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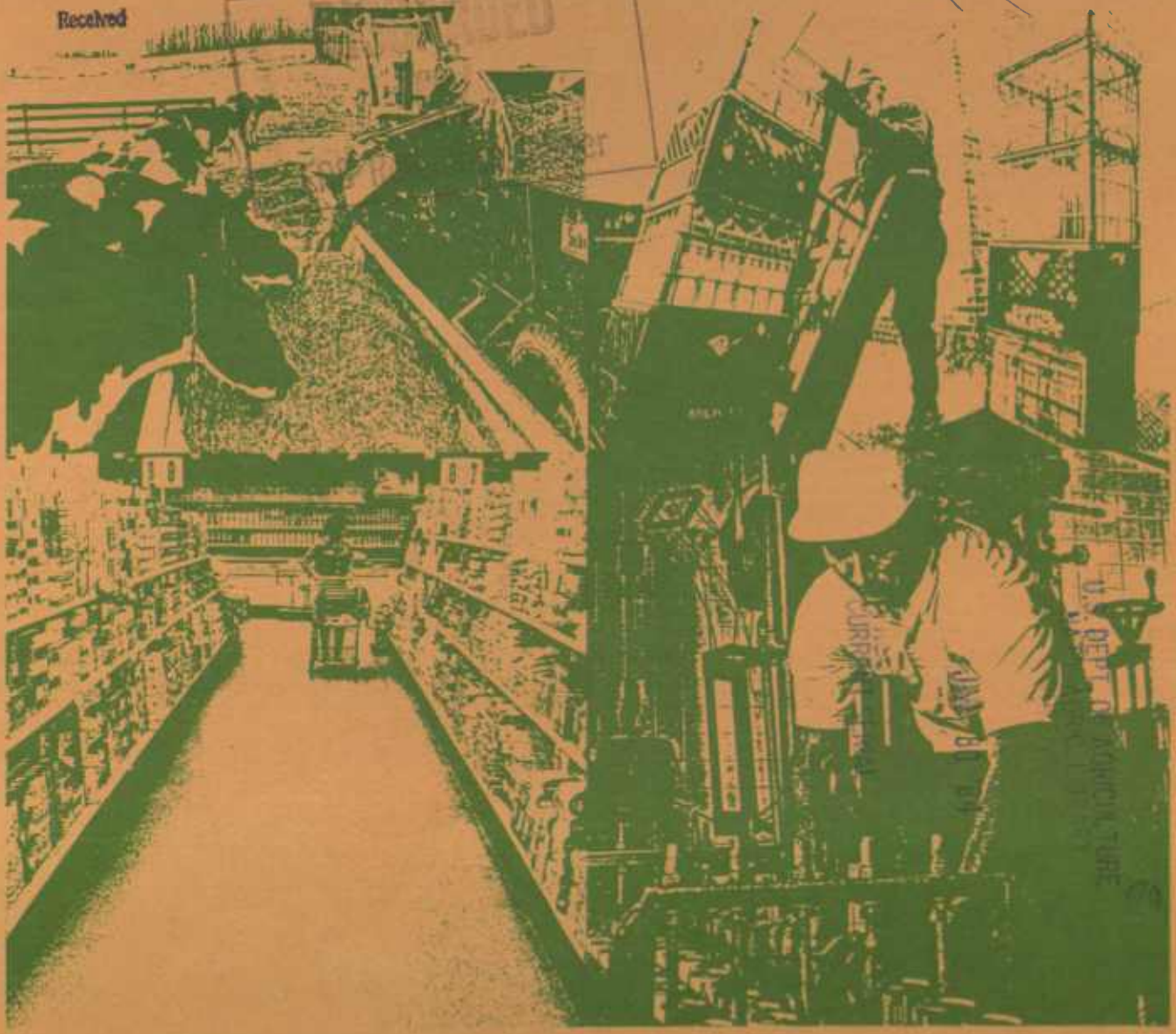
Developments in Farm to Retail Price Spreads for Food Products in 1980



Developments in Farm to Retail Price Spreads for Food Products in 1980. National Economics Division, Economics and Statistics Service, U.S. Department of Agriculture. Agricultural Economic Report No. 465.

Abstract

The rise in food prices in 1980 was the smallest in 3 years and well below the inflation rate for all prices in the economy. For domestically produced foods, both the farm value and food-industry charges for processing and marketing rose less than in 1979, limiting the retail price rise. However, retail prices for fish and imported foods, particularly sugar, rose more sharply. The farm to retail price spread rose more than the farm value of foods and was the principal contributor to the increase in food prices. As in past years, about a third of consumer expenditures for domestically produced foods paid for the farm value of foods and the rest was needed to pay for the marketing bill.

Keywords: Retail food prices, Farm value, Farm to retail price spread, Food marketing costs, Food retailing, Margins, Profit, Productivity

Washington, D.C. 20250. April 1981

Contents

Highlights

Retail food prices at grocery stores rose 8 percent in 1980 compared with 11 percent the year before. Food prices at eating places rose at a somewhat faster rate in 1980, increasing by nearly 10 percent; thus, all food prices averaged 8.6 percent higher than in 1979. This was the smallest increase in 3 years (highlight fig. 1).

Food was a moderating force in overall inflation during 1980, rising much less than the 13-1/2 percent registered by all prices in the economy.

Prices of domestically produced farm foods rose by only 7 percent, following 2 years of sharper gains. Prices of imported foods and fishery products jumped nearly 12 percent, much more than in either of the 2 prior years. (Domestically produced foods account for about four-fifths of grocers' food sales. Imported foods and fish make up the rest.)

Higher charges by the food industry for processing and marketing domestically produced foods caused slightly over half of the 8-percent rise in prices last year. Higher farm prices for these foods caused an additional one-fifth of this increase. Higher prices of fish and imported foods were responsible for the remaining fourth of the rise.

Recent Food-Price Changes

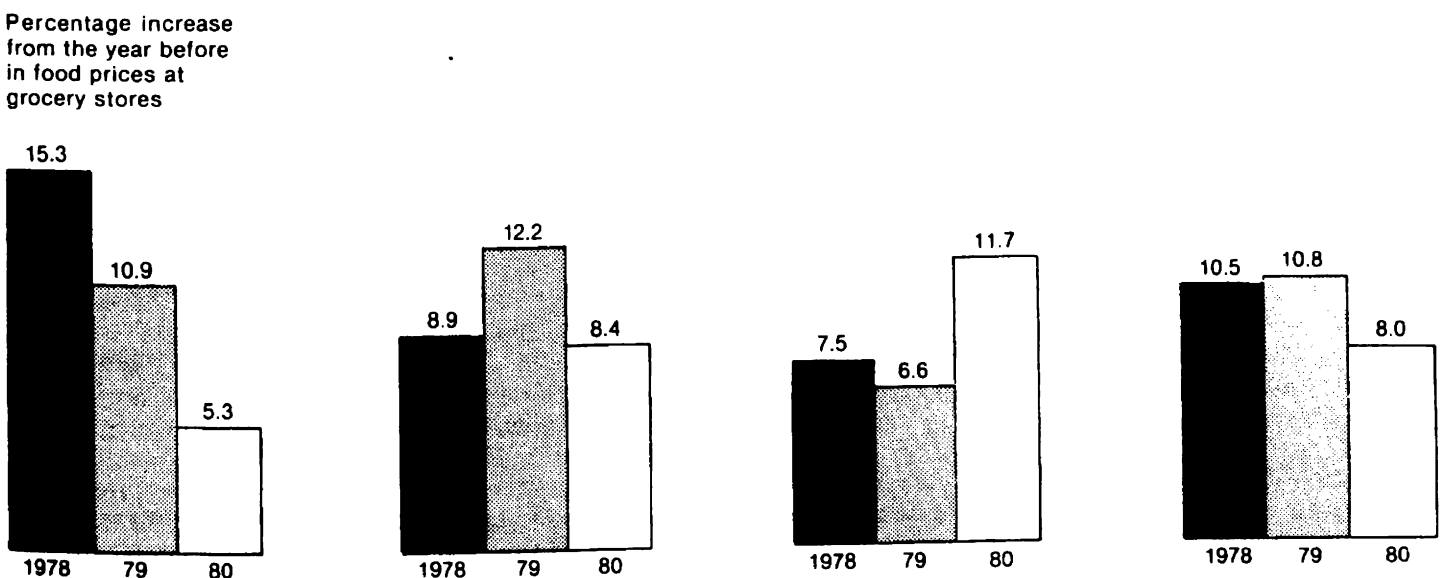
Year-to-year changes in:	1978	1979	1980
		Percent	
All retail prices	7.7	11.3	13.5
All food prices	10.0	10.9	8.6
At foodstores	10.5	10.8	8.0
At eating places	9.0	11.2	9.9
Foodstore prices of:			
Domestically grown foods	11.3	11.7	7.2
Fish and imported foods	7.5	6.6	11.7

Expanded Meat Supplies Held Down Grocery Price Rise

Abundant meat supplies, particularly for pork early in the year, kept the rise in meat prices for 1980 to 3 percent. Retail pork prices averaged 3-1/2 percent lower than in 1979, although beef prices rose about 5-1/2 percent.

Poultry prices were up 5 percent, but prices of eggs, a close substitute for meat, dropped nearly 2 percent. Since meat, poultry, and eggs account for

Highlight figure 1
Why the Pace of Food Prices Slowed



much of our grocery bill, their price changes were the major cause of the smaller retail price increases of domestic farm foods last year.

In contrast to other animal products, retail prices of milk and other dairy products rose sharply. Higher producer milk prices, mandated by the Federal price-support program, and higher processing and marketing costs were equally influential in boosting dairy prices.

Retail prices of most foods derived from crops, including fats and oils, fruits and vegetables, and bakery and cereal products, increased between 7 and 12 percent. In contrast, prices of sugar and sweets advanced nearly 23 percent.

Farm Value Increased Less than Retail Food Prices

The farm value is the payment received by farmers from the retail price of food. USDA determines this value for a fixed list, or "market basket," of foods.

For 1980, the farm value of foods in the market basket increased by 5.3 percent. This was about half the increase of 1979 and the smallest since 1977. That overall 5.3-percent increase in the farm value of foods caused about one-fifth of the 8-percent rise in foodstore prices of food.

Actually, the farm value of foods was lower during the first half of 1980 than it had been in early 1979. In the third quarter, however, the farm value rebounded in response to cutbacks in livestock and poultry production and reduced supplies of fruits, vegetables, and oilseeds.

Most of the 1980 increase in the farm value of foods came from four food groups. The farm value of sugar nearly doubled, that for bakery and cereal foods increased 16 percent, farm value of dairy products was up 9 percent, and the poultry farm value was up 6 percent.

The farm value of meats, which accounts for about four-tenths of the total farm value of the market basket of foods, dropped slightly because of lower hog prices.

Last year, the farm value averaged 37 percent of the price for a market basket of foods. This share was down a little from the 38 percent of the 2 preceding years. As you can see in highlight figure 2, the percentage varied greatly among foods.

Highlight figure 2
Food Prices and 1980 Farm Value Share

	YOU PAID		FARM VALUE: Percent of 1980 retail price
	1979	1980	
Butter, 1 lb.	$1.69	$1.87	67%
Choice beef, 1 lb.	2.26	2.38	61
Eggs, large, 1 doz.	.86	.84	60
Milk, ½ gal.	.96	1.05	55
Chicken, 1 lb.	.68	.72	54
Pork, 1 lb.	1.44	1.40	45
Frozen orange juice, 12 oz.	.89	.87	41
Potatoes, fall, 10 lbs.	1.67	1.92	30
Oranges, Calif., 1 lb.	.44	.37	20
Tomatoes, 1 lb. can	.42	.42	11
Lettuce, 1 lb.	.48	.46	10
White bread, 1 lb.	.47	.51	9*

*For wheat only. For all farm ingredients, 15%.

Since the farm value is a higher proportion of the retail price of eggs, meats, poultry, and dairy products than for many other foods, changes in their farm values in 1980 affected retail food prices the most. For instance, reduced farm values of pork and eggs played a large part in lower retail prices for these foods, and higher milk prices at the farm caused about half of the rise in retail dairy prices.

The farm value of most foods that come from crops represents a small share of the retail price. Last year, farmers received 28 percent of retail fresh fruit and vegetable prices, 18 percent for processed fruits and vegetables, and 15 percent for bakery and cereal products. Thus, even such a large change in the value as the 16-percent increase in farm value of bakery and cereal products last year accounted for little of the big increase in retail prices of bakery and cereal products.

Although the 5.3-percent rise in farm value had a moderating effect on food prices, the increase was insufficient to cover rising farm production costs. Prices that farmers paid for the various inputs used in farm production jumped by 12 percent in 1980. This disparity between the payments farmers received for food products and prices they paid for inputs contributed to a sharp drop in farm income last year.

Farm to Retail Price Spreads Widened

The difference between what farmers received and what consumers paid for the market basket of foods rose 8.4 percent in 1980. This price difference, called the farm to retail price spread, represents food industry charges for handling, processing, and retailing food commodities.

Last year's increase in the farm to retail price spread was the smallest in 3 years. However, it still accounted for slightly over half of the 8-percent rise in grocery store food prices (highlight figure 3).

Last year, farm to retail price spreads went higher for all types of foods. The price spread for meat products averaged 6 percent higher for 1980, following a 21-percent increase in 1979. Price spreads for most other food groups, including dairy products, bakery and cereal products, and fruits and vegetables, increased between 8 and 11 percent.

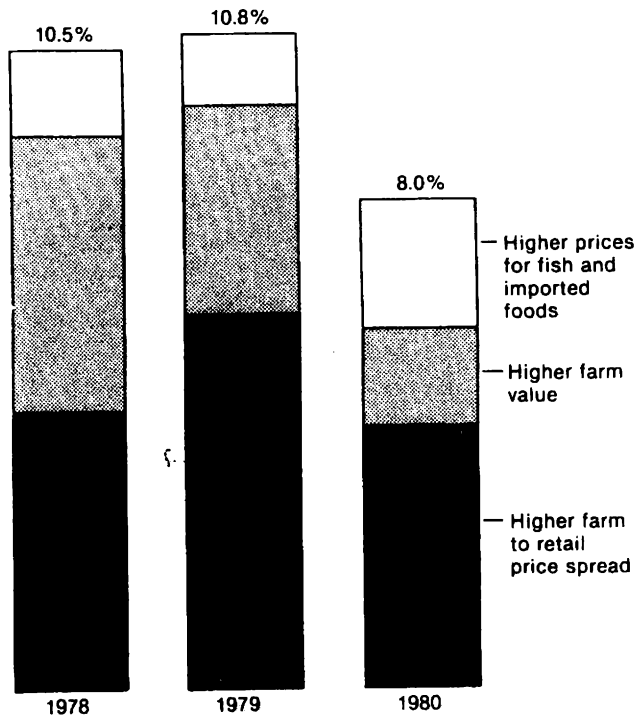
Price spreads for poultry and eggs, though, increased only about 4 percent. Over time, increases in farm to retail price spreads for these products have been smaller than those for most other foods. This primarily reflects a realization of economies of scale in this industry as poultry and egg processing operations have grown larger and become more efficient.

Consumer Food Expenditures Rose

Consumer expenditures totaled $269 billion for foods originating on farms last year, $24 billion, or nearly 10 percent, more than in 1979. This amount included purchases of farm foods both in foodstores and at away-from-home eating places.

Highlight figure 3

Higher Farm to Retail Price Spreads Have Played a Big Part in Raising Food Prices



Yearly increases in food prices at grocery stores and contributing factors.

The increase in food expenditures was larger than that in food prices because consumers purchased a 1 to 2 percent larger volume of food. They ate out less, but bought a larger volume of food at stores for home preparation. Nonetheless, food expenditures advanced less than they had in 1978 or 1979.

Just under a third of consumer food expenditures went back to farmers, who received about $86 billion for the foodstuffs equivalent, up $5-1/2 billion from 1979. The remaining $183 billion of expenditures represented the marketing bill—the total charges received by the food industry for handling, processing, and retailing foodstuffs after they left the farm. The marketing bill was up by $18-1/2 billion in 1980 and thus accounted for more than three-fourths of the year's increase in consumer food expenditures.

Over the years, the marketing bill has been the most persistent cause of rising food expenditures. Since 1975, for example, the marketing bill has added $70 billion of the $100-billion increase in consumer expenditures on domestically produced foods, while the farm value has added $30 billion—mostly in the past 3 years.

The unrelenting growth in the marketing bill in the past 5 years was due only in small measure to the growing volume of food consumed. It was mainly caused by rising labor costs and by rising prices of inputs bought by the food industry from nonfarm industries. Prices of these inputs, except energy, tend to follow inflation in goods and services generally.

Labor was Largest Component Of Marketing Bill

Higher labor costs accounted for over two-fifths of the 1980 increase in the marketing bill. Wages, salaries, and worker benefits were up nearly 11 percent to $81.7 billion. Labor comprised nearly 45 percent of the food marketing bill, and about 30 percent of total consumer spending for farm foods, nearly matching the farm value.

Higher prices for packaging materials drove up the bill for food packaging by more than 16 percent, to $21-1/2 billion, 8 percent of total consumer expenditures for farm foods.

Higher freight rates and a small increase in the volume of food hauled raised transportation costs by 16 percent. Railroad freight rates for food products were 18 percent higher; cross-country truck rates for hauling produce increased by 7 percent.

The fastest rising component of the marketing bill, although still one of the smallest, was fuels and electricity. With major increases in oil and natural gas prices, the food industry's energy bill shot up to $8.5 billion. Energy, however, still made up only 4-1/2 percent of the marketing bill and slightly over 3 percent of consumer food expenditures.

Together, the costs of labor, packaging, transportation, and energy accounted for three-fourths of the increase in food processing and marketing costs in 1980 as well as in most other recent years.

Input Prices Rose with Inflation

A marketing cost index (MCI) has recently been developed to measure price changes of the nonfarm inputs that the food industry uses. In 1980, the MCI rose by 13.5 percent, the same as the general inflation rate as measured by the consumer price index. The large price increase for inputs used by the food industry was mainly caused by spiraling prices of fuels and electricity, packaging, transportation services, and interest rates.

The 1980 rise in the MCI was the largest since 1974, and much above the average annual increase of about 10 percent since then. It also was much larger than the 8.4-percent rise in the farm to retail price spread. In other words, higher prices of food industry inputs did not fully show up in higher charges for food processing and marketing. There appear to have been three reasons. Larger food sales may have enabled retail food chains to lower overhead unit costs. It was also likely that labor productivity in food manufacturing gained. Finally, profit margins of both retailers and food manufacturers were squeezed.

Profit Margins Down

Rising operating costs plus the effects of recession on consumer buying patterns and competition among retailers combined to squeeze food industry profit margins during the first 9 months of last year. Based on data compiled by the Federal Trade Commission, food manufacturers' profits after taxes for January through September declined from 3.4 percent of sales in 1979 to 3.2 percent in 1980. Returns on stockholders' equity dropped from 15.1 percent to 13.8 percent.

Compared to the first quarter of 1979 when big losses by several food chains severely depressed profits, first-quarter 1980 profit margins of food chains recovered to a more normal level of 0.8 percent of sales. But second- and third-quarter profit margins averaged 0.9 percent, against 1.0 percent for those months of 1979.

Developments in Farm to Retail Price Spreads for Food Products in 1980*

Introduction

Consumers, farmers, and legislators want to know what causes food prices to change. They are also interested in the difference between what farmers get for the food they sell, and how much consumers pay for it. (That difference, in economic parlance, is called the farm to retail price spread). To answer these concerns, Congress has directed the U.S. Department of Agriculture—USDA—to measure price spreads for foods originating on farms.

This report presents USDA's findings for 1980. In it you'll learn—

- How much food prices rose in 1980, and why.
- How much of the retail food price represents the farm value.
- How farm to retail price spreads changed last year, both for a shopping basket of foods and for representative foods such as Choice beef or bread.
- About recent developments in food industry costs, profit margins, and productivity.
- Finally, how much Americans spent for farm-produced foods and how these dollars were divided among the costs of producing and marketing food.

*This report was prepared by Denis Dunham of the National Economics Division of the Economics and Statistics Service (ESS), U.S. Department of Agriculture. Floyd Lasley, William Jones, Steve Raleigh, and Lawrence Duewer provided marketing cost data for individual commodities. Appreciation is extended to Harry Harp, Paul Wescott, and Ray McFall Lamm, Jr., for their reviews of the manuscript.

Retail Food Price Developments

Retail food prices rose throughout 1980. They rose more rapidly in the second half of the year than in the first half. For the year as a whole, retail food prices averaged 8.6 percent higher than in 1979.

While this increase added to family food budgets, it was the smallest year-to-year change in food prices since 1976. As table 1 records, food prices rose 10 percent in 1978, and 11 percent in 1979.

The statistics just quoted came from the consumer price index—CPI—for urban consumers, published by the Labor Department's Bureau of Labor Statistics (BLS). The CPI is the most widely accepted measure of changes in retail food prices.

That 8.6-percent retail price rise for 1980 included both prices at foodstores and those we paid at restaurants and other eating places. Prices of food at eating places rose by more than those at foodstores—10 percent as opposed to 8 percent. As you can see in table 1, however, both restuarant prices and foodstore prices rose less than in 1979.

Why Foodstore Prices Increased

To get a better understanding of why the price of food in grocery stores increased last year, we'll consider separately what happened to the prices of foods that American farmers produced and what happened to prices of fishery products and imported foods. The first category accounts for about four-fifths of grocers' food sales. The second accounts for the remaining fifth.

The rise in foodstore prices—8.0 percent, to be precise—was the combined result of a relatively small, 7-percent increase in prices of domestically produced foods and a sharp rise of almost 12 percent in prices of imported foods and fish.

To study more closely the reasons for changes in prices of domestically produced foods, USDA breaks down the prices of these foods into two parts. One represents the farm value of the commodities used to make the foods. The remaining part, or farm to retail price spread, represents all of the charges by companies in the business of assembling foods from farms, processing them, and marketing them to consumers.

In 1980, both the farm value of foods and the farm to retail price spread increased, and thus both played a part in rising foodstore prices. As figure 1 illustrates, higher farm to retail price spreads were the largest cause of foodstore price increases, accounting for just over half of the 8-percent rise. Next in importance was the sharp jump in prices of fish and imported foods, which caused about a fourth of the rise. Smallest contributor to higher food prices was the increase in the farm value.

As table 2 documents, in 7 of the past 10 years, rising farm to retail price spreads contributed more to the rise in food prices than did changes either in the farm value or imported foods and fish.

Table 1—Year-to-year increases in components of retail food prices

Item	1978	1979	1980
		Percent	
All food[1]	10.0	10.9	8.6
Food away from home	9.0	11.2	9.9
Food at home	10.5	10.8	8.0
Imported foods and fishery products	7.5	6.6	11.7
Domestically produced farm foods[2]	11.3	11.7	7.2
Farm value	15.3	10.9	5.3
Farm to retail price spread	8.9	12.2	8.4

[1]Data based on Bureau of Labor Statistics, Consumer Price Index for urban consumers. [2]Data based on USDA market basket statistics.

Figure 1
What Made Food Prices Rise in 1980

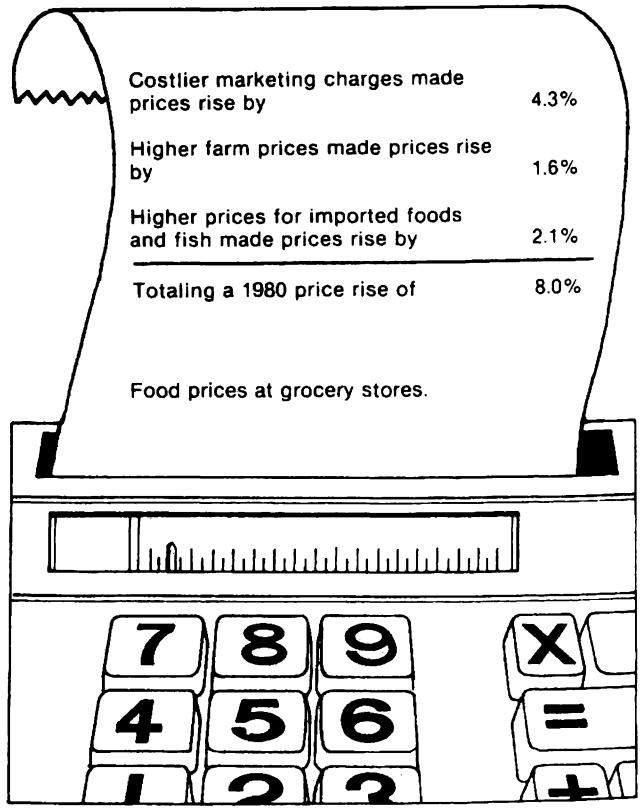


Table 2—Contribution of food-price components to price increases at foodstores

Year	Change in foodstore prices due to— Farm value of food	Farm to retail price spread	Fish and imported foods	Added up to a retail price increase of—
	—Percentage points—			Percent
1971	0.1	1.5	0.8	2.4
1972	3.0	1.3	.2	4.5
1973	11.6	3.7	1.0	16.3
1974	3.2	9.2	2.5	14.9
1975	1.3	5.1	1.9	8.3
1976	-1.8	2.7	1.2	2.1
1977	.1	1.8	4.1	6.0
1978	4.5	4.6	1.4	10.5
1979	3.4	6.2	1.2	10.8
1980	1.6	4.3	2.1	8.0

Source: Derived from Bureau of Labor Statistics data and USDA market basket statistics.

Prices Rose Slowly at First

Foodstore prices increased at a relatively slow pace in the first half of 1980. They rose about 4 percent between December 1979 and June 1980 (fig. 2). This was about half as fast as price rises in the rest of the economy during those months.

Foodstore prices were slow to increase because farm-level prices of foods rose only slightly, held in check mainly by declining livestock prices. Increases in farm to retail price spreads were thus the major cause of food price rises in the first half of 1980.

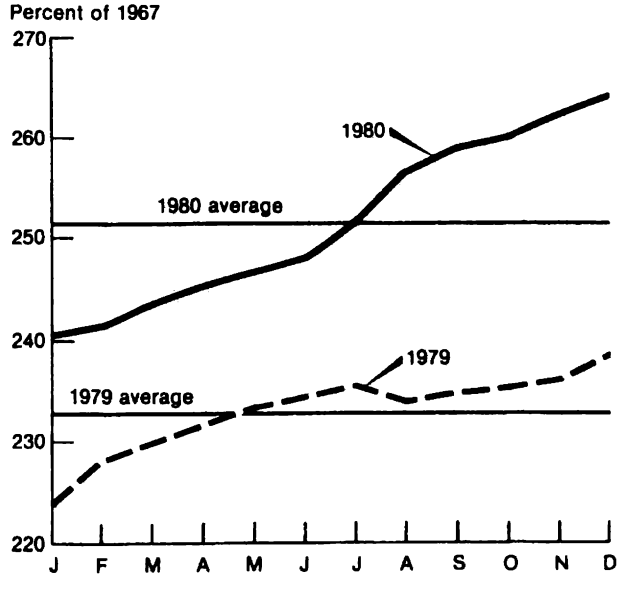
The picture changed after June as prices received by farmers increased. Foodstore prices went up 3.6 percent from the second to the third quarter, the largest quarterly increase of 1980. Higher farm prices for livestock, poultry, and eggs, reflecting midyear production cutbacks in these farm products, were the prime contributors to the third-quarter price increase. By year's end, foodstore prices were about 6-1/2 percent higher than in June.

Meat Prices Rose Little

Taking a look at price changes for major food groups, one of the major reasons retail food prices rose less in 1980 than in 1979 was the slower rise in meat prices. As figure 3 shows, red meat prices averaged only 3 percent higher in 1980 than in 1979. This was the smallest rise since 1977. Meat supplies were larger in the first half of the year, particularly for pork. Farm to retail price spreads for meat also increased less than in the 2 years before, as table 3 documents.

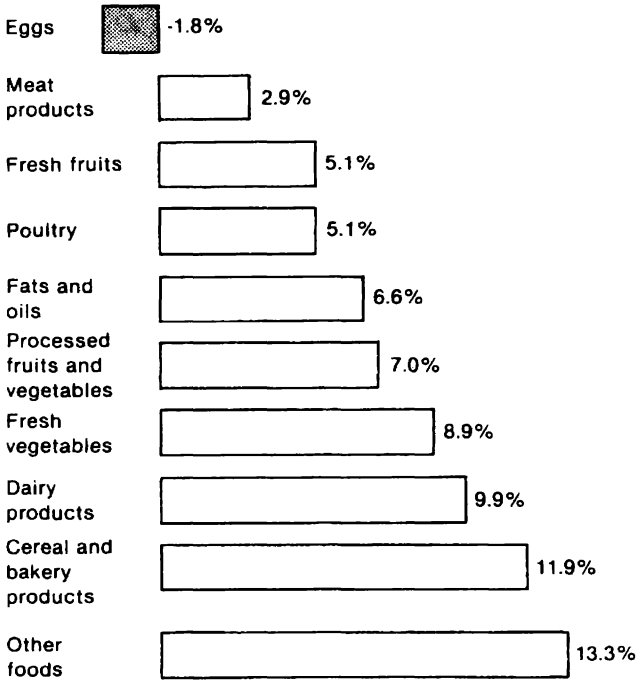
Retail poultry prices averaged only 5 percent higher in 1980 than in 1979. Poultry producers, like livestock producers, increased their output. Egg prices averaged about 2 percent lower in 1980, held down by relatively large egg supplies and the large supply of meat and poultry. Retail dairy product prices, however, rose about a tenth, despite a 3-percent rise in milk production. Higher dairy product prices were due to rising farm to retail price spreads and to increases in farm milk prices which were mandated by the Federal price support program.

Figure 2
Food Prices Rose Throughout 1980



Source: CPI for food eaten at home, BLS.

Figure 3
Eggs Were Cheaper; Other Food Groups Cost More



Change in foodstore prices, 1980. Other foods include sugar and sweets.

Among crop-based foods, retail prices increased the least for fresh fruits, up 5 percent, followed by fats and oils and processed fruits and vegetables; both averaged about 7 percent higher last year than in 1979. Prices for bakery and cereal products were up about 12 percent. Prices for the "other foods" group, which includes sugar and sweets, increased by 13 percent, the most of any group. Reduced sugar production worldwide boosted retail prices.

Food Rose Less than Inflation

Foodstore price increases not only slowed in 1980 from earlier years, they also rose much less than the overall inflation rate of 13.5 percent, as measured by the CPI for all items. This was mainly because, during the first half of 1980, farm prices dropped for many commodities, particularly for meats and poultry, slowing early-year rises in retail food prices.

Table 3—Price changes for a market basket of domestically produced foods[1]

Item	1978	1979	1980[2]	1970-80[2]
	Annual percentage change			
Market basket				
Retail price	11.3	11.7	7.2	7.7
Farm value	15.3	10.9	5.3	7.7
Farm to retail spread	8.9	12.2	8.4	7.7
Meat products				
Retail price	18.7	17.0	2.9	7.9
Farm value	21.6	13.7	-.3	7.5
Farm to retail spread	15.5	20.8	6.3	8.3
Dairy products				
Retail price	7.0	11.6	9.9	7.4
Farm value	9.3	14.3	8.9	8.4
Farm to retail spread	4.6	8.8	10.8	6.5
Poultry				
Retail price	9.4	5.0	5.1	5.9
Farm value	13.2	-1.3	6.2	7.6
Farm to retail spread	4.6	13.5	3.8	4.2
Eggs				
Retail price	-6.7	9.5	-1.8	3.1
Farm value	-4.6	11.3	-4.2	3.7
Farm to retail spread	-10.7	5.7	3.4	2.0
Cereal and bakery products				
Retail price	8.8	10.2	11.9	8.3
Farm value	18.6	15.9	16.4	7.9
Farm to retail spread	7.3	9.2	11.2	8.3
Fresh fruits				
Retail price	22.5	12.3	5.1	9.4
Farm value	34.3	-.1	2.1	9.3
Farm to retail spread	17.6	18.2	6.3	9.5
Fresh vegetables				
Retail price	7.8	2.9	8.9	7.2
Farm value	5.0	-5.3	5.6	6.1
Farm to retail spread	9.2	6.7	10.2	7.7
Processed fruits and vegetables				
Retail price	9.7	8.6	7.0	7.8
Farm value	17.7	6.0	3.1	7.5
Farm to retail spread	8.0	9.2	7.9	7.9
Fats and oils				
Retail price	9.2	8.0	6.6	8.8
Farm value	3.2	8.0	-10.1	8.4
Farm to retail spread	12.5	8.0	15.2	9.0
Other foods				
Retail price	7.6	9.6	13.3	8.3
Farm value	18.2	8.1	55.4	11.3
Farm to retail spread	6.0	9.9	6.2	7.7

[1]The market basket consists of fixed quantities of domestically produced foods derived from data on consumer expenditures in foodstores between July 1972 and June 1974. Retail price data are derived from Bureau of Labor Statistics price indexes. The farm value is based on prices received by farmers for commodities equivalent to foods in the market basket. The spread between the retail price and farm value represents charges for processing and marketing functions. [2]Preliminary

Developments in the Farm Value

This section on farm value and the next one on the farm to retail price spread discuss changes during 1980 in the two components of foodstore prices of domestically produced foods. The focus will be on how these two components changed last year for all domestically produced food and for major groups of foods. The last section of this report will show how these components changed for particular food items such as a pound of pork, a loaf of white bread, or a can of tomatoes.

What Farm Value Means

The food farmers produce loses some of its weight as it is stored, processed, or trimmed. There is always some further loss for food spoiled before it can be sold in stores. For this reason, the farm value is the payment the farmer gets for the amount of raw commodity needed to produce a pound or other unit of food in the grocery store.

This amount varies among foods, of course. Only a slight amount of raw milk is lost, for example, as it is handled and processed for sale in cartons to consumers. Therefore, the farm value of the retail price per half-gallon is just a little more than the price that milk producers received per half-gallon. In contrast, nearly 2-1/2 pounds of live animal are needed to yield a 1-pound Choice steak on the meat counter. The payment the cattle producer receives for that larger quantity of live animal thus determines the farm value in the price of 1 pound of retail beef.

The farm value of foods in the market basket is a measure of the prices farmers receive for the farm products equivalent to these foods.

1980 Farm Value

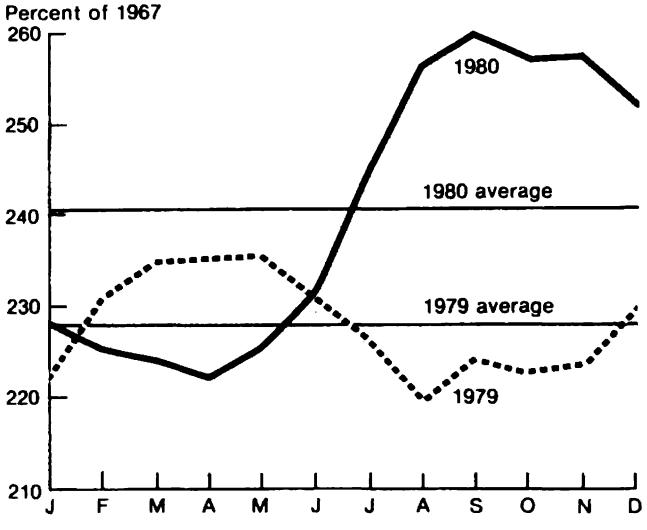
The farm value of foods in the market basket averaged 5.3 percent higher than in 1979. While the farm value fell early in 1980, it rose sharply later on as farm prices did the same.

Farm prices were depressed below 1979 levels during the first half of the year. Large production of crops in 1979 overhung markets in early 1980, keeping crop prices down. And meat supplies were large, too, especially for pork. So, through May, the farm value was well below a year earlier (fig. 4).

During the third quarter of 1980 the situation changed dramatically. Pork and poultry supplies tightened, reflecting decisions by producers in late 1979 and early 1980 to reduce production because of low net returns. Supplies of some fruits and vegetables, including potatoes, apples, and oranges, and food products derived from vegetable oils, also dropped. Farm prices rebounded, sending the farm value for the third quarter well over that for a year earlier. In the fourth quarter, the farm value leveled off. In December, the farm value of food was about 10 percent higher than it had been in December 1979.

Although the farm value of the market basket increased, changes differed greatly among different kinds of foods. Farm value of meat products, which accounts for about 40 percent of the total farm

Figure 4
The Farm Value Dipped, Then Rose in 1980



Farm value for a market basket of domestically produced food.

value of the market basket, averaged slightly lower, and farm values of eggs and fats and oils dropped even more. Farm values of four food groups—bakery and cereal products, dairy products, poultry, and the "other foods" group, including sugar—rose strongly, causing most of the total increase in farm value of foods.

Last year's increase in the farm value was the smallest since 1977. It was about half as large as the 1979 increase of 11 percent; a third as great as the rise in 1978.

During the seventies, the farm value increased, on the average, by 7.7 percent a year, with some big year-to-year variations. As events during 1980 demonstrated, the farm value is volatile because it rises and falls with the prices farmers receive. Since the amount of food Americans require is fairly steady (or "inelastic" in economic terms), a relatively small change in farm output can trigger a larger swing in farm prices, and thus, the farm value of food prices.

Table 4—Indexes of retail price, farm value, and the farm to retail price spread for a market basket of farm foods, and farm value as a share of retail price[1]

Year and quarter	Retail price	Farm value	Farm to retail spread	Farm value share of retail price
	—1967=100—			Percent
1968	103.6	105.4	102.5	38
1969	109.1	114.8	105.7	39
1970	113.7	114.0	113.5	37
1971	115.7	114.6	116.4	37
1972	121.3	125.1	119.1	38
1973	142.3	167.9	127.2	44
1974	161.9	181.5	150.4	42
1975	173.6	187.8	165.2	40
1976	175.4	178.0	173.9	38
1977	179.2	178.3	179.7	37
1978	199.4	205.6	195.7	38
1979	222.7	228.1	219.6	38
1980[2]	238.8	240.3	238.0	37
1979:				
I	217.4	229.5	210.4	39
II	223.8	234.0	217.8	39
III	224.3	223.4	224.8	37
IV	225.3	225.3	225.3	37
1980:[2]				
I	229.8	226.0	232.0	36
II	233.7	226.3	238.0	37
III	242.7	253.9	236.2	39
IV	249.2	254.9	245.8	38

[1]The market basket consists of fixed quantities of domestically produced foods derived from data on consumer expenditures in foodstores between July 1972 and June 1974. Retail price indexes are derived from Bureau of Labor Statistics data. Farm value is based on prices received by farmers for commodities equivalent to foods in the market basket. The spread between the retail price and farm value represents charges for processing and marketing functions. [2]Preliminary.

Even though the farm value of grocery foods may change rapidly, the effect on the prices we pay is usually not as dramatic. The reason is simply that for most foods the farm value makes up a relatively small part of the retail price. Last year's 5.3-percent rise in farm value caused retail food prices in foodstores to rise by just 1.6 percent.

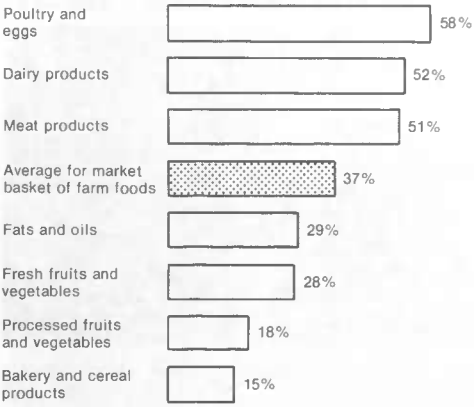
For most types of foods, the percentage of the retail price change explained by the increase in farm value was relatively small. Changing farm value accounted for half or more of the rise in retail prices of only poultry, dairy products, and "other" foods, which includes sugar-based products. Higher retail prices for other types of foods were mainly caused by increases in farm to retail price spreads. Even though the farm value of bakery and cereal products rose 16 percent, it contributed only about a fifth of the retail price increase.

While the farm value of market-basket foods tends to change from one year to the next, its share of the retail price showed no distinct trend over the past decade.

As the seventies began, this share was 37 percent. Between 1973 and 1975, the share jumped as farm prices soared, and averaged 42 percent, the highest level in two decades. After 1976, however, the farm value share steadied again below 40 percent (table 4). Last year's farm value averaged 37 percent.

The farm value as a share of the retail price varies greatly among foods, depending on the inputs used to make them and the complexities of the marketing process. In general, animal products have the highest ratios of farm value to retail price; the more highly processed crop products have the lowest. Last year, the farm-value share of the retail price ranged from 58 percent for poultry and eggs to 15 percent for cereal and bakery products (fig. 5).

Figure 5
Farm Share of Retail Food Prices



Farm value is the payment to farmers for quantities of food commodities, less the allowance for byproducts, equivalent to the retail unit. 1980 data.

Procedures Were Revised

During 1980, the farm value of the market basket was partly revised to reflect changes in data and procedures used in calculating the farm value of meats. The revision reduced the 1980 farm value share of the retail price of meat by about 4 percentage points compared to the old estimating procedure, and the farm share of the retail price of the total market basket by about 1 percentage point. These decreases resulted in large part from the added importance given to processed meat products. The farm value of processed products is a smaller percentage of the retail price than the farm value of fresh meat.

Developments in the Farm to Retail Price Spread

The farm to retail spread is the difference between the farm value of a food product and its retail price. It pays for all the assembling, processing, transporting, and retailing charges that are added to the value of the farm product after it leaves the farm. You might think of the farm to retail spread as a price index of marketing services, since it is computed for a fixed market basket of foods.

The farm to retail price spread for the market basket of foods averaged 8.4 percent higher in 1980. This was a much smaller increase than in 1979.

The spread rose through the first half of the year, while the farm value held steady and accounted for nearly all of the rise in retail food prices from a year earlier (fig. 6). In the third quarter, as the sharp increase in farm value of foods exceeded the rise in retail prices, the price spread dropped a little. The decline in the farm to retail spread was probably due in part to a lag in price adjustment between the farm and retail level. In the fourth quarter, the price spread again widened as farm value leveled off but retail prices continued to rise in further response to the higher farm values in the third quarter.

Price Spreads Increased for All Groups

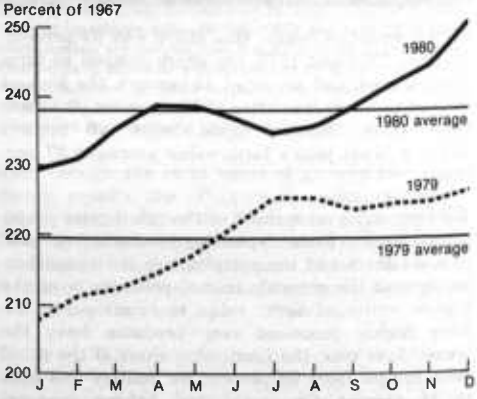
The farm to retail price spread increased for all major food groups in 1980 (table 3). For most groups, increases were moderate, but they varied rather widely. The farm to retail spread for red meats, which registered a sharp 21-percent increase in 1979, went about 6 percent higher in 1980. Large supplies of pork and poultry last year, coupled with an apparent dampening of beef demand because of higher prices, put downward pressure on retail meat prices. This gave retailers and meat processors little opportunity to widen margins.

Despite large supplies of fruits and vegetables, farm to retail price spreads for both fresh and processed fruits and vegetables increased between 6 and 10 percent. These spreads tend to vary with the change in farm value, because retailers usually take a percentage markup on cost. Last year was an exception as increases in farm to retail price spreads were about twice as large as increases in the farm value of these foods.

The 11-percent increase in the farm to retail price spread for dairy products was the largest for this group in recent years, reflecting higher packaging, energy, and transportation costs. The sharply higher farm values for dairy products also may have played a part in the increase as grocers raised retail prices to maintain their usual percentage markups.

Farm to retail price spreads for poultry and eggs rose 3 to 4 percent, the least among the major food

Figure 6
The Farm to Retail Price Spread Continued to Rise in 1980



Price spread of a market basket of domestically produced foods.

groups. Over time, increases in the price spread for these foods have been smaller than those for most others because poultry and egg processors are achieving greater economies of scale and are using more automation in processing and handling. Between 1975 and 1980, price spreads increased 7 percent for eggs and 28 percent for poultry compared with the average 45-percent increase for other farm foods.

Spreads Rose More Slowly than Input Prices

The farm to retail price spread in 1980 did not rise as quickly as the prices that the food industry had to pay for inputs. An index of labor costs and the prices paid for inputs by food processors, wholesalers, and grocery firms shot up by 13.5 percent, the sharpest yearly increase since 1974. (The index will be explained more fully later.)

There appear to have been several possible reasons for this difference. Food supplies were more abundant than in 1979. This allowed food processors and retailers to partially offset some of the increase in operating costs by spreading costs over more units of food processed or sold. For example, foodstore sales, adjusted for price increases to reveal the actual volume of food sold, were about 2.3 percent higher than in 1979. Some of this volume increase probably occurred because of a 1.9-percent decline in sales volume in eating places. It's likely, then, that unit marketing costs of eating places increased more than foodstore unit costs. This and the greater importance of marketing costs as a proportion of sales explain why prices of restaurant meals rose more than foodstore prices.

Other factors helped to moderate the rate of increase in the farm to retail spread. Labor productivity in food manufacturing probably gained slightly. Energy saving measures used throughout the food industry partly offset big increases in energy rates. Firms used such economies as recycling water, burning waste, reclaiming heat from dryers and refrigeration equipment, and making greater use of fluorescent lighting.

An additional factor holding down the price spread in 1980 was a decline in profit margins of food processors and retailers.

Following Foodstore Prices Through the Seventies

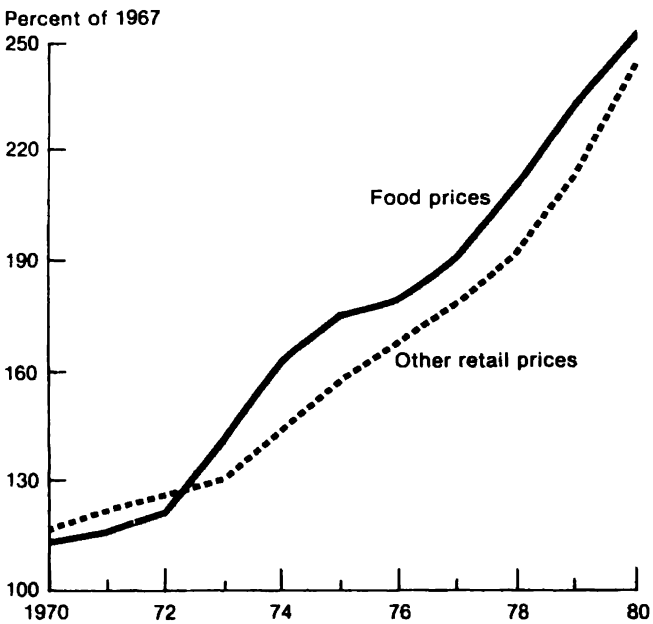
With 1980 just past, it's possible to put food price changes during the seventies into perspective:

- Foodstore prices rose slightly faster than inflation in other retail prices, mainly because of food imports and fish, rather than because of domestically produced foods. Prices of coffee and sugar rose steeply.
- Over the decade, the farm value and the farm to retail price spread of domestically produced foods rose at the same rate.

Retail foodstore prices rose an average of 8.3 percent yearly from 1970 through 1980. Prices rose at a faster pace than did nonfood retail prices in the CPI, which registered a 7.7-percent annual increase for the seventies (fig. 7).

The faster rise in food prices than nonfood retail prices during the seventies can be traced to prices of imported food and fishery products, which climbed an average of 12.1 percent per year. In contrast, retail prices of domestic food products rose at a 7.7-percent rate, the same rate as retail prices of other items in the CPI.

Figure 7
Food Prices Outpaced Other Retail Prices in the Seventies



CPI for food eaten at home and for all items less food, BLS.

Coffee and sugar were the main reasons why imported food prices rose sharply. Retail prices of roasted coffee more than tripled, with an annual rise averaging 13.6 percent. Prices of sugar and sweets rose almost as fast, by 11.5 percent a year. Retail prices of fish and seafood rose, too, up by 10.8 percent a year.

It's easy to understand why this category went up so much: there were world shortages of sugar, a severe freeze damaged the Brazilian coffee crop in 1975, and consumer demand increased. Shoppers were particularly eager for fish and seafoods because of their low fat content and good prices relative to some other meats. Consumption of fish and seafoods per person rose from about 11.8 pounds in 1970 to over 13 pounds in 1980, despite a substantial gain in retail prices.

Foodstore prices of domestically produced foods increased over the decade because both farm prices and charges for processing and marketing food products rose. Both the farm value and farm to retail price spread for the market basket of domestically produced foods rose by the same average annual rate—7.7 percent. For this reason, the farm value was the same share (37 cents) of the retail food dollar in 1980 as it had been when the decade began.

As you might expect, even though the movement of the farm and nonfarm price components of retail prices were the same over the whole decade, they diverged widely in some years.

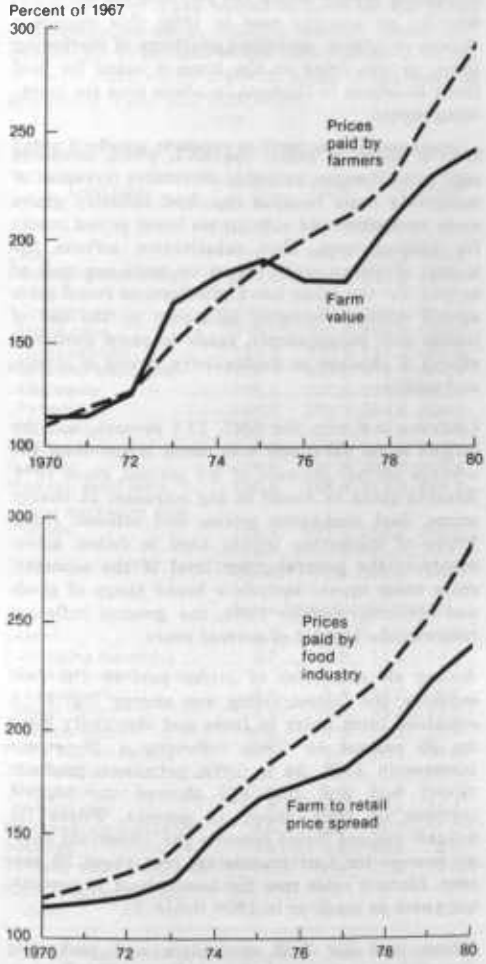
Abrupt changes in food supplies and demand during the seventies led to some big yearly changes in the farm value. For example, the farm value jumped 34 percent in 1973; it declined 5 percent in 1976. The 1973 increase followed a world shortfall of grains and oilseeds and tightening stocks of grain held by our Government. By 1976 and 1977, however, grains and oilseeds were in very large supply and farm value declined. But farm values were to rise sharply again in 1978 and 1979 as meat supplies tightened. As a result, retail food prices rose faster than nonfood prices during the first half of the seventies. However, in the second half, food prices rose at a slower pace than nonfood prices.

While the farm value is prone to ups and downs, over the longer haul, it has had a tendency to trend upward, pulled by factors such as increasing foreign demand for farm commodites and rising farm production expenses. Over the decade, the farm value of the market basket increased 111 percent, undoubtedly reflecting the increase of 161 percent in prices paid by farmers for production items. (fig. 8).

The farm to retail price spread for the market basket of foods increased each year during the seventies. Annual increases were as low as 2 to 3 percent early in the decade and in 1977, but hit 18 percent in 1974 and 12 percent in 1979.

The prices that the food industry must pay for such marketing inputs as labor, energy, or packaging materials drive up the farm to retail spread. USDA's marketing cost index for these inputs increased about 146 percent over the seventies. This increase in input prices, tempered by some gains in food-industry productivity and other economies, pushed the farm to retail price spread up by 110 percent (fig. 8).

Figure 8
Food Price Components Rose with Input Prices Paid by Farmers and the Food Industry



Farm value and farm to retail price spread for a market basket of domestically produced foods. Prices paid by farmers as reported in *Agricultural Prices*. Prices paid by food processors and distributors based on USDA marketing cost index.

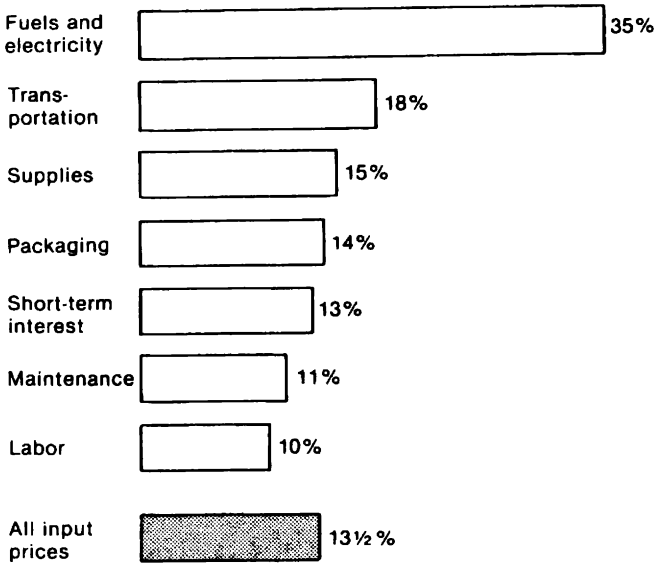
Food Industry Costs, Profit, And Productivity

Economic forces within the food industry determine how much industry firms charge for their services. Three forces are at work: food industry costs, profit, and productivity. Together, they determine how much is added to the price of food after it leaves the farm. The following pages show what happened to each of these three forces recently.

Prices of Marketing Inputs

Increases in farm to retail price spreads mainly reflect rising costs faced hy food industry firms. These costs include both wages and salaries of workers and prices of many inputs bought by marketing firms from other parts of the economy. The USDA's Economics and Statistics Service recently developed a marketing cost index (MCI) for monitoring and analyzing changes in wages and prices of other inputs. The new index provides better information for such analysis of input costs than a previous index of only intermediate goods and services. It incorporates labor and transportation costs and is based on more current cost weights.

Figure 9
The Food Industry Paid Higher Input Prices in 1980



Change from 1979.

The MCI measures price changes of supplies and services used in processing, wholesaling, and food-store retailing of domestically produced foods. It does not cover input prices for doing business at eating places, however. The MCI represents all non-farm input costs except depreciation of buildings and equipment, long-term interest, and profits.

Prices in the index are weighted by the quantities used. That means that the price changes of the items that the food industry uses the most have the greatest effect on the index.

The largest component of the index is labor costs, comprising hourly earnings of workers and employee benefits (47 percent of the total MCI). Labor is followed in importance by food containers and packaging materials (15 percent), transportation rates (10 percent), and energy costs (8 percent). Other cost components include advertising, maintenance and repair services, insurance, short-term interest, rent, and miscellaneous supplies and services.

When the MCI and price spreads change by a similar percentage, changes in the price spread are likely to be largely the result of changes in costs of marketing inputs. When the two indexes move differently, as was the case in 1980, this implies a change in profits, operating practices of marketing firms, or the delay in the time it takes for food firms to adjust to changes in prices paid for marketing inputs.

Over a period of years, the MCI, which measures only price changes, probably overstates increases in marketing costs because the food industry grows more productive and substitutes lower priced inputs for costlier ones. This substitution softens the impact of rising input prices on costs per unit of output. On the other hand, the farm to retail price spread reflects changing efficiency in the use of inputs and, consequently, tends to show combined effects of changes in productivity, prices of inputs, and profits.

Last year's rise in the MCI, 13.5 percent, was the largest since 1974, and was much larger than the average annual increase of 9.5 percent since 1974. Reasons could be found in big increases in energy prices, food packaging prices, and interest rates. Prices of marketing inputs tend to follow movements in the general price level of the economy, since these inputs include a broad range of goods and services. And in 1980, the general inflation rate was the highest of several years.

Among all categories of prices paid by the food industry, the fastest rising was energy (fig. 9). A combined price index of fuels and electricity went up 35 percent in 1980, following a 26-percent increase in 1979. As in 1979, petroleum products (diesel fuel and fuel oil) showed the biggest increase in 1980, about 48 percent. Prices for natural gas and liquid propane gas, important energy sources for food processing, rose about 35 percent. Electric rates rose the least, about 18 percent, but twice as much as in 1979 (table 5).

Prices paid for food containers and packaging materials rose faster than in 1978 or 1979. Producers of most types of packaging raised prices because of rising costs of such raw materials as woodpulp, plastic resins, and tinplate. Sharp hikes for paper-

board products, such as shipping boxes and milk cartons, were due in part to a rise of nearly a fourth in woodpulp prices through September. Crude oil price hikes helped to drive up the prices of polyethylene resin, which is used for plastic containers, by 27 percent in the first 9 months. Prices of metal cans, up by a tenth, added to the costs of processing fruits and vegetables.

Table 5—Price changes in food marketing costs[1]

Cost item	1970	1978	1979	1980[2]
	1967=100			
Labor[3]	122.5	244.4	265.8	292.6
Packaging materials	103.6	204.7	228.4	261.4
Paperboard boxes and containers	101.1	179.6	202.1	234.7
Metal cans	113.1	236.8	293.0	325.7
Transportation	114.3	220.5	251.3	297.9
Fuels and electricity	106.1	331.7	418.2	564.0
Electricity	105.8	250.6	270.3	320.1
Petroleum	106.5	398.1	574.6	850.8
Natural gas	103.6	428.7	544.8	733.7
Maintenance and repair	122.3	226.9	249.7	277.1
Supplies	106.5	197.8	224.3	258.8
Interest, short term	150.9	156.4	213.5	240.3
Total marketing cost index	116.1	227.0	252.2	286.2
	1970-80[2]	1978	1979	1980[2]
	Annual percentage change			
Labor[3]	9.1	9.9	8.8	10.1
Packaging materials	9.7	6.2	11.6	14.4
Paperboard boxes and containers	8.8	1.6	12.7	16.1
Metal cans	11.1	12.5	23.7	11.2
Transportation	10.0	7.5	14.0	18.5
Fuels and electricity	18.2	6.7	26.1	34.9
Electricity	11.7	7.7	7.9	18.4
Petroleum	23.0	3.6	44.3	48.1
Natural gas	22.0	10.5	27.1	34.7
Maintenance and repair	8.5	8.2	10.0	11.0
Supplies	9.3	4.8	13.3	15.4
Interest, short term	4.8	42.4	36.5	12.6
Total marketing cost index	9.5	8.5	11.1	13.5

[1]Data measure changes in prices for fixed quantities of labor and other inputs used in processing, wholesaling, and retailing farm foods sold through foodstores. [2]Preliminary. [3]Hourly earnings and benefits.

Labor costs, the principal component of the MCI, rose by 10.1 percent in 1980, outpacing 1979. Labor costs include both hourly earnings of workers and wage supplements, principally Social Security and unemployment taxes, pensions, and insurance.

Hourly earnings, over four-fifths of labor costs, affected the labor cost index the most. Hourly earnings of food marketing workers were up 9.4 percent in 1980 compared with 8.2 percent in 1979. This larger increase reflected higher wage settlements and a higher rate of price inflation that resulted in larger cost of living adjustments (COLA's) to wages of many workers.

Labor supplements, such as health insurance, private pension plans, and employer payments for Social Security and unemployment insurance, have increased more rapidly than hourly earnings. Increases have averaged about 14 percent annually since 1972. Benefits increased from about 12-1/2 percent of labor costs in 1972 to about 17-1/2 percent in 1980.

Last year was a moderate one for collective bargaining in the food industry. About 300,000 of the 1 million workers covered by major union contracts (those which cover 1,000 or more workers) were renegotiated during 1980. Two-thirds of workers covered were foodstore workers, who belong mainly to the United Food and Commercial Workers International Union. Union contract settlements in food retailing during 1980 generally provided for first-year wage increases ranging from 8 percent to over 10 percent, and were costlier than in the previous year. Contracts providing for relatively small negotiated increases often contained provisions for COLA's. The most common formula for COLA clauses is a 1-cent-an-hour wage increase for each 0.3-point rise in the CPI. Many employees, however, don't receive the full increase computed under the formula because of "caps" in their contracts. These "caps" kept COLA's well below those determined by the inflation rate in 1980. For the past 2 years, increases in workers' earnings were considerably slower than inflation.

Railroad and trucking freight rates for shipping food products continued to rise last year. The transportation cost index, representing railroad freight rates, averaged 18 percent higher.

Data on freight rates charged by truckers are sketchy, but increases in truck rates probably were smaller than for railroads due to differences in cost structures, efficiency, and competitive conditions. Unregulated truck rates for hauling produce from southern California to New York averaged 7 percent more than a year earlier, whereas truck operating costs rose about 14 percent. The costs of trucking food products were boosted by rising diesel fuel prices and truck driver wage increases. Rates have been held down in part by strong competition among truckers.

A price index of supplies used by food processors and retailers averaged 15 percent higher in 1980. This index is based on producer prices of motor supplies, chemicals, cleaning materials, and numerous other items. Prices for services also rose in 1980. Maintenance and repair charges increased 11 percent.

One of the slowest rising components of the MCI was advertising rates. Unit advertisting rates for newspapers, television, and other media averaged 8 percent higher last year than in 1979. Unit rates are based on prices for time or space as well as the audience reached. If an increase in prices is matched by an increase in audience exposure, unit advertising charges do not change.

Profit Margins

Profit margins of food processors and retail food chains are low relative to labor and some other costs, and therefore usually account for only a small part of the widening spread between farm and retail food prices. Profit margins of food chains typically average about 1-1/2 cents per dollar of sales, and less than 1 cent after taxes. Profits per dollar of sales of food manufacturers are higher, averaging 5 to 6 cents before taxes and slightly over 3 cents after taxes, mainly because of their much larger investment per dollar of sales.

Despite sharply rising costs, food chains and processors were able to increase net incomes and profit margins in 1978 and 1979 to the highest level in several years. With employment levels high and consumer incomes rising, demand for food was especially strong.

The picture changed last year. Food industry profit margins declined as the recession slowed the growth in sales and profits while inflation continued to boost operating costs. Based on data compiled by the Federal Trade Commission (FTC), food manufacturers' dollar sales rose 9 percent in the first 9 months of 1980, yet profits after taxes increased only 1 percent. This drove food manufacturers' profit margins down from 3.4 percent of sales in 1979 to 3.2 percent in 1980. Returns on stockholders' equity also declined to 13.8 percent in the first 9 months last year, compared with 15.1 percent a year earlier. Profit margins of manufacturers were higher in the first quarter of 1980 but declined in the second and third quarters as the recession and inflation reduced profits (table 6).

Profit margins of retail food chains followed a similar pattern. Profit margins were well up for the first quarter from the severely depressed level of a year earlier, but declined as the year progressed. The first-quarter dip in 1979 had been largely due to huge losses by two major chains. Second- and third-quarter 1980 profit margins of retail food chains averaged 0.9 percent of sales compared with 1.0 percent a year earlier.

Table 6—Profit margins of food manufacturers and retail food chains, industry averages

Year and quarter	Food manufacturers[1]			Retail food chains[2]		
	After-tax profits as a percentage of—					
	Sales	Stockholder equity	Assets	Sales	Stockholder equity	Assets
	Percent					
1976	3.5	14.9	7.5	0.8	10.0	4.3
1977	3.1	13.2	6.7	.8	10.7	4.5
1978	3.3	13.8	6.8	.9	12.7	4.7
1979	3.3	14.7	7.2	.9	12.7	4.2
1980[3]	3.2	13.8	6.7	.8	12.5	4.1
1979:						
I	2.8	12.2	5.9	.3	4.2	1.4
II	3.5	15.6	7.7	1.1	16.3	5.4
III	3.9	17.3	8.4	.9	13.7	4.5
IV	3.1	13.8	6.7	1.1	16.2	5.2
1980:						
I	3.0	12.8	6.2	.8	11.4	3.7
II	3.1	13.4	6.6	1.0	15.2	5.0
III	3.4	15.1	7.4	.8	11.2	3.6

[1]Data for food manufacturers represent aggregate estimates for corporations based on a sample of company reports. [2]Data for food chains are based on reports from all food retailing corporations having more than $100 million in annual sales, at least 70 percent of which are derived from supermarket operations. [3]Data for 9 months.
Source: Federal Trade Commission.

Retailers reported that sales were not greatly affected by the recession because consumers were doing more eating at home and less in restaurants. Likewise, sales of generic food items were strong as shoppers traded down to lower priced foods. They also bought more on sale. These changes in buying habits altered the normal sales mix of products and therefore store margins, so profits were squeezed. Competition also appeared to become more intense in many markets, particularly on price. Limited-assortment stores and warehouse pricing bid for shoppers' business, adding to the fact that in most parts of the country, supermarkets can't expand sales much unless they take business away from competitors.

Since financial performance varies widely among food chains, industrywide averages can be misleading. Supermarket profits are changeable, for many reasons. Short-term events, like price wars or loss of business in some markets, can cause profits to dip. Food chains in the East Central and Northeast regions face some longstanding problems—regional population losses and too many older, relatively inefficient stores. Two leading firms, Food Fair and Allied Supermarkets, incurred big losses in recent years and were forced to file for protection under bankruptcy laws.

As table 7 shows, the food chain profit picture was spotty. The Atlantic and Pacific Tea Company and Food Fair operated at a loss for the first 3 quarters. Borman's and Stop-and-Shop broke even. In contrast, several firms including Winn-Dixie, Jewel, Lucky, Dillon, and Giant Food bettered the industry performance in profit per dollar of sales. Safeway, the largest food chain, matched the industry average.

The most recent financial review of the supermarket industry by the Food Marketing Institute showed after-tax profit margins averaging 1.0 percent of sales in 1978 and 1979. The review also turned up a switch in the profits of larger and smaller chains. Companies with annual sales over $500 million, the largest, showed the highest profit margin in 1979, 1.1 percent (table 8). Yet smaller firms had consistently shown the highest profit margins during most of the past decade. This may mean that the biggest firms improved productivity or eliminated some small, unprofitable units.

Table 7—After-tax profits of selected supermarket food chains per dollar of sales, first 9 months of 1979 and 1980

Firm	1979	1980
	Percentage of sales	
Albertson's	1.3	1.2
Allied Supermarkets	-6.7	.7
Atlantic & Pacific Tea	-.5	-.9
Borman's	.1	([1])
Dillon	1.7	1.4
Fisher Foods	-.6	.4
Food Fair	-11.5	-.2
Giant Food	1.7	1.1
Jewel	1.1	1.3
Kroger	.9	.8
Lucky	1.5	1.2
National Tea	1.4	1.2
Safeway	1.1	.8
Stop & Shop	.3	([1])
Supermarkets General	.9	.9
Winn-Dixie	1.0	1.6

[1]Less than 0.05 percent.

Table 8—After-tax profits of retail food chains by firm size

Year	Firm sales (million dollars)				
	Less than 10.0	10.0-99.9	100.0-499.9	500.0 and over	Industry average
			Percentage of sales		
1974	1.20	0.92	0.79	0.34	0.69
1975	.99	.92	.91	.80	.88
1976	1.20	.78	.95	.68	.86
1977	.95	.76	.76	.58	.72
1978	.92	.93	.93	1.13	1.02
1979	.90	.94	.81	1.09	.98
			Percentage of net worth		
1974	17.0	13.4	12.1	4.7	10.0
1975	15.4	14.6	11.8	10.4	12.4
1976	18.8	13.0	11.6	8.8	12.1
1977	13.2	12.2	10.0	7.9	9.9
1978	13.4	15.1	14.2	15.7	14.6
1979	14.5	16.1	13.9	14.6	14.4

Source: *FMI 1979 Annual Financial Review*, Food Marketing Institute.

What Productivity Means

Productivity in the food industry can have a big impact on food prices. For example, tomato canneries were faced with higher prices for energy and metal cans last year. If productivity, the number of cans of tomatoes produced for each unit of inputs used, stayed the same, a cannery would pass on the higher costs in terms of higher price per can of tomatoes.

If, however, the cannery installed heat-recycling equipment and streamlined loading of cases of canned tomatoes onto trucks, a smaller input of energy and labor would be used per can of tomatoes produced, offsetting some of the higher costs. This would hold down the price you pay.

Productivity is easier to define than it is to measure in practice. Productivity means the volume of output obtainable from a given input.

Most studies, including this report, measure productivity in terms of the volume of output per labor input, partly because data on employee hours of work are readily available. Labor input is also a relatively good measure of efficiency in the food industry. Labor, after all, is the largest single input in both food processing and distribution.

When output per worker hour goes up, it may be for another reason than contribution of labor alone. Labor productivity mirrors the influence of many factors, such as changes in technology and capital investment, as well as the skill and effort of the work force.

Labor Productivity

The statistics that enable us to measure food industry productivity last year won't come out until well into this year. For this reason, food industry productivity estimates for 1980 aren't available yet.

Even so, there are some early pointers to 1980 developments. Looking at productivity in the Nation's business sector generally, excluding farming, we already have estimates that suggest productivity declined for the year (table 9). In the food industry's case, on the contrary, it is more likely that productivity saw a slight improvement.

First, as already mentioned, sales of food chains increased in real terms last year, making it likely that productivity increased. That would be a welcome turnaround for the chains.

Second, it's reasonable to assume, especially given the larger volume of food products produced, that a long uptrend in the productivity of companies that manufacture food continued in 1980.

Last year capped a decade marked by an uphill struggle to improve productivity in the food industry. Food manufacturers, it's true, realized respectable gains. Their productivity rose faster than that

Table 9—Productivity measured by output per unit of labor input

Year	Food-stores	Eating and drinking places	Manufacturers of farm-originated foods	Nonfarm business sector of the economy
		1967=100		
1964	91	93	94	93
1968	105	102	103	103
1969	106	100	104	103
1970	112	104	108	103
1971	113	101	112	106
1972	112	105	118	110
1973	108	106	118	112
1974	104	101	120	109
1975	105	102	121	111
1976	107	102	124	115
1977	106	99	129	116
1978	101	95	129	117
1979[1]	100	90	132	116
1980[1]				115
Average annual change:		Percent		
1964-74	1.4	0.8	2.4	1.6
1974-79	-.8	-2.3	2.0	1.1

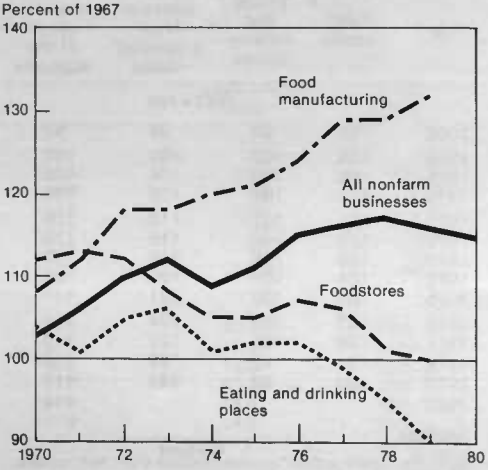
[1]Preliminary.
Source: Bureau of Labor Statistics data and estimates by USDA for food manufacturing.

of businesses generally (fig. 10). But after small gains early in the decade, labor productivity in both food chains and eating places declined over most of the seventies.

Declining productivity contributed to inflation and a markedly slower improvement in the earning power of workers' wages. Increases in workers' hourly earnings mainly resulted in higher unit labor costs and higher food-price inflation.

It's generally agreed that one of the most important causes for this low productivity growth was slow growth in capital investment. Inflation has discouraged capital investment by pushing up prices of new plant construction and equipment and interest rates on borrowed capital. The food and beverage manufacturing industry was expected to invest $5.1 billion in new plant and equipment in 1980. This would be an increase of only 1 percent over 1979, down from an increase of 4 percent from 1978 to 1979.

Figure 10
Food Industry Labor Productivity Varied in the Seventies



Source: BLS, Office of Productivity and Technology. USDA estimates for food manufacturing.

Other causes of productivity's slow growth include adjustment of business to higher energy prices, instability in the economy, and inadequate motivation and training of workers.

Most of the recent gains in food industry labor productivity have occurred in the food manufacturing sector. Output per unit of labor in food manufacturing showed a steady but small annual increase of about 2 percent per year from 1974 to 1979. These increases resulted from an upward trend in output and a small decline in hours worked, reflecting in part the substitution of capital for labor as a consequence of new technology.

The largest increases in labor productivity among food manufacturers have occurred in dairy processing, confectionary manufacturing, fruit and vegetable processing, and grain milling (table 10). Productivity has grown erratically for most industries

Table 10—Indexes of output per employee hour in food manufacturing by industry[1]

Year	All foods[2]			Meat products[3]			Poultry and eggs[4]		
	Output	Employee hours	Output per hour	Output	Employee hours	Output per hour	Output	Employee hours	Output per hour
					1967=100				
1968	101	98	103	103	98	105	96	102	94
1969	103	99	104	103	97	106	102	109	94
1970	104	96	108	106	97	108	114	111	103
1971	106	94	112	110	96	115	117	110	106
1972	110	94	118	112	95	118	122	110	111
1973	109	92	118	101	90	113	122	112	108
1974	111	92	120	110	95	115	125	112	111
1975	108	90	121	107	93	116	121	105	115
1976	113	91	124	115	94	123	130	110	117
1977	116	90	126	115	92	126	133	110	121
1978	116	90	129	114	89	128	141	116	122
1979	119	90	132	118	87	135	153	122	125

	Dairy products[5]			Processed fruits and vegetables[6]			Grain mill products[7]		
	Output	Employee hours	Output per hour	Output	Employee hours	Output per hour	Output	Employee hours	Output per hour
					1967=100				
1968	100	95	106	102	100	102	101	96	105
1969	100	92	110	106	102	104	103	98	105
1970	102	89	115	107	99	108	102	95	107
1971	104	85	122	113	100	113	100	91	110
1972	106	82	130	119	104	115	109	91	120
1973	102	79	130	131	104	126	109	94	116
1974	102	77	133	126	102	123	115	93	123
1975	102	75	135	122	98	125	117	95	123
1976	103	74	140	128	96	133	123	96	128
1977	104	73	142	133	102	130	132	96	137
1978	104	71	148	139	101	138	132	97	137
1979	106	69	153	145	102	142	134	96	140

	Bakery products[8]			Sugar[9]			Confectionary products[10]		
	Output	Employee hours	Output per hour	Output	Employee hours	Output per hour	Output	Employee hours	Output per hour
					1967=100				
1968	101	99	102	100	100	100	104	98	105
1969	103	101	102	101	101	100	98	101	98
1970	99	94	106	109	98	112	105	101	104
1971	98	91	108	109	99	110	111	97	115
1972	103	91	114	115	98	117	117	91	129
1973	102	90	113	110	96	114	124	90	137
1974	101	89	113	108	99	110	130	87	149
1975	102	90	113	106	98	108	109	80	136
1976	105	93	113	116	104	111	108	85	127
1977	102	85	120	115	98	117	123	85	145
1978	101	87	117	106	92	115	124	86	144
1979	102	86	119	107	83	129	126	87	145

[1]Output per employee-hour indexes were computed from unrounded indexes of hours worked by all employees and output. Employee-hour estimates are based on productivity data for selected industries published by the U.S. Department of Labor, Bureau of Labor Statistics, and on data published by the U.S. Department of Commerce, Bureau of the Census. Output estimates are based on data for selected industries published by the Bureau of Labor Statistics and on value-added indexes published by the Bureau of the Census projected for noncensus year by physical output data published by USDA. Data for 1973-79 are preliminary. [2]Establishments primarily engaged in manufacturing shortening and cooking oils, margarine, macaroni, and spaghetti, as well as industry groups shown on this table. [3]Meatpacking plants and establishments specializing in prepared meat products. [4]Poultry dressing plants and establishments specializing in processed poultry and egg products. [5]Plants engaged in processing fluid milk and cream, butter, natural and processed cheese, condensed and evaporated milk, and ice cream and other frozen desserts. [6]Establishments primarily engaged in canning, freezing, and dehydrating fruits and vegetables and manufacturing pickles and sauces. [7]Establishments primarily engaged in milling flour and meal from grain, including wet corn milling, and the manufacturing of blended and prepared flour and cereal breakfast foods. [8]Establishments primarily engaged in manufacturing bread, cakes, and related products, including wholesale bakeries, grocery chain bakeries, home service bakeries, and retail multioutlet bakeries, and establishments primarily engaged in manufacturing cookies and crackers. [9]Establishments primarily engaged in manufacturing raw cane sugar from domestically grown cane, and plants mainly engaged in the manufacture of beet sugar. [10]Establishments primarily engaged in manufacturing candy and other confections, and chocolate and cocoa products.

mainly because of ups and downs in farm commodity production and business conditions.

Productivity in the dairy industry (milk processors and makers of dairy products) increased about 3.5 percent annually during 1967-79. However, productivity grew much more rapidly from 1967 to 1973 than recently. There are several reasons for the rising productivity trend. A rapid switch to fewer and larger dairy plants sharply reduced labor hours at the same time that milk plants modernized. The continuing shift from home milk delivery to carrying milk home from the store substantially reduced the labor in milk distribution.

Lahor productivity at the supermarket suffered a series of setbacks. Between 1972 and 1974, as the economy moved into recession and food prices soared, output per hour fell about 7 percent because, while stores sold less, the labor used stayed the same. Foodstores did recover some of this productivity loss later. However, productivity dropped about 5 percent in 1978 and didn't recover in 1979, leaving the productivity level about 12 percent lower than in the early seventies.

Supermarkets competed strongly for food sales, introducing Sunday store openings, longer hours of operation during the week, and such service-oriented operations as store bake shops and delicatessens. All the extras plus store expansion added a nearly steady increase in hours of labor input, but output did not keep up. Hours worked in food retailing rose 13.4 percent from 1972 to 1979, while output increased only 1 percent.

The story was much the same for eating places. Recent labor productivity in eating and drinking places was lower than during the early seventies, apparently because a growing number of fast food establishments competed to maintain their share of the market. From 1972 to 1979, output per employee hour dropped about 15 percent because labor input rose a third while output only increased 14 percent.

The Food Marketing Bill and Its Components

In this section, we review what Americans actually spent for domestically produced foods in 1980. Earlier sections reported on the prices we paid. But expenditures count how much we bought as well as the prices we paid.

There's a second difference to keep in mind. The expenditures reported in this section include those at eating places, not just at foodstores.

As we did for food prices, we break down food expenditures into two components:

- The farm value is our estimate of how many of the dollars we spent for domestically produced foods at foodstores and eating places were paid to farmers.
- The marketing bill is the difference in dollars between the farm value and retail expenditures.

We will closely examine last year's changes in the marketing bill, dividing it into several principle

marketing functions and also breaking it down into various costs such as labor and packaging.

Unfortunately, nearly all of the estimates just mentioned are based on secondary data, not on direct measures of either consumer food expenditures or actual marketing costs. This limits their accuracy. So consider them as general indicators, not precise measures, of how much was spent and the changes that occurred last year.

Food Expenditures Were Up a Tenth

Consumers spent $269 billion for foods originating on U.S. farms in 1980 (fig. 11). (This was less than the total amount consumers spent for food because it excluded expenditures for imported foods and fishery products.) About 72 cents out of each dollar was spent at retail foodstores on food for use at home. Another 23 cents was spent on purchases of food from public eating places. The remaining 5 cents represented the retail value of foods served by hospitals, schools, airlines, and other institutions. These market shares changed little from 1979 (table 11).

Consumer expenditures for farm foods in 1980 rose nearly 10 percent above the 1979 level. Most of the increase in value came from higher food prices, but the volume of food purchased also increased, by an estimated 1 to 2 percent. Spending for food in foodstores rose more rapidly than spending in public eating places, largely because of the effects of inflation and the slump in the economy on spending for food away from home.

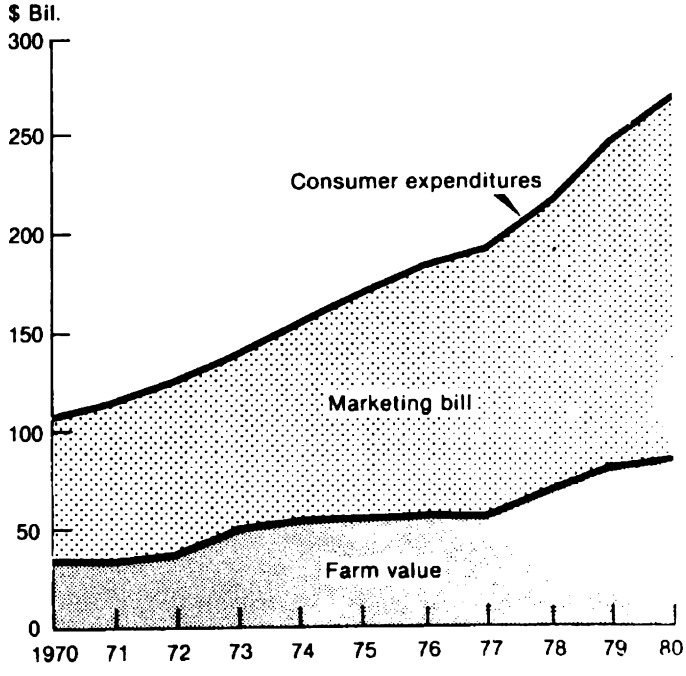
Meat products represent by far the largest share of the retail value of the food we bought. Retail value of meat in 1979 (the latest available data) was more than 29 percent of the total compared with 21 percent for fruits and vegetables, the next largest expenditure group (table 12). Because the consumption of foods changes slowly, there has been little change in the proportion of expenditures accounted for by meat products and other food groups from year to year.

Farm Value Was a Little Higher

How much of what consumers spent on food last year actually went to farmers? We estimate that farmers received about $86 billion in 1980 for the farm products equivalent to the foods purchased by consumers at stores and eating places or eaten by them in hospitals and other institutions.

Farm value increased much more slowly in 1980 than in the 2 prior years. Plentiful supplies of red meat (especially pork), poultry, and fresh fruits and vegetables held down prices and the farm value of foods in the first half of 1980. However, because of rising farm prices in the second half, the total farm value for the year was about $5.4 billion, or 6.7 percent, higher than in 1979. This compared with increases of about 20 percent in 1978 and 16 percent in 1979.

Figure 11
Farm Value and Marketing Bill for Farm Foods



For domestically produced farm foods purchased by civilian consumers both at foodstores and at eating places. 1980 preliminary.

Table 11—Consumer expenditures for domestically produced farm foods, the estimated marketing bill, and farm value

Item and year	Total	For food at food-stores[1]	Eating away from home		
			Total	Public eating places[2]	Institu-tions[3]
			Billion dollars		
Consumer expenditures					
1972	122.2	85.3	36.8	29.4	7.4
1973	138.8	98.5	40.3	32.5	7.8
1974	154.6	109.5	45.1	36.1	9.0
1975	169.0	116.7	52.3	42.0	10.3
1976	183.7	126.6	57.1	46.3	10.8
1977	192.3	130.7	61.6	50.2	11.4
1978	215.7	152.7	63.0	51.0	12.0
1979	245.1	175.3	69.8	57.0	12.8
1980[4]	269.0	193.7	75.3	61.5	13.8
Marketing bill					
1972	82.4	52.9	29.4	23.6	5.8
1973	87.1	56.2	31.0	25.1	5.9
1974	98.2	63.6	34.5	27.7	6.8
1975	113.4	72.9	40.5	32.6	7.9
1976	125.4	78.9	46.5	37.9	8.6
1977	134.3	83.3	50.9	41.8	9.1
1978	146.0	95.2	50.8	41.4	9.4
1979	164.5	109.4	55.1	45.4	9.7
1980[4]	183.0	122.8	60.2	49.6	10.6
Farm value					
1972	39.8	32.4	7.4	5.8	1.6
1973	51.7	42.3	9.3	7.4	1.9
1974	56.4	45.9	10.6	8.4	2.2
1975	55.6	43.8	11.8	9.4	2.4
1976	58.3	47.7	10.6	8.4	2.2
1977	58.0	47.3	10.7	8.4	2.3
1978	69.7	57.5	12.2	9.6	2.6
1979	80.6	65.9	14.7	11.6	3.1
1980[4]	86.0	70.9	15.1	11.9	3.2

[1]Includes food primarily purchased from retail foodstores for use at home. [2]Includes food purchased at restaurants, cafeterias, snackbars, and other public eating establishments. [3]Includes the value of food served in hospitals, schools, colleges, rest homes, and other institutions. [4]Preliminary.

The largest share of the money received by farmers for domestic food sales pays for meat products. In 1979, the latest year we have data for, the farm value of meat was slightly more than 39 percent of the total. The next largest share, 18 percent, paid for dairy products. While livestock and dairy producers thus garnered over half the farm value, it's important to remember that they bought substantial amounts of grain and other feedstuffs from crop farmers.

The farm value of food products represented 32 percent of consumer expenditures for farm foods in 1980. This was about 1 percent lower than for 1979.

Table 12—Consumer expenditures, marketing bill, and farm value for major food groups, 1979

Item	Total	For food at foodstores	Eating away from home
		Billion dollars	
Consumer expenditures			
Meat	72.0	43.8	28.2
Fruits and vegetables	51.1	43.5	7.6
Dairy products	33.6	23.7	9.9
Bakery products	27.3	19.9	7.4
Poultry	12.7	7.4	5.3
Grain mill products	7.9	6.6	1.3
Eggs	5.2	3.7	1.5
Other foods	35.3	26.7	8.6
Total	245.1	175.3	69.8
Marketing bill			
Meat	40.2	19.4	20.8
Fruits and vegetables	40.3	34.5	5.8
Dairy products	18.8	11.4	7.4
Bakery products	23.4	16.5	6.9
Poultry	7.3	2.8	4.5
Grain mill products	6.1	4.9	1.2
Eggs	2.6	1.3	1.3
Other foods	25.8	18.6	7.2
Total	164.5	109.4	55.1
Farm value			
Meat	31.8	24.4	7.4
Fruits and vegetables	10.8	9.0	1.8
Dairy products	14.8	12.3	2.5
Bakery products	3.9	3.4	.5
Poultry	5.4	4.6	0.8
Grain mill products	1.8	1.7	.1
Eggs	2.6	2.4	0.2
Other foods	9.5	8.1	1.4
Total	80.6	65.9	14.7

The farm value is a much smaller part of what we spend for foods eaten away from home than for foods bought at stores, because the cost of preparing and serving foods is a major part of the cost of food eaten out. In 1980, the farm value accounted for about 20 percent of away-from-home expenditures, compared with nearly 37 percent of expenditures for farm foods in foodstores.

Marketing Bill Took 2 Food Dollars Out of 3

The marketing bill, the difference between what consumers spent for food and the farm value, amounted to $183 billion in 1980, about $18.5 billion, or 11 percent, more than in 1979. The marketing bill increased each year in the past decade, reflecting the rising costs of goods and services and a growing volume of food marketed.

Higher labor costs accounted for about two-fifths of last year's increase in the marketing bill. Much of the remaining increase in the bill consisted of higher costs of packaging and food containers, energy, and transportation.

The increase of 11 percent in the marketing bill in 1980 was below the rise in prices of most inputs and less than the general inflation rate of 13.5 percent. Factors that helped moderate the rate of increase in the marketing bill last year were:

- the squeezing of marketing margins in the third quarter as prices of farm commodities rose faster than retail food prices,
- a decline in real sales of public eating places, and
- probable slight gains in productivity in food manufacturing and food retailing.

Last year's increase in the marketing bill explained over three-fourths of the $24 billion rise in expenditures for farm foods. Nonfarm costs continue to be the most persistent source of rising food expenditures, even though a big jump in the farm value of food commodities pushed retail food expenditures higher in both 1978 and 1979. Retail expenditures for domestic farm foods have increased $100 billion since 1975. About 70 percent, or $70 billion, of this increase was due to nonfarm charges for marketing products after they leave the farm. However, farm value has increased $30 billion since 1975, with practically all of the increase occurring in the past 3 years.

What the Marketing Bill Paid For

To get a clearer idea of what we bought when we paid last year's marketing bill, let's look first at four broad functions that the food industry performs—processing, wholesaling, transportation, and retailing (see table 13) —and then at the specific cost items that add up to the marketing bill.

Table 13—Processing and marketing components of consumer expenditures for farm foods

Expenditures and components	1972	1978	1979	1980[1]
	Billion dollars			
Expenditures at foodstores	85.3	152.7	175.3	193.7
Farm value	32.4	57.5	65.9	70.9
Marketing bill	52.9	95.2	109.4	122.8
Processing cost	25.8	44.9	50.7	59.8
Intercity transportation cost	5.0	8.7	10.0	11.7
Wholesaling cost	7.3	13.3	15.6	16.4
Retailing cost	14.8	28.3	33.1	34.9
Expenditures for eating away from home	36.8	63.0	69.8	75.3
Farm value	7.4	12.2	14.7	15.1
Marketing bill	29.4	50.8	55.1	60.2
Processing cost	6.4	11.3	12.1	13.9
Intercity transportation cost	1.1	3.7	2.2	2.5
Wholesaling cost	2.1	1.8	3.9	4.3
Food service cost	19.8	34.0	36.9	39.5

[1]Preliminary.

For 1980, 37 cents of each dollar spent in foodstores paid for the farm value. Thus, 63 cents paid the marketing bill.

Looking at the bill by function, 28 cents paid for processing. Between processing and retailing, 6 cents was spent for intercity transportation and 9 cents for wholesaling. Finally, retailing charges added the last 20 cents. These shares have been relatively constant over the years since costs of each function have risen at similar rates.

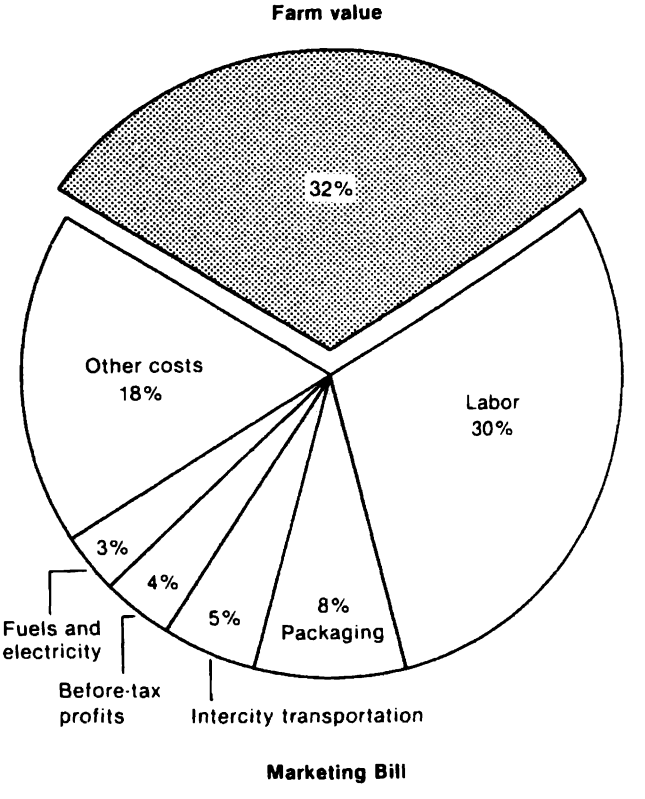
For dollars spent for food away from home, 20 cents covered the farm value. Processing costs accounted for 17 cents, transportation charges for 3 cents, and wholesaling for 6 cents. Thus, 54 cents, or more than half of the dollar, was paid for food service—the preparation and serving of food eaten out.

The food industry is an important part of the American economy. The $183 billion the industry received from consumers in 1980 was in turn spent to pay the salaries of millions of employees as well as paying for all of the other costs of doing business. Following is a detailed accounting of how the money was spent.

Labor the Largest Cost

Direct labor costs are the largest part of the marketing bill. They amounted to nearly $82 billion in 1980, and comprised 30 percent of food expenditures (fig. 12 and table 14). Labor costs are many, including wages, salaries, and employee health and welfare benefits, imputed earnings of proprietors and family workers, and tips for food service. Not

Figure 12
Components of 1980 Consumer Expenditures for Farm Foods



For domestically produced foods purchased for consumption at home and away from home. Preliminary 1980 data. Other costs include depreciation, rent, advertising and promotion, interest, property taxes and insurance, and many miscellaneous items.

Table 14—Components of consumer expenditures for domestically produced farm foods by input costs

Item	1972	1973	1974	1975	1976	1977	1978	1979	1980[1]
					Billion dollars				
Consumer expenditures	122.2	138.8	154.6	169.0	183.7	192.3	215.7	245.1	269.0
Farm value	39.8	51.7	56.4	55.6	58.3	58.0	69.7	80.6	86.0
Marketing bill	82.4	87.1	98.2	113.4	125.4	134.3	146.0	164.5	183.0
Labor[2]	36.6	39.7	44.3	48.7	53.7	58.4	66.2	73.7	81.7
Packaging materials	8.9	9.4	11.8	13.5	14.6	15.2	16.4	18.5	21.5
Transportation[3]	6.1	6.4	7.5	8.5	9.1	9.8	10.5	12.2	14.2
Fuels and electricity	2.5	2.8	3.7	4.6	5.0	5.6	6.2	7.2	8.5
Corporate profits before taxes	4.0	5.4	6.1	7.5	7.6	8.0	9.1	10.1	10.2
Other[4]	24.3	23.4	24.8	30.6	35.4	37.3	37.6	42.8	46.9

[1]Preliminary. [2]Includes employee wages or salaries, and their health and welfare benefits. Also includes imputed earnings of proprietors, partners, and family workers not receiving stated remuneration. [3]Does not include local hauling charges. [4]Includes depreciation, rent, advertising and promotion, interest, property taxes and insurance, accounting and professional services, and many miscellaneous items.

included are the costs of labor engaged in for-hire transporting of foods or in manufacturing and distributing supplies used by food industries.

Labor costs rose nearly 11 percent in 1980—about the same as for 1979 and equaling the average rise during 1974-79. As in 1979, direct labor costs accounted for 45 percent of last year's marketing bill (fig. 13).

Labor costs rose last year because workers earned more and food industry employment rose. Hourly earnings of food industry workers were up by over 9 percent, and their total hourly compensation—the sum of earnings, benefits, and employers' contributions to social insurance programs—was up about 10 percent.

Since 1967, employee benefits, such as paid vacations and holidays, health insurance, private pensions, and payroll taxes for Social Security and unemployment, have increased more rapidly than hourly earnings. Benefits represented 24 percent of total labor costs in 1980, compared with 17 percent in 1967.

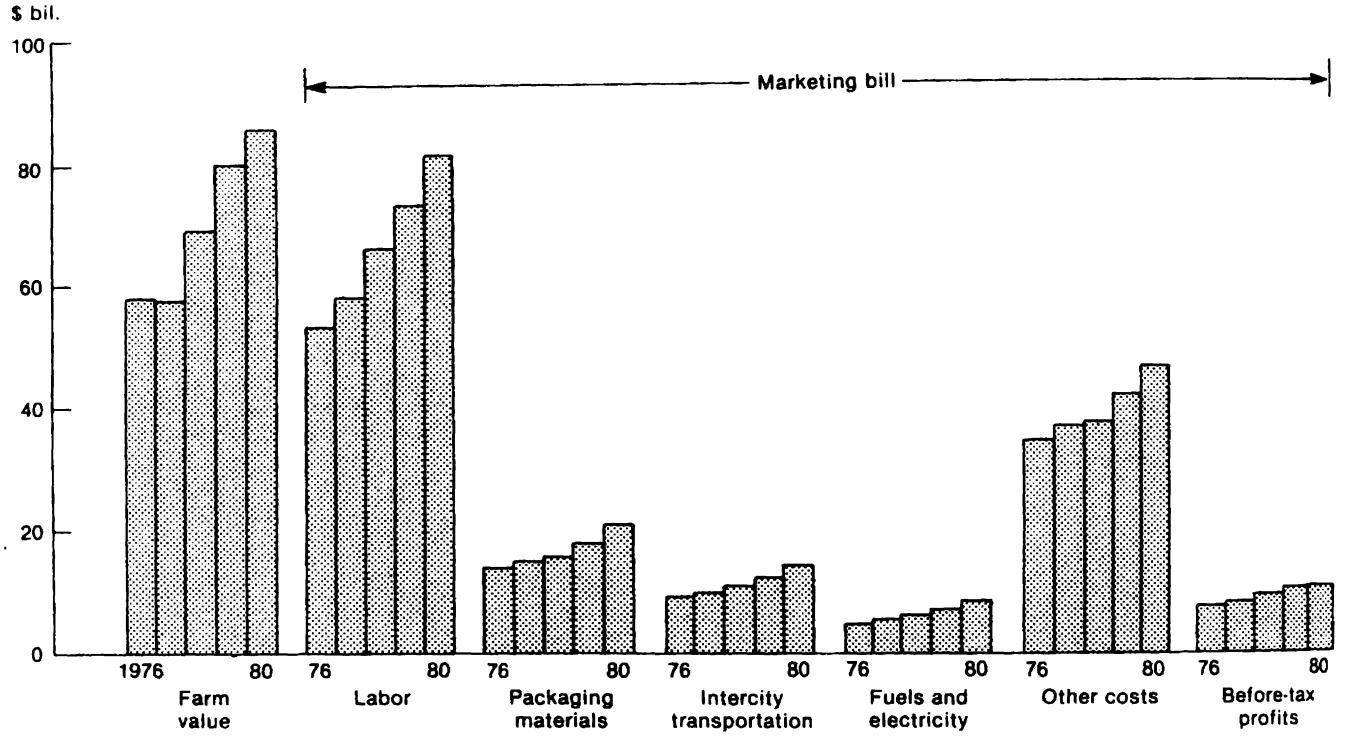
This relative gain in the importance of benefits was caused by higher costs of private pension and insurance plans and legally mandated hikes in payroll taxes for Social Security and unemployment. Between 1967 and 1980, the Social-Security tax rate rose from 4.4 percent to 6.13 percent of earnings, while maximum taxable annual earnings increased from $6,600 to $22,900.

Benefit costs also have risen faster than earnings because of sharp increases in health insurance premiums and successful bargaining by many workers for more liberal health and pension benefits.

About 7.2 million workers were employed in processing and marketing domestically produced farm foods in 1980. This number is less than total food-industry employment since it excludes workers involved in processing and marketing seafoods and imported foods. The largest number of workers (nearly 3.4 million) were employed in away-from-home eating places. Foodstores employed 1.9 million persons, while food processors employed 1.2 million, and food wholesalers, about 700,000 workers.

The number of persons employed in processing and marketing farm foods has increased about 4 percent annually over the past 5 years, largely because of rising employment in foodstores and eating places. The number of workers employed in food processing has changed little during the past 5 years.

Figure 13
What Consumer Expenditures for Farm Foods Paid for



Other costs include depreciation, rent, advertising and promotion, interest, property taxes and insurance, accounting and professional services, and many miscellaneous items. 1980 preliminary.

Hours worked have also increased since 1975, but only about half as fast as employment because of a shorter work week. Last year, more hours worked accounted for about 1 percentage point of the 11-percent increase in labor costs. Practically all of the increase in hours worked occurred in eating places and foodstores.

Packaging Costs Up Sharply

Food containers and packaging materials, the second largest food marketing cost, totaled about $21.5 billion in 1980, 8 percent of total food expenditures. Costs rose 16 percent over 1979, reflecting higher wholesale prices for nearly all types of packaging and containers.

Paperboard containers and boxes are about half of total packaging costs and yet are the least expensive of the packaging materials in food marketing. The food industry spent $10 billion on paper and paperboard products in 1980. Fiber (cardboard) boxes, the primary container used to ship nearly all processed foods, represented about one-third of this total. Sanitary food containers, including those for such products as fluid milk, margarine and butter, ice cream, and frozen food, cost almost as much. The third largest paperboard item was folding boxes used for such dry foods as cereals and perishable bakery products.

Metal containers are next in importance, making up about a fourth of total food packaging costs. Cans have probably become less important as more glass and plastic bottles and fiber containers are used. Steel cans, rather than aluminum, are pri-

marily used for canning foods because they are cheaper and hold up better to cooking temperatures and to rough handling in transport and storage.

Costs of plastic containers and wrapping materials, nearly 15 percent of food packaging costs, have increased faster than for most others in recent years, as use has increased. Plastic is an important source of trays for meat and produce, bottles for milk and fruit juices, jars and tubs for cottage cheese and other dairy products, and flexible wrapping materials, such as polyethylene film, for protective covering of baked goods, meats, and produce. Rising raw materials costs for manufacturing plastics, particularly petroleum, have sharply increased prices of plastic materials in recent years.

Glass containers, which account for a tenth of the total value of food packaging material, are used to package products that tend to react chemically with other containers. Food manufacturers prefer glass containers because their transparency contributes to impulse buying of some food products.

Transportation Costs Advanced

Intercity truck and rail transportation costs for farm foods advanced 16 percent to an estimated $14 billion in 1980. This was about 5 percent of retail expenditures. Sharply higher rates and a slight increase in food marketed boosted costs.

Railroad freight rates jumped by 18-1/2 percent in 1980, following a 14-percent rise in 1979. General rate increases plus fuel surcharge rate increases granted by the Interstate Commerce Commission drove rail rates up.

Fuel prices and other trucking costs also rose considerably. For instance, the total costs of hauling fresh fruits and vegetables increased 12 cents per vehicle-mile, to $1.03, between January and December, nearly matching the 15-cent increase of 1979. In proportion to total costs, fuel costs dropped a little to 26 percent in December 1980.

Rates charged by truckers for hauling fresh produce don't follow their costs in the short run. In January 1980, rates for hauling truckloads of fruits and vegetables from southern California to New York equaled costs. By July, rates were about 70 percent over costs, but by December they had fallen below costs. Truckers compete strongly for hauling fresh produce, an unregulated commodity. This holds rates down in certain seasons when the supply of trucks exceeds demand but allows rates to increase when crops are harvested and trucks are in short supply.

Growth in productivity in the transport industry has not kept pace with cost increases. Railroad productivity per employee hour, measured by car-miles, improved little from 1974 to 1977, increased 5-1/2 percent in 1978, but declined about 1 percent in 1979. Productivity per employee in trucking declined in 1974 and 1975, jumped 12 percent in 1976, but has since declined slightly.

Two major pieces of legislation affecting the transportation industry became law in 1980. Both the rail and motor carrier acts are expected to substantially reduce the level of economic regulation. Carriers will have greater flexibility in setting and changing rates and there will be more freedom of entry for new firms and old firms to new routes. The results of these bills will not be known for some time. However, making fresh fruits and vegetables exempt commodities for railroads in 1979 appears to have resulted in some gain in traffic by the railroads. If the rates of exempt truckers are an indication of what is to come, rail rates may be held at lower levels than under regulation but may fluctuate more.

Energy Costs Rose Fastest

Fuel and electricity costs in the food industry have risen at about 1-1/2 times the annual rate of other costs since the beginning of the sharp rise in energy costs in 1973. Rising about 17 percent a year since 1973, energy costs increased from 2 percent of retail food expenditures to just over 3 percent in 1980. Last year's energy bill came to $8.5 billion, compared with $7.2 billion in 1979, a jump of 18 percent.

This counts only the costs of electricity, natural gas, and other fuels used in food processing, wholesaling, and retailing, including food service of eating places. It excludes transportation fuel costs, except for those incurred for food wholesaling.

Food processing accounts for nearly 40 percent of fuel and electricity costs. These energy expenses have risen more rapidly than for other food marketing functions because processors use a lot of natural gas, which has risen faster in price than electricity.

Food retailing takes a fourth of food marketing fuel and electricity costs. These energy costs increased from about 0.9 percent of foodstore sales in 1975 to about 1.1 percent last year.

Away-from-home food service, which also requires a fourth of the energy bill, has the highest energy costs per dollar of sales, averaging 2.7 percent. The other 14 percent of the energy bill is used for food wholesaling, mainly in transporting food to retailers and eating places.

Other Costs Added Up

The major costs we've just discussed together accounted for over two-thirds of the 1980 food marketing bill. The rest of the bill included a variety of other costs (26 percent of the total bill) and profit (5-1/2 percent).

Many minor costs were incurred in performing food processing and marketing functions. Individually, most were small, but they added up to $47 billion. They were: depreciation, rent, advertising and promotion, repairs, bad debts, contributions, property taxes and insurance, interest, and many others. We relied on data from the Internal Revenue Service and Bureau of the Census to roughly estimate them. Here's a rundown for 1980:

- Plant and equipment depreciation (3 percent of the total marketing bill). The most capital- intensive businesses (food processing and wholesaling) have shown the largest increase in depreciation costs over time.
- Rent (about 2.5 percent of the bill). Nearly half the rent is paid by public eating places, which suggests that a number of eating places are leased rather than owned. Rent rose faster than depreciation in the past 5 years, probably because the sharp rise in equipment and land prices made renting easier or more economical than buying.
- Media television, radio, and newspaper advertising expenditures (roughly $4 billion and about 2 percent of the marketing bill). Food processors do half of all food advertising, food retailers, about 30 percent.
- Repairs, bad debts, and contributions (about 1.6 percent of the marketing bill). These costs have increased faster than most others, especially for wholesalers, apparently because of bad debts for accounts receivable that cannot be collected. Wholesalers are relatively more vulnerable, as they serve small and marginal retail stores and restaurants.
- Interest (around 1 percent of the bill). Interest payments climbed faster than most other costs in the past 5 years, owing to higher rates.

Sufficient data are not available for estimating individual costs of food service in schools and other institutions, property taxes and insurance, for-hire local truck transportation, professional services, and communications. Together, these costs account for about 15 percent of the marketing bill.

Corporate Profits About the Same

Before-tax profits earned by corporate firms from marketing domestically produced foods were about 5-1/2 percent of the 1980 marketing bill and slightly under 4 percent of food expenditures. We estimated 1980 profits at $10.2 billion, compared with $10.1 billion in 1979. Profits were estimated by multiplying sales with ratios of profits per dollar of sales for food retailers, wholesalers, manufacturers, and away-from-home eating places.

Food manufacturers' profits came to over $5 billion; food retailers' profits totaled $2.5 billion. This difference mainly reflected manufacturers' larger investments and slower inventory turnover rate.

Food Price Highlights

This final section reviews the dollar and cents changes in the prices of leading food items in 1980, and explains those changes in terms of the farm value and farm to retail price spread.

Small increases in beef and poultry prices coupled with lower pork and egg prices were a major cause of the relatively small rise in retail food prices in 1980. Prices of most foods increased moderately, due mainly to large supplies and relatively small increases in farm values.

Choice Beef

Retail Choice beef prices continued to go up in 1980 but the 5-percent rise was well below increases of over 20 percent in both 1978 and 1979 (table 15). Retail prices of Choice beef averaged $2.38 per pound in 1980, 5 percent higher than in 1979.

Beef prices rose less last year mainly because of 3-percent larger meat supplies. Beef supplies matched those of 1979, but much larger supplies of pork and poultry, particularly in the first half, held beef prices below the level suggested by the market supply of beef alone. Ironically, the drought served to increase beef supplies after midyear because ranchers were forced to market many animals they otherwise would have kept. This held down retail beef prices later in the year.

The increase in retail beef prices came about one-third from a higher farm value and two-thirds from rising nonfarm beef marketing costs. The farm value, representing the payment to the producer for the quantity of live animal equivalent to a pound of meat sold at retail, rose 4 cents to $1.45 in 1980.

The farm value averaged 61 percent of the retail price of beef in 1980, compared with 62 percent in 1979.

Technically speaking, the farm value is computed from the average of terminal- and direct-market prices for Choice steers, yield grade 3, in 8 markets. Computing the farm value takes two steps. Prices per pound of slaughter steers are multiplied by 2.4 pounds, the quantity of live animal required to sell 1 pound of Choice beef at retail. Then, we estimate the value of byproducts—principally the hide—obtained from the slaughtered animal. We subtract this byproduct value to obtain the farm value of the meat alone.

The farm to retail price spread for Choice beef increased about 7 cents in 1980, averaging 92.6 cents a pound. After averaging near 90 cents a pound during the first 9 months of 1980, the farm to retail spread rose to $1.00 for the last quarter.

The 8-percent rise in the farm to retail spread for 1980 was well below the 21-percent jump in 1979. The value of byproducts dropped sharply in the first quarter of 1980. This increased the farm value of the meat relative to a year earlier, squeezing the farm to retail spread. But the chief factor holding down the increase in the farm to retail spread was the competition from plentiful supplies of pork and poultry. Good buys on pork and poultry raised shoppers' resistance to relatively high beef prices, forcing retailers to special beef more.

Among the costs of the functions of processing and marketing beef, slaughtering costs amounted to 6.8 cents of the farm to retail price spread for beef in 1980 (table 16). This cost included the functions performed from the time the packer purchased the cattle until the carcasses were shipped from the packing plant. Many packers cut beef carcasses

Table 15—Choice beef and pork: Retail price, farm value, and farm to retail price spread by year and quarter

Item	Retail price[1]	Net carcass value[2]	Net farm value[3]	Farm to retail spread			Farm value share[6]
				Total	Carcass-retail[4]	Farm-carcass[5]	
	—Cents per retail pound—						Percent
Choice beef							
1977	148.4	93.8	85.5	62.9	54.6	8.3	58
1978	181.9	119.3	111.1	70.8	62.6	8.2	61
1979	226.3	150.5	140.8	85.5	75.8	9.7	62
1980	237.6	155.4	145.0	92.6	82.2	10.4	61
1979—							
I	215.4	146.1	137.3	78.1	69.3	8.8	64
II	235.5	157.7	148.3	87.2	77.8	9.4	63
III	226.6	146.6	136.4	90.1	79.9	10.2	59
IV	227.7	151.8	141.0	86.7	75.9	10.8	62
1980—							
I	235.2	153.6	143.2	92.0	81.6	10.4	61
II	231.4	152.3	142.3	89.1	79.1	10.0	62
III	241.6	162.9	152.9	88.7	78.7	10.0	63
IV	242.3	152.8	141.4	100.9	89.5	11.4	58
Pork							
1977	125.4	99.0	65.6	59.8	26.4	33.4	52
1978	143.6	107.7	76.6	67.0	35.9	31.1	53
1979	144.1	100.4	66.6	77.5	43.7	33.8	46
1980	139.5	98.0	63.2	76.3	41.5	34.8	45
1979—							
I	156.1	113.8	81.3	74.8	42.3	32.5	52
II	148.2	100.1	67.4	80.8	48.1	32.7	45
III	138.0	93.4	60.5	77.5	44.6	32.9	44
IV	134.3	94.1	57.3	77.0	40.2	36.8	43
1980—							
I	133.9	90.9	57.2	76.7	43.0	33.7	43
II	125.3	82.3	49.3	76.0	43.0	33.0	39
III	144.2	107.7	72.9	71.3	36.5	34.8	51
IV	154.6	111.2	73.3	81.3	43.4	37.9	47

[1]Composite of all cuts adjusted for volume sold at special prices. [2]For quantity equivalent to 1 retail pound: beef, 1.48 pounds of carcass beef; pork, 1.06 pounds of wholesale cuts. [3]For quantity of live animal equivalent to 1 retail pound: beef, 2.4 pounds, and pork, 1.7 pounds minus byproduct allowance. [4]Includes retailing, meat fabricating, wholesaling, and incity transportation. [5]Charges for livestock processing and transporting of meat to city where consumed. [6]Percentage of retail price.

into primals, subprimals, and retail cuts, but the estimate of slaughtering costs assumes that the beef is sold in carcass form. The slaughtering cost is obtained by deducting the farm value and transportation costs (from the packer to the city where consumed) from an average wholesale value of Choice steer carcasses (600 to 700 pounds, yield grade 3).

The largest components of slaughtering costs per pound of beef sold at retail in 1980 were direct labor in the plant, transportation of animals to the plant from the point of purchase, and administrative and selling expenses. The labor component included only direct-line operation, sanitation labor, and some other labor. Repair labor is included in the repair component and administrative and selling labor costs are included in other costs. Profits before taxes were 0.5-cent per pound of Choice beef

Table 16—Choice beef and pork: Farm value, marketing costs by function, and retail price per pound, 1980

Item	Beef	Pork
	Cents	
Farm value	145.0	63.2
Slaughtering		
Direct labor	1.7	12.2
Packaging	.3	2.1
Transportation	.8	1.8
Business taxes	.1	.2
Depreciation	.3	.7
Rent	.2	.1
Repairs	.2	.9
Advertising	.1	.6
Interest	.2	.4
Energy[1]	.4	1.5
Other	[2]2.0	[3]7.9
Profit before taxes	.5	3.1
Total slaughtering	6.8	31.5
Wholesaling		
Intercity transportation	3.7	3.4
Intracity transportation	1.5	1.5
Total wholesaling	18.5	12.3
Retailing	67.3	32.5
Retail price	237.6	139.5

[1]Includes water. [2]Includes 0.6 cent for administrative expenses, such as wages and salaries, insurance, payroll taxes, office supplies, data processing, and travel; 0.1 cent for inspection and grading; 0.4 cent for shipping and selling; 0.2 cent for procurement and miscellaneous items. [3]Includes 1.7 cents for administrative expenses, such as wages and salaries, insurance, payroll taxes, office supplies, data processing and travel; 1.3 cents for shipping and selling; 1.5 cents for procurement and miscellaneous items.

sold at retail in 1980. This estimate is based mainly on data reported in the American Meat Institute's *Annual Financial Review* and annual reports of packing firms.

Transportation of meat from the packer to the retail marketing area amounted to 3.7 cents per retail pound in 1980. Other wholesale costs were 14.8 cents. Retailing costs in 1980 were an estimated 67.2 cents, or 28 percent of the retail price of beef per pound. This estimate assumes that the retail store received carcass beef, and, therefore, that all costs of cutting the carcass are part of the retail margin. However, retailers are increasingly buying beef from packers partially cut up or are cutting carcass beef at their central warehouses. These shifts would raise the cost of the slaughtering or wholesaling function and lower the retailing cost.

Pork

With supplies up about 7-1/2 percent, pork prices dropped 4-1/2 cents per pound in 1980, averaging about $1.40 per pound. Prices dipped to $1.25 per pound in the second quarter, as supplies bulged. Following midyear, though, pork production declined, pushing the price up to $1.55 by the fourth quarter.

The farm value dropped about 3-1/2 cents to 63 cents, or 45 percent of the retail price.

Farm value is computed from the average price of barrows and gilts at seven midwestern markets. This price is then multiplied by 1.7 pounds, the quantity of live animal needed to sell 1 pound of pork at retail. A value for lard and other byproducts is subtracted to obtain the net farm value.

The farm to retail price spread for pork declined slightly in 1980, for the first time in several years. The pressure of large supplies on retail prices in the second quarter and a sharp increase in farm prices in the third quarter squeezed the farm to retail spread. As farm prices leveled off in the fourth quarter of 1980, the farm to retail spread increased.

Among the cost components of the farm to retail spread for pork, slaughtering and processing costs for pork amounted to 31.5 cents in 1980 (table 16).

Included are costs to cut the carcass into primals and process hams, bacon, and other products. The estimate of this cost is obtained by deducting the farm value and intercity transportation costs from a composite wholesale price of pork.

Labor was the largest component for slaughtering and processing pork in 1980, amounting to 12.2 cents per retail pound, or two-fifths of total slaughtering costs. As for beef, this cost includes only labor for direct line operations and related functions. Costs of transporting live animals to the plant and packaging were each about 2 cents of slaughtering costs. Profits before taxes were an estimated 3.1 cents.

Transportation costs for pork between the packer and retail marketing area were 3.4 cents per pound in 1980. Other wholesaling costs were 8.9 cents. These estimates were based on data reported in the *1977 Census of Wholesale Trade*, which indicated that meat wholesaling costs represented about 7.9 percent of gross sales. Retailing costs for pork were estimated at 32.5 cents per pound in 1980, about 23 percent of the retail price.

Broilers

Broiler prices went up despite record output. Apparently, relatively high red meat prices made chicken a good meat buy, increasing demand.

Shoppers paid an average of 72 cents a pound for broilers during 1980, 4 cents more than in 1979 (table 17). Prices were down in the first half of the year, but jumped during the summer as sizzling weather cut the tonnage of broilers marketed.

Table 17—Eggs and broilers: Farm value, marketing cost by function, and retail price

Item	Farm value	Marketing functions					Retail price
		Assembly and procurement	Processing	Intercity transportation	Wholesaling	Retailing	
				Cents			
Eggs, Grade A large (dozen)							
1975	50.8	1.2	9.3	1.5	3.7	10.5	77.0
1976	58.0	.9	9.6	1.4	3.5	11.5	84.9
1977	53.8	.9	10.3	1.5	3.5	12.3	82.3
1978	49.7	.9	10.5	1.6	3.4	12.4	78.5
1979	53.7	1.1	11.7	1.9	3.8	13.7	85.9
1980[1]	51.0	1.2	12.4	1.9	4.1	13.8	84.4
Broilers, ready-to-cook, whole (pound)							
1975	37.0	1.4	7.5	1.4	3.9	12.0	63.2
1976	32.6	1.1	7.8	1.3	3.7	13.2	59.7
1977	33.0	1.1	8.0	1.4	3.7	12.9	60.1
1978	37.2	1.0	8.7	1.4	3.8	14.4	66.5
1979	35.7	1.3	9.6	1.6	4.2	15.6	68.0
1980[1]	38.8	1.4	9.8	1.7	4.3	16.0	72.0

[1]Preliminary.

Farm value for the first 6 months averaged less than the 1979 yearly average, but increased substantially later on. For the year, farm value averaged 39 cents a pound, 3 cents higher. The farm share of the retail dollar spent for broilers increased from 52 cents for 1979 to 54 cents last year.

A 1-cent increase in the farm to retail price spread for broilers (to 33 cents per pound) was spread over slightly higher costs of assembly, processing, hauling, and retailing. Labor, packaging, and energy costs all increased, with labor costs increasing most. An increase in volume of broilers processed per plant helped to hold down the rising cost per

Table 18—Eggs and broilers: Cost components of marketing functions, 1980

Item	Farm value[1]	Marketing functions: Assembly	Processing	Hauling and distribution[2]	Retailing	Retail price
			Cents			
Eggs (per dozen)						
Labor	—	0.60	3.41	2.75	—	—
Packaging	—	—	5.37	.15	—	—
Transportation[3]	—	—	—	—	—	—
Business taxes	—	—	.42	.22	—	—
Depreciation	—	—	.53	.30	—	—
Rent	—	—	([4])	.12	—	—
Repairs	—	—	.27	.20	—	—
Advertising	—	—	.35	—	—	—
Interest	—	—	.22	.14	—	—
Energy	—	.60	.77	1.50	—	—
Other	—	—	.30	.28	—	—
Profit	—	—	.76	.34	—	—
Unallocated	—	0	0	0	—	—
Total	51.0	1.20	12.40	6.00	13.8	84.4
Broilers (per pound)						
Labor	—	.80	4.30	2.70	—	—
Packaging	—	—	1.80	.19	—	—
Transportation[6]	—	—	—	—	—	—
Business taxes	—	—	.23	.23	—	—
Depreciation	—	—	.45	.30	—	—
Rent	—	—	([4])	.12	—	—
Repairs	—	—	.35	.20	—	—
Advertising	—	—	.20	—	—	—
Interest	—	—	.15	.14	—	—
Energy	—	.47	.78	1.35	—	—
Other	—	—	.81	.35	—	—
Profit	—	—	.76	.41	—	—
Unallocated	—	[5].15	0	0	—	—
Total	38.8	1.42	9.83	5.99	16.0	72.0

— = Not estimated.

[1]Farm value for eggs includes allowance for 3-percent loss during marketing. Prices of live broilers converted to retail equivalent by multiplying by 1.41 pounds to allow for losses in processing and marketing. [2]Includes long-distance transportation plus wholesaling and local delivery. [3]Includes 1.1 cents for assembly, 1.8 cents for long-distance transportation, and 1.9 cents for local delivery. [4]Included in depreciation. [5]Includes overhead and profit. [6]Includes 1.3 cents for assembly, 1.6 cents for long-distance transportation, and 2.0 cents for local delivery.

unit, even though prices of all inputs continued to increase at a rapid pace.

In 1980, assembly costs accounted for 2 percent of the retail price for broilers, processing for 14 percent, hauling and distributing for 8 percent, and retailing for 22 percent (table 18).

Eggs

Grade A large eggs averaged 84 cents per dozen during 1980, 1-1/2 cents lower than in 1979. The farm value of 51 cents per dozen was down about 2-1/2 cents, lowering the farm value share of the retail price from 62 percent to 60 percent.

The 1-cent increase in the farm to retail price spread (to 33 cents per dozen) was distributed among each function as all experienced rising costs. There was some indication that an increase in egg marketings helped egg packing plants offset much of the increase in input prices and hold the line on unit cost increases.

Assembly costs accounted for nearly 1-1/2 percent of the retail price for eggs in 1980, packing costs for 15 percent, hauling and distribution costs 7 percent, and retailing about 16 percent (table 18).

Fluid Milk

The retail price for a half-gallon of whole milk averaged about $1.05 in 1980, 9 cents more than in 1979. The 1980 price increase reflected both higher prices paid to farmers for milk and higher processing and marketing costs. During the seventies, retail milk prices increased more slowly than did the cost of all food purchased in stores. But in 1979 and again in 1980, milk prices increased at a slightly greater rate (table 19).

Table 19—Fluid milk: Farm value, marketing costs by function, and retail price per half-gallon

Year	Farm value	Marketing functions: Assembly and procurement	Processing	Wholesaling	Retailing	Retail price
			Cents			
1974	40.9	2.7	10.7	13.6	8.9	76.8
1975	41.2	2.8	11.4	13.6	7.9	76.9
1976	46.2	2.8	10.6	12.1	9.3	81.0
1977	45.1	2.9	13.2	12.6	8.3	82.1
1978	47.0	3.1	14.6	14.3	7.1	86.1
1979	52.5	3.4	15.1	14.2	10.8	96.0
1980	58.1	3.7	16.2	14.2	12.7	104.9
Change, 1974-80	17.2	1.0	5.5	.6	3.8	28.1

The 1980 farm value of a half-gallon of whole milk was 58 cents, up about 6 cents from 1979. Farm value accounted for 55 percent of the retail price, about 1 percent more than in 1979. The 1980 farm-value increase was moderated by a 3-1/2-percent increase in milk production and weak demand for dairy products. These factors tended to keep the price of manufacturing-grade milk below the support price during much of the year. The price of manufacturing-grade milk serves as a base for determining the price of milk for drinking.

The 1980 farm value of fluid milk was based on an estimated price paid to farmers for milk sold fresh to consumers of $14.31 per 100 pounds of milk of 3.5-percent butterfat content. This price was reduced by 32 cents to adjust to the average 3.3-percent butterfat content of whole milk sold in retail stores. The cost of transporting the milk from farm to plant was subtracted in computing the farm value of the milk.

The farm to retail price spread was 47 cents in 1980, 3 cents higher than in 1979. The 7-1/2-percent increase in the spread in 1980 was considerably below the 13-1/2-percent jump in the marketing cost index. Of the total farm to retail spread, the instore retailing margin was estimated to be 12.7 cents, up 1.9 cents from 1979.

The processing and wholesaling margin totaled 30.4 cents, 1.1 cents higher than in 1979. These two functions are usually performed by the same processor-distributor. Data for the processing and wholesaling functions were obtained from 30 processor-distributors representative of moderate-sized plants. The data do not include plants operated by retail food chains (table 20).

Table 20—Grade A whole milk sold through retail stores: Cost components of marketing functions per half-gallon, 1980

Cost	Farm value[1]	Marketing functions				Retail price[4]
		Assembly[2]	Processing[3]	Wholesaling[3]	Retailing	
			Cents			
Labor	–	0.51	5.34	7.61	–	–
Packaging	–	–	5.77	–	–	–
Transportation	–	2.65	–	2.64	–	–
Business taxes	–	.03	.20	.20	–	–
Depreciation	–	.08	.61	.50	–	–
Rent	–	.02	.25	.21	–	–
Repairs	–	.05	.50	.41	–	–
Advertising	–	.01	([5])	.41	–	–
Interest	–	.06	.10	.10	–	–
Energy	–	.07	.93	.23	–	–
Other	–	.24	2.00	1.25	–	–
Profit before taxes	–	–	.49	.68	–	–
Unallocated	–	0	0	0	12.67	–
Total	58.10	3.72	16.19	14.24	12.67	104.92

– = Not estimated.

[1]Prices received by farmers are normally quoted for 3.5-percent butterfat at plant of first receipt. This price has been adjusted for transportation from farm to first plant to get the farm price, then adjusted to get the value of milk containing 3.3-percent butterfat. There are approximately 23.2 half-gallons of milk per 100 pounds. [2]Includes laboratory and on-farm field service to assure quality, pickup at farms, transportation, receiving and reloading as necessary, and final delivery to processor. [3]Data for the processing and wholesaling functions represent costs for 30 fluid milk processor-distributors which are representative of moderate-size, single-plant operations throughout the country. Very small plants and plants operated by retail food chains are not included. Data are for 9 months. [4]Average of BLS monthly prices. [5]Dairy products, especially milk, are also advertised through cooperative ventures. This cost is not included.

The processing margin was 16.2 cents in 1980, 7 percent higher than in 1979. This function includes milk receiving, storing, pasteurizing, homogenizing, packaging, and loading for delivery. Labor and packaging each accounted for about one-third of the processing margin.

The wholesaling margin was 14.2 cents, the same as in 1979. This function includes all selling and delivery expenses involved in getting the milk to retail stores. Labor costs accounted for about half and transportation costs about one-fifth of the wholesaling function for fluid milk. These data may overstate the wholesaling margin and thereby squeeze the retail margin. The data exclude supermarket chains that own their own milk processing plants or handle their own distribution of milk to stores. Either way, they may have a labor cost advantage over other processors.

Procurement costs accounted for 3.7 cents of the total margin in 1980, up 9 percent from 1979. This function includes milk quality control, pickup at farm, and transporting the milk to processors. Transportation charges accounted for 71 percent of procurement.

Processor-distributors have held down unit product costs over the years despite rising input prices by making adjustments in processing and distribution methods which have increased productivity. However, container costs have risen with general price increases since the milk carton is a fixed cost per unit of output. Probably the largest cost-reducing adjustment has been the gradual shift from retail delivery to the less labor-intensive wholesale delivery. In addition, the average volume of milk processed per plant has increased by one-fourth since 1975, contributing to cost savings because of economies of scale.

Also, processor-distributors have made cost adjustments in their procurement and assembly practices. Many now obtain their milk supply from a central source, such as a milk-producers' cooperative, thereby reducing costs for labor, buildings and equipment, record-keeping, and supplies.

Butter

The retail price of a 1-pound carton (quarter cuts) of butter averaged about $1.88 in 1980, a little over 19 cents more than in 1979 (table 21). The retail price moved upward throughout the year and in December was 17 cents above January. During the early seventies the price of butter lagged behind the BLS food-price index for all food purchased for home consumption, but since 1975 the rate increased and in 1980 the price went up over one-third more than did the all-food index. The retail price difference between butter and its major substitute, margarine, widened in 1980 as margarine prices averaged about 73 cents per pound, $1.16 per pound less than butter. The price difference between these two products has increased at an annual rate of 13 cents per pound since 1974, accounting in large part for the decline in butter consumption.

The 1980 farm value of butter rose by 14 cents to about $1.25 per pound, about the same rise as in 1979. The farm value was about 67 percent of the retail price in 1980, up from 66 percent in 1979. Large milk supplies and a slack demand for dairy products in 1980 slowed competition among manufacturers for milk, causing milk prices to lag behind mandated higher support prices during much of the year. This condition moderated the full effect on farm value of a 15-percent higher support price for milk. The 1980 farm value for butter is based on a price of $11.83 per 100 pounds of milk containing 3.5-percent butterfat. Farm value is calculated on the basis of relative dollar returns at wholesale for bulk butter and nonfat dry milk

Table 21—Butter: Farm value, marketing costs by function, and retail price per pound

Year	Farm value[1]	Marketing functions: Assembly and procurement	Processing	Intercity transportation	Wholesaling	Retailing	Retail price
				Cents			
1976	82.5	3.2	12.4	2.5	6.3	21.2	128.1
1977	86.3	3.2	15.0	2.6	6.3	21.8	135.2
1978	97.3	3.4	15.2	2.7	6.3	24.1	149.0
1979	111.6	3.7	14.6	2.9	6.7	29.1	168.6
1980	125.5	4.2	18.6	3.5	6.8	29.2	187.8
Change, 1976-80	43.0	1.0	6.2	1.0	.5	8.0	59.7

[1]Market value of 0.81103 pound butterfat and 0.19 pound of skim milk at the plant, less the producer hauling charge.

Table 22—Butter: Cost components of marketing functions per pound, 1980[1]

Cost	Farm value[2]	Marketing functions: Procurement: Contract hauling[3]	Procurement: Other[4]	Manufacturing	Wholesaling: Printing and packaging[5]	Wholesaling: Hauling and warehousing	Retailing	Retail price
					Cents			
Labor	—	—	0.21	2.59	1.29	—	—	—
Packaging	—	—	—	2.41	2.21	—	—	—
Transportation	—	3.77	—	—	—	3.49	—	—
Business taxes	—	—	.01	.12	.06	—	—	—
Depreciation	—	—	.02	.41	.06	—	—	—
Rent	—	—	.02	.14	.03	—	—	—
Repairs	—	—	.02	[6].23	.11	—	—	—
Advertising	—	—	—	[7].04	.02	—	—	—
Interest	—	—	—	.24	.12	—	—	—
Energy	—	—	.06	1.09	.10	—	—	—
Other	—	—	.08	[8]1.03	.36	—	—	—
Profit before taxes	—	—	—	5.58	.32	—	—	—
Unallocated	—	0	0	0	0	7.30	28.78	—
Total	125.48	3.77	.42	13.88	4.68	10.79	28.78	187.80

— = Not estimated.

[1]Carton of quarter-pound wraps. [2]Market value of 0.811 pound of butterfat and 0.19 pound of skim milk at the plant less the producer hauling charge. [3]Of the contract hauling charge, 3.33 cents was paid by producers and 0.44 cent by plants. [4]Costs to plants for hauling milk from farms in plant-owned trucks, laboratory and field service to producers, and operating receiving and reload stations. [5]Costs incurred by specialized butter wholesalers in printing and packaging 50 percent of the butter, assuming the other 50 percent was printed by manufacturers. [6]Excludes plant labor used to repair buildings and equipment; this is included in labor. [7]Cost of advertising butter through cooperative ventures is not included. [8]Includes cost of salt and color (used in butter), general supplies, office supplies, insurance, and other expenses. Cost of seasonal storage is excluded.

powder produced from 100 pounds of 3.5-percent butterfat milk. The dollar returns are adjusted by subtracting processing costs and producer cost of farm-to-plant hauling of milk to obtain the value at the farm.

The farm to retail margin for butter was 62 cents in 1980, 5 cents more than in 1979. The 9-percent increase in the spread occurred largely in the processing margin, which widened about 27 percent.

The processing margin (including printing and packaging by wholesalers) totaled 18.6 cents in 1980, 4 cents more than in 1979 (table 22). The residual profit share of this margin accounted for 5.9 cents, or about one-third of the total processing margin. The profit estimate is 3.2 cents more than in 1979. Excluding profit, the remaining margin was 12.7 cents, only 0.8-cent higher than in 1979. This small increase in the margin in face of rising prices paid for inputs was made possible by a 16-percent rise in butter production which allowed firms to make more efficient use of facilities and other inputs, thus helping to hold down unit costs. Data for the processing function represent 22 manufacturing plants and 5 specialized butter wholesalers. The processor margin includes manufacturers' costs of receiving, storing, pasteurizing, and separating whole milk into cream and skim milk, and churning, printing, packaging, and selling butter. Part of the processing cost is incurred by specialized wholesalers that buy bulk butter (usually 68-pound containers) which they recondition, print, and package for sale.

The continuing trends to new and larger manufacturing plants which allow for greater economies of scale, adoption of new technology in processing, and shift to printing and packaging greater shares of the butter at place of manufacture also helped to comhat the effects of rising input prices in 1980.

Fruits and Vegetables

Retail prices of fruits and vegetables in 1980 averaged about 7 percent higher than in 1979. This was the smallest annual rise since 1976. Price increases were relatively small last year because of abundant supplies that held down the farm price of fruits and vegetables. Last year's apple and orange crops were record large, providing large supplies for much of the year. Production of many vegetables, especially potatoes, lettuce, and tomatoes, also was very high. Large stocks of processed fruits and vegetables and competiton from large fresh supplies kept downward pressure on prices of processed products. Many promotional discounts on processed fruits and vegetables were offered as high interest rates made inventory holdings more costly.

Retail prices of fresh fruits increased 5 percent last year. The farm value went up only 2 percent while the farm to retail spread went up 6 percent. The ratio of farm value to the retail price of fresh fruit averaged about 28 percent in 1980.

For fresh vegetables, retail prices averaged 9 percent higher in 1980 than in 1979, mainly due to higher potato prices. Most of the increase in retail prices reflected a 10-percent increase in the marketing spread. The farm value of fresh vegetables rose about 5-1/2 percent in 1980.

Retail prices of processed fruits and vegetables averaged 7 percent higher in 1980. Higher prices mirrored 3-percent higher farm values and 8-percent higher marketing charges. Last year, the marketing spread accounted for slightly over four-fifths of the retail price of processed fruits and

Table 23—Selected fruits and vegetables: Farm value, marketing costs by function, and retail price

Food item and year	Farm value[1]	Marketing functions: Assembly and procurement	Packing and processing	Intercity transportation	Wholesaling	Retailing[2]	Retail price[3]
	Cents						
Potatoes, fall (10-pound bag)							
1976	51.5	([4])	20.0	22.7	13.4	59.7	167.3
1977	44.3	([4])	16.9	24.1	13.2	66.6	165.1
1978	41.4	([4])	20.0	22.8	16.3	72.6	[5]173.1
1979	40.3	([4])	19.7	26.0	10.5	70.8	[5]167.3
1980	57.8	([4])	15.5	30.4	10.4	78.3	[5]192.4
Oranges, Calif. (pound)							
1976	6.0	0.4	3.2	2.7	2.0	10.6	24.9
1977	7.1	.4	4.0	2.8	2.3	10.8	27.4
1978	9.8	.4	5.2	3.3	2.6	15.5	36.8
1979	13.2	.4	4.1	4.4	3.6	18.1	43.8
1980	7.3	.4	5.8	5.2	2.4	15.5	36.6
Iceberg lettuce, Calif. (pound)							
1976	[6]8.6	.3	5.7	7.1	3.3	15.8	40.8
1977	[6]4.1	.3	5.8	7.5	3.0	16.1	36.8
1978	[6]12.0	.3	6.2	7.1	2.7	17.3	45.6
1979	[6]5.9	.3	7.9	8.1	3.0	22.4	47.6
1980	[6]4.4	.3	8.4	8.2	3.0	21.5	45.8
Orange juice, frozen (12-ounce can)							
1976	22.2	1.1	9.4	2.7	6.4	11.3	[7]53.1
1977	23.0	1.5	20.1	3.0	5.4	10.6	[7]63.6
1978	40.3	1.3	12.9	3.6	9.2	16.4	[7]83.7
1979	41.2	1.4	14.3	3.8	10.4	18.3	[7]89.4
1980	35.8	1.4	13.9	4.4	11.5	20.4	[7]87.4
Tomatoes, Calif. (pound)							
1976	4.0	.7	17.8	3.2	2.1	7.3	35.1
1977	3.9	.6	21.1	3.4	1.5	6.8	37.3
1978	4.8	.7	17.4	3.6	2.6	8.5	37.6
1979	5.1	.8	19.6	4.3	2.7	9.4	41.9
1980	4.5	.9	22.3	4.8	1.3	8.4	42.2

[1]The farm value is the payment to farmers for the quantity of farm products equivalent to the unit sold at retail minus imputed value of byproduct. Because of losses from processing, waste, and spoilage, the farm value represents larger quantities than the retail unit. [2]Instore cost only, headquarters and warehousing expenses are included in wholesaling. [3]Derived from BLS monthly U.S. average retail prices and price indexes. Prices of fresh produce items were weighted by the quantities marketed. [4]Included in farm value. [5]Represents prices for only Russet and Northeast white potatoes in 6 retail markets, and thus not strictly comparable with earlier data for all fall potatoes. [6]Farm value of lettuce is the value in the field. Harvesting and packing, a contract operation, appear as packing cost. [7]Estimated by Florida Department of Citrus.

vegetables and farm value for less than one-fifth, roughly the same proportions as in other recent years.

Estimates of the charges for processing and marketing functions have been made for selected fruits and vegetables (fresh potatoes, lettuce, oranges, frozen orange juice concentrate, and canned tomatoes) to explain increases in price spreads, and therefore, retail prices over the years (table 23).

The instore retail margin is largest for fresh potatoes, lettuce, and oranges, averaging about half of the farm to retail price spread or between 40 and 45 percent of the retail selling price. Retail margins for fresh produce are large, partly because store labor costs are comparatively high and sales per foot of selling space are below the average for the store. The retail margin, a relatively constant percent of the retail price, accounted for the largest portion of the increase in retail prices for these three items in recent years. Transportation charges from producing areas to retail markets are the second largest cost of marketing potatoes, lettuce, and oranges, accounting for 15 to 20 percent of the retail price.

Processing costs comprise the largest share of the farm to retail price spread and retail price of canned tomatoes. Processing costs for canned tomatoes were about three-fifths of the marketing spread in 1980. The principle processing cost is for the metal can, label, and case used to package and ship the product. Packaging costs exceed the farm value of tomatoes for a 1-pound can. Rising processing costs accounted for most of the increase in retail price of canned tomatoes from 35 cents in 1976 to 42 cents in 1980.

Retail prices of a 12-ounce can of frozen orange juice averaged 87 cents in 1980. Slightly less than a fourth of the price consisted of the retail margin. Processing costs represented the second largest cost, amounting to about 16 percent of the retail price. Packaging represents the largest cost of processing. Automated operations have minimized the labor cost of concentrating and packaging orange juice concentrate. Transportation and wholesaling costs are relatively high at 18 percent of the retail price, in large part because the product must be kept frozen at all times to maintain quality.

Bread

Retail prices of white bread rose nearly 9 percent last year, about the same rate of increase as for all foods. The retail price of 1 pound of white bread averaged 51 cents in 1980, 4 cents higher than in 1979. Price increases reflected higher costs of ingredients used in making bread, and higher processing and distribution charges (table 24).

A higher farm value for wheat and other farm-produced ingredients accounted for 1.1 cent of the rise in bread prices last year. The farm value, at 7.5 cents, represented 15 percent of the retail price. The farm value of only the wheat equivalent to the flour used in a loaf amounted to 4.6 cents in 1980, or 9 percent of the retail price. Other farm ingredients (nonfat dry milk, sugar, and shortening) comprise the remaining 2.9 cents of the farm value.

The farm to retail price spread of 43.4 cents per pound loaf in 1980 represented 85 percent of the retail price. This amount included all charges for milling wheat into flour and for baking, wholesaling, and retailing bread. The spread increased 3 cents per loaf last year, three-fourths of the retail price increase.

Table 24—White bread: Retail price, farm value of ingredients, farm to retail price spread, and farm value share of retail price per 1-pound loaf

Year	Retail price	Farm value		Farm to retail price spread	Farm value share	
		Wheat[1]	All ingredients		Wheat	All ingredients
		—Cents—			—Percent—	
1970	27.7	2.6	3.4	24.3	9	12
1971	28.5	2.6	3.5	25.0	9	12
1972	28.2	2.9	3.8	24.4	10	13
1973	31.5	4.1	5.5	26.0	13	17
1974	39.3	5.4	7.9	31.4	14	20
1975	41.0	4.5	6.8	34.2	11	17
1976	40.2	3.8	5.5	34.7	9	14
1977	40.5	2.7	4.5	36.0	7	11
1978	41.7	3.3	5.4	36.3	8	13
1979	46.7	4.2	6.4	40.3	9	14
1980	50.9	4.6	7.5	43.4	9	15

[1]Payment to farmers for the quantity of wheat (0.867 pound) required to produce the flour for a 1-pound loaf of white bread. Based on average farm prices for hard winter and spring wheat in 10 leading States for production of these wheats.

The main component of the farm to retail spread is the baker-wholesaler spread. It represents the charges by wholesale bakeries that bake and distribute bread to retail stores. Last year, this spread amounted to about 33 cents. Costs of the baking function accounted for slightly less than half of the baker-wholesaler spread. Wholesaling costs accounted for the other half. Wholesaling costs mainly consist of labor costs for delivery of bread to stores.

The retailing price spread was estimated at 6.7 cents per loaf in 1980. However, this spread may be understated because of difficulties in adjusting wholesale bread prices used in computing the retail spread. Adjustments must be made for discounts and allowances from wholesale list prices and price differences between national and store brands of bread.

Other components of the farm to retail price spread consisted of assembling wheat from farms, milling and transporting flour to bakeries, processing farm ingredients other than wheat, and the cost to bakers of nonfarm ingredients. These amounted to an estimated 4.1 cents per pound of bread last year.

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