oil Consumption Has Decreased 5 Percent Since 1986, It Is Still 15 Percent Higher Than in 1970

Item	1970	1975	1980	1985	1986	1987	1988	1989
				Pounds per capita				
Fats and oils, fat-content basis [1]	52.6	52.4	57.2	64.3	64.4	63.0	63.0	60.9
Vegetable	38.5	41.9	44.9	51.0	51.8	51.8	52.2	50.4
Animal	14.1	10.5	12.3	13.3	12.6	11.2	10.8	10.5
Fats and oils, product-weight basis [2]	55.8	55.6	60.3	67.4	67.6	66.0	66.0	63.9
Butter	5.4	4.7	4.5	4.9	4.6	4.6	4.5	4.3
Margarine	10.8	11.0	11.3	10.8	11.4	10.5	10.3	10.2
Lard (direct use) [3]	4.6	2.9	2.6	1.8	1.7	1.8	1.8	1.8
Edible tallow (direct use) [3]	NA	NA	1.1	1.9	1.8	1.0	.8	.9
Shortening	17.3	17.0	18.2	22.9	22.1	21.4	21.5	21.5
Salad and cooking oils	15.4	17.9	21.2	23.5	24.2	25.4	25.8	23.9
Other edible fats and oils	2.3	2.0	1.5	1.6	1.7	1.3	1.3	1.3

NA = Not available. [1]Fat content of butter and margarine is 80 percent of the product's weight. For all other products, fat content and product's weight are the same. Includes the quantity of frying fat disposed of by restaurants; processed by renderers for use in animal feeds, pet foods, and industrial operations; and shipped for export. [2]May not total due to rounding. [3]Direct use excludes use in margarine, shortening, and nonfood products.

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capita consumption of edible tallow will probably continue to decline as McDonalds and others switched from using animal fats to an all-vegetable fat product for frying.

With animal fats declining and vegetable fats increasing until 1989, the share of total fat from animal sources declined. The share from animal fats fell from 27 percent in 1970 to 17 percent in 1989.

Fruits and Vegetables

Per capita consumption of fresh fruits rose 18 pounds from the 1970-74 annual average to a total of 94 pounds (retail-weight equivalent) in 1989 (table 4). The rise stemmed entirely from the increasing popularity of fresh noncitrus fruits, particularly bananas, apples, grapes, pears, and strawberries. Other notable increases include frozen and dried noncitrus fruits and citrus and noncitrus fruit juices.

The combined total per capita consumption of 12 major commercial fresh vegetables hit a record high in 1989, 39 percent above the 1970-74 level. (We track 12 vegetables: Artichokes, asparagus, broccoli, carrots, cauliflower, celery, corn, eggplant, garlic, iceberg lettuce, onions, and tomatoes.) Iceberg lettuce, onions, tomatoes, and broccoli had the largest individual gains. Corn was the only fresh vegetable (among those tracked) to decline. Per capita consumption of vegetables used for freezing has gradually increased since 1970-74, while the quantity used for canning has declined.

Average annual per capita potato consumption continues to increase, as Americans eat more and more french fries.

Flour and Cereal Products

Grain consumption per person increased in recent years, after falling dramatically from the levels of the first half of the century. Per capita use of flour and cereal products reached 185 pounds in 1990, compared with an annual average of 148 pounds in 1980-84, 135 pounds in 1970-74, 204 pounds in 1945-49, and 287 pounds in 1910-15.

America's aging population has influenced much of the increase. ERS research shows that in 1988, households whose head was 45 years or older spent an average of 36 percent more per person for cereals and bakery products than did younger households. Demand for flour and cereal products might be expected to rise in the 1990's, as the first of the baby boom generation, the largest U.S. population group, reaches age 45 in 1991.

Americans consumed more wheat than all other grains in 1990. Average per capita consumption of wheat flour in 1990 reached 138 pounds, a 24-percent rise since 1970-74. Americans are eating more pizza, pasta, pitas, and fajitas — all of which are made from wheat flour. For example, consumption of pasta products rose from 9 pounds per capita in 1970-74 to 13 pounds in 1990.

Although wheat consumption continued to rise, wheat's share in total grain consumption has declined 8 percentage points since 1970-74. Rice, corn, and oat products have gained enough momentum to capture some of wheat's market share (table 5).

Sweeteners

The long downtrend in the consumption of refined sugar—due to the increased use of corn sweeteners and low-calorie sweeteners—has reversed.

Consumption of total caloric sweeteners (on a dry weight basis) increased 15 pounds per person between 1970 and 1990 (table 6). Per capita use of corn sweeteners nearly quadrupled during the same period, surpassing refined sugar use in 1985. High-fructose corn syrup largely replaced sugar in soft drinks.

Since 1986, however, consumption of refined sugar increased 4 pounds per person. Higher consumption of bakery and cereal products has helped push the increase. The bakery and cereal industry has become the largest industrial user of sugar. This industry alone accounted for 20 percent of total sugar deliveries for food and beverages, up from 14 percent in 1980.

Low-calorie, or high-intensity, sweeteners have a sweetness so intense that only a fraction is needed to provide the same degree of sweetness as sugar. U.S. per capita consumption of low-calorie sweeteners (mainly aspartame and saccharin) increased faster than caloric sweeteners in the 1980's. By 1988 (the last year for which estimates are available), low-calorie use was about 20 pounds per person (in sugar-sweetness equivalent, or SSE). Low-calorie sweeteners accounted for about 13 percent of overall sweetener consumption in 1988, compared with 6 percent in 1980 and 5 percent in 1970.

Beverages

Americans now drink more commercially produced beverages than ever. Since 1970, the rise in per capita consumption of soft drinks, fruit juices, and alcoholic drinks has more than offset declines in per capita consumption of milk and coffee.

Table 4.

Americans Consume More Fresh and Frozen Fruits and Vegetables Than 20 Years Ago

Item	Annual average					
	1970-74	1975-79	1980-84	1985-89	1988	1989*
	Pounds per capita [1]					
Fresh fruit [2]	75.7	80.6	86.7	93.0	95.1	93.9
Citrus [2]	27.1	26.3	25.6	24.3	25.6	23.8
Oranges	14.6	13.6	13.8	13.2	14.2	12.3
Grapefruit	8.2	8.0	7.2	6.4	6.6	6.7
Tangerines and tangelos	2.3	2.6	2.1	1.6	1.7	1.7
Lemons and limes	2.1	2.2	2.5	3.1	3.1	3.2
Noncitrus [2]	48.6	54.3	61.2	68.7	69.5	70.1
Apples	15.6	17.0	17.5	19.0	19.2	20.9
Other noncitrus [3]	33.0	37.4	43.6	49.7	50.3	49.2
Bananas	18.0	19.6	21.7	21.8	24.3	24.7
Grapes	2.3	3.0	4.8	6.8	7.4	6.3
Peaches	4.5	4.8	4.6	4.3	4.8	4.0
Pears	2.2	2.4	2.7	3.1	3.1	3.2
Strawberries	1.6	1.8	2.2	2.9	2.9	3.1
Citrus juice [4]	37.5	44.9	44.4	46.5	46.9	44.2
Apple juice [4]	4.4	5.4	9.6	13.7	19.3	19.0
Frozen fruit	3.4	3.1	3.0	3.9	3.8	4.8
Canned fruit	12.1	11.2	9.1	8.3	7.2	NA
Dried fruit	2.4	2.4	2.4	2.9	2.9	3.2
Raisins	1.3	1.3	1.5	1.9	1.9	2.1
Watermelons	11.3	10.8	10.9	12.0	12.3	12.4
Honeydews	1.0	1.2	1.8	2.3	2.3	2.4
Selected fresh vegetables [5]	66.4	70.0	75.9	85.7	88.7	91.8
Iceberg lettuce	21.2	23.3	23.7	24.5	25.7	27.4
Onions	12.1	12.8	13.9	16.4	17.1	17.0
Tomatoes	10.3	10.7	11.7	14.7	15.3	15.3
Canned vegetables (farm weight) [2]	92.7	90.7	87.6	87.7	83.4	NA
Processed tomatoes	63.0	62.7	62.5	64.8	61.4	NA
Other canned vegetables [6]	29.7	28.0	25.1	22.9	22.1	21.2
Frozen vegetables (farm weight)	13.7	14.5	15.0	16.9	18.1	16.9
Fresh potatoes	53.3	47.6	46.5	47.5	49.6	48.0
Frozen potatoes	14.9	20.3	19.7	22.8	21.4	23.2
Sweetpotatoes (farm weight)	5.0	5.1	4.9	4.5	4.1	4.1

*Preliminary. NA = Not available. [1]Retail-weight equivalent, except as noted. [2]May not total due to rounding. [3]Includes apricots, avocados, cherries, cranberries, figs, kiwifruits, mangos, nectarines, olives, papayas, persimmons, pineapples, plums, pomegranates, and other fruits not shown separately. [4]Single-strength equivalent. [5]Includes artichokes, asparagus, broccoli, carrots, cauliflower, celery, corn, eggplant, and garlic. [6]Asparagus, carrots, pickles, green peas, and corn.

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Table 5.
Use of Flour and Cereal Products Increased 50 Pounds per Person Between 1970 and 1990, But Corn, Rice, and Oat Products Are also Becoming More Popular

Item	Annual average						Market share	
	1970-74	1975-79	1980-84	1985-89	1989	1990*	1970	1990*
	Pounds per capita [1]						Percent	
Flour and cereal products [2]	134.6	141.5	148.2	167.5	175.0	185.4	100.0	100.0
Wheat flour	111.0	116.3	117.3	126.8	129.2	137.8	82.5	74.3
Rye flour	1.2	.8	.7	.6	.6	.6	.9	.3
Rice (milled basis)	7.2	7.4	10.1	12.9	15.6	16.6	5.3	9.0
Corn products [3]	10.2	11.8	14.4	20.5	21.8	22.1	7.6	11.9
Oat products [4]	4.2	4.2	4.7	5.7	6.9	7.4	3.1	4.0
Barley products [5]	.9	.9	.9	.9	.9	.9	.6	.5

*Preliminary. [1]Consumption of most items at the processing level. Excludes quantities used in alcoholic beverages, corn sweeteners, industrial uses, and fuel. [2]May not total due to rounding. [3]Corn flour, meal, hominy, grits, and starch. [4]Rolled oats, ready-to-eat oat cereals, oat flour, and oat bran. [5]Barley flour, pearl barley, barley malt, and malt extract used in food processing.

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Table 6.
Per Capita Consumption of Caloric Sweeteners Increased 12 Percent Between 1970 and 1990, Even as Low-calorie Sweeteners Gained Market Share

	1970	1975	1980	1985	1986	1987	1988	1989	1990*	Market share 1970	Market share 1988
	Pounds per capita									*Percent*	
Total sweeteners [1, 2]	128.3	124.0	131.6	148.1	147.7	151.7	153.2	NA	NA	100.0	100.0
Caloric sweeteners [2]	122.6	117.9	123.9	130.0	129.1	132.6	133.2	134.3	137.5	95.6	86.9
Refined (cane and beet) sugar	101.8	89.2	83.6	62.5	60.0	62.4	62.1	62.5	64.2	79.3	40.5
Corn sweeteners [2]	19.3	27.4	39.1	65.9	67.7	68.9	69.7	70.3	71.9	15.0	45.5
High fructose corn syrup	.7	4.9	18.0	44.2	46.1	47.3	48.0	48.3	49.0	.5	31.3
Glucose	14.0	17.5	17.6	18.1	18.0	18.0	18.1	18.4	19.0	10.9	11.8
Dextrose	4.6	5.0	3.5	3.5	3.5	3.5	3.6	3.6	3.8	3.6	2.3
Honey	1.0	1.0	.8	1.0	1.0	1.0	1.0	1.0	1.0	.8	.7
Edible syrups [3]	.5	.4	.4	.4	.4	.4	.4	.4	.4	.4	.3
Low-calorie (high-intensity) sweeteners [4]	5.8	6.1	7.7	18.1	18.5	19.1	20.0	NA	NA	4.5	13.1
Saccharin	5.8	6.1	7.7	6.0	5.5	5.5	6.0	NA	NA	4.5	3.9
Aspartame	0	0	0	12.1	13.0	13.6	14.0	NA	NA	0.0	9.1

*Preliminary. NA = Not available. [1]Dry-weight basis. [2]May not total due to rounding. [3]Contains estimates of sorgo, maple, cane, molasses, and refiner's syrup. [4]Sugar-sweetness equivalent. Assumes saccharin is 300 times as sweet as sugar and aspartame is 200 times as sweet. Cyclamate for food use was banned by the U.S. Food and Drug Administration effective 1970. Acesulfame-k, equal to aspartame in sweetness, entered U.S. commercial use in 1988.

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Per capita consumption of bottled water more than doubled between 1983 and 1990, from 3.4 gallons per person to 8.0 gallons (7.2 gallons nonsparkling and 0.8 gallons sparkling). The top five bottled water markets in the United States were: California (which accounted for 36 percent of the national total), New York, Texas, Florida, and Illinois. Arizona and Massachusetts tied for sixth place.

Per capita consumption of alcoholic beverages among adults age 21 years and over reached a record high of 43 gallons in 1981, but declined steadily to 39 gallons in 1989. Nevertheless, average use of alcoholic beverages among adults age 21 and older in 1989 was 9 percent greater than in 1970. ■

Nutrient Content of the U.S. Food Supply

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There have been some marked changes in the American food supply over the last two decades. We're using less red meat and eggs and more poultry and fish. We've also cut back on whole milk but are using more cheese, lowfat milks, and creams. Animal fats—butter, lard, and beef fat—have declined in use, while vegetable fats—oils and shortening—have increased. Use of many plant-based foods has risen steadily over the past 20 years, particularly grain products, fresh fruits, fruit juices (especially citrus), fresh and frozen vegetables, and caloric sweeteners. These changes have affected nutrient levels of the food supply.

Changes in the quantity of nutrients available are affected by more than changing diets. Technological advances, such as the introduction of new crop varieties, and specific events, such as revised Federal enrichment standards, affect nutrient levels as well.

Nutrient levels reported in this article are based on food disappearance data—that is, all food available for consumption from the U.S. food supply—and are reported on a daily per capita basis. Estimates of food available are referred to as food "use" rather than consumption because the data represent disappearance of foods into food marketing channels and have presumably been used up for consumption. Disappearance data presented here do not show ingestion of foods because they do not account for losses that occur after the food is measured at the wholesale/retail level. Nonetheless, these data are useful for indicating trends in food and nutrient levels in the American diet over time. The data presented here are based on food use data through 1988.

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Grains Increase Carbohydrate and Other Nutrients

One of the most significant changes in food use affecting nutrient levels has been an increased use of grain products. Between 1968 and 1984, annual per capita use of grains increased by a modest 8 pounds, from 146 to 154 pounds. However, increased use of wheat flour and rice raised that figure by another 18 pounds between 1984 and 1988 (see April-June, 1991 *FoodReview*, "U.S. Flour Milling on the Rise").

This large increase was primarily responsible for a 26-gram gain in carbohydrate from 1984 to 1988 (399 to 425 grams). Greater use of grain products, which provide complex carbohydrate, slightly raised the share of total calories provided by complex carbohydrate from 22 to 23 percent.

Grains played less of a role in the increase in carbohydrate between 1968 and 1984, from 379 grams to 399 grams. Most of this increase can be attributed to corn syrups. Annual per capita use of corn syrups rose from 13 to 66 pounds between 1968 and 1988, primarily because

Table 1.
Levels for Most Nutrients in the U.S. Food Supply Have Increased

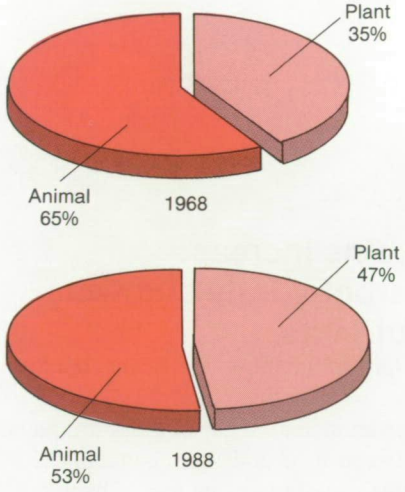
Nutrient (unit)	1968	1978	1988
	Per person per day		
Food energy (kcal)	3,300	3,300	3,600
Carbohydrate (g)	379	387	425
Protein (g)	98	99	105
Fat (g)	158	157	168
Saturated fatty acids (g)	63	58	60
Monounsaturated fatty acids (g)	64	63	67
Polyunsaturated fatty acids (g)	24	30	34
Cholesterol (mg)	500	450	440
Vitamin A (RE)	1,430	1,500	1,630
Carotenes (RE)	470	580	770
Vitamin E (mg)	12.7	14.6	16.7
Vitamin C (mg)	100	108	118
Thiamin (mg)	2.0	2.1	2.2
Riboflavin (mg)	2.3	2.3	2.4
Niacin (mg)	22	24	26
Vitamin B6 (mg)	2.0	2.0	2.2
Folate (mcg)	270	267	284
Vitamin B12 (mcg)	10.2	9.8	9.1
Calcium (mg)	850	850	890
Phosphorus (mg)	1,470	1,460	1,540
Magnesium (mg)	320	310	330
Iron (mg)	14.7	14.8	17.1
Zinc (mg)	12.5	12.3	12.7
Copper (mg)	1.6	1.5	1.7

Source: Human Nutrition Information Service, USDA.
Contact: Nancy Raper (301) 436-5625.

of the development of high-fructose corn syrup as a sugar substitute. High-fructose corn syrup replaced much of the sugar used in soft drinks, canned fruits, ice cream, and many other foods. With growing use of corn syrups, annual sugar use fell from 99 pounds in 1968 to 62 pounds in 1988, which offset some of the increase in carbohydrate from corn syrups.

Grain products were also responsible for almost all of the increase in thiamin, riboflavin, and iron and a major portion of the gain in niacin (tables 1 and 2). Federal standards for enriching white flour with thiamin, riboflavin, and niacin were raised in 1975 and with iron in 1983. These higher nutrient standards and a 16.5-pound increase in annual per capita use of wheat flour were major factors behind the higher nutrient levels. The increase in poultry use also contributed to the higher niacin level.

Figure 1
Animal Sources of Fat Have Declined Relative to Plant Sources



Contact: Nancy Raper (301) 436-5625.

Grain products have been the primary source of thiamin and iron over the past two decades, accounting for about one-third of the total of each in 1968 and 43 percent in 1988. Lower use of red meat reduced the share of iron from the meat, poultry, and fish group from 27 percent in 1968 to 22 percent in 1988. The decrease in iron from red meat more than outweighed the increase from higher poultry use.

Dairy products have been the largest contributor of riboflavin, accounting for about one-third during those years. The meat, poultry, and fish group ranked second as a source in 1968. But by 1988, grain products ranked second. The meat, poultry, and fish group has been the primary source of niacin during the past two decades.

Sources of Fat Shift

The level and the sources of fat have also changed. The level of fat available for consumption has risen about 6 percent over the last two decades to 168 grams. Most of this gain was due to increasing use of vegetable fats—salad and cooking oils and shortening. Use of oils almost doubled and use of shortening increased by about one-third. In contrast, use of animal fats—butter and lard—decreased.

Even though vegetable sources of fat increased over the past 20 years, animal sources still accounted for a greater share of fat in the American food supply in 1988 (figure 1). However, the proportion from animal sources declined markedly from 65 to 53 percent between 1968 and 1988, primarily due to less use of butter and lard. Using less whole milk and red meats also contributed to the decline.

Americans are increasing their use of animal foods which are lower in fat—lean cuts of red meat, poultry, fish and shellfish, and lowfat milks. However, use of creams and cheese, items which are generally higher in fat, is also increasing.

The increased use of vegetable fats and the shift of animal fats has meant changes in the mix of fatty acids (table 1). Fat is comprised of saturated, monounsaturated, and polyunsaturated fatty acids. Total saturated fatty acids declined slightly from 63 grams in 1968 to 60 grams in 1988. The level of monounsaturated fatty acids rose slightly from 64 to 67 grams. Polyunsaturated fatty acids showed the biggest change, increasing from 24 to 34 grams.

Data on fats and oils available for consumption may overestimate trends in actual consumption. Some of the increase in fat use is associated with the growth of away-from-home eating places, which discard significant amounts of fats used in frying foods.

Food Energy Increases

Higher levels of fat and carbohydrate, as well as protein, increased the level of food energy in the food supply from 3,300 calories in 1968 to 3,600 in 1988. The proportion of calories provided by fat decreased slightly from 43 to 42 percent, while the share from carbohydrate rose from 46 to 47 percent. Food energy from protein remained constant at 11 percent.

Most Other Nutrients Increase

Levels for most nutrients in the food supply increased over the past two decades. However, levels of vitamin B12 and cholesterol declined. Although major sources of most nutrients were the same

in 1968 and 1988, changes occurred in the relative nutrient contributions of some foods.

● Calcium. Levels of calcium closely followed trends in the use of dairy products, which accounted for about three-fourths of the calcium between 1968 and 1988. Significant gains in use of lowfat milks and cheese were mostly responsible for the increase in calcium from 850 to 890 milligrams. Grain products and dark green vegetables also added to the higher level, but to a lesser extent.

Among dairy products, whole milk was the leading source of calcium in 1968, but use was halved by 1988. In contrast, use of lowfat milks almost tripled, while cheese increased by more than 80 percent. Consequently, cheese was the leading source by 1988, with lowfat milks a close second.

● Zinc. The small increase in zinc, from 12.5 to 12.7 milligrams, reflects gains from grain products, lowfat milks, and cheese. Although the meat, poultry, and fish group was the primary source of zinc over the last two decades, its share declined slightly from 51 to 47 percent as Americans used less red meat. The share of zinc supplied by dairy products increased from 17 to 19 percent and the share from grain products rose from 12 to 14 percent.

● Magnesium. Greater use of lowfat milks, cheese, poultry, nuts, and fruits accounted for the rise in magnesium, from 320 to 330 milligrams. Foods of plant origin provided the largest share of magnesium in the food supply, about two-thirds between 1968 and 1988.

● Phosphorus. Increased use of poultry, grains, cheese, and lowfat milks spurred the gain in phosphorus from 1,470 to 1,540 milligrams. Three food groups—dairy products; meat, poultry, and fish; and grain products—provided about three-fourths of the phosphorus in the food supply. Of these, dairy products constituted the largest share. The meat, poultry, and fish group ranked second.

How Nutrient Levels Are Estimated

Each year, USDA's Human Nutrition Information Service estimates the daily per capita levels of food energy and 24 nutrients and food components in the U.S. food supply. Estimates are derived from data on quantities of foods available for consumption per capita per year and from data on the nutrient composition of foods. Nutrient levels of the food supply are determined by multiplying the annual pounds used per capita of each food by the nutrient value of the edible portion per pound of food.

Estimates include nutrients from all foods in the commercial system, as well as nutrients from foods produced at home. Some sources of nutrients are excluded: consumer purchases of vitamin and mineral supplements; alcoholic beverages and the sugars and grains used in their manufacture; and baking powder, baking soda, yeast, and certain vitamins and minerals added to foods for their functional or flavoring properties. Nutrients added commercially through enrichment of flour and cereal products and through fortification of other foods are included.

Estimates exclude nutrients from the inedible parts of foods, such as bones, rinds, and seeds, but include nutrients from parts of foods that are edible but not always eaten, such as the separable fat on meat. Estimates also include nutrients that may be lost after food is measured at the wholesale/retail level—during processing, marketing, or cooking.

Estimates also reflect changes in the composition of foods due to technological developments and marketing practices. For example, the vitamin values applied to fresh potatoes consumed in recent years are higher than vitamin values applied to potatoes produced at the beginning of the century because of better storage conditions and use of different varieties.

The nutrient content of most foods has not changed over time. For these foods, the same set of composition data has been used for all years in the series. The estimates reported here are based on the most up-to-date food composition data.

● Copper. The level of copper was about the same in 1988, 1.7 milligrams, as in 1968, 1.6 milligrams. The slight increase reflects greater use of nuts and grain products. Foods of plant origin accounted for the largest share of copper, providing about 75 percent between 1968 and 1988.

● B6. Gains in poultry, fruit, and grain products use increased vitamin B6, from 2.0 to 2.2 milligrams. The meat, poultry, and fish group was the primary source of vitamin B6, accounting for about 40 percent over the last two decades.

● Folate. Greater use of citrus fruits and juices (mainly frozen orange juice), grain products, and deep-yellow and dark-green vegetables (mainly broccoli) was largely responsible for the small increase in folate, from 270 to 284 micrograms. Foods of plant origin were the primary source of folate, accounting for about three-fourths between 1968 and 1988.

● Vitamin A, carotenes. Vitamin A occurs in different forms. Retinol, the active form of vitamin A, is found in animal foods. Plants contain carotenes, which are converted to vitamin A in the body. Retinol and carotenes together constitute total vitamin A.

Total vitamin A increased from 1,430 retinol equivalents (RE) in 1968 to 1,630 RE in 1988. Carotenes also rose from 470 RE per person per day in 1968 to 770 RE in 1988.

The higher vitamin A level reflects increased use of vegetables high in carotenes—dark-green and deep-yellow types (particularly carrots and broccoli)—and the development of new varieties of deep-yellow vegetables, such as carrots, which have a higher carotene content. Vegetables accounted for 80 percent or more of the carotenes over the past 20 years.

Table 2.

Food Nutrients Come From Varied Sources, Which Have Shifted Over Time [1]

Food group	Food energy	Protein	Total fat	Fat: Satu-rated	Fat: Monoun-saturated	Fat: Polyun-saturated	Choles-terol	Carbo-hydrate
				Percent				
1968								
Dairy products, excluding butter	10	20	12	19	9	3	14	6
Meat, poultry, fish	22	43	37	43	41	24	42	—
Eggs	2	6	3	2	3	2	38	—
Legumes and nuts	3	5	3	2	4	7	0	2
Grain products	20	19	1	1	—	4	0	36
Fruits	3	1	—	—	—	—	0	6
Vegetables	5	5	—	—	—	1	0	10
Fats and oils, including butter	17	—	40	31	42	58	6	—
Sugar and sweeteners	17	—	0	0	0	0	0	39
Miscellaneous [2]	1	1	2	2	1	1	0	1
1988								
Dairy products, excluding butter	10	20	12	20	8	2	15	5
Meat, poultry, fish	19	43	32	40	35	17	47	—
Eggs	1	4	2	2	2	1	33	—
Legumes and nuts	3	5	4	2	5	6	0	2
Grain products	21	20	1	1	—	3	0	38
Fruits	3	1	—	—	—	—	0	7
Vegetables	5	5	—	—	—	1	0	9
Fats and oils, including butter	20	—	47	32	48	69	5	—
Sugar and sweeteners	17	—	0	0	0	0	0	39
Miscellaneous [2]	1	1	2	3	2	1	0	1

	Vitamin A	Carotenes	Vitamin E	Vitamin C	Thiamin	Ribo-flavin	Niacin	Vitamin B6
					Percent			
1968								
Dairy products, excluding butter	17	3	4	4	9	35	2	10
Meat, poultry, fish	31	0	7	3	31	26	48	42
Eggs	6	0	3	0	1	10	—	3
Legumes and nuts	—	—	6	—	6	2	5	4
Grain products	—	1	5	0	36	18	25	9
Fruits	3	9	4	39	4	3	3	9
Vegetables	26	80	10	52	11	6	12	22
Fats and oils, including butter	14	4	60	0	—	—	—	—
Sugar and sweeteners	0	0	—	—	—	—	—	—
Miscellaneous [2]	3	2	1	3	1	1	5	1
1988								
Dairy products, excluding butter	16	2	3	3	8	33	2	10
Meat, poultry, fish	21	0	6	2	25	22	45	41
Eggs	4	0	2	0	1	7	—	2
Legumes and nuts	—	—	6	—	6	2	5	4
Grain products	—	1	4	0	43	25	31	9
Fruits	3	6	4	42	5	3	2	10
Vegetables	42	88	8	48	11	6	12	22
Fats and oils, including butter	11	2	67	0	—	—	—	—
Sugar and sweeteners	0	0	—	—	—	1	—	—
Miscellaneous [2]	1	1	1	4	1	1	3	1

Continued—

Table 2.
Food Nutrients Come From Varied Sources, Which Have Shifted Over Time *(continued)* [1]

Food group	Folate	Vitamin B12	Calcium	Phos-phorus	Mag-nesium	Iron	Zinc	Copper
				Percent				
1968								
Dairy products, excluding butter	9	17	76	34	20	2	17	4
Meat, poultry, fish	11	77	4	30	15	27	51	21
Eggs	8	4	3	5	1	4	4	—
Legumes and nuts	20	0	3	6	12	7	5	15
Grain products	13	1	4	13	17	34	12	19
Fruits	10	0	2	2	6	3	1	7
Vegetables	27	0	6	8	16	14	7	23
Fats & oils, including butter	—	—	—	—	—	—	—	—
Sugar and sweeteners	0	0	—	—	—	2	—	2
Miscellaneous [2]	2	0	2	2	12	5	2	9
1988								
Dairy products, excluding butter	8	18	75	34	19	2	19	4
Meat, poultry, fish	10	76	4	29	15	22	47	16
Eggs	6	4	2	4	1	3	3	—
Legumes and nuts	20	0	3	6	13	6	5	18
Grain products	14	2	4	14	19	43	14	20
Fruits	13	0	3	2	7	3	1	7
Vegetables	27	0	7	8	16	13	7	22
Fats & oils, including butter	—	—	—	—	—	—	—	—
Sugar and sweeteners	0	0	—	—	—	2	1	3
Miscellaneous [2]	2	0	2	2	11	5	3	9

— = Contributes less than 0.5 percent. [1]Food components may not total 100 percent due to rounding. [2]Coffee, tea, chocolate-liquor equivalent of cocoa beans, spices, and fortification of foods not assigned to a specific group.

Source: Human Nutrition Information Service, USDA.
Contact: Nancy Raper (301) 436-5625.

● Vitamin E. The vitamin E level of the food supply increased to 16.7 milligrams in 1988, up 4 milligrams from 1968. This large increase is attributed mostly to greater use of salad and cooking oils and shortening. The fats and oils group has always been the primary source of vitamin E, accounting for 60 percent or more over the past two decades. Within the fats and oils group, oils provided the largest proportion. Moreover, their share increased from 30 to 38 percent.

● Vitamin C. Higher use of fruits and vegetables accounted for the rise in vitamin C from 100 to 118 milligrams. These two food groups provided about 90 percent of the vitamin C between 1968 and 1988. More processed citrus juices, mostly frozen orange juice, were behind the higher level. Use of frozen orange juice, for example, jumped from 20 pounds per capita per year in 1968 to 37 pounds in 1988. Vegetables, primarily dark-green types and tomatoes, also contributed to the increase, but to a lesser degree.

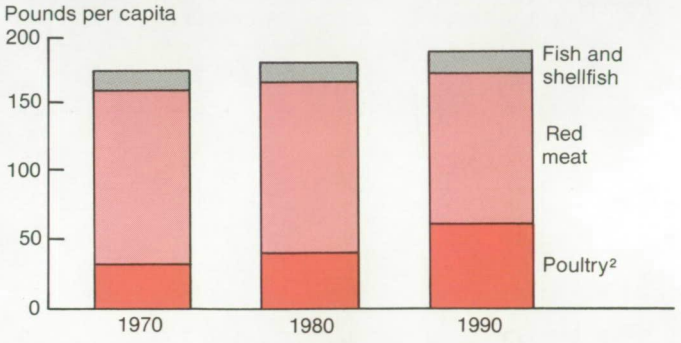
● Protein. With Americans using more poultry, protein rose from 98 to 105 grams. Between 1968 and 1988, use of poultry increased from 45 to 80 pounds per capita per year. Increased use of grain products, cheese, and lowfat milks also contributed to the higher level.

● Cholesterol. Cholesterol declined from 500 to 440 milligrams over the past two decades. Most of the decrease was due to a drop in use from 316 eggs per person per year in 1968 to 244 eggs in 1988.

● B12. Lower use of meat (mostly offals) and eggs was responsible for the decline in vitamin B12, from 10.2 to 9.1 micrograms. Offals, which include liver and other organ meats, are particularly good sources of vitamin B12. The meat, poultry, and fish group provided about 75 percent of the vitamin B12 between 1968 and 1988. ■

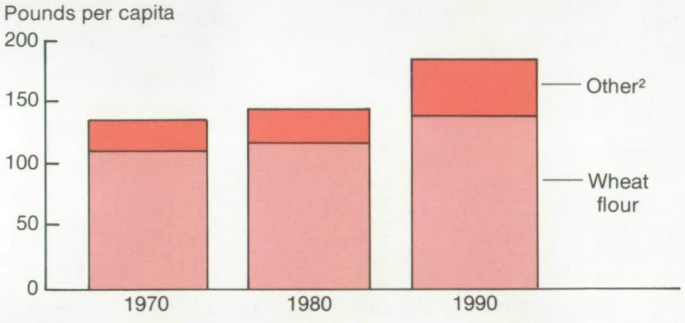
Food Consumption. . .At a Glance

Rapidly Increasing Poultry Consumption Is Behind the Higher Meat Consumption[1]



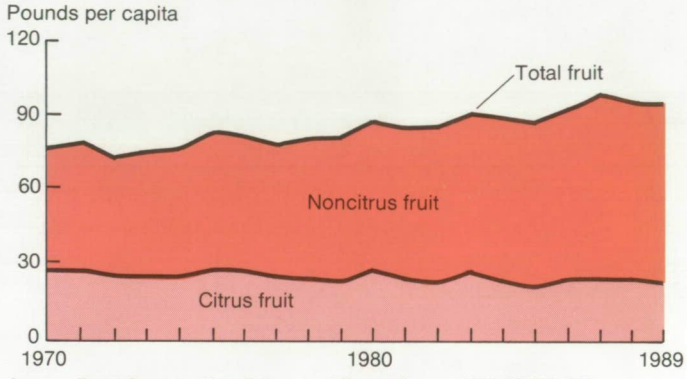
[1]Includes quantities sold to renderers and pet food processors.
[2]Includes skin, neck meat, and giblets.
Contact: Judith Jones Putnam (202) 219-0870.

Grains Consumption Jumped 50 Pounds per Person Since 1970, But a Decreasing Share Comes From Wheat[1]



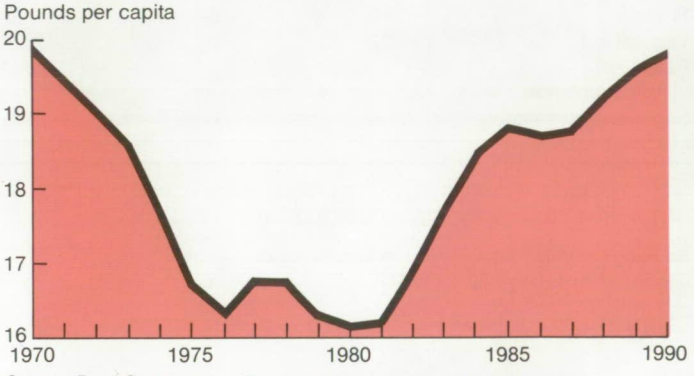
[1]At the processing level. Excludes alcoholic beverages, corn sweeteners, feed, seed, fuel, and industrial uses.
[2]"Other" includes rice, corn, oat, rye, and barley products.
Contact: Judith Jones Putnam (202) 219-0870.

Americans Are Eating More Fresh Fruit



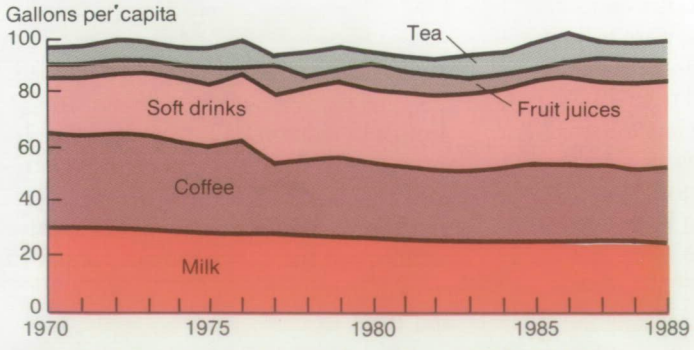
Source: *Food Consumption, Prices, and Expenditures, 1968-89,* SB-825, USDA, ERS, May 1991.
Contact: Judith Jones Putnam (202) 219-0870.

America's Palate for Candy Returns



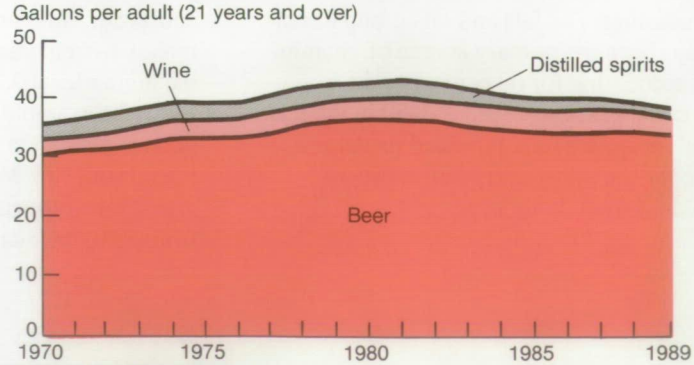
Source: *Food Consumption, Prices, and Expenditures, 1968-89,* SB-825, USDA, ERS, May 1991.
Contact: Judith Jones Putnam (202) 219-0870.

Americans Are Drinking More Soft Drinks and Fruit Juices, and Less Milk and Coffee



Source: *Food Consumption, Prices, and Expenditures, 1968-89,* SB-825, USDA, ERS, May 1991.
Contact: Judith Jones Putnam (202) 219-0870.

Alcoholic Beverage Consumption Increased During the 1970's, But Slowly Declined in the 1980's



Source: *Food Consumption, Prices, and Expenditures, 1968-89,* SB-825, USDA, ERS, May 1991.
Contact: Judith Jones Putnam (202) 219-0870.

Food Prices From Farm to Retail

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Retail food prices in 1990, as measured by the consumer price index (CPI), posted the same 5.8-percent increase as in 1989. These back-to-back annual increases were the largest since 1980 and 1981. Price gains in 1990 were greatest early in the year, advancing by nearly a 14-percent annual rate in the first quarter.

This striking increase stemmed in part from a December 1989 freeze in Florida and Texas that sharply reduced citrus and vegetable supplies. Meat and dairy prices also rose sharply, reflecting tight market supplies. Increases in the CPI for food abated over the remainder of the year, but prices throughout 1990 averaged above 1989 levels.

The two major components of the food index—food sold in grocery stores for use at home and meals and snacks consumed away from home—advanced by much different rates in 1990. Food prices in grocery stores climbed 6.5 percent in 1990, while prices for restaurant meals advanced 4.7 percent. Last year was the fourth consecutive year the price rise was greater for the grocery food index. One possible explanation is that grocery store food prices are more sensitive to changes in farm and wholesale commodity prices.

Farm prices for commodities and costs for processing and distributing foods directly influence retail food prices, and both played a role in pushing up food prices last year. Average farm prices of commodities advanced almost 6 percent. Higher livestock prices resulting from reduced production accounted for much of this increase. Processing and distribution costs increased almost 8 percent. Processing and distribution costs, or marketing charges, make up most of the retail price of foods. As a result, the rise in marketing charges pushed up food prices much more than higher farm prices last year, and nearly every other year of the decade.

Strong consumer demand for food through the first half of 1990 also contributed to the upward movement in food prices. This was tempered in the second half, however, by a decline in real disposable income.

Higher costs of red meat, dairy products, and fresh fruit accounted for half of the rise in grocery prices in 1990 (table 1). Red meat generated about one-third of the rise in costs for food consumed at home. Price increases for these three food groups in 1990 were much larger than in 1989. However, increases were more moderate for most other foods, particularly eggs, fresh vegetables, cereals and bakery products, and fats and oils. The smaller increases of these other foods partly reflected a return to more normal crop production after the 1988 drought.

For the fourth year in the past five, food prices in 1990 rose by more than the CPI for all consumer products and services.

The author is an agricultural economist in the Commodity Economics Division, Economic Research Service, USDA.

Table 1.
Red Meat, Fresh Fruit, and Dairy Prices Rose the Most in 1990

Food	1988	1989	1990
	Annual percent change in the CPI		
All food	4.1	5.8	5.8
Food at home	4.2	6.5	6.5
Meat	2.4	4.0	10.1
Beef and veal	5.5	6.4	8.0
Pork	-3.0	.6	14.7
Poultry	7.2	9.9	-.2
Fish and seafood	5.8	4.5	2.2
Eggs	2.3	26.6	4.7
Dairy products	2.4	6.6	9.4
Fresh fruit	8.3	6.6	12.1
Fresh vegetables	6.3	10.7	5.6
Processed fruit and vegetables	7.9	6.3	6.2
Cereals and bakery products	6.4	8.4	5.7
Sugar and sweets	2.7	4.7	4.4
Fats and oils	4.6	7.2	4.2
Nonalcoholic beverages	0	3.5	2.0
Other prepared foods	3.7	6.4	4.5
Food away from home	4.1	4.6	4.7

Source: U.S. Department of Labor, Bureau of Labor Statistics.
Contact: Denis Dunham (202) 219-0870.

Retail Price Components

Retail prices can be broken down into two components: farm value and the farm-to-retail price spread (see box). The farm-to-retail price spread is the difference between the retail price and the farm value. The price spread covers processing, distributing, and retailing charges. A related concept is the farm value share—the average percentage farmers get from each dollar consumers spend in retail grocery stores.

Farm value represents the price farmers receive for the raw-commodity equivalent of foods in the "market basket." USDA uses the market basket concept to track price changes for commodities farmers sell and foods consumers buy in retail grocery stores. The market basket is representative of foods purchased by urban consumers in grocery stores in 1982-84. The basket excludes fish, seafood, and beverages. Changes in retail prices of the market basket are components of the CPI for food at home.

What Farmers Received

The farm value of USDA's market basket of foods averaged 5.8 percent higher in 1990, but failed to match the 7.1-percent increase in retail prices of these foods (table 2). However, the 1990 increase in the farm value was the second largest since 1984, and exceeded the rise in retail food prices during the first half of the year. But the farm value then declined for 6 consecutive months, the longest period of decline since January-May 1985, while small increases continued in retail prices.

Higher commodity prices boosted the farm value of all but 2 of the 10 food groups in the market basket. Increases were largest for fresh fruit (18 percent), red meats (13 percent), and processed fruit and vegetables (10 percent). Farm values were sharply lower for poultry, and cereals and bakery products.

Red meat accounted for about 36 percent of the farm value of USDA's market basket. The higher farm value for red meat in 1990 mainly reflected 6-percent higher steer-cattle prices and 24-percent higher hog prices. The farm value of beef rose 11 cents to $1.68 per pound (table 3) as beef supplies shrank 1.5 percent. Retail price of Choice beef averaged $2.81 per pound. A decline of 3 percent in pork supplies resulted in a 17-cents per pound increase in the farm value for pork. An average pound of pork sold at retail in 1990 for $2.13, of which hog producers received 87 cents.

Higher producer prices for milk used in fluid products pushed up the farm value of dairy products by an average of about 3 percent. A half-gallon of fluid milk retailing for $1.42 returned the producer about 64 cents in 1990, 5 cents more than in 1989.

Although poultry producers increased their broiler and turkey output, farm prices rose until mid-1990. But by the fourth quarter, the more than 7-percent rise in output caused farm prices to fall more than 8 percent. Broiler chicken producers received 46 cents of the average retail price of 90 cents per pound of whole frying chicken, about 5 cents less than in 1989.

The farm value of eggs rose only fractionally in 1990, following a dramatic 41-percent increase in 1989. The farm value of cereals and baked goods declined 11

"Market Basket" Tracks Price Changes

USDA tracks changes in the prices of food commodities that originate on U.S. farms through a fixed set of foods representing consumer purchases. These foods, called the market basket, account for about 88 percent of all food eaten at home. Excluded from the market basket are fish, seafood, and nonalcoholic beverages.

The cost of the market basket is divided into two components: the farm value and the farm-to-retail price spread. USDA's Economic Research Service (ERS) calculates the farm value of food by multiplying the price farmers receive for commodities by the quantities of farm products equivalent to foods sold at retail. For example, it takes 2.4 pounds of live cattle to yield 1 pound of Choice beef at the meat counter. Thus, the farm value of 1 pound of Choice beef is equal to the payment the farmer receives for 2.4 pounds of cattle.

The second component of food prices, the farm-to-retail price spread, reflects the cost of processing and distribution. ERS developed a food marketing cost index (FMCI) for monitoring and analyzing changes in labor costs and prices of other inputs used in food processing and distribution. The FMCI measures price changes for supplies and services used in processing, wholesaling, and foodstore retailing of domestically produced foods. It does not cover input prices for doing business at eating places. The FMCI represents all nonfarm food marketing costs except depreciation of buildings and equipment, long-term interest, and profits.

Prices in the index are weighted by the quantities used in 1972. The purpose is to ensure that price changes of individual input items affect the index proportional to the use of each input by the food industry. Labor, for instance, is weighted more heavily than packaging materials because of the food industry's proportionally greater dependence on labor.

Table 2.
Farm-to-Retail Price Spread Widened for All Food Groups in the Market Basket in 1990

Group and price components	1980	1989	1990	Annual change 1980-90	Annual change 1989-90
	Index (1982-84=100)			*Percent*	
Market basket:					
Retail price	88.0	124.6	133.5	4.2	7.1
Farm value	96.7	107.1	113.3	1.6	5.8
Farm-to-retail spread	83.5	134.1	144.4	5.6	7.7
Meats:					
Retail price	92.7	116.7	128.5	3.3	10.1
Farm value	96.7	103.3	116.6	1.8	12.9
Farm-to-retail spread	88.8	130.4	140.6	4.7	7.8
Dairy:					
Retail price	90.9	115.6	126.5	3.3	9.4
Farm value	96.2	99.1	101.9	.6	2.8
Farm-to-retail spread	85.9	130.8	149.2	5.7	14.1
Poultry:					
Retail price	93.7	132.7	132.5	3.5	-.2
Farm value	95.5	117.1	107.6	1.2	-8.1
Farm-to-retail spread	91.5	150.6	161.1	5.8	7.0
Eggs:					
Retail price	88.6	118.5	124.1	3.4	4.7
Farm value	88.3	107.5	108.0	2.0	.5
Farm-to-retail spread	89.0	138.1	153.2	5.5	10.9
Cereal and bakery:					
Retail price	83.9	132.4	140.0	5.2	5.7
Farm value	110.7	101.7	90.5	-2.0	-11.0
Farm-to-retail spread	80.6	136.7	146.9	6.1	7.5
Fresh fruit:					
Retail price	83.9	154.7	174.6	7.6	12.9
Farm value	83.7	108.5	128.0	4.3	18.0
Farm-to-retail spread	84.2	176.0	196.0	8.8	11.4
Fresh vegetables:					
Retail price	79.0	143.1	151.1	6.7	5.6
Farm value	73.4	123.3	124.2	5.4	.7
Farm-to-retail spread	81.3	153.2	165.0	7.3	7.7
Processed fruit and vegetables:					
Retail price	82.6	125.0	132.7	4.8	6.2
Farm value	96.6	133.6	147.2	4.3	10.2
Farm-to-retail spread	79.1	122.3	128.1	4.9	4.7
Fats and oils:					
Retail price	89.3	121.2	126.3	3.5	4.2
Farm value	95.8	95.6	107.1	1.1	12.0
Farm-to-retail spread	86.9	130.6	133.4	4.4	2.1
Other prepared food:					
Retail price	97.0[1]	125.5	131.2	3.0	4.5
Farm value	97.3[1]	114.5	116.7	1.8	1.9
Farm-to-retail spread	96.9[1]	127.2	133.4	3.2	4.9

[1]Data for 1982.

Source: *Food Cost Review, 1991*, AER-651, USDA, ERS, June 1991.
Contact: Denis Dunham (202) 219-0870.

percent in 1990, reflecting lower prices of wheat and rice.

Charges Beyond the Farm Gate

The farm-to-retail price spread for the market basket rose 7.7 percent in 1990 because of higher prices of most inputs, such as energy used in the food industry, and greater use of other inputs per unit of output. For example, labor costs rose as foodstores offered more labor-intensive prepared foods and services. Packaging costs also rose because new products, such as microwaveable foods, often require additional packaging materials. Increased spending on advertising and promoting branded food products also added to the costs.

Prices of inputs used in processing, wholesaling, and retailing foods increased by an average of about 3.3 percent in 1990, as measured by an ERS food marketing cost index. A 3.6-percent rise in the labor component and an 8.4-percent rise in the energy component contributed most to the increase. Prices of packaging materials advanced by less than 1 percent. Short-term interest rates declined about 9 percent, moderating the rise in the overall index.

Price spreads increased for all 10 food groups in the market basket, presumably reflecting higher food industry labor costs, higher prices of other inputs, and the lag in the retail price adjustment to the decline in farm value after mid-1990.

The farm-to-retail price spread for red meats widened about 8 percent, mainly reflecting increases for pork. The price spread for pork increased about 11 percent, a likely adjustment to reduced pork sales and much higher inventory costs because of the dramatic rise in prices. In 1989, the price spread for pork had declined about 2 percent, and both the farm value and retail prices were relatively stable.

The farm-to-retail price spread for Choice beef increased about 4 percent in 1990, likely reflecting the relatively small rise in the farm value and the fact that there was an increase in the price spread in 1989. Fluctuations in the price spread for beef and pork partly reflect retail merchandising practices designed to maximize total meat department sales and profits.

Cereals and bakery products accounted for 21 percent of the farm-to-retail price spread of the food market basket. The price spread for these foods widened 7.5 percent in 1990 as farm prices fell and retail prices rose. It is unlikely that all of the price spread increase was due to rising processing and marketing costs. Profit margins also may have increased.

Industry advertising and product development costs for cereals and bakery products rose probably to capitalize on growing demand for products that consumers perceive to be nutritionally beneficial. However, the growth in product sales slowed in 1990 in likely response to rising retail prices that have largely consisted of increases in the farm-to-retail spread.

The price spread for poultry, which increased 13 percent in 1989, widened by 7 percent in 1990. The spread between retail poultry prices and farm prices has widened much more in recent years than earlier in the 1980's.

The price spread for eggs rose 11 percent in 1990, resulting from a 4.7-percent rise in retail egg prices and nearly stable farm egg prices. The volatility in market prices during the year was likely behind some of this large increase in the price spread.

The price spread for dairy products widened 14 percent, the largest increase among the 10 food groups in the market basket. The price spread for dairy products grew more in 1990 than at any time since 1980. Dairy's annual increase is usually less than most foods because of the fluid milk processing industry's large annual increase (4.5 percent) in labor productivity.

For much of 1990, the dairy price spread was about a tenth higher than a year earlier. But the farm value of milk dropped sharply during the fourth quarter, and the spread widened to 21 percent above a year earlier. The unusually large increase in 1990 reflects the instability of markets created by record-high farm prices of milk early in the year, low cheese stocks, and strong consumer demand that resulted in nearly a 3-percent increase in commercial use of all dairy products in 1990.

The farm-to-retail price spread increased 11 percent for fresh fruits and about 8 percent for fresh vegetables. The price spread for fruits and vegetables tends to vary directly with farm values. When the farm values for these products increase (as in 1990), the price spread increases. Movement in the same direction of the price spread and farm prices suggests that retail pricing is based largely on a constant percentage markup of costs rather than a constant dollar markup.

Farm Value Share

The farm share is computed from retail prices and farm values of foods. The farm value share reflects changes in farm and retail food prices over time. The 1990 farm value share was stable, because the increase in the farm value was nearly as large as the rise in retail prices.

1990 was the fourth year in succession that the farm value share averaged 30 percent. This contrasts with the early 1980's, when abundant food supplies held down farm prices, while rising food processing and distributing charges boosted retail prices. These opposing forces caused a decline in the farm value share from 37 percent in 1980 to 30 percent in 1987.

Farm value shares vary greatly among foods (table 3). In general, the more highly processed the product is, the smaller the farm share. For instance, wheat is the

Table 3.
Farm Value Share Was Highest for Animal Products in 1990

Food	Retail price	Farm value	Farm value share of retail price [1]
	Dollars		*Percent*
Animal products:			
Eggs, Grade A large, 1 doz.	1.01	0.65	64
Beef, Choice, 1 lb.	2.81	1.68	60
Chicken, broiler, 1 lb.	.90	.46	51
Milk, 1/2 gal.	1.42	.64	45
Pork, 1 lb.	2.13	.87	41
Cheese, natural cheddar, 1 lb.	3.50	1.19	34
Fruits and vegetables:			
Fresh—			
Lemons, 1 lb.	1.07	.27	25
Potatoes, Northeast, 10 lbs.	3.38	.76	22
Grapefruit, 1 lb.	.66	.16	25
Oranges, California, 1 lb.	.57	.13	23
Apples, Red Delicious, 1 lb.	.72	.16	22
Lettuce, 1 lb.	.60	.09	16
Frozen—			
Orange juice concentrate, 12 fl. oz.	1.62	.56	34
Broccoli, cut, 1 lb.*	1.21	.25	21
Corn, 1 lb.*	1.07	.12	11
Peas, 1 lb.*	1.06	.12	11
Green beans, cut, 1 lb.*	1.09	.11	10
Canned and bottled—			
Apple juice, 64-oz. bottle*	1.36	.28	21
Apple sauce, 25-oz. jar*	.90	.17	19
Pears, 2-1/2 can*	1.14	.20	18
Peas, 303 can (17 oz.)*	.61	.10	16
Corn, 303 can (17 oz.)*	.51	.08	16
Peaches, cling, 2-1/2 can*	1.07	.17	16
Green beans, cut, 303 can*	.49	.06	12
Tomatoes, whole, 303 can	.60	.05	8
Dried—			
Beans, 1 lb.*	.70	.30	43
Raisins, 15-oz. box*	1.30	.39	30
Crop products:			
Sugar, 1 lb.	.40	.15	38
Flour, wheat, 5 lbs.	1.25	.30	24
Shortening, 3 lbs.	2.75	.69	25
Margarine, 1 lb.	.84	.19	23
Rice, long grain, 1 lb.	.50	.10	19
Prepared foods:			
Peanut butter, 1 lb.	1.89	.48	25
Pork and beans, 303 can (16 oz.)*	.41	.09	22
Potato chips, regular, 1-lb. bag	1.99	.29	15
Chicken dinner, fried, frozen, 11 oz.*	1.40	.18	13
Potatoes, french fried, frozen, 1 lb.	.84	.11	13
Bread, 1 lb.	.70	.04	6
Corn flakes, 18-oz. box*	1.56	.10	6

*January-June 1989 average. [1]Computed from unrounded data.

Source: *Food Cost Review, 1990,* AER-651, USDA, ERS, June 1991.
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principal ingredient in both flour and bread, but additional manufacturing processes are required for bread. Foods derived from animal products tend to have a higher farm value share than those derived from crops, because more farm inputs are required for animal products than for crop products. For example, the 1990 farm value share was 64 percent for eggs, 60 percent for Choice beef, but only 6 percent for corn flakes cereal.

Other factors influencing the farm value share include costs of transportation from the farm to the consumer, product perishability, and the amount of shelf space occupied in retail foodstores. These factors partly explain why the farm share for California fresh oranges is lower than that for frozen concentrated orange juice. ■

Food Spending

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Incomes normally rise faster than food expenditures, but in 1990, food spending as a percentage of income rose slightly. Much of the growth in food spending came from people eating more outside the home, where prices are higher than in grocery stores. Rising incomes are chiefly responsible for the increased spending on food away from home. Much of the increase in household income is due to a rise in the number of households with more than one earner. Such households generally have more money and less time, and eat out more often, than single-earner households.

Food and alcoholic beverage expenditures in the United States totaled $626 billion in 1990, 6 percent more than in 1989 (table 1). Total spending for food to be eaten at home rose 5.2 percent from 1989 to 1990, while expenditures for food away from home increased 7.2 percent. Since 1965, away-from-home food expenditures have increased nearly ninefold, which is double the rate of increase of at-home expenditures (table 1). People are eating out more as incomes rise and as more women are employed outside the home. Spending for alcoholic beverages rose 4 percent from 1989.

In real terms (once adjusted for inflation), however, total overall food sales rose just 0.3 percent between 1989 and 1990. A 2.1-percent increase in real spending for food away from home was offset by a 1.1-percent decline in real spending for food at home.

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Source of Food Spending

Most funds for food spending came from individuals and families (figure 1). They provided $444 billion of the $546 billion (81 percent) spent on food. And, their food spending in 1990 was up $25 billion (6 percent) from 1989. Governments and businesses contributed about 17 percent of the funds for food in 1990. The Federal Government spent $25 billion on food stamps, donated food commodities, food supplies for the armed forces, and meals for prisoners in Federal institutions. State and local governments accounted for another $5 billion in food expenditures. Businesses spent $64 billion for such expenses as meals on business trips and those furnished to employees in restaurants. The value of food produced at home, including sport fish and game, totaled $9 billion.

Food Spending and Income

American families and individuals spent $467 billion of their disposable personal income on food in 1990 (table 2). This 6.2-percent increase over 1989 was greater than the 5.9-percent rise in income. (See box on how food spending series differ.) Incomes normally grow

Table 1.
Food Spending Rose 6 Percent in 1990

Expenditures	1965	1970	1975	1980	1985	1989	1990*
				Billion dollars			
All food and beverages [1]	102.3	139.1	219.8	356.2	471.9	591.1	626.0
All food (excluding alcohol)	86.7	117.1	188.0	306.2	406.9	514.7	546.3
At-home food	60.5	77.5	119.9	185.6	234.6	280.6	295.3
Sales	56.6	73.4	113.9	177.4	227.6	272.1	286.3
Home production and donations	3.9	4.1	6.0	8.3	7.1	8.6	9.0
Away-from-home meals	26.2	39.6	68.1	120.5	172.2	234.0	251.0
Sales	22.1	33.8	57.8	103.3	150.2	205.9	220.3
Supplied and donated [2]	4.1	5.8	10.3	17.2	22.0	28.1	30.7
Alcoholic beverages	15.6	22.0	31.8	50.0	65.0	76.4	79.7
Packaged	9.0	12.9	19.3	29.4	38.7	43.2	45.2
Drinks	6.6	9.1	12.5	20.6	26.3	33.2	34.5

*Preliminary. [1]May not total due to rounding. [2]Includes child nutrition, subsidies.

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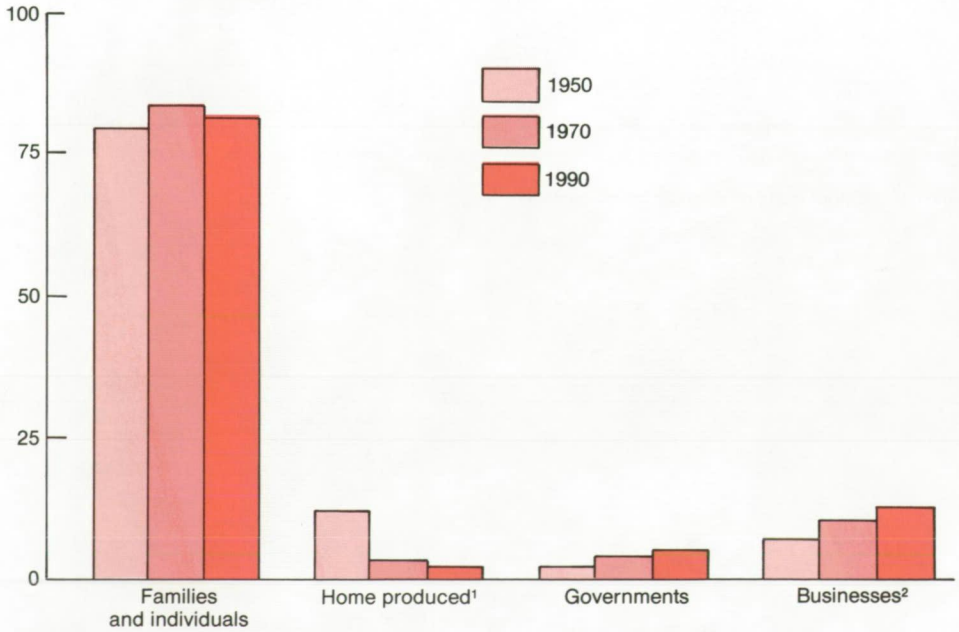
Figure 1
Who Pays for Food

Percent of total expenditures



[1]The value of food produced and consumed by the same family. [2]Includes philanthropic institutions.
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Comparable Measures Are Needed To See Relationships of Food Expenditures and Income

Constructing accurate and comparable measures of food expenditure and income relationships is difficult. Food expenditures as a share of income can vary according to how income is measured and what expenses are counted. Items such as food produced at home and food stamps can be counted as both food expenditures and income, but are treated differently in different series.

Food produced at home is valued at the prices at which it could be purchased, as in the data on total food expenditures (table 1). Its value is also estimated at the prices at which it could be sold, as done in the data on disposable income spent on food (table 2). However it is handled, the value must be included in both expenditures and income in order to avoid distorting one measure or the other.

The value of food stamps is also treated as both income and food expenditures. Food stamps supplement family income, which allows recipients to substitute food stamps for cash at the grocery store and use their cash for something else.

Besides the differences in the way food produced and consumed by the same family is valued, the total food expenditure series and the personal income spent on food series differ in that the total expenditure series includes, while the personal income series excludes, the value of food from the following: food donations to individuals, expense-account meals, provisions to inmates and patients, and donations (food and cash) to schools and institutions.

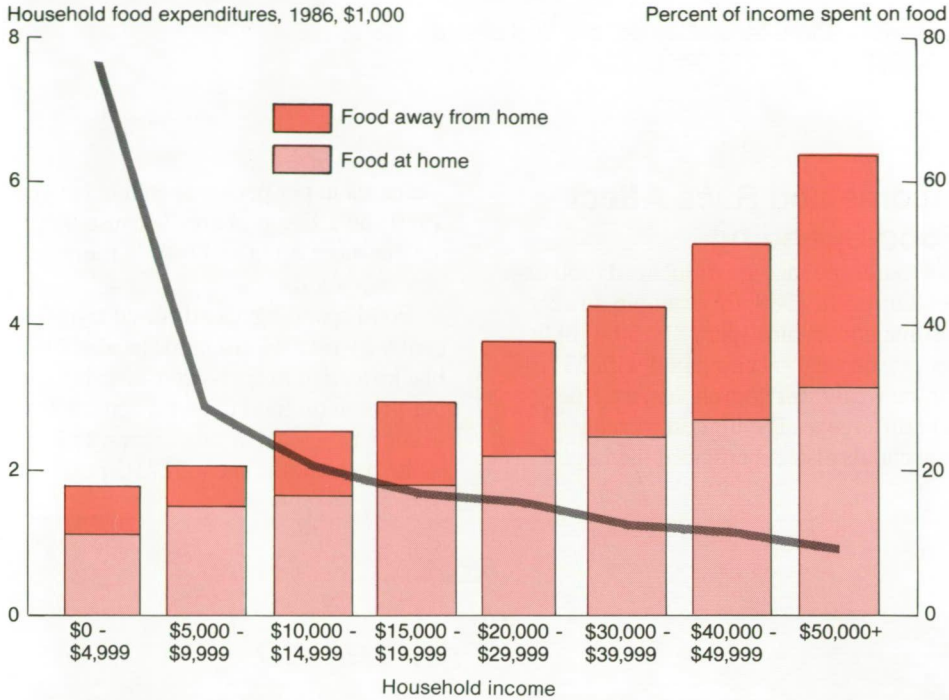
Table 2.
Personal Food Expenditures Rose More Than Disposable Personal Income in 1990[1]

Component	1965	1975	1985	1989	1990
			Billion dollars		
Disposable personal income	486.8	1,142.8	2,838.7	3,725.5	3,946.1
Total personal consumption expenditures	440.8	1,012.8	2,629.0	3,471.1	3,658.5
Nondurables	191.9	416.2	911.2	1,130.0	1,194.1
Food	74.3	161.0	357.1	439.5	466.7
At home	57.4	115.1	228.5	272.7	286.9
Away from home	16.9	45.9	128.6	166.8	179.8
Alcoholic beverages	13.5	28.1	58.3	68.0	70.9
At home	9.0	19.3	38.7	43.3	45.2
Away from home	4.5	8.8	19.6	24.7	25.7
Cleaning and household supplies	5.7	12.5	26.4	32.8	34.3
Toiletries	4.5	10.3	23.1	29.7	31.5
Tobacco	8.1	15.1	32.2	41.7	45.1
Drugs	5.2	12.0	28.1	36.4	39.2
Clothes and shoes	34.1	70.8	156.4	204.6	213.3
Gasoline and oil	14.8	39.7	90.6	83.8	93.7
Fuel, oil, and coal	4.4	8.4	18.5	17.7	18.6
Other	27.3	56.9	120.5	175.8	180.8
Durables	63.5	135.4	372.2	474.6	480.9
Motor vehicles and parts	29.9	55.8	179.1	215.5	213.5
Furniture and household equipment	25.1	54.5	129.9	171.4	176.5
Other	8.4	25.1	63.2	87.8	90.9
Services	185.4	461.2	1,345.6	1,845.5	1,983.5
Housing	65.4	148.4	403.0	533.9	569.5
Household operation	26.5	63.5	175.3	206.3	210.9
Transportation	14.5	35.7	89.8	126.4	136.6
Personal care	8.2	13.2	32.1	48.6	54.7
Medical care	25.9	84.2	291.5	434.3	483.7
Personal business	20.2	52.2	169.9	243.1	255.1
Recreational	9.4	24.7	74.1	108.9	119.2
Other	15.3	39.3	109.9	144.0	154.0
Savings	34.3	104.6	125.4	171.8	179.1
Other [2]	11.7	25.4	84.3	103.6	108.7

[1]As of February 27, 1991.Data may not total due to rounding.[2]Includes interest paid by consumers to businesses and personal transfer payments to foreigners.

Sources: Bureau of Economic Analysis, Department of Commerce; USDA for food and alcoholic beverage data.
Contact: Alden Manchester (202) 219-0880.

Figure 2
The Amount Spent on Food Away From Home Rises Sharply as Household Incomes Increase



Source: *U.S. Food Spending and Income: Changes Through the Years,* AIB-618, USDA, ERS, Jan. 1991.
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than food spending, as evidenced by a smaller share of disposable income (income after taxes) being spent on food. For example, food spending's share of disposable personal income was 11.8 percent in 1990, 12.6 percent in 1985, 14.1 percent in 1975, and 15.3 percent in 1965.

One explanation for the rise in food spending relative to income is the increased demand for services, as away-from-home food spending rose faster than incomes. Away-from-home food spending increased 7.8 percent from 1989, while at-home food spending rose only 5.2 percent. In 1965, 23 percent of personal food expenditures went for food away from home. By 1990, that figure increased to 39 percent.

The desire for services also affects nonfood purchases. As incomes rose during the past two decades, the majority of the increase went for nonfood items and services like housing, transportation, and medical care. Since 1965, the share of income spent on services has climbed from 42 to 54 percent.

Households with higher incomes spent more money on food. But, the proportion of income spent on food was much higher in low-income households (figure 2). For example, the share of income spent on food averaged 42 percent in the 20 percent of households with the lowest before-tax incomes (including food stamps). Food spending totaled 9 percent of before-tax income in the 20 percent of households with the highest incomes. ■

Per Capita Food Spending

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When adjusted for inflation, U.S. per capita spending of urban households on food for consumption at home declined more than 6 percent from 1980 to 1988, according to the Bureau of Labor Statistics. On the other hand, inflation-adjusted (real) per person away-from-home food spending rose more than 10 percent. The net of these two changes was a small decline in real total per person food spending.

These averages, however, mask the fact that some population groups spent much less in 1988, after adjusting for inflation, while others spent more. For example, total food spending grew rapidly for single people, while spending declined sharply for households with six or more members. Single people spent almost twice as much on weekly food per person as five-member households—$36.73 versus $19.23 in 1988.

Per person food spending declines as household size increases, but larger households have a much larger total food bill than smaller households. In 1988, for example, one-person households spent $36.73 weekly and five-person households spent $96.15. Nevertheless, household food spending does not increase proportionately with household size because larger households can take advantage of economies of size (such as buying in bulk), tend to have more children (who eat smaller portions), and tend to buy a different mix of food.

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Income and Race Affect Food Spending

Household income influenced food expenditures. In 1988, for example, lower income households spent $19.50 weekly per person on food compared with $31.50 for the wealthiest households, a 62-percent difference. The highest income households also experienced the largest increases in per person spending between 1980 and 1988, probably because they ate out more often and bought more convenience foods.

Food spending also differed significantly by race. Households headed by blacks tended to spend considerably less per person on food than did households headed by whites or other races. In 1988, white households spent $27.03 per

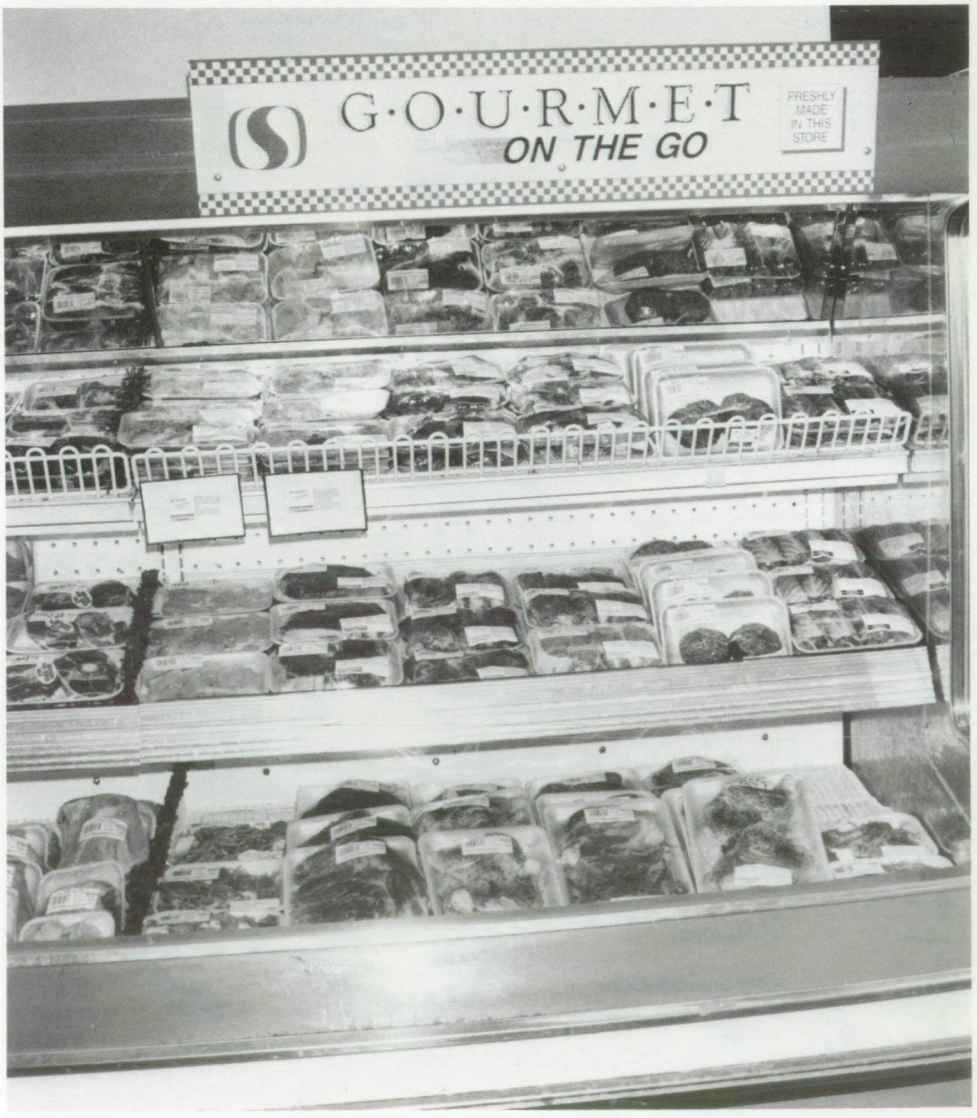


Table 1.
Northeasterners Spent the Most on Food in the 1980's

tem	Weekly per-person food expenditures								
	1980	1981	1982	1983	1984	1985	1986	1987	1988
	1988 dollars								
All urban households	25.80	25.31	26.16	26.21	25.83	27.13	25.94	26.25	25.68
Number of household members:									
One	33.22	34.62	35.26	32.37	34.79	36.86	34.55	35.36	36.73
Two	31.30	31.25	31.42	33.35	30.29	33.59	32.82	32.89	31.59
Three	24.92	25.24	25.32	24.47	26.56	26.42	25.44	25.59	25.48
Four	23.33	22.35	24.31	24.47	23.63	23.83	22.44	23.02	22.47
Five	21.70	19.95	21.18	20.96	20.79	20.98	19.82	20.74	19.23
Six or more	19.03	17.46	16.62	16.50	17.64	17.46	16.68	15.62	15.83
Single female parent with children	16.96	18.69	17.69	16.38	18.31	18.45	16.23	18.22	17.65
Income groups:									
Poorest 20 percent	22.45	20.90	21.24	19.26	18.97	21.24	20.47	19.42	19.50
Second-poorest 20 percent	24.26	21.57	22.23	21.47	22.13	22.58	22.87	23.30	22.67
Middle 20 percent	24.71	25.71	25.58	24.35	25.80	25.83	26.21	26.31	25.19
Second-richest 20 percent	28.74	27.44	28.43	27.63	27.38	28.58	27.28	27.33	28.31
Richest 20 percent	30.66	32.87	33.35	35.66	33.84	35.44	33.92	34.31	31.50
Race:									
White	26.99	26.44	27.36	27.54	27.21	28.45	27.22	27.56	27.03
Black	18.10	17.93	18.33	17.71	16.98	18.70	17.65	18.42	17.89
Other [1]	24.07	23.07	24.16	26.18	24.48	25.99	24.80	22.27	22.11
Age of household head:									
Under 25 years (nonstudent)	23.63	21.67	23.17	22.36	23.61	23.33	23.65	23.15	21.99
25 to 34 years	25.22	22.92	24.81	23.59	22.98	23.87	23.18	23.55	23.82
35 to 44 years	24.11	25.45	24.38	25.40	24.69	26.09	25.46	25.49	24.62
45 to 54 years	26.61	26.92	28.55	28.92	29.13	30.15	28.66	28.10	28.06
55 to 64 years	29.30	28.90	31.12	31.44	29.38	31.78	29.84	30.66	28.98
Over 64 years	27.38	26.86	26.37	27.31	27.65	29.41	27.32	28.36	27.26
Region and city size									
MSA's [2] in the:									
Northeast	27.28	26.65	26.84	28.62	27.53	28.94	29.12	27.57	28.04
Midwest	26.19	24.07	25.26	25.72	25.02	26.06	25.08	25.97	25.23
South	24.19	25.26	25.48	25.60	24.95	25.98	24.33	25.14	24.86
West	26.27	27.58	29.93	28.49	28.52	31.26	27.53	28.56	26.17
Other urban areas	24.60	21.61	22.14	20.10	21.94	21.79	22.21	22.24	23.10

[1]Includes American Indians, Aleuts, Eskimos, Asians, and Pacific Islanders. [2]Metropolitan Statistical Areas (MSA's) are, except in New England, a county or a group of contiguous counties that contain at least one city of 50,000 or more inhabitants. In New England, MSA's consist of towns or cities.
Contact: James Blaylock (202) 219-0862.

Table 2.
Spending for At-home Food Use Has Declined, Especially for Meats

Item	1981	1982	1983	1984	1985	1986	1987	1988
				Food expenditure index (1980=100) [1]				
Total food (excluding alcohol)	98.1	101.4	101.6	100.1	105.2	100.6	101.8	99.6
Food away from home	97.6	106.6	109.5	105.2	112.0	109.6	112.8	110.2
Lunch	104.0	110.1	111.3	109.9	118.0	114.0	124.1	122.9
Dinner	102.6	109.7	119.8	111.2	124.9	118.2	120.9	117.4
Other meals and snacks	79.4	96.4	90.1	88.1	80.7	88.2	82.2	79.7
Food at home	98.4	99.0	97.5	97.4	101.5	95.8	95.8	93.7
Cereal and bakery products	97.1	102.0	95.2	97.7	104.2	97.1	101.1	98.8
Cereal and cereal products	100.9	105.4	98.3	101.2	105.3	105.3	113.8	111.4
Flour and prepared flour mixes	94.2	100.5	84.7	82.5	87.0	71.7	71.0	69.0
Cereal	101.9	106.2	97.8	101.4	109.7	109.3	127.9	124.0
Rice, pasta and cornmeal	96.1	103.2	92.3	103.2	95.4	101.6	95.8	96.5
Bakery products	94.4	100.4	93.9	96.2	103.7	93.6	95.6	93.4
White bread	92.2	100.7	91.6	85.9	86.6	71.8	75.0	62.8
Other bread	117.1	112.6	117.5	113.6	132.1	136.1	146.6	144.9
Fresh biscuits, rolls, and muffins	91.1	100.1	97.4	100.0	103.9	102.7	110.0	108.1
Cakes and cupcakes	90.0	86.0	89.4	98.0	106.5	98.0	88.5	83.6
Cookies	95.6	102.6	98.9	109.7	114.5	100.5	105.9	109.9
Crackers and other bread products	103.6	97.1	91.6	93.4	107.5	97.0	94.0	102.5
Doughnuts and sweet rolls	90.7	109.2	83.6	86.5	97.2	87.0	90.8	81.5
Frozen and refrigerated bakery and fresh pies, tarts, and turnovers	81.9	92.8	75.2	85.6	88.3	78.2	75.1	84.4
Meats, poultry, fish, and eggs	97.6	93.6	92.3	89.8	92.1	85.5	80.6	75.8
Meats	96.6	90.9	89.4	85.7	88.5	81.9	75.7	71.9
Beef	98.1	93.9	89.6	85.7	86.4	84.1	77.1	69.6
Ground beef (excluding canned)	99.0	97.9	92.9	93.8	91.4	95.6	96.7	87.8
Chuck roast	104.9	85.8	88.5	75.2	65.2	72.2	54.1	51.9
Round roast	66.6	66.6	76.8	67.7	70.5	71.2	58.6	48.5
Round steak	82.8	81.2	66.4	77.5	68.0	61.4	41.7	44.7
Sirloin steak	107.7	116.3	126.3	104.1	115.8	103.4	86.5	80.2
Other beef (excluding canned)	108.8	99.7	92.2	87.9	96.0	74.2	79.9	69.3
Pork	88.5	78.4	81.8	77.5	81.7	71.4	63.7	64.1
Bacon	94.5	82.2	89.3	85.8	82.9	77.4	68.7	72.8
Pork chops	91.1	82.5	83.2	79.0	84.0	72.1	65.5	66.5
Ham (excluding canned)	76.7	68.1	72.7	61.5	76.4	61.9	60.4	56.3
Other pork	87.2	74.7	76.1	76.7	78.5	64.7	52.3	56.6
Pork sausage	107.7	96.6	104.4	97.9	105.7	92.4	79.7	74.7
Canned ham	69.8	86.5	63.3	66.5	66.0	64.5	60.6	40.8
Other meats	102.4	99.4	98.2	93.7	103.4	90.1	89.1	88.2
Frankfurters	95.8	91.9	92.8	92.8	100.3	90.6	91.5	88.9
Bologna, liverwurst, and salami	101.6	97.4	90.5	90.1	88.7	92.2	87.5	79.4
Other lunch meats	107.3	105.8	104.2	105.0	112.6	94.9	96.8	101.7
Lamb and miscellaneous meats	98.2	90.1	92.2	68.3	101.1	55.0	61.7	59.1
Poultry	101.2	103.0	98.3	96.5	99.1	96.4	97.8	88.5
Chicken	102.5	102.2	100.5	96.8	96.7	93.3	97.7	83.1
Fresh whole	97.8	94.8	93.4	78.4	77.4	62.3	55.5	43.1
Fresh and frozen parts	106.2	104.4	102.5	104.9	112.2	115.2	128.3	113.0
Other poultry	95.0	112.6	88.5	99.7	99.9	98.8	100.8	107.5
Fish and seafood	104.4	100.8	111.3	114.6	111.4	98.1	92.2	83.8
Canned	98.1	84.8	87.1	89.1	89.0	88.2	83.7	74.4
Fresh and frozen	104.4	109.7	120.3	126.7	121.0	104.3	92.7	86.9
Eggs	96.1	102.6	90.7	84.5	89.6	83.9	81.3	79.5
Dairy	99.2	104.6	100.1	99.9	105.7	98.4	105.1	102.6
Fresh milk and cream	100.9	104.4	97.5	97.7	100.3	93.6	97.7	96.5
Fresh whole milk	94.6	102.7	88.4	87.8	83.1	73.5	72.2	60.9
Other fresh milk and cream	107.7	106.8	111.3	113.0	130.0	125.2	140.3	152.7
Cheese	96.2	103.5	99.8	93.2	100.6	93.0	105.1	102.0
Ice cream and related products	94.8	102.2	109.5	115.5	124.6	118.6	122.8	120.4
Other dairy products	92.7	90.1	98.4	106.4	122.7	109.0	105.6	93.2

Continued—

Table 2.
Spending for At-home Food Use Has Declined, Especially for Meats *(continued)*

Item	1981	1982	1983	1984	1985	1986	1987	1988
	Food expenditure index (1980=100) [1]							
Fruits and vegetables	99.8	100.8	100.9	96.1	97.6	95.2	96.3	93.5
Fresh fruits	106.3	106.0	107.6	99.7	94.3	97.3	94.1	93.0
Apples	118.4	101.0	105.5	100.8	101.8	94.0	93.7	91.5
Bananas	114.6	137.5	115.1	124.6	142.5	135.6	136.6	136.5
Oranges	89.2	69.5	98.3	64.6	68.2	75.2	60.1	50.2
Other fresh fruits	104.8	112.6	111.3	109.1	91.7	99.7	98.2	114.2
Fresh vegetables	97.9	101.8	99.7	92.6	98.1	93.0	97.5	91.6
Potatoes	103.6	104.9	97.6	97.8	95.7	92.7	97.8	81.6
Lettuce	103.7	96.6	94.2	91.1	82.5	86.3	71.3	65.4
Tomatoes	96.1	107.1	90.3	86.1	87.8	89.9	93.5	81.3
Other fresh vegetables	99.4	101.4	104.2	93.0	103.7	94.4	107.1	102.1
Processed fruits	97.5	98.1	98.6	93.7	101.6	96.1	97.3	97.2
Frozen fruits and fruit juices	98.3	94.5	89.7	79.1	85.4	78.1	69.4	70.3
Other fruit juices	97.5	100.3	102.0	96.8	110.0	100.1	109.5	108.4
Canned and dried fruits	93.4	96.3	101.6	105.6	111.1	93.9	106.5	110.0
Processed vegetables	94.1	94.0	91.3	93.9	90.7	88.6	90.5	88.5
Frozen vegetables	96.9	95.0	91.4	102.5	92.4	91.7	95.8	99.9
Canned beans and corn	88.8	84.2	84.2	89.2	79.3	79.9	77.7	72.2
Other processed vegetables	94.8	92.3	93.6	94.0	93.7	94.0	96.4	87.6
Sugar and sweets	92.6	92.8	98.7	100.5	103.4	96.9	91.7	95.9
Candy and chewing gum	93.7	94.8	110.4	112.6	116.0	111.1	109.0	112.9
Sugar and artificial sweeteners	89.2	92.1	88.9	87.4	93.8	82.0	81.3	79.0
Other sweets	98.3	103.0	91.8	97.4	102.5	90.5	80.1	85.4
Fats and oils	99.5	101.3	93.5	94.3	100.2	88.4	85.2	87.4
Butter	92.9	102.2	89.8	87.6	97.6	86.5	74.3	63.9
Margarine	97.5	96.7	85.1	86.6	92.2	75.3	77.0	80.6
Other fat and oil products	101.7	102.4	97.3	98.7	106.7	93.3	91.0	96.1
Other fats, oils, and salad dressings	96.8	102.2	93.9	97.2	109.6	96.1	97.4	100.0
Nondairy cream substitutes	97.3	89.7	92.0	89.6	86.9	85.3	67.7	76.2
Beverages	95.9	94.9	97.8	99.9	104.7	101.7	105.2	107.4
Carbonated drinks	101.8	100.8	102.7	105.6	114.7	112.4	122.9	130.0
Coffee	99.0	94.0	96.4	95.4	95.5	80.0	77.3	71.0
Roasted	105.6	97.7	104.0	105.2	108.1	86.2	94.2	77.6
Instant and freeze-dried	91.8	90.1	88.3	84.7	81.7	72.3	57.2	63.9
Other noncarbonated drinks and beverages	91.2	92.6	104.9	105.0	104.8	115.7	105.3	111.2
Miscellaneous foods	102.9	107.1	108.5	119.2	126.7	122.1	123.8	127.7
Soups	101.9	107.5	95.2	100.7	112.2	101.6	111.5	114.4
Frozen prepared foods	102.5	104.1	118.9	142.2	145.3	137.3	126.4	137.3
Potato chips, snacks, and nuts	98.9	102.9	114.1	120.2	133.5	122.5	130.5	135.9
Seasonings, olives, pickles, and relishes	89.9	90.1	86.8	84.6	95.1	92.9	82.6	85.4
Sauces, gravies, and other condiments	95.6	110.3	98.4	100.2	108.8	102.1	102.1	106.3
Miscellaneous prepared foods [2]	124.2	116.9	114.7	134.5	152.3	147.4	141.8	133.1
Other prepared foods	105.4	114.0	98.8	121.7	124.2	140.4	151.1	158.5
Alcoholic beverages	90.7	91.1	94.5	84.7	91.6	77.4	80.9	72.8
Alcoholic beverages at home	83.4	88.6	90.9	79.2	85.6	74.8	78.3	68.6
Beer and ale	84.5	84.9	86.8	83.9	89.4	84.1	87.2	76.4
Whiskey	83.5	101.9	94.4	57.0	65.2	51.5	46.3	45.8
Wine	89.6	95.7	108.8	87.0	105.9	84.2	94.1	76.9
Other alcoholic beverages	72.6	81.3	85.1	73.7	65.6	55.7	59.9	54.4
Alcoholic beverages away from home	101.4	96.0	103.9	101.9	114.5	95.2	99.9	96.9

[1] Index constructed by dividing spending (in constant dollars) for each food group each year by 1980 spending levels. [2] Includes prepared salads and desserts and baby food categories.

Contact: James Blaylock (202) 219-0862.

person on food and black households spent $17.89, a 51-percent difference. Helping to explain this difference is that white households were generally smaller, 2.5 versus 2.8 members, and had higher incomes, $29,950 versus $21,332.

Other groups—including American Indians, Eskimos, and Asians—spent 18 percent less than whites but 24 percent more than blacks. For both black and white households, real per person weekly food spending was about the same in 1988 as in 1980. But American Indians, Eskimos, and Asians decreased their spending by $2.

Age and Location Also Factor In

In general, per person food spending tends to increase as the household head ages, until age 65. The major reason is the increase in income associated with rising age, at least until retirement. Households headed by a person under age 34 spent less per person on food in 1988 than in 1980. Other households spent more or about the same.

In 1988, urban households in the West and Northeast spent more per person on food than those in the South or Midwest (table 1). Northeasterners tended to spend the most and Southerners the least. Some of these differences are caused by regional variations in food prices, differences in household incomes, and purchases of a different mix of food.

Between 1980 and 1988, real per person spending increased almost 3 percent in the Northeast and South, stayed about the same in the West, and declined almost 4 percent in the Midwest.

The Mix of Food in Grocery Sacks Changes

Foodstuffs posting the most rapid growth in real at-home spending between 1980 and 1988 were: cereals, up 24 percent; breads (other than white), up 45 percent; fresh milk (other than whole), up 53 percent; bananas and frozen prepared foods, both up 37 percent; carbonated drinks, up 30 percent; and potato chips and related snacks, up 36 percent (table 2). Among the biggest losers were white bread, beef and pork products, fresh whole milk, oranges, lettuce, and butter. At-home expenditures on alcoholic beverages also fell significantly.

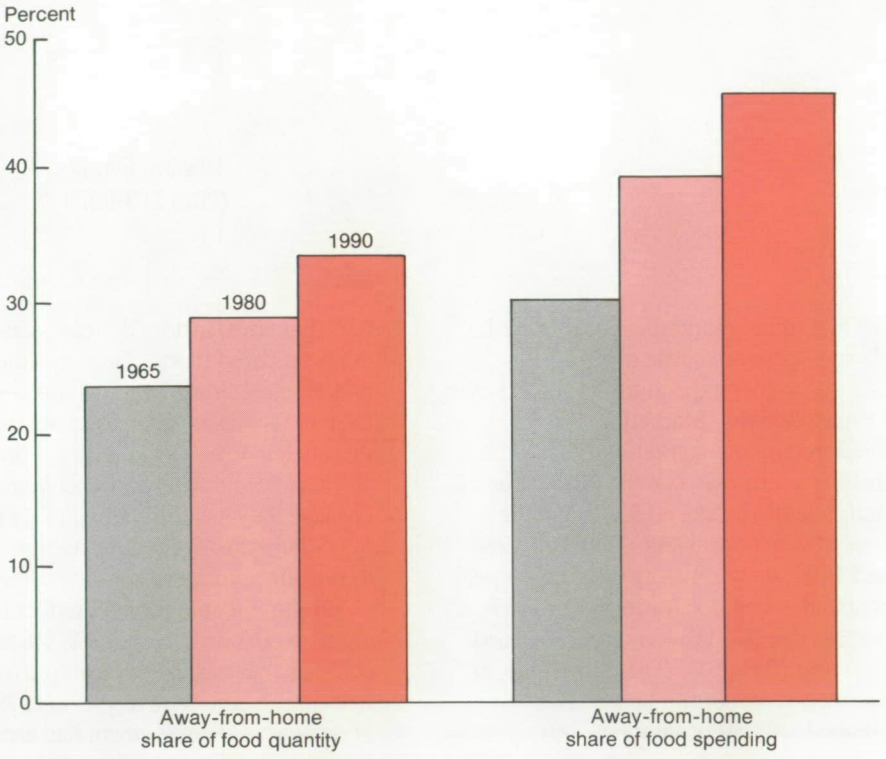
One interesting trend is the changing at-home consumption patterns for foods that are obviously close substitutes. For example, there is a pronounced trend away from drinking fresh whole milk, down almost 40 percent between 1980 and 1988, to drinking lowfat fresh milk, up over 53 percent. Likewise, spending on white bread dropped about 37 percent, while spending for other types of bread rose 45 percent.

One may be tempted to conclude that consumers appear to be shifting consumption toward products they perceive as healthier. However, increased consumption of other foods, such as cola drinks, up 30 percent, and snack foods, up 36 percent, contradict this conclusion. ■

Away-From-Home Food Expenditures. . .At a Glance

The share of total food spending for meals and snacks away from home rose from 30 percent in 1965 to 39 percent in 1980, and to 46 percent in 1990. Though almost half of food dollars are spent on meals and snacks away from home, those purchases amount to just a third of the quantity of food purchased. Away-from-home food is more expensive because of the added cost of preparing and serving the food. The away-from-home share of the food quantity has increased from 24 percent in 1965 to 29 percent in 1980, and to 34 percent in 1990.

People Are Eating Out More Often



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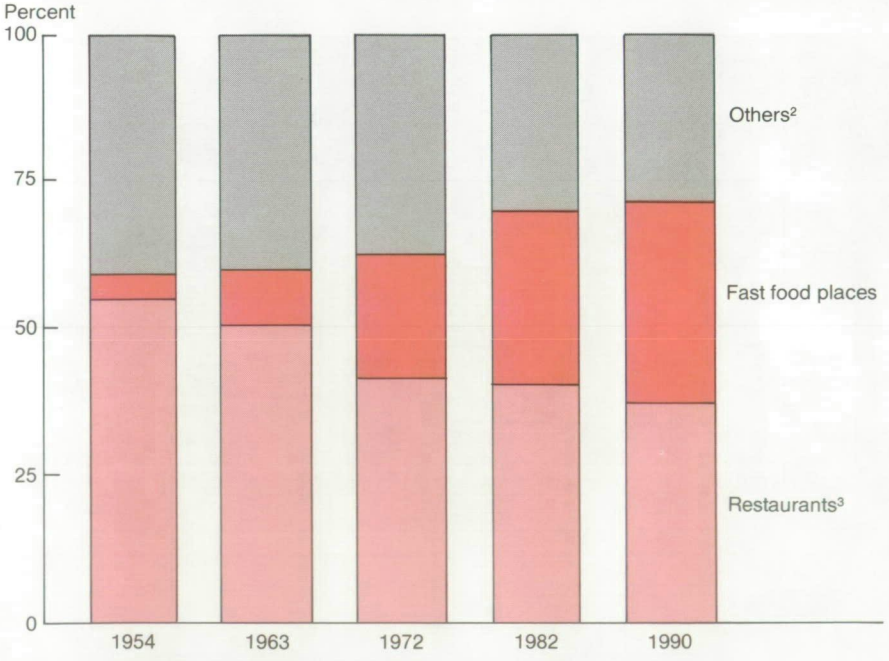
Fast Food Outlets Rival Traditional Restaurants for the Away-From-Home Food Dollar[1]



[1]Sales of away-from-home food by type of outlet. [2]Includes other eating places, hotels and motels, schools, colleges, stores, bars, vending machines, recreational places, and military outlets. [3]Includes lunchrooms, cafeterias, and caterers.

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Although traditional restaurants get the largest share of the away-from-home food dollar, the increased popularity of fast food outlets caused most of the growth in away-from-home food spending. Its share of the away-from-home food spending market grew from 4 percent in 1954 to 34 percent in 1990. Over the same period, spending at table-service restaurants, lunchrooms, cafeterias, and caterers—the more traditional eating places—declined from 55 to 37 percent.

Fast food outlets got their start in the 1950's. But, rapid penetration into almost every community led to market saturation by the late 1970's. Building additional outlets no longer provided the desired growth. Instead, many fast food firms are using other avenues of growth, such as adding salad bars, breakfasts, and chicken products, or entering the pizza takeout or delivery market.

Food Costs Beyond the Farm Gate

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Higher marketing costs were the primary cause of rising consumer expenditures on food over the past decade. Marketing costs are measured by the marketing bill, which is the difference between the farm value of domestically produced foods and the final cost to consumers. Between 1980 and 1990, the marketing bill rose 83 percent and accounted for most of the 67-percent rise in consumer domestic food spending (figure 1). The farm value, or farmer's share, of food purchases climbed only 30 percent (see box).

Labor: The Largest Cost

Labor costs overshadow all other cost components in the marketing bill (figure 2). Rising labor costs have accounted for almost half of the total increase in the marketing bill over the last decade. And, higher labor costs were primarily responsible for the 5.9-percent increase in the marketing bill between 1989 and 1990. Labor costs rose 6 percent to $154 billion, largely because of greater employment in the food industry and higher employee compensation (table 1). Employment in eating and drinking places—which account for 53 percent of total food industry employment—rose 2.3 percent in 1990. About 27 percent of the industry was employed in foodstores and 20 percent in food manufacturing and wholesaling.

During 1990, employment in the retail food industry grew 3.3 percent, which was the average rate of increase for this sector over the last decade. Foodstore employment increases were generated by higher consumer purchases of microwaveable foods; take-out foods from salad bars, bakeries, instore delicatessens; and other prepared foods. Grocery stores are making greater use of part-time workers to stem increased labor costs arising from these labor-intensive services. Part-time workers hold down labor cost increases because they are paid less, qualify for fewer benefits, and reduce overtime pay to full-time workers.

Employment in food manufacturing grew just 0.3 percent in 1989-90, the fifth consecutive year in which employment rose after 6 consecutive years (1979-85) of decreases. Employment has grown over the past few years largely because more workers were hired in poultry processing plants as consumers increased consumption of poultry products. Nearly 4 percent more employees worked in the poultry industry in 1990 than in 1989.

While health concerns may be increasing the demand for poultry products, Americans' palates continue to crave candy. As a result of strong demand, more candy was produced, requiring 8.6 percent more workers at candy manufacturers. However, the overall effect on food processing employment was not as great because candy manufacturers employ less than a third as many people as poultry processing establishments.

The biggest factor affecting labor costs in the past year was the rapid escalation of health care costs, resulting from rising health insurance premiums. Employers have attempted to contain health costs by requiring second opinions prior to surgery, approval from insurance carriers prior to hospital stays, and participation in health maintenance organiza-

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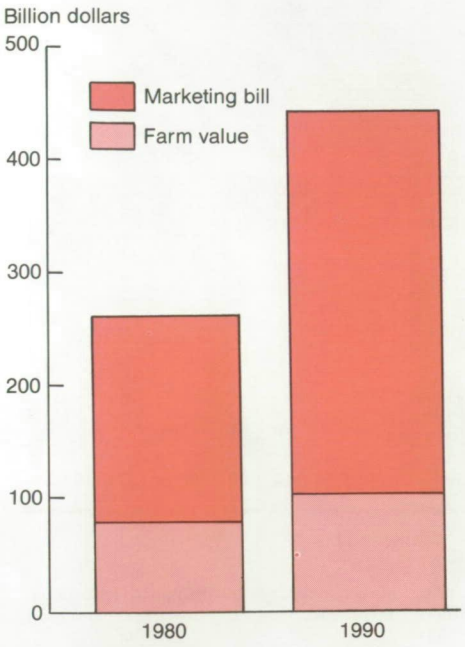
Figure 1
Marketing Bill's Share of Consumer Food Spending Has Risen



Source: *Food Cost Review, 1990,* AER-651, USDA, ERS, July 1991.
Contact: Howard Elitzak (202) 219-0870.

Where Our Food Dollars Go

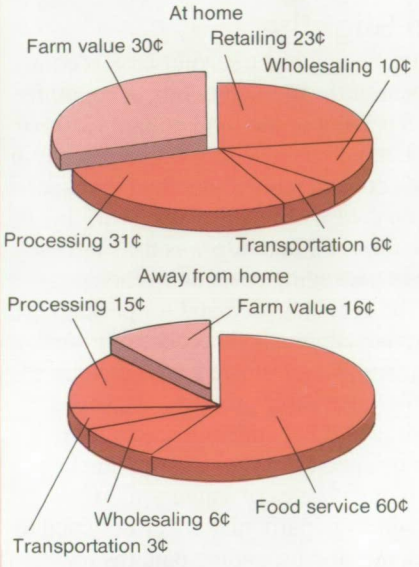
Consumer food expenditures cover items bought at foodstores and eating places. They can be broken into two components based on where the dollars go—the farm value and the marketing bill. The farm value, which accounted for 24 percent of the 1990 food dollar, is an estimate of the farmer's share of food purchased for at-home and away-from-home consumption. The marketing bill is the difference between the farm value of domestically produced foods and the cost to the consumer. Imported foods and seafood are excluded from these estimates.

In 1990, marketing costs accounted for $334.2 billion of the $440.8 billion Americans spent for U.S. farm foods. The marketing bill rose 5.9 percent and the farm value increased 2.7 percent over 1989.

The marketing bill is the cost of processing, wholesaling, transporting, and retailing food. These costs are higher for away-from-home meals than for food for at-home use. Correspondingly, the farm value share for away-from-home food is smaller, primarily because the cost of additional labor needed to prepare meals and snacks reduces the farmer's share of the final product's value. For the same reasons, away-from-home foodservice costs are much greater than their retailing counterpart in the at-home market—60 cents of the food dollar, versus 23 cents.

Processing is a larger share of at-home food expenditures than of away-from-home, 31 cents versus 15 cents. However, when an allowance is made for the larger share of food service in the away-from-home market relative to the share of retailing in the at-home market, processing costs are about the same. This suggests that retail stores and away-from-home outlets purchase about the same proportions of raw and processed foods.

Marketing Costs Take a Larger Share of the Away-From-Home Food Dollar[1]



[1]1990 data. Farm value is an estimate of the farmer's share of food purchased for at-home and away-from-home consumption.
Source: *Food Cost Review, 1990,* AER-651, USDA, ERS, July 1991.
Contact: Howard Elitzak (202) 219-0870.

tions (HMO's). Employers have shifted some health costs to employees by means of higher deductibles and copayments. Some plans have reduced benefits, while others have required employees to pay a larger share of the premium.

Higher Social Security taxes and pensions were also behind the higher cost of employee benefits. Social Security payroll taxes for employers escalated because the maximum amount of taxable wages increased as did the tax rate on wages.

Low inflation rates and concessions on wages and benefits by unions held down labor costs during the 1980's. Cost-of-living adjustments (COLA's), for example, were once a major feature of union wage contracts. In 1990, COLA's were in effect for only 7 percent of food manufacturing employees, while no major contract provided COLA's for retail food employees. With low inflation rates, COLA's were phased out and replaced by lump sum payments.

Lump sum payments were granted in lieu of wage increases or to offset wage decreases. They restrain labor costs by holding down the wage rate base, which is used to calculate benefits such as overtime, pensions, and life insurance. These payments were largely eliminated in 1990 bargaining settlements. Two-tiered wage contracts—in which workers hired after a specified date receive lower wages or fewer benefits—continue to be phased out. Both management and labor have noted the reduced productivity from employees on lower wage tiers.

Back-loaded contracts also continue to be phased out. These contracts provide lower wage rate increases in the first year of a contract, relative to subsequent years. Prior to 1983, more contracts were front-loaded, meaning the largest wage increases occurred in the first year. Back-loaded contracts were used to dampen rising wage rate bases, which effectively delayed wage increases. Nearly half of all workers were covered by back-loaded contracts in 1986. That figure had dropped to 20 percent of all workers by 1990.

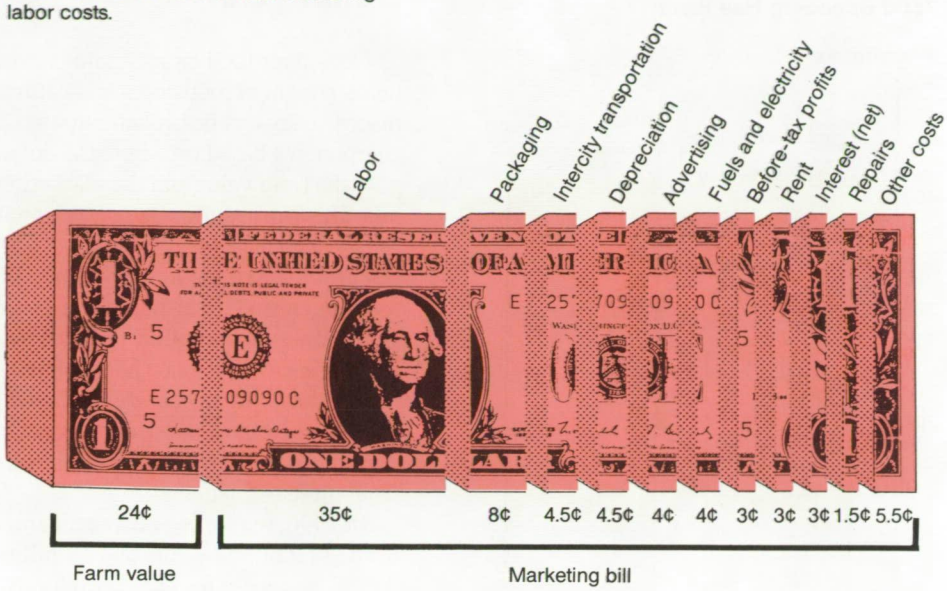
In 1990, front-loaded contracts predominated in bargaining agreements covering food manufacturing and retailing. They provided higher wage adjustments than back-loaded contracts. The Bureau of Labor Statistics reports that the average front-loaded adjustment for food manufacturing workers was 4.6 percent in the first year and 3.4 percent annually

over the life of the contract. For foodstore workers, wage increases averaged 4.6 percent during the first year and 3.8 percent annually over the life of the contract.

Recent collective bargaining settlements in food manufacturing and retailing provided larger wage adjustments than the contracts they replaced. These wage increases reflect renewed efforts by unions to regain wage concessions and givebacks that were granted during the 1980's. Since labor agreements are valid for a period of 2-3 years, labor costs are expected to accelerate upward over the next few years.

Figure 2
What a Dollar Spent on Food Paid for in 1991[1]

About one-third went for food marketing labor costs.



[1]Includes food eaten at home and away from home. Other costs include property taxes and insurance, accounting and professional services, promotion, bad debts, and many miscellaneous items.
Source: *Food Cost Review, 1990,* AER-651, USDA, ERS, July 1991.
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Packaging Costs Up Slightly

Packaging is the second-largest component of the marketing bill, accounting for 8 percent of the food dollar. Costs of these materials rose less than 3 percent in 1990, considerably lower than the 8-percent increase of the previous year. In fact, the 1990 increase was the smallest rise in packaging costs in 5 years.

The growth in demand for packaging materials diminished because of a weak economy, which slowed sales increases of microwaveable products, packaged foods, and other convenience foods requiring specialized packaging. Packaging industry sales of sanitary food containers in particular are closely tied to consumer food spending patterns for these items. Also stemming the rise in packaging costs was a decline in the price of plastic packaging, while prices of paperboard boxes and sanitary food containers held steady.

The choice of packaging products is largely driven by modern cooking technology and demographic forces, such as population changes and shifts in workforce composition. Fast-paced, two-income lifestyles have reduced the amount of time available for preparing food at home and increased the demand for quick, easy-to-prepare meals. The growing pool of older adults also tends to use more convenience foods. The desire for convenience implies increased sales of sanitary food containers that are lightweight and microwaveable.

The demand for convenient, microwaveable food products was strong enough that, despite a sluggish economy, the amount spent on food packaging rose in 1990.

Table 1.
Higher Labor Costs Fueled the Marketing Bill's Rise in 1990

Component	1975	1980	1985	1988	1989	1990
			Billion dollars			
Labor [1]	48.3	81.5	115.6	137.9	145.1	153.8
Packaging materials	13.3	21.0	26.9	32.6	35.2	36.2
Rail and truck transportation [2]	8.4	13.0	16.5	17.8	18.6	19.6
Fuels and electricity	4.6	9.0	13.1	14.1	15.3	16.3
Pre-tax corporate profits	7.1	9.9	10.4	11.6	11.8	14.1
Other [3]	29.7	48.3	76.5	87.9	89.6	94.2
Total marketing bill	111.4	182.7	259.0	301.9	315.6	334.2

[1]Includes employees' wages or salaries and health and welfare benefits. Also includes imputed earnings of proprietors, partners, and family workers not receiving stated remuneration. [2]Excludes local hauling charges. [3]Includes such items as depreciation, rent, advertising and promotion, interest, taxes, licenses, insurance, and professional services.

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Transportation Costs Have Soared

Intercity truck and rail transportation costs for farm foods amounted to $19.6 billion in 1990, or 4.4 percent of retail food expenditures. Larger food marketings and higher transportation rates boosted costs more than 5 percent in 1990, the largest increase since 1981.

The entire transportation sector was hit hard by higher oil prices that occurred with the Persian Gulf crisis. Trucks and trains that transport food products use diesel fuel. The oil price rise had a large

impact on diesel fuel prices, which rose 26 percent in 1990. Fuel costs account for approximately 20 percent of total truck transportation costs.

Energy Bill Is Higher

The 1990 energy bill came to about $16 billion, up 6.5 percent from 1989, and represents almost 4 percent of retail food expenditures. The energy bill included only the costs of electricity, natural gas, and other fuels used in food processing, wholesaling, retailing, and foodservice establishments. (Transportation fuel costs, except for those incurred for food wholesaling, were excluded.) Higher energy costs resulted largely from the expanded size of the food industry.

Higher oil prices arising from the Persian Gulf crisis had a limited effect on food marketing costs. Food manufacturers and distributors use natural gas and electricity to power their facilities. Natural gas prices remained at 1989 levels as a result of abundant domestic supplies. Electric rates increased less than 2 percent, since coal — not oil — is the principal source of energy for generating electric power.

Corporate Profits Rose

Before-tax profits that firms earned from marketing foods of U.S. origin were estimated at $14.1 billion for 1990, a 19-percent increase over 1989. Higher food industry sales and larger profit margins in food retailing were the primary causes of the dramatic jump in industry profits.

The large profit margin can be explained by several factors. First, a number of companies cut costs and sold assets to reduce debt and interest payments resulting from merger and acquisition activity. (see " The Food Marketing System" elsewhere in this issue.) Second, greater efficiencies have been achieved through the use of technology for inventory management and merchandising, labor savings at checkouts, and energy conservation. Third, retailers have built larger stores to give more space to the highest margin products, including perishables, service departments, and nonfood items. ■

The Food Marketing System

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The U.S. food marketing system has entered the 1990's considerably changed in size, competitiveness, and performance from that of the early 1980's. The food marketing system's 380,000 firms that process, wholesale, and retail the Nation's food supply have become considerably more concentrated and deeper in debt. They are introducing more new and diverse products to satisfy consumer demand. Also, food firms are more international in character, with foreign food firms owning stock in American food companies and American food firms owning stock in foreign food companies.

The system has been performing spectacularly as the 1990's unfold. Profits and productivity are up. Common stock prices of food firms rose more than those of other firms. And, food firms are leading other firms in automation.

Yet, the food marketing system's relative economic importance to the rest of the economy has been declining as consumers spend a declining share of their income on food.

Growing Slower Than the Rest of the Economy

The food distribution system is the Nation's largest marketing system, but its growth rate is below that of the rest of the economy. In 1980 for example, food manufacturing, wholesaling, and retailing firms contributed 11 percent of the value added to the gross national product (GNP). In 1990, that figure fell to 9.5 percent. In 1980, these firms employed 11.5 percent of U.S. workers, compared with less than 10 percent in 1990. A major factor in the relative decline of the food marketing system is that the share of disposable personal income spent on food dropped from 13.8 percent to an estimated 11.8 percent. As people's incomes grow they spend their additional money on nonfood products and services, causing the rest of the economy to grow faster than the food sector.

Fewer Firms, But More Debt

Although food marketing firms recorded $730 billion in sales in 1990, fewer firms were involved. Concentration is increasing in nearly all of the 49 different food processing industries, as well as in the wholesaling, retailing, and foodservice industries (table 1).

Some of this increased concentration has been due to a jump in the number of mergers. Between 1982 and 1990, more than 4,100 mergers and leveraged buyouts (debt purchases of another firm's stock) took place in the food distribution system alone. Food processing experienced nearly 2,500 of these transactions, while food wholesaling, retailing, and food service had over 1,600 mergers and leveraged buyouts (table 2).

The pace of mergers and leveraged buyouts is slowing, however. New merger and leveraged buyout transactions in the food marketing system dropped sharply from 573 in 1987 to 350 in 1990. The decline in merger and leveraged buyout activities is not too surprising. The record pace of industry restructuring through the 1980's certainly reduced the number of likely merger and leveraged buyout candidates. More significantly, the high yield, high risk ("junk") bond market sharply weakened in 1990, drying up a major source of financing. Financial institutions were reluctant to fund mergers and leveraged buyouts. And, 1990 was a recession year.

Food processors and retailers accumulated more debt in the 1980's than in the past. Their total liabilities nearly tripled, rising from about $90 billion to almost

Table 1.
Top Few Firms Increasingly Dominate the Food Marketing System

Year	Share of market			
	Top 50 processing firms	Top 50 wholesaling firms	Top 20 retailing firms	Top 50 foodservice firms
	Percent			
1963	NA	NA	34.0	NA
1967	35.0	NA	34.4	NA
1972	38.0	48.0	34.8	13.3
1977	40.0	57.0	34.5	17.8
1982	43.0	64.0	34.9	20.2
1987*	48.0	71.4	36.5	22.3

NA = Not available. *Estimated.

Sources: *Food Marketing Review*, various issues, USDA, ERS; and *Quarterly Financial Report*, U.S. Department of Commerce, Bureau of the Census.
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Table 2.
Food Marketing Mergers and Leveraged Buyouts Slowed for the Second Consecutive Year After Soaring for Much of the 1980's

Year	Processing	Wholesaling	Retailing	Food service	Total [1]
			Number		
1982	250	38	38	51	377
1983	225	38	45	64	372
1984	242	37	60	78	417
1985	291	64	52	73	480
1986	347	65	91	81	584
1987	301	71	65	77	514
1988	351	71	76	75	573
1989	277	65	53	72	476
1990	208	58	37	47	350
Total	2,492	507	517	618	4,134

[1]Total includes some double counting because of interindustry mergers. For example, a food processing firm that merged with a foodservice firm was included as an acquisition in each sector.

Sources: *Food Marketing Review, 1991,* USDA, ERS; and the Food Institute.
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$270 billion between 1980 and 1990. Inflation, several successive years of major capital expansion, and normal asset growth accounted for only a small portion of this growth. The overwhelming share of debt was due to leveraged buyouts and mergers by a few firms in the late 1980's (table 3).

Debt as a percentage of assets for food processors rose from about 50 percent in 1980 to 68 percent in 1990, and was considerably above the 60-percent figure reported for all manufacturing corporations in 1990. Food retailers' debt rose from 63 to 86 percent of assets during that same period. The figure was 75 percent for all retailers in 1990. One impact of increasing relative debt is that funds normally available for dividends are instead used to pay interest charges on loans.

Competition Is Keen

Although food marketing was more concentrated in 1990, competition among firms for greater market share remained intense. Competition among fewer, larger firms for a share of the food dollar and limited shelf space was reflected in record new product introductions, consumer advertising expenditures, and retail promotions.

Food firms introduced more new and varied products over the past decade, as they differentiated their products to satisfy ever smaller targeted consumer markets. Fewer than 2,000 new food products were introduced in 1980, compared with over 10,000 in 1990. New introductions were up nearly 10 percent from 1989, as 11 food categories showed an increase. Candy, condiments, breakfast cereals, beverages, bakery products, and dairy products accounted for 70 percent of the new introductions in 1990. However, many of the new products are withdrawn from the market after a relatively brief time. The bulk of the nearly 75,000 new products placed on the market between 1982 and 1990 were withdrawn within a year.

Food firms are the largest group of advertisers in the United States, spending nearly $12 billion in direct advertising of their products in 1990, compared with $11.4 billion in 1989 and $4 billion in 1980. In 1990, eating and drinking places and foodstores each spent about $1.7 billion. Mass media expenditures for food processors amounted to $6.3 billion. The redeemed value of food manufacturers' coupons was estimated at over $2 billion.

All advertising is not targeted at consumers, however. With heightened competition for scarce retail shelf space, food processors increased their trade promotions aimed directly at food retailers. Going into the 1990's, manufacturers' promotions aimed at retailers and wholesalers was estimated to be about twice what was spent on promotions to consumers.

To recover some of the costs associated with stocking new items, for example, some retailers charge manufacturers a slotting fee, a one-time charge for shelf space. Fees per new item per store range from $15,000 to $40,000. Manufacturers might pay $2-$3 million in slotting fees to introduce a new product in stores across the country. Because of the proliferation of new products and the incidence of product failure, some retailers also charge "failure fees." These fees help retailers recoup costs of removing failed new products from their distribution system.

Table 3.
The Top Four Going-private Leveraged Buyouts in History Were Food-Related

Buyer	Target	Price	Year	Industry
		Billion dollars		
1. Kohlberg Kravis Roberts and Co.	RJR Nabisco, Inc.	24.72	1989	Tobacco, food
2. Kohlberg Kravis Roberts and Co.	Beatrice Cos., Inc.	6.25	1986	Food
3. Kohlberg Kravis Roberts and Co.	Safeway Stores, Inc.	5.34	1986	Supermarkets
4. Thompson Co.	Southland Corp.	4.00	1987	Convenience stores

Source: *Food Marketing Review,* various issues, USDA, ERS.
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Going Global

The U.S. food marketing system is growing globally. While U.S. food trade remained at between 4 to 5 percent of total U.S. shipments, across the globe ownership of food processing companies by foreign firms has risen sharply. In 1982, sales of foreign food processing firms owned by U.S. companies totaled $39 billion. By 1988, sales reached over $60 billion (table 4). Direct investment by U.S. companies in foreign food processing, wholesaling, and retailing firms rose from $10 billion in 1982 to $21 billion in 1989.

Investment funds flow both ways, and foreign companies are investing in U.S. food firms. Total sales of foreign food processing firms in the United States rose from $15 billion in 1982 to $30 billion in 1988. The book value of total foreign investment in the U.S. food marketing system rose from $9 billion in 1982 to $28 billion in 1990.

What Happened in the Food Marketing System in 1990

Industry Growth and the Economy

Sales slowed because of recession. Food marketing's share of income fell for the 11th consecutive year. Wages were slightly higher, farm prices were up modestly, but interest rates and the value of the U.S. dollar were lower.

Structure

Merger activity slowed again. Some recently leveraged-buyout companies resold common stock, thereby going public again.

Conduct

Competition for retail shelf space and consumer acceptance intensified. 13,000 new grocery products were introduced; rental fees for shelf space became more apparent. Advertising aimed at consumers reached $12 billion, but food's share of total advertising fell since 1989.

Performance

Profitability from operations rose sharply, but net profits were still lowered by high interest expenses. The system is one of the Nation's most highly leveraged, but debt levels went up only slightly from 1989. Owners' equity appreciation outperformed that for nonfood companies.

Table 4.
Sales of U.S. Food Processors Abroad Are Twice That of Foreign Food Processors Here, But U.S. Sales of Foreign-owned Food Processors Have Grown Rapidly

Country or region	1982	1987	1988	Change, 1982-88
		Million dollars		*Percent*
Sales of foreign food processors owned by U.S. companies				
Total, all countries	39,023	50,049	60,264	54.4
Europe	18,974	29,070	34,534	82.0
EC-12	18,327	27,868	33,164	81.0
Canada	5,258	5,407	7,518	43.0
Japan	2,363	4,442	14,933	532.0
Australia	NA	1,880	2,092	NA
Sales of U.S. food processors owned by foreign companies				
Total, all countries	14,847	22,862	30,053	102.4
Europe	10,527	17,967	22,318	112.0
EC-12	NA	10,418	14,841	NA
Canada	2,218	3,174	4,017	81.1
Japan	564	612	1,003	77.8
Australia	NA	220	1,478	NA

NA = Not available.

Sources: *Food Marketing Review, 1991,* USDA, ERS; and the Bureau of Economic Analysis, U.S. Department of Commerce.
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Labor Productivity Rises

The last half of the 1980's saw sharp increases in profitability, productivity, and output of the food marketing system, while input costs rose at a moderate pace. In food manufacturing, such as dairy, sugar, beer, and soft drinks, 1990 employment was the same as in 1980. But, output increased sharply, rising by about 2 percent a year. The resulting increase in worker productivity was primarily due to automation.

The food retailing and foodservice industries hired more workers because these firms were offering more consumer services and conveniences. For example, to meet consumer demand for freshness, some food retailing firms added in-store juicing machines to provide fresh-squeezed juice. The labor required to operate such machines is greater than that needed to stock shelves with juice from food processors. Such services and conveniences are hard to automate and, as a result, labor productivity among food retailing and foodservice firms declined. However, the decline has stabilized.

Financial Performance Has Been Strong

The automation that has improved labor productivity has required investment in plants and equipment. Food processors undertook 456 new plant projects in 1990, compared with 379 in 1989 and 201 in 1984. New construction reached an all-time high of 219 projects. These projects cost $16.4 billion, a $500-million increase over 1989. Since 1984, U.S. food manufacturing firms have spent $82 billion on new plants and equipment.

Food retailers were also modernizing and upgrading their facilities. About 1,000 small supermarkets were closed in 1990 and replaced by fewer, larger stores. An estimated 5,000 new franchised restaurants opened worldwide in 1990.

In profit and loss terms, the food system has performed quite well. While after-tax profitability of food retailers and food processors has fallen in recent years due to higher interest payments, it still exceeds that of their nonfood counterparts. Between 1985 and 1990, after-tax profits of food manufacturers, as a share of stockholders' equity, were higher than those of all manufacturers (table 5).

A similar performance measure is appreciation of stockholders' equity. Over the past 8 years, the index of common stock prices, as measured by the Dow Jones Equity Market Index, grew sixfold for food processing firms and fivefold for food retailers and wholesalers. The index for all firms increased just threefold. Beverages and soft drinks also outperformed the market index.

In 1990, the index for the food industry outperformed the market index. The market index dropped 8 percent, while the index rose 12 percent for food processors, 21 percent for beverage bottlers, and 9 percent for food wholesalers and retailers. Restaurants were the only food firms experiencing a decline (down 4 percent), as earnings for fast food chains dropped sharply.

Price/earnings ratios, a measure investors use to value the quality of an industry's earnings, also were above average for the food marketing system. There are several reasons for these superior ratios. First, part of the system's appreciation reflects speculation stemming from leveraged buyouts and mergers, many of which increased stock prices. Second, food processing and retailing profits have grown rapidly in recent years. Third, although food marketing is a slow-growth industry, cyclical movements tend to be small with stable growth in earnings and income as in 1990. ■

Table 5.
Food and Tobacco Processing Firms Have a Greater Return to Stockholders' Equity Than Other Processing Firms

Year	Income from operation		After-tax profits as a share of stockholders' equity	
	Before taxes	After taxes	Food and tobacco processors	All processors
	Million dollars		*Percent*	
1985	20,015	12,798	15.3	10.3
1986	21,595	13,292	16.2	9.5
1987	24,658	15,579	17.4	12.9
1988	28,686	20,625	21.9	16.4
1989	31,057	16,545	17.0	13.6
1990	33,883	16,094	16.1	10.7

Sources: *Food Marketing Review,* various issues, USDA, ERS; and *Quarterly Financial Report,* U.S. Department of Commerce, Bureau of the Census.
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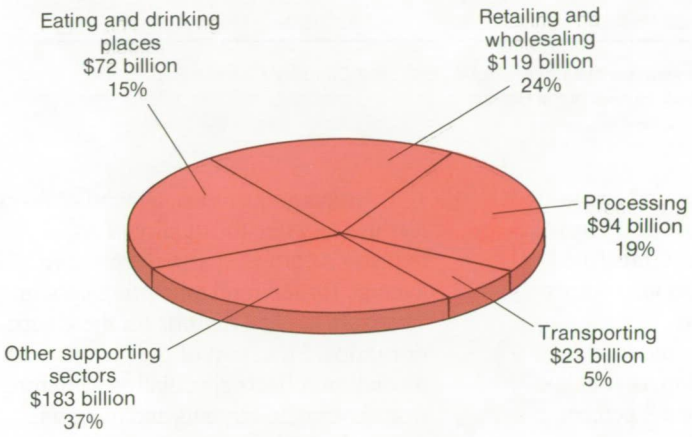
The Food Marketing System. . .At a Glance

The Food System, While Large, Continues to Decline in Relative Importance to the Whole Economy

The food marketing system adds value to raw food through processing, storage, transportation, and services. The food system added $491 billion to the value of raw food in 1989 and an estimated $505 billion in 1990.

Though the food system continues to grow, its expansion is slower than the rest of the economy. Thus, for the 11th consecutive year, the industry's relative contribution to the whole economy declined in both income generated and workers hired.

The Food Marketing Industry Provided $491 Billion in Value Added to Raw Food Products in 1989



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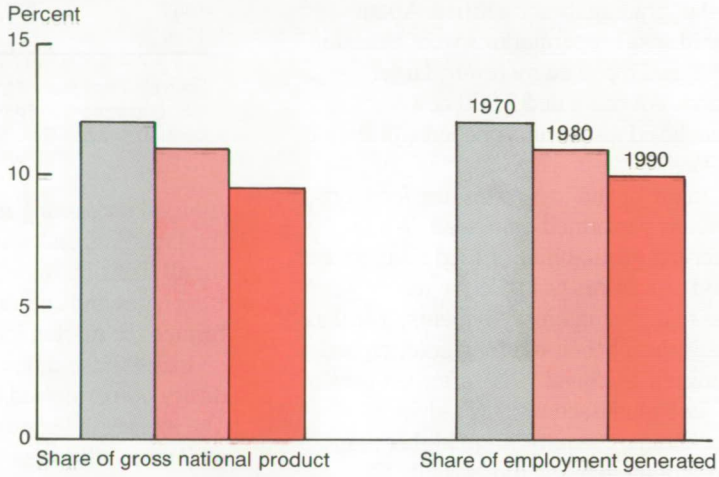
The Food Marketing System's Relative Contribution to the Nation's Economy Continues To Decline



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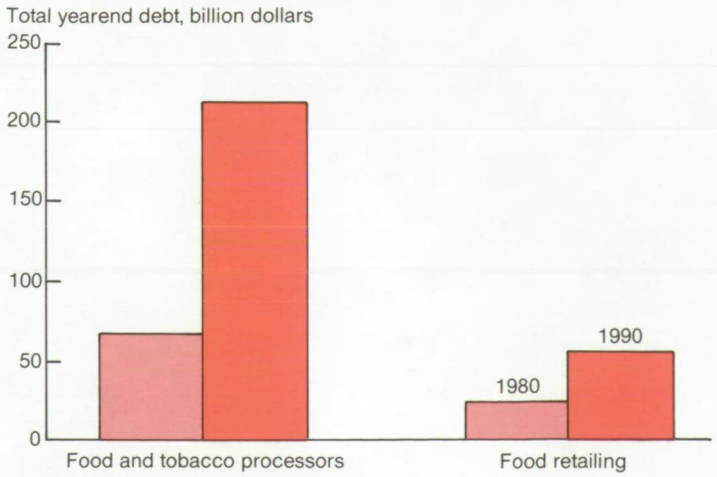
Mergers and Leveraged Buyouts Drive-up Food Industry Debt

After a robust decade of mergers and leveraged buyouts, the food marketing system appears to be reducing its appetite for acquiring industry firms. In the wake of the 1980's buying binge, the food marketing system's debt more than doubled, causing debt/asset ratios to climb.

Debt in the Food Industry Rose Sharply Over the Past Decade, Largely From Financing Buyouts of Competing Firms



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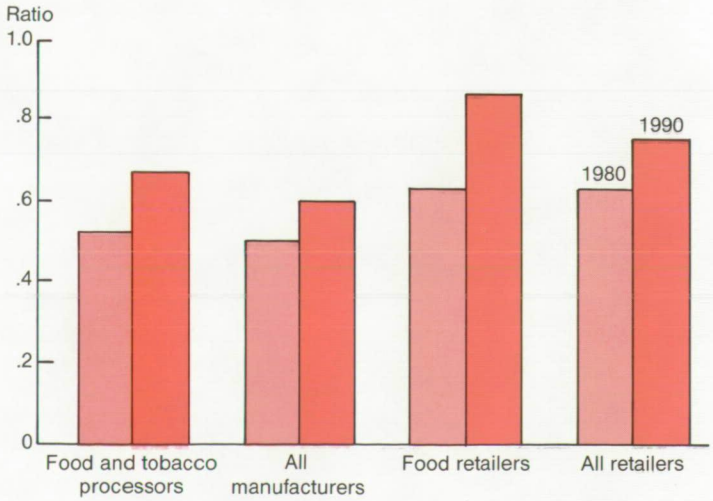
Food Marketing System Debt/asset Ratios Have Increased



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Domestic Food Assistance Programs

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Many Americans received food assistance from the Federal Government in fiscal 1990, including food stamps, vouchers, food packages, or cash. The Food Stamp Program is the largest of the Federal food assistance programs in terms of both the number of people served and the amount of money spent. Monthly participation rates in the Food Stamp Program were almost 20 million, up over 1 million from fiscal 1989. Through U.S. food assistance programs, over 28 million school children received free or reduced-cost school breakfasts and lunches, and almost 962 million meals were served in the Child Care Food Program.

To provide this food, the U.S. Government spent over $24.2 billion in fiscal 1990 (table 1). This represents a 70-percent increase over the $14.2 billion spent in 1980 and over a 10-percent rise since 1989.

Overall growth of food assistance programs during the past decade was sporadic, but with a continual upward trend. Three factors account for most of the increase in program expenditures since 1980. First, inflation caused the cost-of-living adjustments to rise each year. Second, increased unemployment associated with recessions in 1982-83 and 1990 created additional demand for food assistance, particularly food stamps. Third, the large accumulation of Government surplus commodities, particularly dairy products, fostered a major increase in food donations, particularly The Emergency Food Assistance Program (TEFAP).

USDA food assistance programs are designed to improve the nutritional well-being of low-income persons and other target groups, such as children and the elderly.

Food assistance programs, which are administered by USDA's Food and Nutrition Service, were initiated during the Great Depression of the 1930's. The programs were to help feed the poor and unemployed and to stabilize farm prices by distributing growing stocks of surplus agricultural commodities. Since then, assistance programs have expanded and new programs have been implemented. The National School Lunch Program and the Food Stamp Program are notable examples.

Food Stamp Program

The Food Stamp Program dominates domestic food assistance activity, accounting for almost two-thirds of the monies spent in 1990. The program grew rapidly in the late 1970's as the total cost more than doubled between 1977 and 1981. Expansion of the Food Stamp Program slowed during most of the 1980's under the combined effects of program maturity, budgetary constraints, and an improved economy.

The Food Stamp Program helps low-income households and individuals to purchase foods they need to improve their nutritional intake. Participants are entitled to a monthly allotment of food stamps, the value of which depends on

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Table 1.
Food Stamps Responsible for Two-thirds of Food Assistance Spending in 1990

Fiscal year	Food stamps [1]	Food distribution [2]	Women, infants, and children [3]	Child nutrition [4]	Total [5]
			Million dollars		
1980	9,206.5	194.7	727.7	4,033.9	14,242.9
1981	11,225.2	239.1	871.6	4,221.3	16,636.0
1982	11,038.1	459.7	948.8	3,733.2	16,275.3
1983	12,675.7	1,353.4	1,126.0	4,061.9	19,302.9
1984	12,407.5	1,487.9	1,388.1	4,265.9	19,634.2
1985	12,531.9	1,439.2	1,489.3	4,391.0	19,935.9
1986	12,462.1	1,380.9	1,582.9	4,625.5	20,129.9
1987	12,461.4	1,312.9	1,679.6	4,883.3	20,421.4
1988	13,199.7	1,073.1	1,797.5	5,040.8	21,181.7
1989	13,820.7	705.3	1,911.0	5,186.1	21,754.6
1990	16,353.9	639.6	2,122.5	5,471.2	24,869.0

[1]Includes benefits, State administrative and other costs, and nutrition assistance to Puerto Rico and the Northern Marianas. [2]Includes cash in lieu of commodities, administrative expenses, and TEFAP. Also includes food distribution programs on Indian reservations and nutritional program for the elderly. [3]Includes bonus commodities and administrative expenses. [4]Includes all child nutrition programs and special milk programs. [5]Includes program administrative costs and food for disaster relief and soup kitchens.

Source: USDA, Food Nutrition Service, Program Information Division.
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household size, assets, and monthly income. Recipients may redeem the coupons for food at authorized retail outlets.

The current program began as a pilot operation in 1961. Through the Food Stamp Act of 1964, Congress established the Food Stamp Program as a permanent program. An earlier prototype was operational during the late 1930's and was terminated during World War II. By 1974, Congress had established uniform national standards and had mandated nationwide distribution of the program.

The program is available in all States, the District of Columbia, Guam, and the Virgin Islands. Puerto Rico and the Northern Marianas participated until 1982, when separate Nutritional Assistance Programs were established for these territories. In order to be eligible for the program, persons must meet income guidelines, asset limitations, and certain work requirements. Benefit levels are adjusted annually to reflect changes in the cost of food as measured by USDA's Thrifty Food Plan. The Thrifty Food Plan is a low-cost food plan that provides a nutritious diet.

Over 19.9 million people participated each month in the Food Stamp Program in fiscal year 1990 (table 2). Participation numbers peaked in 1981 at 22.4 million and steadily declined after 1982 until 1988. This gradual downtrend was primarily due to generally improving economic conditions. For example, the unemployment rate fell from 9.6 percent in 1983 to 5.5 percent in 1988, and participation fell by 14 percent over that period. Since 1988, as the economy has softened, participation has increased by 1.3 million.

The Food Stamp Program increases the food-buying power of participating households and indirectly supplements their incomes. ERS analysts estimate that food stamp recipients spend 20-40 percent of the value of their food stamps for additional food purchases. The remainder simply replaces income previously allocated to food. This substitution frees up income for purchases of nonfood items. Thus, at the current assistance level of $16.4 billion, food stamps create an additional $3-6 billion in annual food expenditures and $10-13 billion in nonfood expenditures.

Child Nutrition Programs

USDA operates five programs to provide meals and snacks to pre-school and school-age children. These programs are the National School Lunch Program, School Breakfast Program, Special Milk Program, Child and Adult Care Food Program, and the Summer Food Service Program.

In fiscal year 1990, Federal expenditures for these five programs totaled $5.3 billion, 9 percent higher than in 1989. Child nutrition program costs declined in 1982 due to changes in regulations in the National School Lunch and Special Milk Programs. However, Federal expenditures since increased 43.5 percent as cost per child served rose. Expenditures for the National School Lunch Program also have increased steadily since 1982 (table 3). This program is available to virtually every child, whereas the School Breakfast and Child Care Programs have concentrated primarily in low-income areas.

As a result of declining school enrollment and changes in program regulations in 1981-82, participation in the National School Lunch Program fell from a high of 27 million children in 1979 to 22.9 million in 1982. Participation gradually increased to 24.1 million children by 1990. The proportion of lunches served free or at reduced prices remained relatively stable over the years at 47-48 percent of all lunches.

The School Breakfast Program was initiated in 1966 and permanently authorized in 1975. The program has historically been concentrated in schools with high levels of low-income students. The School Breakfast Program has grown steadily since 1982, when the program served 34,300 schools and 3.3 million participants. In 1990, the program served

daily breakfasts to 4.1 million students in 42,600 schools. Much of the growth has been fostered by a concerted effort to make this program more widely available to needy children.

The Child and Adult Care Food Program registered the sharpest growth of all food assistance programs during the 1980's. Total meals served in this program increased by 124 percent from 431 million meals served in 1980 to 966 million in 1990. The substantial increase in the number of family care homes in the program spurred much of the growth in the program. Funding increased over 240 percent, from $236 million in 1980 to $812 million in 1990. The program now serves over 1.5 million youngsters and 20,000 adults at 158,000 facilities.

Continued growth in the number of children in day care facilities indicates that this program will expand to meet the increased demand for its services. The adult feeding component, initiated in 1989, currently accounts for about 1 percent of the number of meals and total cost of the program. ■

Table 2.
Greater Participation and Higher Benefits Spurred the Largest Increase in Food Stamp Program Expenditures in the Last Decade

Fiscal year	Average monthly participation	Monthly benefits per person	Total program costs [1]
	Millions	*Dollars*	*Million dollars*
1980	21.1	34.47	9,206.5
1981	22.4	39.49	11,225.2
1982	21.7	39.17	10,836.7
1983	21.6	42.98	11,847.1
1984	20.9	42.74	11,578.8
1985	19.9	44.99	11,703.0
1986	19.4	45.49	11,638.4
1987	19.1	45.78	11,604.2
1988	18.6	49.83	12,316.8
1989	18.8	51.85	12,908.3
1990	19.9	58.99	15,413.0

[1]Includes administrative and other costs.

Contact: Masao Matsumoto (202) 219-0864.

Table 3.
1990's Increase in Expenditures for Feeding Children at School Was the 4th Largest Since 1980

Fiscal year	School lunch	School breakfast	Special milk	Commodities	Total
			Million dollars		
1980	2,279.4	287.8	145.8	904.5	3,617.5
1981	2,380.6	331.7	100.9	895.2	3,708.4
1982	2,185.4	317.3	18.3	766.0	3,287.0
1983	2,401.8	343.8	17.4	812.4	3,575.4
1984	2,507.7	364.0	16.6	820.6	3,712.9
1985	2,578.4	379.3	16.0	830.2	3,803.9
1986	2,714.5	406.3	15.4	854.0	3,990.2
1987	2,797.1	446.8	15.5	919.3	4,178.7
1988	2,917.4	482.0	18.7	852.8	4,270.9
1989	3,004.9	507.0	18.5	795.0	4,325.4
1990	3,210.2	594.2	19.5	658.1	4,482.0

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Overseas Food Aid

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The United States provides food aid abroad through two main channels: the Public Law 480 program (P.L. 480), otherwise known as the Food for Peace Program, and Section 416(b) of the Agricultural Act of 1949, as amended.

P.L. 480 provides commodities to assist developing countries. Food is distributed through P.L. 480 under three programs, whose operations were modified by the 1990 farm bill. Previously, the United States helped designated countries with balance-of-payments problems purchase U.S. agricultural commodities through long-term, low-interest credit under P.L. 480 Title I. Title I also authorized sales of U.S. farm products for local currency to help generate economic growth through the recipient country's private sector.

Under P.L. 480 Title II, the United States donated agricultural commodities to alleviate famine, provide disaster relief, combat malnutrition, and encourage economic and community development. These donations were distributed through either recipient governments, private voluntary organizations, cooperatives, or the World Food Program. Since 1954, the United States has donated more than $10 billion in food to over 100 countries under Title II. Under the Food for Development Program (P.L. 480 Title III), the United States could have forgiven a Title I loan if the local currency generated from Title I commodity sales were used to finance specified development projects. These programs were managed by five Federal agencies—the Departments of Agriculture, State, and Treasury; the Agency for International Development (AID); and the Office of Management and Budget.

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The 1990 farm bill authorized several changes in foreign food aid distributions effective January 1, 1991. Title I still provides for concessional sales of U.S. agricultural commodities, but credit terms have been shortened. Responsibility for implementation of the Title I program is assigned to the Secretary of Agriculture. Title II continues to make available emergency food aid to recipient country governments, public and private agencies, and international organizations, such as the World Food Program. In nonemergency situations however, only private voluntary organizations, cooperatives, and international organizations may distribute Title II commodities. The 1990 farm bill increases slightly each year the minimum volume of commodities allocated for Title II donations. The new Title III program authorizes food assistance to least developed countries through government-to-government agreements. Implementation of Titles II and III is assigned to the Administrator of the Agency for International Development.

The Section 416 program is separate from, though similar to, P.L. 480 Title II. Section 416 involves the overseas donation of surplus commodities owned by USDA's Commodity Credit Corporation (CCC). Donations have historically included corn, dairy products, sorghum, wheat, and wheat flour. However, such shipments depend on the availability of surplus CCC stocks.

Funding for P.L. 480 peaked at about $2.2 billion in fiscal 1985 during the African famine. For fiscal years 1987-90, funding remained relatively stable at $1.5 billion. P.L. 480 has accounted for 5 percent or less of the value of total U.S. agricultural exports since fiscal 1974. Volumes shipped have declined from about 8.5 million tons in fiscal 1985 to about 5.3 million tons in fiscal 1989. This compares with the peak shipment volume of close to 19 million tons in fiscal 1962.

Funds to support Section 416 distributions of surplus CCC stocks are provided by the CCC. As much as $279 million (in fiscal years 1985 and 1988) of commodities have been shipped. Volumes have ranged from 153,000 tons in fiscal 1984 to 2.1 million tons in fiscal 1988.

The channels through which U.S. food aid has been distributed have changed slightly over the years. In fiscal years 1977-79, Titles I and III shipments accounted for 68 percent of total food aid. In fiscal years 1987-89, such shipments constituted 55 percent. Title II's share of food aid dropped only a percentage point to 31 percent in fiscal years 1987-89. These declines were due mainly to the growth in Section 416 shipments, which started in fiscal 1983 and accounted for almost 15 percent of total food aid shipments during fiscal years 1987-89. Also reducing the share of aid through Titles I and III were their lower shipments.

Commodities Provided

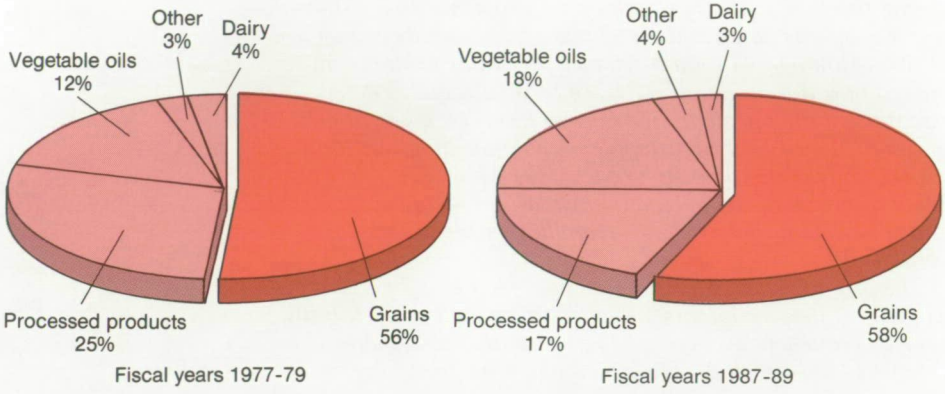
The United States provides a wide array of commodities through its food aid programs. These range from bulk, unprocessed commodities to foods easily used in relief camps. In fiscal years 1987-89, grains constituted 58 percent of the value of all food aid shipments (figure 1). Much of that was wheat, followed by rice, corn, and sorghum. Grains were distantly followed by processed cereal products, which constituted 17 percent of the total. These products, which can be more readily used or consumed, include flour, bulgur wheat (cracked wheat), and cereal mixtures containing such ingredients as corn meal, soy flour, and nonfat dry milk. Vegetable oils used for cooking purposes and as an ingredient in other foods accounted for approximately 18 percent of the total value. Almost all of the vegetable oil category consisted of soybean oil. Dairy products, mostly nonfat dry milk, constituted 3 percent of the 1987-89 total. Miscellaneous com-

modities included cotton, dry beans, tallow, and other products.

The commodity composition of U.S. food aid in fiscal years 1987-89 changed somewhat from 10 years earlier (figure 1). While the share of processed products (mainly cereals) and dairy products declined, the share of grains, vegetable oils, and miscellaneous commodities increased. Bulk grain shipments increased with large exports under Section 416. Much of the decline in processed products can be attributed reduced flour shipments to Egypt and Sri Lanka. Much higher shipments of soybean oil, mainly to Pakistan, accounted for the increase in vegetable oils. Dairy products' share decreased slightly due to less availability and fewer shipments in fiscal 1989. Miscellaneous commodities increased due to more shipments of dry beans, tallow, and a variety of other commodities. A major change among the miscellaneous commodities was that tobacco was no longer provided in 1987-89 as it had been 10 years earlier.

Figure 1
Grains Continue To Dominate International Food Donations

Value of food aid shipped



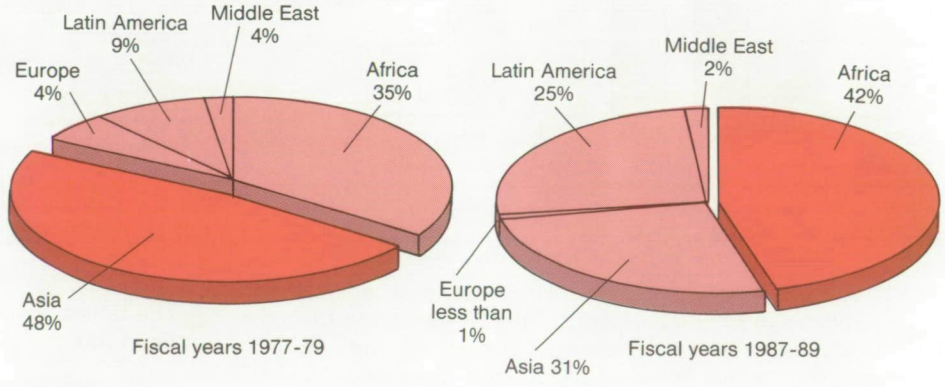
Source: USDA, ERS.
Contact: Mark Smith (202) 219-0820.

Major Recipients

The distribution of U.S. food aid has also shifted significantly in the last 10 years (figure 2). In fiscal years 1987-89, Asian countries received slightly more than 30 percent of the total, compared with almost half in fiscal years 1977-79. In particular, India, Indonesia, and Korea (a former P.L. 480 recipient which is now a major commercial buyer of U.S. agricultural exports) received less aid in 1987-89 than 10 years earlier. African countries, on the other hand, received more than 40 percent of all U.S. food aid in the late 1980's, compared with 35 percent in fiscal years 1977-79. Ethiopia, Mozambique, and the Sudan received significantly more U.S. food aid in the late 1980's than in the late 1970's. The share of U.S. food aid shipped to Latin America grew to 25 percent from about 10 percent in fiscal years 1977-79. Greater shipments were directed to Mexico and Central American countries, especially El Salvador. Less aid was shipped to Europe (mainly Portugal) and the Middle East (mainly Israel, Jordan, and Syria) in the late 1980's than in the late 1970's. ■

Figure 2
Recipients of U.S. Food Aid Have Changed Since the Late-1970's

Value of food aid shipped



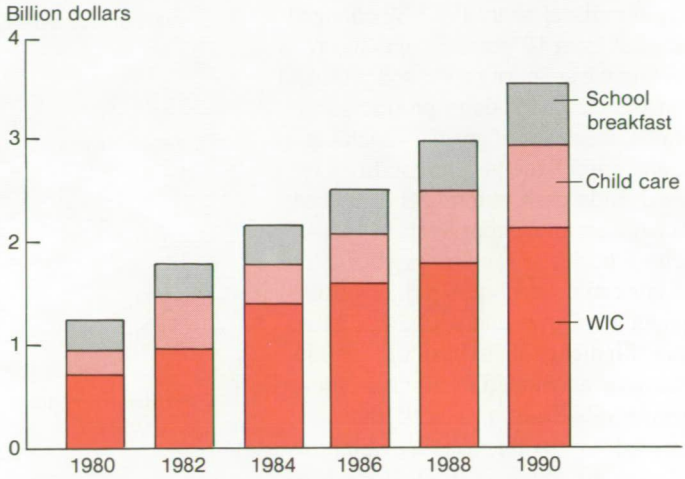
Source: USDA, ERS.
Contact: Mark Smith (202) 219-0820.

Food Assistance. . .At a Glance

Expenditures for the Special Supplemental Food Program for Women, Infants, and Children (WIC) rose 200 percent during the 1980's. WIC provides food assistance to low-income women, infants, and children who are nutritionally or medically at risk. Although all food assistance programs promote improved nutrition as an objective, only WIC requires determination of the recipients' nutritional needs by a health official or a nutritionist. Through supplemental nutrition, nutrition education, and access to health services, WIC improves the well-being of pregnant, nursing, and postpartum women and infants and children up to age 5 whose families' income are below 185 percent of the poverty level.

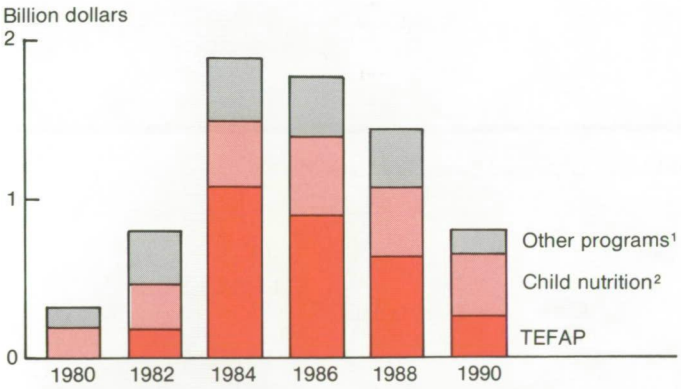
The program now serves 4.5 million people—23 percent are women, 31 percent infants, and 46 percent children. Monthly benefits (vouchers averaging $30.33) are used to acquire specified foods, such as infant formula, eggs, fruit juice, milk, cheese, and cereal.

Funding for Children's Programs Grew Rapidly in the 1980's



Contact: Masao Matsumoto (202) 219-0864.

Most Food Distribution Outlays in the 1980's Went for Emergency Relief



1Commodity supplemental, needy family, and elderly feeding programs and charitable institutions.
2Includes bonus commodities only.
Contact: Masao Matsumoto (202) 219-0864.

Food distribution was dominated during the 1980's by the growth of Government stocks of surplus commodities, particularly Federal purchases of dairy products. The Temporary Food Assistance Program (TEFAP) was started in 1982 to help distribute Government holdings of surplus butter, cheese, nonfat dry milk, honey, rice, cornmeal, and flour. Federal costs for TEFAP increased markedly after 1980, but have dropped significantly since 1987 as Government surpluses were depleted.

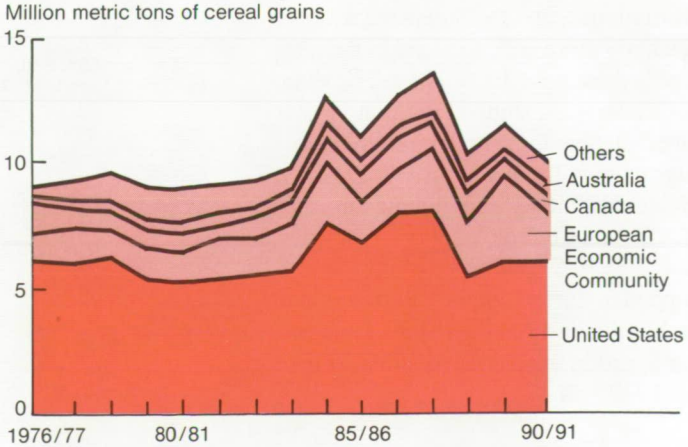
USDA commodities are also distributed through schools, the Nurtition Program for the Elderly, the Commodity Supplemental Food Program, Food Distribution to Indian Reservations, and charitable institutions.

Food distribution programs have historically been associated with farm price support or surplus removal programs by channeling the resultant surpluses to needy persons. As these Government stocks are depleted, however, food distribution must be either phased-out or financed through appropriated funds. The 1990 farm bill made TEFAP a permanent program, based on authorization rather than required purchases of surplus commodities.

According to the Food and Agriculture Organization (FAO), the United States will provide about 60 percent of total world shipments of cereal aid in 1990/91 (July-June), followed by the European Community with approximately 18 percent, Canada with 9 percent, and Japan and Australia with less than 5 percent each.

Other principal donors include Argentina, Austria, the Scandinavian countries, Switzerland, and the World Food Program. FAO estimates that world shipments of cereal aid will fall to slightly less than 10 million in1990/91 from the 11.5 million tons shipped in1989/90 as the European Economic Community reduced their food aid shipments by 1.5 million tons.

The United States Is a Leader Among Nations That Provide Food Aid



Note: Data are reported July-June.
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U.S. Agricultural Trade

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U.S. agricultural trade has improved significantly since the mid-1980's. Exports jumped from $26 billion in 1986 to $40 billion in 1990, and import growth slowed as the world economy and U.S. competitiveness improved. Farm exports outpaced imports (table 1), more than tripling the U.S. agricultural trade surplus to nearly $18 billion—the seventh highest ever.

Despite agriculture's trade gains over the last 5 years, the sector has not completely recovered to the record-high early-1980's levels. In 1990, exports were higher than in the mid-1980's, but lagged earlier years. Export value remained 8-percent below the 1981 record. The volume of exports was also substantially below peak levels. Export volume totaled 148 million tons in 1990, compared with more than 160 million tons at the beginning of the 1980's.

At the same time, imports hit their third consecutive record high in 1990, rising $1 billion to $22.5 billion. Imports of products that compete with domestic agriculture have continued to surge, offsetting the beneficial effects of declining prices for tropical imports which do not compete with domestic production, such as coffee.

Measuring Agriculture's Competitiveness

Using agricultural trade statistics is one method of measuring the economic health of agriculture. However, these data provide only part of the story. Other comparisons give a better understanding of U.S. agriculture's trade performance. For example, measuring trade as a share of farm production provides an indication of the sector's competitiveness. Similarly, U.S. farm trade can be compared with trade performance in other sectors of the U.S. economy and with other countries. These measures explain why U.S. agriculture is relatively competitive, but not at its peak.

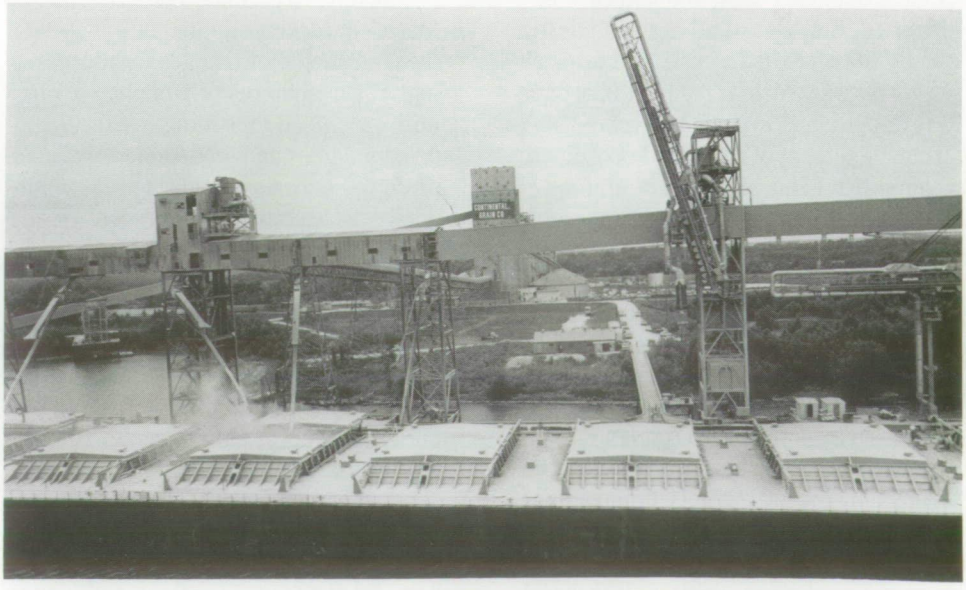
Export earnings as a share of cash receipts from farming provide the broadest comparison of U.S. agricultural output and exports. Cash receipts change with prices and production tonnage, just as export earnings depend on both prices and volume. In 1990, exports equaled 24 percent of cash receipts, slightly lower than in 1989. Since 1968, this share has ranged from 12 to 31 percent, with variations largely paralleling changes in exports, although droughts tend to raise the figure.

A country that exports a substantial share of its farm production probably has a fairly competitive farm sector. On the other hand, if much of a country's food is imported, its farm sector is probably not very competitive. The United States, for example, has a large expanse of fertile soil and generally mild, moist weather, which makes it unsurpassed in its ability to competitively produce and export large amounts of corn, wheat, and other field crops (table 1). Other countries, such as Japan, that rely heavily on imports generally lack the resources to meet domestic consumption needs.

Exports are particularly important for some major U.S. field crops. The United States generally exports about half of its wheat and soybean crops and a quarter of its corn crop in a given year. Other crops with high export shares include rice, sorghum, hops, almonds, walnuts, cotton, and tallow.

In contrast, exports of livestock products equal only about 7 percent of cash receipts, while vegetable and fruit exports come to about 16 and 26 percent of their respective cash receipts. The amount of farm production actually finding its way out of the country is smaller than these shares, since the value of exports is inflated by transportation and processing costs. Such costs are higher for livestock and horticultural products than for grains, oilseeds, or cotton.

Overall, a larger share of the U.S. supply of farm products is exported than imported, sometimes twice as much. The import share of domestic supply varied



The author is an agricultural economist in the Commodity Economics Division, Economic Research Service, USDA.

Table 1.
Grains and Oilseeds Led the List of U.S. Agricultural Exports ...

	Volume [1]			Value [1]		
	1981	1986	1990	1981	1986	1990
	Thousand metric tons			*Million dollars*		
Feed grains and products	69,516	36,327	69,510	10,497	3,817	8,093
Wheat and products	43,592	26,981	28,914	8,052	3,547	4,430
Oilseeds and products	29,802	27,582	23,772	9,305	6,266	6,098
Fruits, nuts, and vegetables	4,024	3,445	5,117	3,558	2,915	5,196
Animal products	2,685	2,598	2,820	4,107	4,353	6,553
Rice	3,172	2,382	2,501	1,537	648	829
Other	9,220	10,637	15,052	6,724	4,763	8,983
Total	162,011	109,952	147,686	43,780	26,309	40,182
..... While Fruits, Nuts, and Vegetables Dominated Imports in 1990						
Bananas	2,442	2,859	3,236	501	700	926
Coffee	987	1,185	1,290	2,800	4,151	1,997
Cocoa and products	431	507	698	953	1,189	1,042
Meat	905	1,139	1,142	2,222	2,248	2,848
Fruits, nuts, and vegetables	NA	3,794	4,337	1,966	3,493	4,826
Sugar	3,746	1,905	1,769	2,170	654	734
Vegetable oils	831	1,173	1,189	522	555	710
Other	NA	NA	NA	6,084	8,094	9,431
Total	NA	NA	NA	17,218	21,084	22,514

NA = Not available. [1]Fiscal years.

Source: *Foreign Agricultural Trade of the United States*, various issues, USDA, ERS.
Contacts: Stephen MacDonald and Susan Pollack (202) 219-0822.

greatly among commodities. Less than 1 percent of eggs, butter, and lettuce was imported. But, almost all of the domestic supply of coffee, tea, cocoa, and tropical vegetable oils, such as palm and coconut, was imported. However, on average about 10 percent of total food consumed is imported. (This is a share of all food consumed in the United States rather than the supply. The import share would be a few percentage points smaller if food produced and exported were taken into consideration.)

While the import share is less volatile than the share for exports, it has increased in recent years as foreign farmers are becoming more competitive with U.S. farmers in specific markets. Orange juice from Brazil is one of the most widely publicized cases of imports displacing domestic production. In 1970, less than 1 percent of the domestic orange juice supply was imported. Since 1970, several freezes in Florida significantly reduced the U.S. supply of oranges for processing. The availability of Brazilian orange juice precluded replanting freeze-damaged trees and eroded the profitability of domestic production. Imports now account for 35-40 percent of domestic consumption.

During fiscal 1990, imports of fruits and vegetables surged again following a destructive December freeze in Florida and Texas. Vegetable prices soared, pushing the value of vegetable imports to $2.3 billion, a $300-million increase. Tomato imports jumped 84 percent and peppers climbed 51 percent.

These increases in vegetable imports are likely to be only temporary. But, they helped drive the value of competitive imports upward in fiscal 1990 for the sixth consecutive year (table 2). Now U.S. imports of meats, fruits, vegetables, and other competitive products total almost $17 billion, up from less than $7 billion in 1977. Increased competitive agricultural imports are benefiting consumers by providing them with lower prices and increased availability of fresh products.

During the past same 13 years, noncompetitive imports, such as coffee, cocoa, and bananas, have remained fairly stable, fluctuating between $5.3 and $7.8 billion.

U.S. Agricultural versus Nonagricultural Trade

The shrinking role of U.S. agriculture in the general economy is reflected in the export and import trends of the last couple of decades. While agricultural exports lag earlier records, nonagricultural exports in 1990 surpassed their 1981 peak by more than $125 billion, making them a significant source of growth for the U.S. economy. U.S. nonagricultural exports have been equivalent to about 7 percent of gross national product (GNP) in recent years, a share that has been climbing yearly since the mid-1980's. As the volume of exports continues to grow faster than the production of goods in the U.S. economy, the export share of nonagricultural production is approaching the 8-percent record set at the beginning of the 1980's.

In contrast, 24 percent of agriculture's production was exported in 1990, well below the 31-percent record reached in 1981. Also, agriculture's share of total U.S. exports has remained below 12 percent since 1986, compared with over 20 percent in 1974, as farm export growth has lagged nonfarm export growth.

Agricultural imports are also becoming less significant to the overall economy. In 1990, agricultural commodities accounted for 4 percent of all U.S. imports, compared with 25 percent in 1960 and 51 percent in 1940. A declining import share of agricultural commodities results from a shift in demand from food to goods that are more responsive to income growth, such as fuels and manufactured goods.

Table 2.
The Value of U.S. Imports of Competitive Products Is Increasing

	Volume [1]			Value [1]		
	1981	1986	1990	1981	1986	1990
	Thousand metric tons			*Million dollars*		
Competitive imports						
Meat	905	1,139	1,142	2,222	2,248	2,848
Fruits, nuts, and vegetables	NA	3,794	4,337	1,966	3,493	4,826
Sugar	3,746	1,905	1,769	2,170	654	734
Vegetable oils	831	1,173	1,189	522	555	710
Grains and feed	NA	2,311	3,468	412	668	1,181
Other	NA	NA	NA	4,010	5,656	6,631
Total	NA	NA	NA	11,302	13,274	16,930
Noncompetitive imports						
Bananas	2,442	2,859	3,236	501	700	926
Coffee	987	1,185	1,290	2,800	4,151	1,997
Cocoa and products	431	507	698	953	1,189	1,042
Rubber	625	794	840	759	605	712
Other	NA	NA	NA	903	1,165	907
Total	NA	NA	NA	5,916	7,810	5,584
Total imports	NA	NA	NA	17,218	21,084	22,514

NA = Not available. [1]Fiscal years.

Source: *Foreign Agricultural Trade of the United States*, various issues, USDA, ERS.
Contact: Susan Pollack (202) 219-0822.

Comparing U.S. and World Agricultural Trade

The United States has been the world's largest exporter of farm products since the end of the 19th century, although not as strong in net agricultural trade in recent years. The United States had been the leader in agricultural trade surplus since 1973, but temporarily dropped to third in 1986.

Between 1980 and 1986, the U.S. share of total world agricultural export value fell from over 18 percent to 12 percent. The United States since recovered the rank of the largest net farm exporter but has won back only part of the share of world agricultural trade volume. The U.S. share of world agricultural trade value stood at 15 percent in 1989, compared with a peak of 19 percent in 1981.

The rise and fall in the U.S. share and rank primarily stem from variations in U.S. agriculture's competitiveness with farmers overseas. However, the rate of expansion in world agricultural trade also tends to affect the U.S. share. Rapidly expanding world agricultural trade generally means a greater share for U.S. exports. The United States has the transportation, stockholding, and productive infrastructure that enable it to meet growing export demand. When global trade is weak, however, U.S. agricultural exports tend to fall disproportionately, partly because some exporting countries substantially subsidize their agricultural exports. In addition, some countries, particularly developing countries, have lower costs of production than in the United States. As a result, there have been large long-term variations in the U.S. share of world agricultural trade, with weakness in the latter half of the 1980's paralleling relatively slow growth in world agricultural trade.

World agricultural trade in recent years lagged nonagricultural trade. In 1989, world agricultural exports totaled $300 billion, a record high. Nonagricultural exports also reached a record high, $2.7 trillion. The agricultural record exceeded the 1981 peak by only 28 percent, while nonagricultural exports were 54 percent higher. Agricultural products accounted for only 10 percent of total world trade in 1989, a share that has steadily declined from 17 percent in 1968 and 1973. Thus, both world and U.S. agricultural trade have receded compared with nonagricultural trade.

Real Agricultural Exports

The most comprehensive comparison of agricultural trade with overall economic activity is made by deflating export value by the rate of general price increases in the economy. The U.S. economy and most of its components tend to grow faster than general price inflation, but agricultural exports do not. The 1990 value of U.S. agricultural exports was $40 billion, about $1 billion below the 1980 value without correcting for inflation. The difference becomes much larger when the effects of inflation are factored out: U.S. exports in 1990 were worth only $25 billion in constant 1980 dollars (table 3).

Another measure that is not affected by inflation is export volume. In 1980, the volume of U.S. agricultural exports totaled 163 million metric tons. By the middle of the decade, agricultural exports had fallen to 110 million as world trade faltered and the U.S. share shrank. By 1990, volume had rebounded to 148 million tons, but U.S. agricultural exports still fell short of the performance of 10 years earlier.

During the last 20 years, U.S. agricultural export prices have risen about 130 percent. But, U.S. consumer prices and nonfarm export prices have risen more than 200 percent. Since farm product export prices rose less than the inflation rate, real farm product export prices fell 28 percent. The difference between changes in farm export prices and the consumer price index represents a loss of

purchasing power for the agricultural sector.

Compounding the decline of real farm product export prices is the long-term tendency of food consumption to increase more slowly than income. As incomes rise, consumers spend most of the extra earnings on goods and services instead of food products. With additional incomes being used primarily to purchase nonagricultural goods and services, the demand for, and thus prices of, these goods and services increases relative to food.

Reversing the downward trend of real agricultural export prices will be difficult. One option is to increase export value through increased processing, higher quality, or alternative higher value crops. The difficulty here is that the United States has a strong comparative advantage in bulk product production. To change this, agriculture would have to bid resources away from the rest of the economy, which would drive up their cost for all sectors of the economy. This could harm the competitiveness of all U.S. products, both agricultural and nonagricultural. Instead, efforts have been directed toward pursuing trade growth through multilateral negotiations and toward encouraging sustainable market growth through economic reforms in consuming countries. ■

Table 3.
Nonagricultural Trade Grows Faster Than Agricultural Trade

	1970	1975	1980	1985	1989	1990
			Billion dollars			
Agricultural exports (deflated) [1, 2]	15	33	41	24	26	25
Total exports (deflated) [2]	92	166	221	168	239	249
Agricultural trade balance [1]	1	12	23	12	18	18
U.S. trade balance	1	2	-36	-134	-135	-121
			Percent			
Export share of farm production [1]	14	25	29	22	23	24
All U.S. exports as share of GNP	4	7	8	5	7	7
U.S. share of world agricultural exports	14	18	18	15	15	NA
U.S. share of world exports	15	13	12	12	12	12
U.S. share of world agricultural imports	11	7	7	9	7	NA
U.S. share of world imports	15	13	14	20	16	16
Agricultural exports as share of all exports	16	20	18	14	11	10
Agricultural imports as share of all imports	13	9	7	6	4	4
			Index (1980 = 100)			
Agricultural export price index [1]	40	88	100	88	91	93
U.S. consumer price index	47	65	100	131	150	158

[1]Fiscal years; all others are calendar years.[2]In 1980 dollars.

Sources: *Foreign Agricultural Trade of the United States*, various issues, USDA, ERS. *Agricultural Outlook*, various issues, USDA, ERS. *FAO Trade Yearbook*, various issues, United Nations, Food and Agriculture Organization.

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U.S. Agricultural Export Programs

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The U.S. Government has launched several new programs and expanded many older export programs to encourage foreign sales of U.S. commodities. But, several factors continue to limit U.S. agricultural exports. Protectionist trade policies of other nations, fluctuating exchange rates, and a depressed global economy continue to challenge global demand for U.S. agricultural products.

Four broad categories of U.S. agricultural export programs—food aid, export credit guarantees, export payments, and nonprice promotion—assist both exporters and importers of U.S. agricultural commodities. Food aid programs help friendly nations overcome hunger (see "Overseas Food Aid," elsewhere in this issue). Export credit guarantees for U.S. agricultural goods make credit available to foreign buyers facing foreign exchange constraints. Export payments help exporters compete for sales of specific commodities in markets where competitors subsidize their exports. Nonprice export market promotions stimulate product awareness and acceptance in export markets.

Export Credit Guarantees

Of all export programs, export credit guarantees represent the largest share of agricultural export value, about 10 percent of total agricultural exports. Two credit guarantee programs, recently reauthorized in 1990 legislation, make purchases of U.S. agricultural commodities more affordable. The Export Credit Guarantee Program, called GSM-102, guarantees short-term credit (6 months to 3 years) to importers. The Intermediate Export Credit Guarantee Program, called GSM-103, guarantees intermediate-term credit (more than 3-10 years). The 1990 farm bill authorized the Commodity Credit Corporation (CCC) to provide annually at least $5 billion in credit guarantees under GSM-102 and $500 million under GSM-103 through 1995 (table 1).

The credit guarantee programs assist importers in many middle- and lower-income countries in purchasing a variety of U.S. agricultural products. Grains, oilseeds, and their products accounted for the majority of exports under these programs from 1986 through 1989 (table 2).

Credit guarantee programs have a larger role in exports of some commodities than others. From 1986 to 1989, over 30 percent of tallow and wheat flour, over 25 percent of all rice, and almost 25 percent of all wheat and soybean

Table 1.
Program Levels for Commercial Agricultural Export Programs Have Remained Fairly Constant

Fiscal year	Credit guarantees		Export Enhancement Program [1]	Market development		
	GSM-102	GSM-103		Foreign Market Development Program [2]	Market Promotion Program [3]	
					Authorization	Actual expenditure
	Million dollars					
1986	5,000	500	256.3	38.5	110	76.1
1987	5,000	500	927.8	27.7	110	57.3
1988	5,000	500	1,013.7	27.5	110	115.0
1989	5,000	500	338.8	28.2	200	143.5
1990	5,000	500	311.8	30.0	200	152.9
1991	5,000	500	779.0*	31.5	200	183.0**

*As of August 8, 1991.
**Estimated.
[1]Program levels for the Export Enhancement Program are the market values of EEP bonuses. [2]Foreign Market Development Program levels are actual FAS program expenditures. 1990 and 1991 expenditures are as of July 29, 1991. [3]The Market Promotion Program, authorized under the 1990 farm bill, replaced the Targeted Export Assistance Program, an export program authorized in the 1985 farm bill to counteract unfair trade practices.

Sources: Mandated program levels are from the 1985 and 1990 farm bills and annual appropriations.

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Table 2.
Credit Guarantees Are Important in Exporting Wheat, Soybean Oil, Rice, Flour, and Tallow

Commodity	Credit guarantee programs' exports	Total exports	Credit guarantee programs' shares of total exports
	Million dollars		*Percent*
Wheat	4,059	16,608	24
Corn	2,104	16,786	13
Soybeans	1,330	17,466	8
Soybean oil	454	1,859	24
Soybean meal	730	5,194	14
Cotton	1,083	6,272	17
Tobacco	244	5,091	5
Rice	774	2,884	27
Flour	272	848	32
Poultry meat	69	1,627	4
Tallow	529	1,630	32
Total [1]	13,496	129,198	10

Note: Data are for fiscal years 1986-89. [1]Sales value of all commodities shipped under credit guarantee programs.

Source: Compiled from "Notices to Recipients," USDA, FAS, 1986-89.
Contact: Karen Ackerman (202) 219-0821.

oil exports were assisted by GSM-102 and GSM-103 credit guarantees (table 2).

Major credit guarantee purchasers change over time. From 1986 through 1989, Latin American countries (mainly Mexico) plus Iraq, Korea, and north African countries used the greatest share of credit guarantees. For fiscal 1991, however, over 30 percent of the $5.2 billion in credit guarantees allocated as of the end of July 1991 assisted sales to the Soviet Union. Mexico and Algeria accounted for 24 and 15 percent of fiscal 1991 credit guarantee allocations, respectively.

Export Enhancement Program

The Export Enhancement Program (EEP) is another program used to stimulate U.S. farm trade. Unlike credit guarantees for potential importers, the EEP uses competitive pricing as a tool for U.S. exporters.

The main objective of the EEP is to discourage "unfair" trade practices of other nations by making U.S. agricultural products competitive in export markets. Other goals are to increase U.S. agricultural exports, and to encourage U.S. trading partners to negotiate agricultural trade issues.

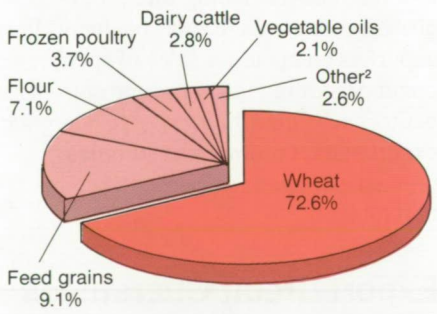
The EEP works to address these issues by targeting specific export markets and products. USDA periodically announces EEP initiatives for countries eligible for EEP sales of specific quantities of specified commodities. Exporters negotiate sales to foreign buyers, then bid for the sales and the EEP "bonus" they will need in order to sell at the competitive price. If the bids are accepted, exporters make the sales at the competitive prices. The bonuses received are in the form of generic commodity certificates redeemable for CCC commodities.

The 1990 farm bill requires the CCC to make available to U.S. exporters a minimum of $500 million each year in CCC funds or commodities. From program inception in 1985 through August 8, 1991, EEP bonuses totaling $3.65 billion have been awarded to U.S. exporters. Over 70 percent of EEP bonuses have been awarded to grain merchants to make U.S. wheat competitive in world markets (figure 1). The remainder of EEP bonuses has been awarded (in order of bonus value) to exporters of barley, flour, frozen poultry, dairy cattle, vegetable oils, barley malt, rice, poultry feed, sorghum, eggs, and semolina.

EEP sales have a major role in the exports of some commodities, but the program's importance has varied over the years. EEP has been used consistently to assist wheat exports. Annual EEP wheat sales ranged from 43 to 66 percent of total U.S. wheat exports between fiscal years 1987 and 1990 (table 3). EEP barley sales represented almost all barley exports in fiscal years 1987 and 1990, but were less important in fiscal 1989. EEP sales represented over 40 percent of dairy cattle and over 60 percent of egg exports in fiscal 1987, but decreased as a share of exports in the following 3 years.

While 116 EEP initiatives have been announced for sales to 78 countries, the

Figure 1
Wheat Accounts for the Largest Share of EEP Sales Value[1]



[1]1985 through April 1991.
[2]Other commodities include barley malt, poultry feed, rice, semolina, and eggs.
Source: USDA, FAS, data.
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majority of EEP sales have been to north Africa, the Middle East, the Soviet Union, and China. Some of these importers, who are both price-conscious and need credit, use a combination of the EEP and credit guarantees to purchase U.S. agricultural commodities.

Nonprice Market Promotions

USDA's Foreign Agricultural Service (FAS) administers two programs that assist eligible trade organizations and companies to develop export markets for U.S. agricultural products: the Foreign Market Development Program (FMDP) and the Market Promotion Program (MPP). Through these market promotions, FAS works with nonprofit producer organizations and private companies to conduct technical assistance and education projects, trade missions of potential buyers to the United States, generic and branded advertising, point-of-sale promotions, and other informational services such as nutrition information and articles in trade publications.

Under the FMDP, FAS has conducted promotion activities in export markets since 1955. The MPP, authorized in the 1990 farm bill, replaces the Targeted Export Assistance (TEA) Program, authorized in the 1985 farm bill to combat unfair trade practices. Market development is the main goal of the MPP, but priority for MPP assistance still goes to exports of commodities that have been damaged by the unfair trade practices of other nations.

FAS expenditures for FMDP and TEA promotions for fiscal years 1986-89 averaged $30.5 million and $98 million, respectively. Promotions of grains and their products (including dry beans and dry peas) accounted for over 40 percent of FMDP expenditures. Horticultural products captured the largest share, 53 percent, of the TEA expenditures over that 4-year period (figure 2).

Although promotions under FMDP and TEA may be conducted throughout

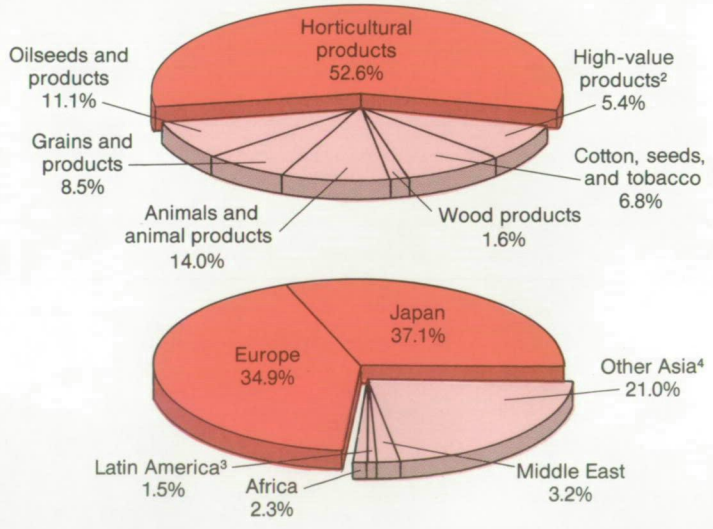
Table 3.
EEP Sales Represent a Large Share of Exports of Wheat, Barley, and Frozen Poultry

Commodity	EEP sales as share of total exports [1]			
	1987	1988	1989	1990
	Percent			
Wheat	51.0	65.6	42.7	51.2
Flour	69.0	36.8	51.8	26.9
Barley	98.0	59.2	30.8	87.7
Sorghum	2.1	3.5	0	0
Rice	1.1	5.5	.7	0
Vegetable oil	2.4	21.0	7.0	3.4
Frozen poultry	27.9	29.3	38.6	80.0
Dairy cattle	42.6	4.7	0	0
Eggs	68.9	24.1	12.8	25.7

[1]Fiscal years.

Sources: USDA, FAS, Export Credits Division; and *Foreign Agricultural Trade of the United States*, various editions, USDA, ERS.
Contact: Karen Ackerman (202) 219-0821.

Figure 2
Horticultural Products Received Most of the TEA Program Funds; Most Promotions Were Aimed at Japan and Europe[1]



[1]1986-89.
[2]High-value product promotion organizations include national and regional associations of State departments of agriculture and trade organizations representing candy and bourbon manufacturers.
[3]Latin America also includes less than 1 percent for promotions in North America.
[4]Other Asia includes South Asia, mainland China, Southeast Asia, East Asia, and Oceania.
Source: Calculated from FAS promotion expenditures, USDA.
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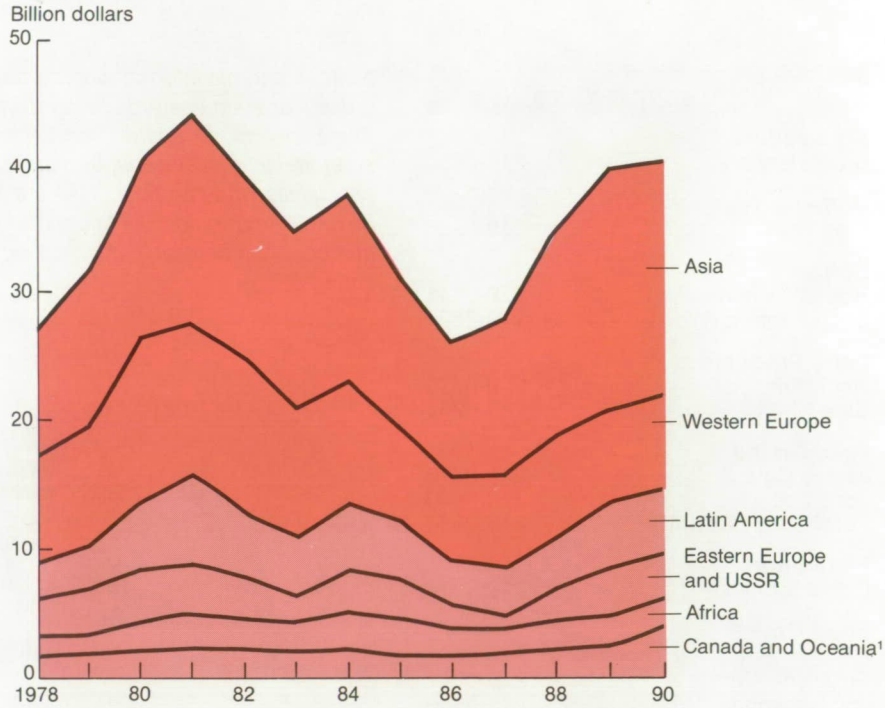
the world, the bulk of the promotions from fiscal 1986 through fiscal 1989 were aimed toward customers in the Far East and Western Europe. FMDP assisted promotion activities on several continents. Almost 50 percent of FMDP funds went for promotions in developed Asian countries (Japan, Hong Kong, Korea, Singapore, and Taiwan) and in developing Asian countries (including the Middle East, South Asia, and the Peoples Republic of China). Twenty-six percent went for promotions in Western and Eastern Europe, and 20 percent assisted promotions in Latin America and Africa.

In contrast, TEA promotions were conducted primarily in developed countries. Almost 35 percent of USDA's expenditures for TEA in fiscal years 1986-89 went for promotions in Western Europe, and 37 percent were aimed at Japan (figure 2). Almost 15 percent of the TEA funds were spent on activities in developed East Asian countries, while the remainder was scattered through several countries. ■

International Trade. . .At a Glance

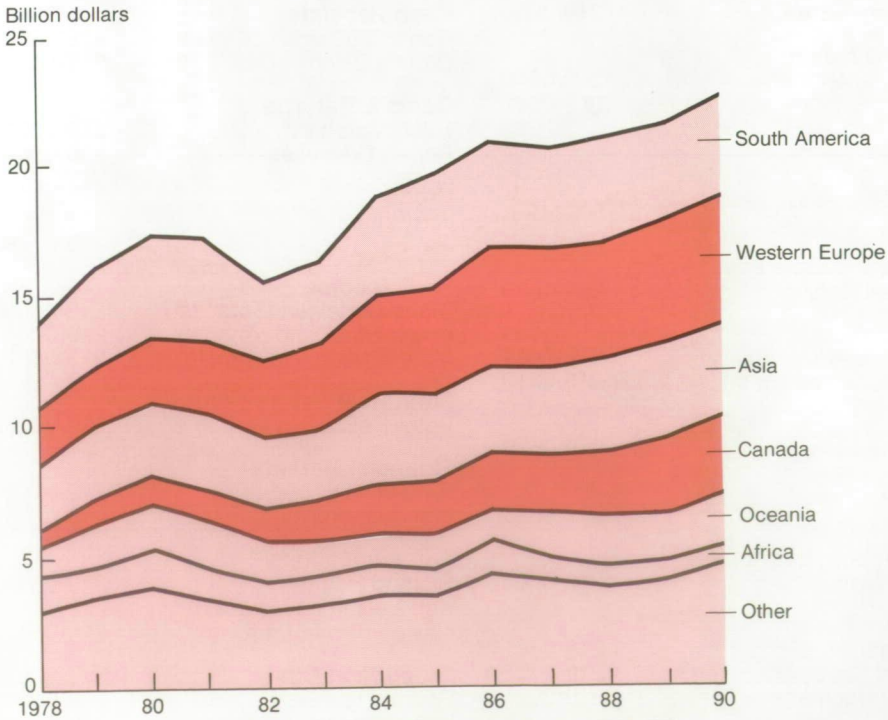
Since 1978, about two-thirds of U.S. agricultural exports have been shipped to Asia or Western Europe, with more and more going to Asian countries. U.S. agricultural exports to Asia were $10 billion in 1978, or 37 percent of total agricultural exports. By 1990, U.S. agricultural exports to Asia had grown by 81 percent to capture 45 percent of total agricultural exports.

Asia and Western Europe Are Our Biggest Customers for Agricultural Products



[1]During the 1980's, U.S. agricultural exports to Canada were underreported by an estimated $1 billion annually. This discrepancy was partly corrected in 1990.
Source: *Foreign Agricultural Trade of the United States*, various issues, USDA, ERS.

Canada and Western Europe Are Exporting More Agricultural Products to the United States



Source: *Foreign Agricultural Trade of the United States*, various issues, USDA, ERS.
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U.S. agricultural imports from Canada and Western Europe rose 372 percent from 1978 to 1990. Now more than a third of U.S. agricultural imports are from these two sources. Much of the imports from these regions compete with products produced in the United States.

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The articles in issues NFR-32 to NFR-38 (Fall 1987) are cited below by the issue number and page. For example, 32/11 means NFR-32, page 11. Beginning in 1988, the magazine was issued in volumes. Those articles are cited by quarter (January-March, April-June, July-September, and October-December) and page. For example, J-M88/5 means the January-March 1988 issue, page 5; and J-S88/18 means the July-September 1988 issue, page 18.

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