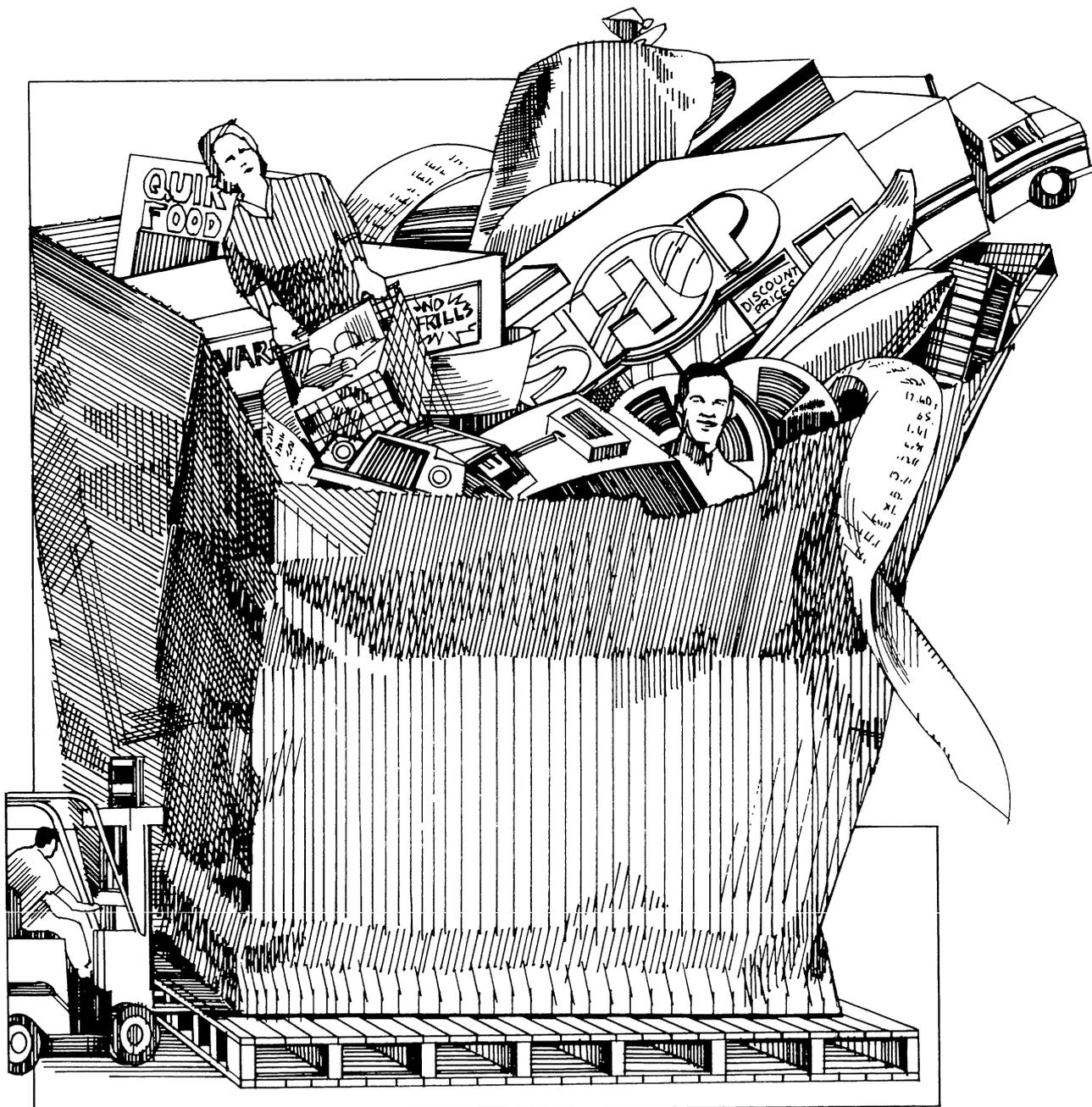


National Food Review

United States
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Economics and
Statistics
Service

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NFR-14



In this Issue:

Productivity Growth Slows In U.S. Food Industry

Productivity Growth Slows in the U.S. Food Industry

Because labor costs currently account for about 22 cents of each food dollar, reduced productivity growth in U.S. food manufacturing is viewed as a major contributor to rising food prices.

From 1929 to 1972, labor productivity in the U.S. food industry showed remarkable gains. However, by 1977 these gains had slowed considerably, and by the end of the decade productivity growth in the food industry had registered a decline.

This issue of the *National Food Review* examines some of the reasons for this turnaround and prospects for productivity in the future.

Other articles focus on the proposed changes in the Food Stamp Program and some surprising ESS findings on the cost of food packaging.

The articles on labor productivity begin on page 13.

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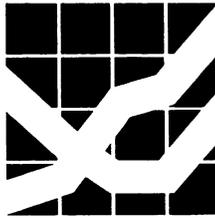
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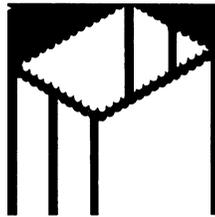
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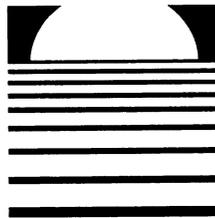
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Food Spending and Income

Anthony E. Gallo
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Food expenditures in 1980 were over \$302 billion, about 10.5 percent above those of 1979. However, only 2.5 percent of this increase was due to higher volume, the remainder reflected higher food prices.

Food-at-home expenditures, \$222.3 billion in 1980, were more than 11 percent higher than in 1979. Higher grocery store food prices caused most of this increase, but apparent volume, unadjusted for changes in the product mix, was about 4 percent above 1979. Both actual expenditures and apparent volume rose at a sharp pace throughout 1979 and through the first half of 1980. But, during the last two quarters of 1980, apparent volume dropped from the second quarter 1980 high. Actual expenditures during the second half continued advancing however, as price increases more than offset drops in volume.

By contrast, 1980 expenditures for food away from home, when adjusted for price increases, were fractionally lower than in 1979. Retail sales in the Nation's restaurants had been sluggish throughout 1979 and 1980. Fourth quarter 1980 volume was 4 percent below fourth quarter 1979. In current dollars, away-from-home eating averaged \$80 billion (the average for the 4 quarters) for the year, about \$3 billion above 1979.

Because consumers increased their expenditures in the supermarket while holding back on away-from-home expenditures, the portion of the food dollar allocated to restaurant eating declined.

A slowing economy likely contributed to this shift in food buying. Disposable personal income (DPI) in 1980 increased to over \$1.8 trillion, about 11 percent above the previous year. When adjusted for price increases there was no change, and on a per capita basis real DPI declined fractionally.

Nevertheless, the portion of DPI spent on food at home remained at 12.2 percent, the same as in 1979. Food away from home, at about 4.5 percent of DPI, also remained unchanged. All food expenditures as a percent of income averaged 16.6 percent for the year.

Food Expenditures in Relation to Disposable Income Revised December 1980

Year	Personal Consumption Expenditures for Food ¹						
	Disposable Personal Income	For use at home ²		Away from Home ³		Total	
	Amount	Percentage of Income	Amount	Percentage of Income	Amount	Percentage of Income	
	Bil. Dol.	Pct.	Bil. Dol.	Pct.	Bil. Dol.	Pct.	
1929 ...	82.4	16.4	19.9	3.2	19.5	23.8	
1939 ...	70.0	12.8	18.3	2.9	15.7	22.4	
1940 ...	75.3	13.4	17.8	3.1	16.6	22.0	
1941 ...	92.2	15.3	16.5	3.8	19.2	20.8	
1942 ...	116.6	18.2	15.5	5.1	23.3	20.0	
1943 ...	133.0	20.4	15.4	7.0	27.4	20.6	
1944 ...	145.6	21.5	14.8	8.3	29.8	20.5	
1945 ...	149.1	23.3	15.6	9.9	33.2	22.3	
1946 ...	158.9	29.5	18.6	9.5	39.0	24.6	
1947 ...	168.7	34.6	20.5	9.2	43.7	26.0	
1948 ...	188.0	37.0	19.7	9.3	46.3	24.7	
1949 ...	187.9	35.7	19.1	9.2	44.9	24.0	
1950 ...	206.6	36.6	17.8	9.4	46.0	22.4	
1951 ...	226.0	41.1	18.2	11.0	52.1	23.1	
1952 ...	237.7	43.1	18.1	11.6	54.7	23.0	
1953 ...	252.2	43.8	17.4	11.7	55.5	22.0	
1954 ...	257.1	45.0	17.5	11.5	56.5	22.1	
1955 ...	275.0	46.4	16.9	11.7	58.1	21.1	
1956 ...	292.9	48.3	16.5	12.1	60.4	20.6	
1957 ...	308.6	51.3	16.6	12.6	63.9	20.7	
1958 ...	319.0	53.9	16.9	12.7	66.7	20.9	
1959 ...	338.4	55.3	16.3	13.5	68.7	20.3	
1960 ...	352.0	56.2	16.0	14.2	70.5	20.0	
1961 ...	365.8	57.3	15.7	15.0	73.9	19.8	
1962 ...	386.8	57.8	14.9	16.1	73.9	19.1	
1963 ...	405.9	58.8	14.5	17.0	75.7	18.7	
1964 ...	440.6	62.4	14.2	18.0	80.2	18.2	
1965 ...	475.8	68.8	14.0	19.0	85.8	18.0	
1966 ...	513.7	72.4	14.0	20.2	92.6	18.0	
1967 ...	547.9	74.0	13.5	21.0	95.0	17.3	
1968 ...	593.4	79.5	13.4	23.3	102.1	17.3	
1969 ...	638.9	84.7	13.3	25.3	110.2	17.2	
1970 ...	695.3	91.8	13.2	27.7	114.6	17.2	
1971 ...	751.8	94.2	12.5	29.1	123.4	16.4	
1972 ...	810.4	100.6	12.4	31.8	132.4	16.3	
1973 ...	914.5	112.2	12.3	35.7	147.9	16.2	
1974 ...	998.3	127.3	12.8	40.2	167.5	16.8	
1975 ...	1096.7	139.4	12.7	45.8	185.2	17.0	
1976 ...	1199.4	149.3	12.5	51.2	200.4	16.8	
1977 ...	1311.5	160.6	12.2	57.3	217.9	16.6	
1978 ...	1462.9	177.2	12.1	64.2	247.4	16.5	
1979 ...	1641.9	199.7	12.2	73.3	273.2	16.6	
1980 ...	1822.2	222.3	12.2	80.0	302.3	16.6	

¹Data of the Department of Commerce in the *Survey of Current Business*. Omits alcoholic beverages, food donated by Government agencies to schools and needy persons, and non-personal spending for food such as business purchases of meals, food furnished inmates of

hospitals and institutions, and food included with transportation tickets and camp fees.

²Includes food consumed on farms where produced.

³Includes food served to the military and employees of hospitals, prisons, and food service establishments.

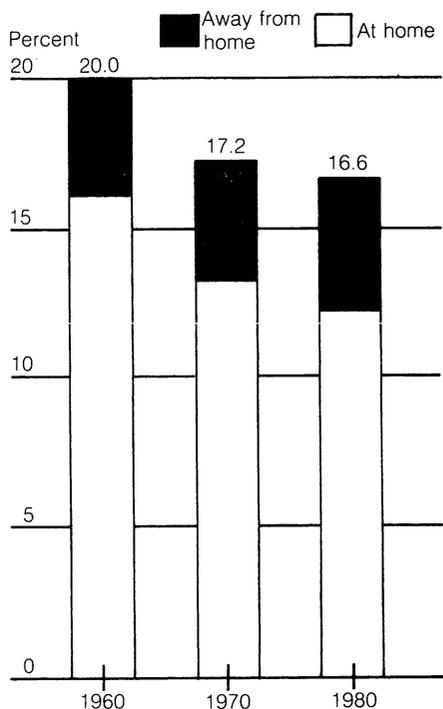
**Expenditures for Food and Income:
Revisions 1967-1980**

The National Income and Product Accounts of the United States, from which the USDA derives its Personal Consumption Expenditures (PCE) for food, have recently been revised by the Department of Commerce. This benchmark revision is the result of three sources of information: the Department of Commerce's 1972 input-output tables, summary tabulations from the 1977 economic censuses, and 1973 and 1976 tabulations of audits conducted by the Internal Revenue Service.

For the food component of PCE and DPI, revisions cover the period from 1967 to 1980. In the revisions:

- Disposable personal income was raised for 1968 to 1980, ranging from a fractional amount to 1.5 percent;
- PCE for food at home was lowered about 1 percent for this period;

**Percent of Disposable Personal
Income Spent on Food**



**Personal Consumption Expenditures for Food, 1929-1980 (1972 Dollars)
Revised December 1980**

	Home Use	Away From Home	All Food	Disposable Personal Income
	Billion Dollars			
1929	41.6	10.9	52.5	229.5
1933	38.2	7.8	46.0	169.6
1939	45.4	12.8	58.2	229.8
1940	47.1	13.7	60.8	244.0
1941	48.3	15.3	63.6	277.9
1942	47.6	16.8	64.4	317.5
1943	46.1	19.9	66.0	332.1
1944	47.8	23.3	71.1	343.6
1945	50.5	26.2	76.7	338.1
1946	57.3	23.0	80.3	332.7
1947	57.3	19.4	76.7	319.0
1948	57.8	18.5	76.3	336.0
1949	58.5	18.9	77.4	336.9
1950	59.3	18.8	78.1	362.9
1951	59.8	20.2	80.0	372.7
1952	61.8	21.1	82.9	383.2
1953	64.0	21.5	85.5	399.1
1954	65.9	21.1	87.0	403.3
1955	69.4	21.5	90.7	426.9
1956	71.9	22.0	93.9	446.3
1957	73.7	22.1	100.0	455.6
1958	74.3	21.7	96.0	460.7
1959	77.4	22.8	99.7	479.7
1960	77.9	23.0	100.9	489.7
1961	78.7	23.8	102.5	503.8
1962	78.8	24.8	103.6	524.9
1963	79.1	25.5	104.6	542.3
1964	82.2	26.6	108.8	580.8
1965	86.3	27.4	113.7	616.3
1966	88.7	27.9	116.6	646.8
1967	91.1	27.5	118.6	673.5
1968	94.4	29.6	129.0	701.3
1969	96.2	29.7	125.9	722.5
1970	99.0	30.3	129.4	751.6
1971	99.7	30.3	130.0	779.2
1972	100.6	31.8	132.4	810.3
1973	96.5	33.0	129.4	865.3
1974	95.1	33.0	128.1	858.4
1975	97.7	34.6	132.3	875.8
1976	103.5	36.2	139.8	907.4
1977	107.5	38.2	145.7	939.8
1978	107.0	39.2	146.2	981.5
1979	109.4	40.2	149.6	1011.5
1980	113.5	40.0	153.5	1018.4

Changes in Food Expenditures and Income

	1960-1970	1970-1980	1960-1980
	percent change		
Food	70	153	329
Food At Home	63	142	296
Food Away From Home	95	188	463
Disposable Personal Income	98	162	418

Changes in Real Expenditures for Food and Income

	1960-1970	1970-1980	1960-1980
	percent change		
Food	28	18	52
Food At Home	27	15	46
Food Away From Home	32	32	74
Disposable Personal Income	53	36	108

- PCE for food away from home was raised, with the sharpest increases occurring in the most recent years. PCE estimates for away-from-home eating were increased from \$61.4 billion to \$64.2 billion in 1978, and from \$67.2 billion to \$73.3 billion in 1979;
- PCE for all food was slightly higher for most years, ranging from virtually no change in 1971 to a 2-percent increase in 1979. Total food expenditures were lowered for 1978;
- As a result of the revisions in the income and expenditure series, the portion of DPI spent on food at home was lowered for every year from 1968 to 1980. At the same time, PCE for away-from-home eating was increased as a portion of DPI. All food expenditures as a portion of DPI remained unchanged for most years; and
- Real expenditures (in 1972 dollars), for food at home, away from home, all food, and DPI were raised for each year between 1968 and 1980.

The Long Term Trend: 1960-1980

A review of food expenditures and disposable income between 1960 and 1980 indicates several long-term trends. Between 1960 and 1980, DPI more than quadrupled, while food expenditures more than tripled.

As a result, the portion of income spent on food declined from 20.0 percent to 16.6 percent.

Away-from-home food expenditures increased more than 4.5 times, while at-home expenditures nearly tripled. Food at home, as a percent of DPI, dropped from over 16 percent to a little more than 12 percent, while restaurant eating rose from about 4 percent to 4.5 percent. The largest part of the drop for at-home expenditures as a percent of income took place between 1960 and 1970, while the increased portion for away-from-home eating occurred during the past decade.

The portion of the food dollar allocated to away-from-home eating rose from a little more than a fifth in 1960 to 27 percent in 1979, and remained at 27 percent in 1980.

When adjustments are made for inflation, DPI more than doubled between 1960 and 1980, with most of the increase coming in the 1960's. Apparent volume of food expenditures (excluding changes in the product mix) advanced at about half the pace of real DPI during both decades. Real food-away-from home expenditures rose about 75 percent during the 20-year period, maintaining the same pace during both decades. At-home expenditures advanced at about half the pace in the 1970's as in the 1960's.

Personal Consumption Food Expenditures, Quarterly 1979 and 1980

	1979 Quarter				Annual 1979	1980 Quarter				Annual 1980
	1	2	3	4		1	2	3	4	
Current Dollars										
All Food	262.0	268.3	274.7	288.3	273.3	294.1	295.9	305.2	314.1	302.3
Food at Home	190.9	197.0	201.8	210.1	200.0	214.1	217.5	225.6	231.8	222.3
Food away from Home	71.1	71.3	72.9	78.2	73.3	80.0	78.4	79.6	82.3	80.0
Disposable Personal Income	1580.2	1612.8	1663.8	1710.1	1641.7	1765.1	1784.1	1840.4	1899.1	1822.2
1972 Dollars										
All Food	146.8	148.1	149.8	153.4	149.6	155.6	159.5	152.6	151.1	153.5
Food at Home	106.3	108.6	110.3	112.2	109.4	114.3	115.0	113.1	111.4	113.5
Food away from Home	40.5	39.5	39.5	41.2	40.2	41.3	39.5	39.5	39.7	40.0
Disposable Personal Income	1005.7	1006.9	1015.7	1017.7	1011.5	1021.0	1008.2	1018.5	1026.6	1018.6

Domestic Food Programs

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Participation in the Food Stamp Program (FSP) rose from an average of 17.7 million people in fiscal 1979 to 21.1 million in 1980. This 19-percent increase was largely due to higher unemployment which increased the number of eligible participants, and inflation that eroded the purchasing power of low-income households. The elimination of the purchase requirement in 1979 made the FSP more accessible, thus encouraging these households to apply.

The value of food stamps issued in fiscal 1980 totaled \$8.7 billion. Per capita benefits averaged \$34.35 per month. An average of 22.0 million persons participated in the FSP in the fourth quarter of fiscal 1980, and during that 3-month period Federal expenditures amounted to \$2.3 billion.

On January 1, 1981, food stamp households received an 11.5-percent increase in benefits. A four-person household with no net income (gross income minus allowed deductions) now receives \$233 a month in food stamps, up from \$209. This was the first adjustment in benefit levels since an annual system of updates, mandated by the 1980 amendments to the Food Stamp Act, replaced semiannual adjustments.

The January update was based on the rise in the cost of USDA's Thrifty Food Plan (TFP) between September 1979 and September 1980. The TFP specifies the amounts of different foods needed to provide nutritious meals. The TFP contains less meat, poultry, and fish and more dry beans and grain products than are consumed by most families.

The maximum deductions that households are allowed in determining net income were raised on January 1. The standard deduction went from \$75 per month to \$85 to reflect changes in the Consumer Price Index for all urban consumers for items other than food. All households also receive an excess shelter cost deduction, a dependent care deduction, and a deduction equal to 20 percent of earned income. The shelter deduction and the dependent care



deduction either individually or combined, may not exceed \$115. (The maximum limit was \$90 in 1980). The elderly and disabled receive a full deduction for shelter costs that exceeds 50 percent of their net income, and are allowed to deduct medical expenses exceeding \$35 per month.

Deductions are higher in Alaska, Hawaii, and Guam, and lower in Puerto Rico and the Virgin Islands than in the 48 contiguous States and the District of Columbia because of differences in average incomes and prices.

The Special Supplemental Food Program for Women, Infants, and Children (WIC) continued to expand in fiscal 1980, and reached an average of 1.9 million persons, 28 percent above fiscal 1979. Participation in the fiscal 1980 fourth quarter averaged 2.1 million, with Federal expenditures of

\$208.1 million. Actual benefits to WIC participants represented 82 percent of this amount.

Participation and costs for the food distribution programs have declined since the FSP became available on a national basis. In fiscal 1980, the food distribution programs—the Nutrition Program for the Elderly, the Commodity Supplemental Food Program, and the Needy Family Program—accounted for 1 percent of the total expenditures for the family food programs. The Nutrition Program for the Elderly, the largest of these, distributed \$68.2 million in commodities or cash and served an average of 634,000 meals per day in fiscal 1980.

Proposed Changes the Food Stamp Program

Child Nutrition Programs

Federal cash expenditures for the Child Nutrition Programs totaled approximately \$3.1 billion in fiscal year 1980, led by the National School Lunch Program (NSLP), with cash payments of \$2.3 billion. In addition, participating schools received \$845.3 million in commodities or cash in lieu of commodities.

An average of 26.7 million children participated in the NSLP in 1980, compared with 27.1 million in fiscal year 1979. In March 1980, there were 94,295 participating schools and child care institutions, 267 less than in March 1979. The total number of lunches served increased by .5 percent in 1980 to 4.4 billion. Full price lunches accounted for 55.2 percent of all lunches served in 1980, a decline from the 56.3 percent in 1979. Free and reduced price lunches represented 38 and 6.8 percent, respectively, of all lunches served.

In fiscal year 1980, meals were served through the School Breakfast Program to an average of 3.6 million children in 33,934 schools and institutions. Between March 1979 and March 1980, the number of outlets offering the program increased by 2,380, or 8 percent, adding 300,000 children and increasing the number of meals served from 554.2 million to 611.4 million.

On December 5, 1980, the Omnibus Reconciliation Act of 1980 (P.L. 96-499) was enacted, in part to reduce Federal expenditures for the Child Nutrition Programs. Some changes are permanent, while others will be in effect only until September 30, 1981. The Act will reduce program costs by an estimated \$317.0 million for fiscal year 1981.

Under this Act, new Federal income eligibility guidelines for free and reduced price meals will apply. Income eligibility for free meals is set at or below 125 percent of the poverty level defined by the Office of Management and Budget (OMB), plus a standard deduction equal to the food stamp standard deduction of \$80 per month. Formerly, eligibility was limited to children from families with incomes at or below 125 percent of the guidelines issued by the Secretary of Agriculture. From February through September 1981, the free meal in-

come limit for a family of four is \$10,270 per year. Children from families with a net income between 125 and 195 percent of poverty may receive reduced price lunches. The reduced price income limit for a family of four is \$15,490.

A general rate of 18.5 cents in cash and 15.5 cents in commodities will be paid to the States by the Federal Government for all lunches served through July 1, 1981. States receive an additional 83.5 cents for each free lunch served and 63.5 cents for each reduced price lunch. Therefore, the total Federal reimbursement for free lunches is 117.5 cents, and 97.5 cents is paid for each reduced price meal.

From January through September 1981, the general cash reimbursement rate has been reduced by 2.5 cents per meal except in school districts in which 60 percent or more of the lunches were free or at a reduced price during the 1978-79 school year. Further, the Omnibus Reconciliation Act of 1980 reduced commodity assistance by 2 cents for all meals served from January through September 1981. Therefore, during this period, States may receive a minimum reimbursement of 113 cents for each free meal served, or a maximum of 115.5 cents. The range for reduced price meals is 93 to 95.5 cents per meal.

For fiscal year 1981, the reimbursement rates for the National School Lunch and School Breakfast Programs will be adjusted each July 1 rather than semiannually.

Permanent provisions of the legislation include withholding commodity assistance for the School Breakfast Program, a reduction of 3 cents in the reimbursement rate for snacks served in institutions participating in the Child Care Food Program, and a limit in the Summer Food Service Program to two meals per day. In addition, the reimbursement rate for reduced price lunches is set at 20 cents less than the reimbursement for free lunches. The previous law had permitted a higher reimbursement rate for States that had a statewide charge for reduced price lunches at a level below 20 cents. ■

This discussion of the Administration proposal is adapted from testimony by Deputy Secretary Richard Lyng, before the Subcommittee on Domestic Marketing, Consumer Relations and Nutrition, Committee on Agriculture, U.S. House of Representatives.

Food Stamp Program (FSP) authorization expires September 30, 1981 and new legislation to extend the program is expected to contain substantial changes in program eligibility rules aimed at reducing program costs.

Increased participation, and higher food prices have contributed to the rise in FSP expenditures. Federal expenditures amounted to \$8.7 billion in fiscal 1980, and are expected to total \$10.8 billion in fiscal 1981 and \$12.5 billion in fiscal 1982 if cost-saving provisions are not implemented. The rapid rise in program cost has prompted the Administration to propose changes which would save about \$2 billion in fiscal years 1982 and 1983. The savings would grow to about \$3 billion in fiscal years 1984 and 1985. In addition to the Administration proposals, several other alternatives have been or are likely to be introduced for congressional consideration.

The Administration Proposal

Overall, it is estimated that if enacted the changes proposed by the Administration would result in 363,000 households, or 1 million persons, made ineligible for the FSP. Of those households remaining eligible, about 35 percent would see reduced benefits of \$6 or more per month. The proposal requests appropriation authority through fiscal year 1985, continuing fixed dollar expenditure ceilings. If sufficient funds are not available to provide the established benefit levels to all participating households, the benefits would be reduced to ensure that expenditures remained within the appropriation. The proposal would:

Restrict eligibility to households with gross monthly income at or below 130 percent of the poverty line.

The current program uses net monthly income after allowable deductions to deter-

mine eligibility and benefit level. A family of four with no elderly member could qualify in July 1981 with an annual gross income of up to \$14,000 per year or approximately 160 percent of the poverty level. The proposed eligibility standard, set at 130 percent of the annual nonfarm income poverty guideline, would set the income eligibility standard for a family of four at approximately \$11,000 a year.

The current procedure of using net monthly income to determine the benefit level would remain the same. Estimated savings are approximately \$273 million in fiscal year 1982. About 363,000 households, or 1 million persons, would be made ineligible by setting the gross income limit at 130 percent of poverty.

Reduce food stamp benefits received by families with students eligible to receive free school lunches.

Currently, most school age children whose families participate in the program are eligible for a free lunch under the National School Lunch Program (NSLP). Previous arguments against proposals to offset NSLP benefits against FSP benefits have centered on administrative expense and burden. The procedure proposed uses a national formula that eliminates the need for verifying school attendance records for each child or calculating monthly reductions on an attendance basis. Rather, the formula is based on the value of a Thrifty Food Plan meal and national average school attendance rates. In 1982, the formula would provide a 67 cent per person per meal guarantee in food stamps, approximately half the subsidy of a school lunch which is \$1.28. To avoid unduly hurting families with a large number of school age children, the maximum number of household members counted as students for reduction purposes will be four. Using the 67 cent figure, this means a food stamp

household with two children receiving free school lunch would have annual FSP benefits reduced by \$214.

The maximum annual household FSP benefits reduction would be \$428 for those households with four or more children receiving free school lunches. Students who do not participate in the School Lunch Programs because of religious or medical reasons, or because the School Lunch program is not offered, qualify for an exception from this rule. If implemented on schedule, estimated savings would be \$522 million for fiscal year 1982. Approximately 2.5 million households in an average school month would be affected.

Eliminate residents of drug and alcoholic treatment rehabilitation programs, residents of group living arrangements for the blind and disabled, residents of homes for battered women and children, and commercial boarders from the FSP.

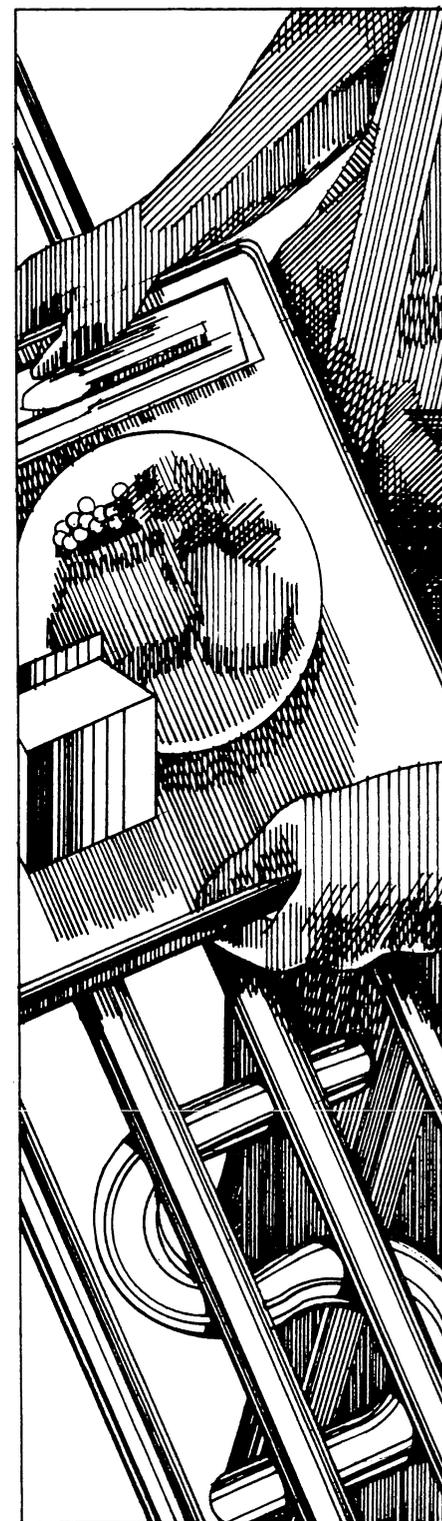
Estimates of program-cost reductions for fiscal year 1982 are \$12 million from eliminating institutions and \$50 million from eliminating boarders.

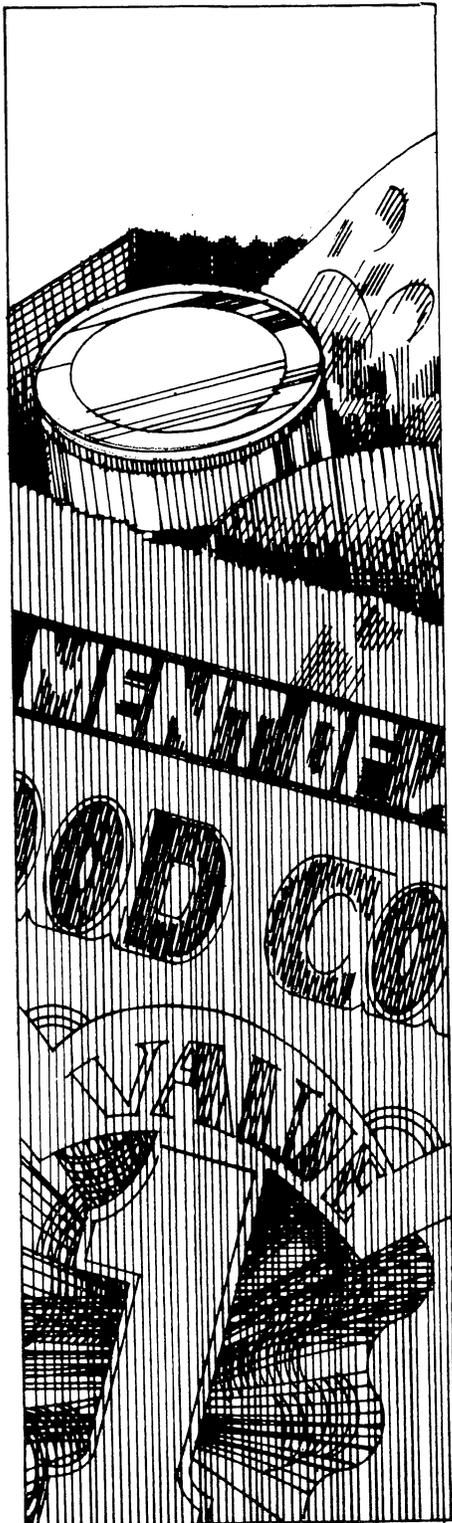
Make annual adjustments in the cost of the Thrifty Food Plan based on data for the 12-month period ending each preceding September rather than December.

This proposal would result in savings of \$359 million in fiscal year 1982 and smaller amounts in succeeding years.

Eliminate the indexing of the standard deduction and the dependent care/excess shelter expense deduction cap and "freeze" them at current amounts.

The Administration proposal would use gross income to determine eligibility but net income to determine the amount of bonus stamps the participant would receive. Under present rules, the net income is calculated by deducting the cost of other living expense items from gross income. The level of these deductions is based on the Consumer Price Index (CPI)—less food—which is heavily influenced by homeownership costs. These costs represented 30 percent of the index in 1980. Because of the low proportion of FSP participants who are home-





owners, the index is a poor measure of changes in the cost of these other living expenses.

The Administration proposal would freeze the deductions at present levels but allow the gross income eligibility standard and the Thrifty Food Plan to continue to be indexed on an annual basis. This change would result in cost savings of \$123 million in fiscal year 1982.

Repeal the two increases in dependent care and medical expense deductions enacted under the 1980 amendments.

This means current rules would remain in effect, a separate dependent care deduction would not be established, and the medical deduction would not be expanded. It is estimated that this proposal would result in savings of \$60 million in fiscal year 1982.

Strengthen the retrospective accounting period and periodic reporting system enacted under the 1980 amendments.

Under the proposal, States could no longer choose between a prospective, anticipatory system and a retrospective system to determine eligibility and compute allotments. A retrospective accounting system, and periodic reporting would be made mandatory except for certain groups. The current 1 month accounting period would be retained. All States would be required to implement this system by October 1983, allowing for necessary time to adjust data processing and institute a monthly reporting system so no savings are projected for fiscal year 1982. Additional costs of conversion to the new system are expected to be more than recouped in savings by fiscal year 1984.

In addition to the changes related to participant eligibility and level of Food Stamp assistance, the Administration has proposed a number of changes which would increase program accountability and control. These changes are expected to save about \$210 million in fiscal year 1982 and succeeding years. Proposals call for:

An increase in the use of the disqualification method of penalizing individuals who violate program rules by easing the criteria

needed for State officials to conduct administrative hearings.

This plan would replace the term "fraud" with "willful misrepresentation" as an action subject to a hearing and disqualification penalties. States will no longer be constrained by the difficulty of proving fraud prior to imposition of program penalties. The use of allotment recovery to collect overpayments would be expanded.

Program Control

Nonfraud recoveries would be limited to households which have the ability or resources to pay, but persons found guilty of willful misrepresentation would, in addition to disqualification, be subject to having all benefits recovered without taking resources and income into consideration.

The authority of the Secretary to allow State retention of 50 percent of all claims collected with the exception of State-caused errors would be expanded giving further tools, greater authority, and additional incentives to collect and serve as a stronger deterrent to program abuse.

Changes in the eligibility of retail food stores to participate in the program.

The proposal tightens the retail food store definition to eliminate firms which do only a marginal food business. Current legislation authorizes bars, gas stations, carry-out shops, and others that have small food sections to be a retailer. The proposal would limit the definition of a retail food store to a full line grocery store or other businesses whose food sales are at least half the total gross sales. The only exception will be for firms which are the only source of staple food items in an area.

Another part of the proposal responds to abuse of the 1977 Act provision which permits the return of up to 99 cents in cash in a food stamp transaction. This policy has resulted in some incidents of manipulation by individuals to get cash to buy ineligible food items. Rather than strictly return to

the old credit slip system—also criticized—it is more workable to provide for cash change only in transactions in which the total food stamp purchase exceeds \$5. Credit slips not to exceed 99 cents would be used in transactions where the food stamp purchase is less than \$5.

Convert all food assistance programs in Puerto Rico to a block grant and authorize this to be extended later to the Virgin Islands, Guam, American Samoa, the Trust Territory of the Pacific Islands and the Commonwealth of the Northern Marianas.

Instead of providing assistance via categorical programs—food stamps and child feeding programs—Federal assistance would be consolidated into a block grant for area authorities to administer. The block grant would be an amount equal to 75 percent of the total Federal amount that would have been received under the categorical programs in Puerto Rico in fiscal 1982. It is estimated that the block grant in Puerto Rico alone would save close to \$300 million in fiscal year 1982.

Other Proposals

A number of proposals for changes in the present FSP have been made in recent years and some are likely to be introduced during the debate of the Administration's proposal. Among these are:

Recoupment of food stamp benefits from beneficiaries whose adjusted gross annual income for the year exceeds a specific level.

Households with net monthly income at or below the poverty guidelines are eligible for participation in the FSP. Some food stamp households, such as those temporarily unemployed or engaging in seasonal occupations, may be eligible for food stamp benefits during the period of low income since food stamp eligibility is determined on a monthly basis. However, the annual income of these households could be relatively high.

In 1977, Congress considered an amendment that would have required recoupment in the FSP. Although the amendment was defeated, USDA was directed to conduct a study on the recoupment proposal. The characteristics of the proposal introduced by Representative James Jeffords of Vermont in 1977 were considered in the study prepared by USDA's Food and Nutrition Service (FNS).

Benefits would be recouped through the Internal Revenue Service. To facilitate recoupment, food stamp households would receive reports similar to W-2 forms indicating annual benefits from the FSP. In addition, tax forms would be revised to include questions on the value of food stamps received during the year.

FNS estimated that at least 20 months would be required to implement recoupment of food stamp benefits. In fiscal year 1983 and thereafter, net savings—in 1980 dollars—at the Federal level would total \$48 million annually. However, annual State Administrative costs would total \$27 million.

Increasing the present 30-percent reduction from household net income.

Food stamp households with net monthly income of up to \$30 receive coupons equal in value to the cost of the Thrifty Food Plan for the household's size. Households with net incomes exceeding \$30 per month receive benefits equal to the cost of the Thrifty Food Plan minus an amount equal to 30 percent of the household's net income.

Estimated savings from raising the benefit reduction rate to 37.5 percent would be \$1.8 billion. Under a 30-percent benefit reduction rate, a family of four with no income currently is eligible for \$233 in food stamp benefits. A family with \$100 income receives \$203 in benefits; a family with income of \$300 receives \$143 per month in stamps. Raising the benefit reduction rate would leave benefits unchanged for the no-income family. However, the family with \$100 income would receive \$195.50 in benefits (a loss of \$7.50) and a family with \$300 income would receive \$120.50 in benefits (a loss of \$22.50). This proposal could be im-

plemented very easily; however its primary disadvantage is that it tends to have a negative influence on work incentives.

Reinstatement of the Purchase Requirement

Prior to the 1977 Act, households with net monthly income exceeding \$30 were required to buy a portion of their food stamp allotment. At the time of consideration, analyses indicated that approximately half of the persons eligible for food stamps were not participating in the program. The primary reason for not participating was found to be the inability of households to afford the purchase price of food stamps. Thus, elimination of the purchase requirement was adopted as an outreach measure to encourage participation, and also as a means of cutting down on vendor fraud. It has been estimated that elimination of the purchase requirement increased program participation by 3.6 to 4.7 million persons.

Savings resulting from reduction in participants from reinstating the purchase requirement were estimated by the Congressional Budget Office at \$1.4 billion for fiscal year 1982.

Including Federal energy assistance payments as income when determining benefits.

This fuel-assistance program currently provides low-income families with up to \$750 a year to help pay energy bills. Counting this assistance as income would save \$418 million in FSP costs in fiscal year 1982.

Tailoring individual benefits to nutritional requirements.

Currently, benefits are based on the assumption that everyone eats the same amount, regardless of age, sex, or medical status of the recipient. Adoption of individual allotments could save \$1.2 billion in fiscal year 1982; however, the savings would come largely at the expense of the elderly, whose benefits would be significantly reduced. ■

Packaging in Food Marketing

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Packaging and container costs for foods and beverages (alcoholic and non-alcoholic) average nearly one-third of the value of the food ingredients they protect. While the packaging and container value for less-processed foods is a small fraction of the raw food ingredient value, for a fourth of the food and beverage product industries the cost of the package exceeds the cost of the food ingredient.

About \$1 out of every \$11 consumers spend on food and beverages goes to pay for packaging, ranging from simple paper wrapping for butter to elaborate crush-proof cannisters and styrofoam beverage insulators.

Food and beverage industries use two-thirds of all packaging and containers in the United States. Well over half of all paper, metal, and glass packaging is used for wrapping, canning, and bottling edible products.

The basic purposes of packaging are to protect foods and aid in handling. Packaging shields processed foods from light, heat, oxygen, infestation, and other destructive forces. Packaging also permits foods, and especially beverages, to be handled, carried, stacked, and stored. Food packaging has other purposes as well. Most packages inform consumers as to ingredients, weight, nutrient composition, storage techniques, and cooking methods. Today's packaging not only preserves many foods for longer periods but also is less breakable and can be used in conjunction with large-scale mechanical handling equipment. In general, extensive packaging uses more materials but results in large retailer-wholesaler labor cost savings.

Packaging Materials

It took over 600 pounds of materials, on average, to package all items purchased by each American last year. Based on dollar value, paper, metal, glass, and plastic account for about 95 percent of the packaging materials used in food manufacturing. In 1980, the food and beverage industries used 62 percent of the paper, 71 percent of the metal, and 96 percent of the glass produced by the Nation for packaging and containers.

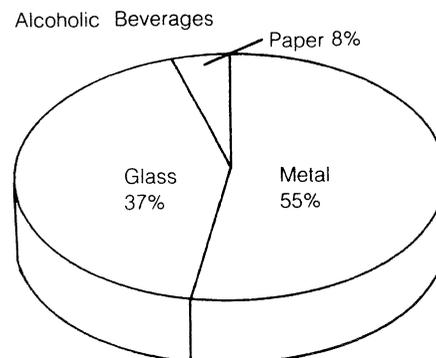
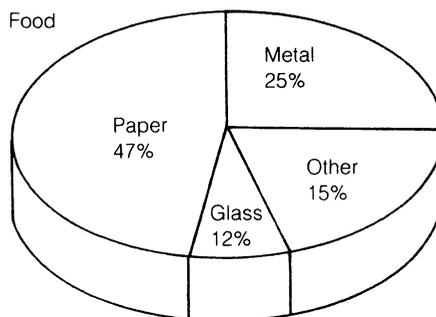
Packaging and Container Costs for Processed Food and Beverage Products, 1980

Type	All products	Food and non-alcoholic beverages	Alcoholic beverages	Food and alcoholic beverages	Food and alcoholic as percent of all products
		Billion dollars			Percent
Paper	23.2	13.9	0.4	14.3	62
Metal	14.2	7.4	2.7	10.1	71
Glass	5.4	3.6	1.8	5.2	96
Plastic	5.0	2.4	*	2.4	48
Wood	0.9	0.4	*	0.4	44
Textile	0.5	0.6	*	0.6	80
Other	2.6	1.1	*	1.1	42
Total	52.0	29.3	4.9	34.1	66

*Negligible

Source: Estimated from 1977 Census of Manufacturers, by applying a 1977-80 inflation factor.

Percentage of Packaging Materials Used for Food and Alcoholic Beverages



Source: ESS estimates

Changes in Food Marketing Costs

	1970-80	1979-80	Percent Change
Total Marketing Cost	247	14	
Packaging and Containers	252	15	
Paperboard Boxes and Containers	232	16	
Metal Cans	288	11	
Paper Bags	220	14	
Plastic	301	19	
Glass	222	12	
Metal Foil	73	5	
Transportation Service	261	19	
Labor	239	10	
Advertising	196	10	
Fuel and Power	532	35	

Source: BLS

Over 40 percent of the packaging materials for food and beverages are paper and paperboard containers. Metal accounts for about a third of food and beverage packaging, while glass makes up another 15 percent. Plastics, wood, adhesives, labels, and textiles comprise the other 13 percent of packaging for food.

Packaging Costs Compared with Raw Food Costs

In about one-fourth of all food and beverage industries, the packaging and container costs are more than the value of the food ingredient used in production. Beer packaging value is more than 5 times the value of the food component. Ready-to-mix desserts, chips, table syrups and other prepared foods, chewing gum, and soft drinks have a packaging value about twice the value of the raw agricultural ingredient. The ratio is about 1.5 for breakfast cereals, soups, baby foods, frozen entrees, and desserts. The value of packaging is about equal to the value of the food ingredient for canned fruits and vegetables, pet foods, and distilled spirits.

The packaging for cake mixes, condiments, wines, cookies, and crackers amounts to about 90 percent of the food value. For flavorings, the relative value is about 75 percent, while pasta and ice cream packaging is about 60 percent. For bread and candy the relative value of packaging is about half the food value.

Red meats, raw produce, cheese, sugar, butter, and cheese packaging value is only from 3 to 7 percent of the food ingredients.

Food Packaging Costs by Type of Food

Packaging costs vary widely among different food products. Fresh produce and meats, poultry, and fish, on which consumers allocate about 30 percent of their food and beverage budgets, account for less than 5 percent of packaging costs.

Beverages and highly processed foods account for the bulk of packaging costs. Beer and soft drinks account for almost one-fourth of packaging and container costs. If all other beverages are added, the figure rises to one-third.

When ranked by the total portion of

packaging costs each contributes to the consumer food bill, 10 of the 38 food and beverage products surveyed accounted for 60 percent. Yet these products account for only 35 percent of the consumer food and beverage bill. Included in this group are canned and frozen food, milk, and highly prepared foods.

By contrast, the 10 products which use the least packaging only account for 4.5 percent of food and beverage packaging costs, but they are 8 percent of the food and beverage budget. The food and beverage products in the middle represent only 36 percent of packaging costs, but almost 60 percent of expenditures.

Portion of Food and Beverage Packaging Expenditures for by Each Industry, 1977

Industry	Percent of total packaging costs for food and beverages	Industry	Percent of total packaging costs for food and beverages
Beer	13.0	Animal Feeds	2.8
Soft Drinks	10.8	Meats, unprocessed	2.7
Canned Fruits and Veg.	7.4	Candy	2.6
Prepared Foods	7.2	Breakfast Cereals	2.3
Fluid Milk	4.6	Frozen Fruits and Veg.	2.1
Soups, Baby, and Other	3.7	Fats and Oils	2.1
Frozen Dinners	3.6	Sausage and Lunchmeats	2.0
Pet Food	3.3	Cookies and Crackers	2.0
Bread and Cakes	3.3	Canned Milk	2.0
Relishes, Seasonings, and Spices	3.2		
Total	60.1	Total	20.6
Industry	Percent of total packaging costs for food and beverages	Industry	Percent of total packaging costs for food and beverages
Distilled Spirits	1.9	Dried Fruits and Veg.	0.7
Coffee	1.6	Sugar	0.7
Wines and Brandy	1.5	Frozen Seafood	0.7
Flavorings	1.5	Chocolate and Cocoa	0.5
Ice Cream	1.5	Chewing Gum	0.5
Poultry	1.2	Rice	0.5
Cheese	1.1	Canned and Cured Seafood	0.5
Flour Mix Products	1.0	Canned Poultry and Eggs	0.4
Starches and Corn Products	1.1	Pasta	0.3
Cake Mixes	0.9	Butter	0.1
Total	15.3	Total	4.5

Source: 1977 Census of Manufacturers

What Does Packaging Cost the Consumer?

Packaging is the third largest component of the consumer food bill, following the farm value and labor components. The \$34 billion spent on packaging materials by the food and beverage industries in 1980 accounted for about 9 percent of Americans' total expenditures on food consumed. On a per person basis, about \$150 each year is allocated to food and packaging materials.

About \$5 billion was spent on packaging for alcoholic beverages. If alcoholic beverages are excluded, packaging costs for 1980 were \$29 billion, or about \$128 per person yearly.

Over the past decade, food packaging and container costs have risen only slightly faster than all other food marketing costs combined. Transportation and energy costs have risen faster, other marketing costs more slowly, than food packaging costs.

The portion of consumers' food expenditures due to packaging costs has remained at about 9 percent during the decade.

Why the Increasing Packaging Costs?

Two trends are responsible for rising packaging costs—a greater amount and more elaborate packaging, and the increasing cost of packaging materials. Packaging and container prices were 2.5 times as high in 1980 as in 1970. The sharpest growth was for plastic prices, which were 3 times greater in 1980 than 10 years earlier, largely reflecting higher petroleum costs. The 1980 metal can prices advanced almost 190 percent of 1970 prices. Both paper and glass, which are less energy intensive, rose significantly less than the overall price index for packaging and containers. The lowest price increase was for metal foil, due largely to relatively stable aluminum prices. In the United States, hydroelectric power is primarily used to produce aluminum.

In addition to the packaging material becoming more costly, many foods are being more elaborately wrapped. Consumer desires for increased storability and labor-saving "convenience" have played an important role. Smaller households, fewer children, and dual-career situations may be responsible for the marketing of smaller package sizes. The impact of the desire for convenience is more difficult to judge, because some of the most convenient foods require the least packaging.

Efforts to save labor costs by mechanizing the handling of foods have required packages that are rigid, crush-proof, leak-proof, and easily stackable. Many foods that could be packed in cheap soft pouches or bags are put into cans or boxes because this saves labor or shelf space and simplifies storage equipment. Reductions in handling costs for wholesalers and retailers may run counter to the efforts by manufacturers to substitute lighter, cheaper packaging. Consumers too may bear some increased costs in the form of toting bulky packages and disposing discarded containers.

Because packaging is a minor form of advertising, some of the increase in packaging costs may be related to the general increase in food advertising expenditures—the pack-

Packaging Cost As a Percent of Food Ingredient Cost, 1977

Item	Packaging Cost greater than 100 percent of the Food Ingredients	Item	Packaging Cost 50-100 percent of the Food Ingredients
Beer	510	Cake Mixes	90
Prepared Foods	214	Relishes, Spices and Seasonings	88
Chewing Gum	193	Cookies and Crackers	86
Soft Drinks	189	Wines and Brandy	86
Breakfast Cereals	164	Flavorings	74
Soups, Baby, and other Specialties	147	Pasta	62
Frozen Dinners	141	Ice Cream	60
Pet Food	122	Bread	50
Distilled Spirits	101		
Canned Fruits and Veg.	101		
Item	Packaging Cost 10-50 percent of the Food Ingredients	Item	Packaging Cost less than 10 percent of the Food Ingredients
Candy	48	Poultry	7
Frozen Fruits and Veg.	42	Cheese	7
Dried Fruits and Veg.	39	Sugar	5
Canned Poultry and Eggs	36	Butter	4
Starch and Corn Products	33	Red Meats	3
Canned Milk	30		
Fats and Oils	22		
Canned and Cured Seafood	20		
Fluid Milk	16		
Chocolate and Cocoa	17		
Rice	17		
Frozen Seafood	13		
Animal Feeds	12		
Flour Products	11		
Sausage and Lunch Meats	10		
Coffee	12		

Source: 1977 Census of Manufacturers

LABOR PRODUCTIVITY in FOOD DISTRIBUTION

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aging enables the manufacturer to attract the shopper and reinforce the brand's image. One way of gaining in-store attention is to capture large blocks of shelf facing, through a multiplication of package sizes, flavor variants, and other forms of brand proliferation. The rate of brand proliferation of foods has been found to be associated with the intensity of packaging costs.

Regulation is often viewed as a cost-increasing factor. Very little regulation of packaging materials and sizes occurs on the Federal level, although several agencies regulate food labeling. The FDA prohibits packaging materials that may cause foods to become impure or unsafe. The only other Federal Government statute directly applicable to packaging is the Fair Labeling and Packaging Act passed in the mid 1960s. The principal purpose of the law was to give the FDA and the FTC power to prohibit packaging that might deceive or mislead consumers about the weight or contents. The law also authorized the Department of Commerce to seek voluntary industry agreements to reduce undue proliferation of package sizes. Differences in package sizes make it difficult for consumers to compare per unit prices. The unit pricing in grocery stores makes this task more manageable. ■

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Since labor costs to move products from the processors' loading docks to store shelves take about 22 cents of each food dollar, a decline in labor productivity over recent years is a growing concern to consumers and the food industry.

From 1929 to 1972, labor productivity in the Nation's retailing and wholesaling industries was marked by rapid gains. However, by 1977 these gains had slowed considerably, and by the end of the decade productivity in the food industry had registered a decline. These developments evolved over the past half century from the continuous changes in the food industry.

The Early Years

The food wholesaling and retailing industries underwent major changes that increased productivity prior to World War II. Chains (food firms with 11 or more stores) became a significant factor in food retailing during the 1920's. Before, food wholesalers (or jobbers) sent route salesmen from store to store, competing with other wholesalers for small orders. Chains bypassed jobbers by operating their own warehouses. As chains increased their share of industry sales, the amount of labor needed at the wholesale level to handle each unit of product sold was sharply reduced.

During the 1930's and 1940's, many independent retailers affiliated with wholesalers and agreed to concentrate their purchases from a single supplier. They also granted the wholesalers considerable control over product availability to increase efficiency. This wholesale-retail affiliation enabled wholesalers to gain many of the productivity advantages enjoyed by integrated chains. Retailers benefited from lower cost merchandise and services, such as accounting, private label merchandise, employee training, group advertising, and financial assistance.

After 1945, small, multi-story warehouses in the center of town were replaced by one-story buildings in the suburbs. The



method of moving goods within the warehouse changed too; pallets and forklifts replaced two-wheel hand trucks and freight elevators. The whole emphasis of warehousing changed from the shrewd purchase and storage of merchandise to the efficient distribution of merchandise to stores. Potential gains from shrewd buying were less than gains possible with rapid inventory turnover.

Independent retailers introduced supermarkets in the 1930's. Supported by rapid population growth, new store construction picked up after the war and hastened the adoption of supermarkets. Supermarkets' reliance upon self-service eliminated the need for as many clerks as in the traditional stores, increasing labor productivity. Credit sales and delivery, also labor intensive, were discontinued. By moving large amounts of merchandise, supermarkets lowered building and equipment costs per item sold.

Mid-Century

Labor productivity continued to improve during the 1950's as supermarkets replaced smaller stores and wholesale-retail affiliations increased. Supermarkets' (grocery stores with 20 or more employees) share of sales rose from 28 percent to 50 percent during the decade. Warehouses added more labor saving technology and found more ef-

ficient ways to organize their inventory, delivery routes, and receiving and shipping schedules.

At the same time, two factors dampened labor productivity. While early supermarkets used abandoned buildings in low-rent areas, displayed merchandise on crates, and generally cut costs wherever possible, by the 1950's many store appointments, services, and promotional attractions were added. These additions increased the cost of doing business and adversely affected output per labor-hour.

The number of items handled by supermarkets has increased sharply since the 1920's when the typical grocery store handled about 850 different items. By 1950, supermarkets typically handled 3,750 items and by 1962, the number was up to 6,600. It is more efficient to handle two cases of the same product than one case each of two different products since different products must be stored and handled separately. Additional items increase warehouse and store size and thus increase distances traveled by workers as they move merchandise within the facilities.

The growth of chains, the sharp increase in supermarkets' share of sales, and the adoption of improved product handling techniques more than offset the negative effects of more items and services, so that labor productivity rose through the 1950's. Output per labor-hour in food wholesaling and retailing increased an average of 2.8 percent per year from 1929 to 1958.

The 1960's were also a time of productivity gains. The Bureau of Labor Statistics reported that output per labor-hour in food retailing rose at an average annual rate of 2.7 percent between 1958 and 1972. During the decade, supermarkets' share of grocery store sales rose from 50 percent to 63 percent. Chains' share of sales rose from about 45 percent in 1960 to about 54 percent in 1970. Firms also continued to develop improved labor-saving techniques for warehouses, stores, and trucking operations.

Late in the decade, supermarkets renewed their emphasis on keeping prices as low as possible. However, the number of items handled continued to increase, reaching 7,700 in 1970.

Recent Developments

Output per labor-hour in food stores dropped 6.8 percent between 1972 and 1974. Productivity improved 1.5 percent during 1975-77 and then fell 5.5 percent during the 1978-79 period. Changes in the structure of the industry and the variety of products and services offered to consumers probably account for the failure of the industry to maintain the productivity growth rates that were recorded between 1929 and 1972.

Population growth had slowed by 1970, especially in the industrial centers of the Northeast and North Central regions. Increased eating out took sales away from grocery stores, and recessions also adversely affected sales. However, retailers were slow to cut back on new store construction, so that excess capacity developed, and productivity fell.

Convenience stores were built rapidly during the 1970's. Convenience stores adversely affected labor productivity in the industry in two ways: first, in some instances, by taking sales away from existing supermarkets—reducing the supermarkets' productivity—second, by requiring more labor-hours per unit of product sold. When they capture a larger share of the industry, average productivity must fall.

Other developments during the 1970's also impaired grocery store productivity. Supermarkets' share of sales increased from 63 percent to 80 percent during the decade, and this would normally improve productivity. However, many nonfood items—toiletries, prescription drugs, general merchandise, etc.—which require more labor per dollar of sales were added.

Supermarkets added service departments for bakery, fish, and delicatessen products in which clerks prepare or wrap items upon request. Customer services that increase labor requirements such as longer hours, express checkout, and unit price information were also added.

The trend toward integrated wholesale-retail operations was virtually complete by 1970 (unaffiliated supermarkets are now very rare), so this source of increased productivity essentially disappeared. Similarly, except for convenience stores, small grocery stores had already been reduced to a small share of industry sales, thus ending another source of productivity gain by 1970. Average store size continued to increase, but much of the increase was due to sales of items that require more labor.

Some changes during the 1970's did contribute to improved productivity. For example, no-frills limited assortment box stores and warehouse stores have become popular in many areas. These stores have many characteristics of the early supermarkets. They offer limited product selection and few customer services in order to cut operating costs and prices. The limited selection allows them to handle full-pallet loads of many items, and much of the merchandise is displayed in their cut-open shipping cartons. What is lost in aesthetics and variety is gained in efficiency, and sales per labor-hour are much higher in no-frills stores than in other supermarkets. No-frills stores now account for about 5 percent of total grocery store sales.

Supermarkets have continued to seek productivity-enhancing changes in operating practices and technology. They have begun discontinuing some slow moving items, scheduling workers to better match daily and weekly labor needs, and reducing distances trucks travel to reach stores. Some firms have mechanized their warehouses to achieve labor reductions.

About 3,100 supermarkets now have Universal Product Code (UPC) scanners which reduce labor requirements at the checkout and provide information that permits more accurate labor scheduling throughout the store. Several retailers are no longer price-marking individual packages, using shelf tags instead. While this reduces labor requirements, some consumer

and labor organizations are resisting the change.

Changes in store characteristics and customer services may improve productivity in coming years for several reasons:

- No-frills limited assortment stores are expected to capture a larger share of industry sales.
- Full-service supermarkets are beginning to limit product selection and use bulk handling techniques to reduce per-unit operating expenses. At the same time, some warehouse stores are adding products and services, resulting in a melding of the two types of stores, which is likely to continue.
- Convenience store growth, which impeded industry productivity growth in the 1970's, will probably level off.

However, supermarkets that offer a large assortment of foods, nonfoods, and services are still increasing their share of sales, which may partially offset these potential increases in industry-wide labor productivity.

Prospects for the Future

Technological developments, improvement in coordination among manufacturers and distributors, and improved management of resources with existing technology offer promise for improved labor productivity in food wholesaling and retailing. UPC scanners are being put in about 100 additional stores each month. At the current rate of adoption, most supermarkets that could justify the technology will have scanners by 1990.

In many areas, wholesalers and retailers' trucks travel near manufacturers' warehouses while making deliveries to stores. Backhauling is the practice of sending these trucks to pick up purchased merchandise at the manufacturers' warehouses on the return trip. Manufacturers, under certain circumstances, have always been permitted to reduce the price of merchandise to reflect the savings they realize by not paying for the transport of the merchandise. Many

manufacturers were reluctant to grant backhaul allowances, however, because they were concerned that they would be accused of illegal price discrimination between customers who did and did not backhaul.

Backhauled merchandise accounted for 9.5 percent of affiliated wholesalers' purchases in 1976. Comparable data are not available for chains. During 1980, Congress clarified the law so manufacturers can grant backhaul allowances without fear of illegal price discrimination charges, provided they do not exceed actual transportation costs. As a result, several additional manufacturers have announced plans to grant backhaul allowances.

Food manufacturers and distributors are also working on other projects that could improve coordination and, in turn, productivity. Firms are attempting to reach agreement on standard-size pallets and shipping containers (mostly cartons). One size may be efficient for a manufacturer but inefficient for wholesalers, retailers, or transportation firms. Agreement on a few standard sizes will improve productivity immediately and increase the feasibility of some mechanized equipment that could further increase productivity.

Still another promising area for productivity gains is in computer technology. A pilot project is now underway linking a major wholesaler's computer with a few large manufacturers' computers. Information about the distributor's reorder needs and the manufacturers' terms of sale will be used in a computer program to arrive at a reorder quantity automatically. Documentation records, billing information, and shipping instructions will all be handled by computer. The program will eliminate much paperwork and streamline the ordering and billing of routine products. Buyers and sellers will still communicate directly on sales of other products. A consultant's report has indicated that computer-to-computer reordering is feasible, and could save the food industry \$300 million per year.

Computer technology is being applied to a vast number of different management decisions in food wholesaling and retailing.

Computers help firms decide whether to discontinue slow moving products, where to store merchandise most efficiently, how to route delivery trucks, whether to handle products through the warehouse or have them shipped directly to stores, and how much to charge for products.

Many warehouse functions are repetitive, making them candidates for automation. At the same time, many of these tasks are also complex (for example, handling packages of many sizes and shapes), making automation difficult and expensive. Recent developments in robot technology, and declining real costs of the equipment make it likely that robots will find an important place in food warehouses in the future.

Wholesalers are motivated to improve productivity because it affects their own profits and the profits of the retailers they serve. However, they occasionally must sacrifice some productivity to meet the needs of the stores for a wide array of products and business services.

Retailers must give even greater weight to providing customer services, often at the expense of productivity at both retail and wholesale levels. However, retailers who operate most efficiently can offer a more attractive combination of both services and prices. Given the incentives and opportunities that exist, labor productivity in the food distribution system should improve in the future. ■

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Research and Development of Food Processing Firms

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Many new food products and methods of production are due to research and development (R&D) which cost food industries \$428 million in 1978, according to the National Science Foundation. The R&D intensity of the food industries—R&D expenditures in food divided by food sales—was 0.4 percent in 1978, which was the lowest for all manufacturing industries.

Despite the low R&D intensity in food manufacturing, the rate of technological change in food, as measured by increasing labor productivity, is about average for all manufacturing industries. The explanation of this paradox is that technological change in the food sector is due not only to research in the food industries, but also to research in chemicals, machinery, and many other industries.

Technological changes in food industries occur through the development of new products and new production processes. For example, the introduction of frozen juice concentrates and instant hot cereals gave consumers new food products. The development of a new production process to freeze dry coffee is an example of a process invention.

Additional examples of process inventions are the development of a new conveyor belt and the substitution of plastic for glass bottles.

Technological change in food manufacturing is also affected by changes in technology outside the food industry. The use by food firms of small computers to help control the food production process is an example of how new nonfood technologies can lead to technological change in the food industries.

Explaining Food Firms' R&D Expenditures

The resources devoted to R&D activities vary widely among U.S. food processing firms. A look at the R&D expenditures of 10 large food processing firms shows expenditures ranging from \$800,000 for the Pabst Brewing Company to almost 100 times that amount, \$79.1 million, for General Foods Corporation.

Why do firms' R&D expenditures differ so widely? Research and development expenditures of firms represent a form of in-

vestment by those firms. Since firms benefit from reduced production costs or increased sales from new or improved products over a period of years. But, investment in R&D is an optional investment. While meat packing firms, for example, must periodically invest in factories and machinery if they are to continue packing meat, they need not invest in R&D.

Firm size, the percentage of total industry sales enjoyed by the leading four firms, and the degree of diversification are hypothesized by economists to affect the amount of money a firm spends on R&D activity. A mathematical model was developed to determine the relative importance of these three characteristics in explaining differences in R&D expenditures for American food processing firms.

Firm Size

There are two reasons why a firm's R&D expenditures might increase more than proportionately with its size. First, economies of scale in research and development may—up to some point—diminish the unit costs of research as the R&D laboratories increase in size. This occurs if R&D laboratories use expensive, specialized equipment and specialized personnel. Then, for unit costs of R&D to be at a minimum, labor and equipment must be fully employed.

A second reason is because large firms receive larger benefits than small firms from the development of new products and new production processes. When a firm introduces a production process innovation, the extent of cost savings depends on the

Research and Development Expenditures in Food Processing Industries

Millions of dollars

500

400

300

200

100

0

1970 1971 1972 1973 1974 1975 1976 1977 1978

scale of production and costs. If one firm's sales and costs are twice those of another's, identical percentage costs savings will result in total cost savings that are twice as great for the larger firm.

Larger firms generally have the financial resources to better promote new products. For example, General Mills recently spent over \$10 million to introduce its new Crispy Wheats 'n Raisins Cereal.

On the other hand, some economists argue that smaller firms have an advantage over larger firms in the process of deciding to engage in particular research projects. They argue that since a large firm is likely to have more decision-making stages than a smaller firm, the managers of a large firm have more chances to decide against investing in any specific R&D project.

In the model, firm size was measured by the total assets of food processing firms. Firm R&D expenditures increased more than proportionately with firm size up to a firm size of about \$150 million in assets (1967 dollars)—about one-sixth the size of the largest firm studied—and increased at a diminishing rate for larger firms.

Market Power and Diversification

Market power and firm diversification also help to explain inter-firm differences in R&D expenditures. Market power exists in an industry when one or a few firms produce a large percentage of an industry's total sales. In this situation, price competition may be lessened because each firm realizes that others will probably meet any price cuts. As a result, firms in industries where there is market power usually earn greater profits than firms in competitive industries. These larger profits may increase firms' R&D by providing the financial resources necessary for investing in R&D. However, since price competition is lessened, the need to engage in R&D to reduce costs may be lessened.

In the model, firm R&D expenditures increased as the leading four firms' share of industry sales increased from 0 to about 60 percent. When the leading four firms' share increased beyond 60—a level which represents high market power—firm R&D expenditures declined.

Diversified firms—those that manufacture more than one product—are likely to invest more heavily in R&D than specialized (one-product) firms. If diversified firms engage in R&D projects in several of their product lines, the risk of R&D investment is reduced since projects that fail may be offset by those that succeed. Results of the model confirm that R&D expenditures increase with increasing firm diversification.

The Larger Picture

These results demonstrate that the characteristics of U.S. food processing firms and of the markets in which they sell their products play an important role in determining their R&D expenditures. However, much of the research on food technology may actually be performed by individuals, firms, and other institutions outside the food processing industries.

Analyses of a group of patents awarded for mechanical inventions suggests that R&D by U.S. food firms may not be the

most important determinant of changes in food technology. Except for the starch industry, where 67 percent of the patents granted to U.S. corporations were assigned to starch companies, U.S. food processing companies accounted for less than 30 percent of the patents granted to U.S. corporations. And, when patents from all sources are considered only 9 percent were traceable to U.S. food firms. Technological changes in food processing appear to be heavily influenced by research performed by organizations outside the U.S. food processing industries. ■

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Working Paper No. 47 (1980) of the North Central Research Project NC-117 presents a more detailed discussion of the economic hypotheses and the statistical tests. This paper is available from the Food Systems Research Group, Department of Agricultural Economics, University of Wisconsin, Madison, Wisconsin 53706.

Research and Development Expenditures of Ten Large U.S. Food Processing Firms, 1979

Firm name	Firm's R&D Expenditures
	Million Dollars
Standard Brands Inc.	8.7
Oscar Mayer & Co.	4.9
CPC International Inc.	33.9
Campbell Soup Co.	18.8
General Foods Corp.	79.1
Kellogg Co.	11.4
Nabisco Inc.	11.1
Carnation Co.	10.5
Hershey Foods Corp.	3.6
Pabst Brewing Co.	.8

Source: Standard and Poor's Compustat Services, Inc.

Origins of a Group of Patents for Six Food Manufacturing Industries, 1969-1977

Industry	U.S. Food Firms Within the Industry Share of:	
	Patents Assigned to U.S. Corporations	Total Patents
	Percent	
Beer	28	7
Meat	18	11
Dairy	22	8
Sugar	22	6
Poultry	21	13
Starch	67	29
Six Industries' ¹	24	9
Averages ¹		

¹Weighted by industry shipments.

Source: Culbertson, John D. and Willard F. Mueller. *The Influence of Market Structure on Technological Performance in the Food Manufacturing Industries*. Working Paper 47 of North Central Regional Research Project NC 117. October, 1980. p. 17.

Nutrition Information— Consumer's Views

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Sixty-four percent of 1,353 households polled in 1980 by ESS reported making at least one food change for health or nutrition reasons in the 3 years prior to the survey.

More than half (56 percent) of the respondents from households making diet changes for health or nutrition reasons cited doctors, dentists, or nurses as sources of influence. The elderly and those with the least schooling were more likely to cite these health professionals as influential sources of information. Yet, in 1977, less than one-third of all medical schools required nutrition education as part of the curriculum.

Thirteen percent of the respondents from households making recent diet changes cited a dietician or nutritionist as having considerable influence in modifying household food consumption; 8 percent mentioned Government publications or pamphlets; and 4 percent referred to an information source such as an extension worker or public health educator.

Measurements based on consumers' perceptions may tend to underestimate the importance of the above sources, since their information and education efforts are often directed at other health professionals and the mass media. Directing their messages through intermediaries who have significant influence on the public may be a more efficient use of limited resources.

Mass Media

Magazines, newspapers, and television were each cited as influential sources of information by about one-third of the respondents in households changing food practices for health or nutrition reasons; health and diet books were mentioned by about one-fourth. Respondents from higher income households and those with more schooling were more likely than others to cite these sources. However, for functionally illiterate and semi-literate target groups (20 percent and 30 percent of the adult population, respectively), printed material may not be as effective as word of mouth.

Food and nutrition messages presented in the mass media can have a powerful influence on food choice. Results in the Stan-



ford Heart Disease Prevention Program, for example, suggest that structured campaigns, using multiple media sources to reach the general population and private or individual counseling to advise high-risk individuals, can influence food selection and other lifestyle habits which affect health.

Food Advertising

The food marketing system is the largest user of national media advertising among all industries. Television accounts for 90 percent of national mass media food advertising, which includes magazines, newspaper supplements, network radio, and outdoor billboards. Magazines, television, and newspapers were the second, third, and fourth most frequently cited sources of health nutrition information in the ESS survey, and radio was tenth. Because of the pervasiveness of food advertising in these media, it is difficult for the respondent to differentiate among the influences of information obtained from television programming, newspaper or magazine articles, or educational pamphlets, and from advertising.

Food advertising can convey useful nutritional information, but it may also be mis-

leading. Undoubtedly, the level of nutrition consciousness for many consumers who are shifting from use of solid fats and hydrogenated margarines to liquid cooking or salad oils and soft margarines is raised and reinforced by health-oriented advertising messages.

On the other hand, some food advertising confuses consumers by making emphatic or erroneous nutrition claims or implying that certain foods or nutrients have exceptional health-giving properties. A recent television commercial for a leading brand of white bread is illustrative. Through a selective comparison of nutrients, the commercial strongly implied that white bread is as nutritious as whole wheat.

In fact, enriched white bread is similar to whole wheat bread in calcium, thiamin, riboflavin, and niacin—nutrients which along with iron are added by the manufacturer to the refined white flour; but it contains significantly lower amounts of dietary fiber, chromium, copper, potassium, manganese, zinc, magnesium, iron, protein, vitamin B6, vitamin E, folacin, and pantothenic acid. The commercial was withdrawn after a public interest organization filed a petition to have it removed and requested that corrective advertising be aired.

Food Labeling

One-fifth of the respondents in households making diet changes for health or nutrition reasons said that food labels were important sources of information influencing diet modification. But, with only about 5 to 10 percent of all foods bearing labels containing nutritional panels and virtually none with percentage of ingredient labels, reliance on food labels for accurate nutritional information is risky at best.

Sugar provides a striking example of the contrast between the people's dietary intentions and their actual food intake. Some of the discrepancy may be traceable to incomplete food labeling. About a third of the survey households said they were cutting down on sugar and sugary foods such as candy, sweet desserts, and sweet baked goods. Yet, national consumption data indicate a significant increase in the use of caloric sweeteners.

The consumption of sucrose (cane and beet sugar) has been dropping slowly in recent years, while corn syrup use has more than tripled since 1960 with the development of "high-fructose"—a corn syrup about as sweet as sucrose. In addition, and perhaps more importantly, the way we obtain our sweeteners has changed over the years. In 1909-13, only 25 percent of the cane and beet sugar consumed was already processed in the food and beverage product; the remaining sugar was added at home. Today, food processors add about three-quarters of the cane and beet sugar consumed as well as virtually all of the corn syrup.

As the trend toward greater processing of our food supply continues, more compre-

hensive labeling for sugar, salt, fat, and other ingredients related to diet/health concerns could help make consumers more aware of food ingredients and aid them in making informed food choices.

Consumer Misconception About Food and Nutrition

Consumers surveyed had important misconceptions about food and nutrition, and were not always able to articulate reasons for making dietary changes. In the survey, the reason generally given for substituting whole-grain bread and cereals for white was a vague, "It's better for us." This unfamiliarity with the merits of whole grains may contribute to the unfavorable trend toward reduced consumption of bread and

grain products. The misconception that starches are more fattening than other foods also supports the trend. Less than one-third of the respondents agreed that, "In general, people should eat more bread and grain products to help promote health and prevent disease." This misconception is common in the general population, but even more prevalent in the higher socioeconomic groups.

Innovations in food production, technology, and processing in the past decade have changed and expanded the basic food supply, so that many Americans are confronted with opportunities for overconsumption and food selections which may impair their health. Consumer confusion about food and nutrition is compounded by the growth of the "convenience" food market, food fortification and fabrication, and away-from-home eating.

Information Sources Influencing Household Dietary Change

	Influential sources ¹	Most influential source Percent ²
Doctor/dentist/nurse	56	38
Magazine	32	7
Television	29	5
Newspaper	27	4
Friend/relative	26	7
Diet/health book	23	4
Food label	21	2
Dietician/nutritionist	13	3
Diet group	10	4
Radio	10	1
Health food store	9	1
Government publication/pamphlet	8	1
Extension worker/public health educator	4	1
Other influences	7	3
No influence/I figured it out myself	9	9
Don't know/no answer	7	10

¹Percentages add to more than 100, because respondents were allowed multiple answers.

²Percentages are based on responses from 862 households

(64 percent of the total sample) which made dietary changes for reasons of health or nutrition in the 3 years prior to the survey.

The Dietary Guidelines

The growing scientific consensus that modest dietary and other lifestyle changes can improve health has sparked an important reorientation of Government nutrition research and education objectives. The Dietary Guidelines for Americans, issued jointly by USDA and The Department of Health and Human Services (HHS) in 1980, provide an authoritative public health message which can serve as a common base for other nutrition information and education efforts. The Dietary Guidelines can be a focus for public and private research and policy deliberations.

The traditional nutrition message to the public had been "eat more"—more foods to provide protein, vitamins, and minerals to prevent deficiency diseases. The new message, "be moderate," suggests reducing dietary excesses and eating a variety of unprocessed or lightly processed foods to ensure adequate consumption of vitamins and minerals, particularly trace minerals.

More research is needed to clarify the finer details of the relationship of diet to chronic disease. As scientific knowledge grows, advice to the public may need to be altered. But, in the interim, the Dietary Guidelines provide the public with some simple, understandable guidance about

Factors Influencing Food Choice

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what to eat. The USDA Human Nutrition Center is developing other materials including menus, recipe suggestions, and new food guides to help the public translate these guidelines into daily practice.

What Do Consumers Want the Government to Do?

To assess the public's opinion of the appropriate role for Government in nutrition research and education, survey respondents were asked: "If scientific evidence found that food eaten regularly can increase your chances of having a heart attack, what, if anything, do you think the Government should do?" Most said they wanted the Government to publish more information (63 percent) and to continue testing (54 percent).

In other responses, about half (48 percent) said that Government should require ingredient percentages or amounts on food labels. A third advocated regulation for advertising of possibly harmful foods. A quarter (27 percent) advised that such foods be banned.

More than three-quarters of the college graduates wanted more information; better than 6 in 10 said the Government should require quantitative ingredient labeling and continue testing; and about 4 in 10 said that related advertising should be regulated. Respondents who had not attended college were more than twice as likely to want the food banned.

The survey data indicate most U.S. consumers want Government to ensure adequate information in the marketplace through stepped-up nutrition research. Consumers want more effective information and education efforts to communicate up-to-date, factual knowledge about the relationship between health and diet and improved food labeling, so they can moderate their diets through individual decisions. Many consumers, particularly those with more schooling, said that some regulatory guidelines for food advertising might be appropriate.

National Nutrition Education Strategy—A Cooperative Effort

The survey indicated that people are con-

cerned about their diet and its relation to health and need better information and guidance to clear up misconceptions. The fact that they rely mostly on health professionals, the media, and food labeling for dietary information and guidance suggests that the quality of nutrition information available from these sources should be a high priority. Training of health professionals, more nutrition labeling on food products and high quality, objective information from the media are all obvious recommendations. In addition, new educational techniques and broader participation in nutrition education by food marketers may be called for.

Two projects, one underway and one in the planning stages, are good examples of new approaches to nutrition education. To teach children better eating habits, USDA is developing a nationwide nutrition project called "Food for Thought".

"Snack Smart" is the theme for the multi-media campaign that encourages children ages 5-12 to choose fresh fruits, vegetables, and other foods that provide nutrients but not an excessive number of calories for their snacks. The materials developed include television and radio spots, newspaper and magazine ads, and publications for use in schools, food stores, and other community outlets. Printed materials designed for the project feature Spiderman, the popular comic strip character, to attract the children's attention and increase their receptivity toward "smart" snack foods.

Other messages, directed at parents, stress the importance of choosing snacks that set a good example for children. A field test to evaluate the effectiveness of this multi-media strategy is now being conducted in Madison, Wisc. and Knoxville, Tenn.

Last fall, the Federal Trade Commission requested public comments on appropriate methods for getting voluntary nutrition information into the mass media. The most popular and viable idea was that of a council-type organization of representatives from food producers and manufacturers, advertisers, Government agencies, and consumers. A group has been formed to study such an undertaking. ■

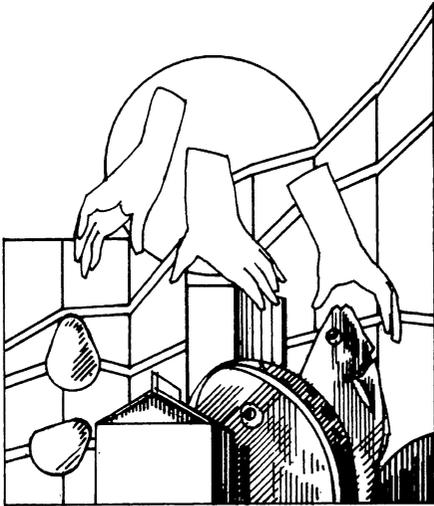
Economic conditions influence how households allocate their food budget. Evidence from two nationwide surveys of household food consumption conducted by USDA in 1965 and 1977 shows that consumers respond to both the changing price relationships among alternative food items and the real changes in their consumer purchasing power.

Consumers are more likely to adjust purchases to price changes within a major food group than to those between major food groups. For example, consumers continued to spend about the same percentage of their food budget on dairy products, but they altered the proportions of cheese, yogurt, milk, or other products that they bought. The survey also found that the level of expenditure for food at home was much less responsive to changes in real purchasing power than expenditures on food consumed away from home. On the other hand, family size has a much larger impact on food-at-home expenditures than on food away from home.

Consumers faced dramatically different economic conditions during each of these two surveys. During the 12 year period, 1965-1977, average food-at-home prices rose 148 percent, non-food prices were up by 104 percent, and average per capita disposable income increased by 120 percent.

Average price increases among food groups varied widely during this period: meat, poultry, fish, and egg prices rose 86 percent, cereal and bakery prices increased 96 percent, and dairy prices increased 93 percent. In addition, prices of food items within major food groups increased at differing rates. Consequently, there were substantial changes in the relative prices of alternative food items during this period.

Despite substantial changes in price relationships among various food groups, consumers surveyed did not make significant changes in their allocation of expenditures among the groups. Consumers continued to spend approximately the same proportion of their food-at-home budget on cereal and



bakery goods, dairy products, fruits, and other major food groups. This finding is not surprising because, as price relationships change, consumers are more likely to substitute relatively lower priced items within the same food group than items between food groups. For example, consumers tend to more readily substitute poultry for beef in their diets than other nonmeat proteins.

Expenditure Shifts

As might be expected, expenditure patterns within several food groups changed substantially between 1965 and 1977. Allocation of expenditure for fish among animal protein products increased from 5.9 percent to 8.0 percent, while the share allocated to beef and veal expenditures declined from 40.4 percent to 39.7 percent. The proportion of the meat, poultry, fish, and eggs budget spent on poultry increased from 10.9 percent in 1965 to 12.5 percent in 1977. A poultry price increase nearly 40 percent less than the price increase for red meats probably contributed greatly to this increase.

Reinforcing the economic incentive to shift meat purchases to poultry are nutritional concerns of consumers. A 1979-80 ESS survey found that 17 percent of the respondents making dietary changes for health or nutrition reasons were eating more poultry, 16 percent and 14 percent were eating less beef and pork, respectively.

The proportion of the meat, poultry, fish, and egg budget spent on eggs declined from 8.3 percent in 1965 to 5.6 percent in 1977. This occurred despite a smaller increase in the price of eggs relative to other food prices. Changing nutritional concerns of the consumer also appear to be an in-

fluence on egg consumption. Sixteen percent of the respondents who made health or nutrition related dietary changes said they were eating fewer eggs. In addition, the increase in labor force participation by women may be influencing the content of breakfast, with pre-cooked cereals and other ready-to-eat alternatives substituting for eggs.

Expenditure shares within the cereal and bakery products group also shifted substantially over the period. The share of expenditures on flour and cereal, as a percentage of total expenditures on cereal and bakery products, increased from 31.3 percent in 1965 to 36.7 percent in 1977. On the other hand, expenditures on bread decreased from 29.4 percent to 23.5 percent during

Allocation of Food Group Expenditures

	1965		1977		Percentage Price Change Between 1965-1977
	Percent of Food at Home	Percent of Food Group	Percent of Food at Home	Percent of ² Food Group	
Cereal and Bakery Products	12.2	100.0	11.8	100.0	96
Flour, Cereal		31.3		36.7	97
Bread		29.4		23.5	84
Other Bakery Products		39.3		39.9	110
Dairy Products ¹	13.1	100.0	13.0	100.0	93
Fresh Milk and Cream		62.6		54.7	84
Frozen Desserts		13.8		11.4	75
Cheese		17.8		28.1	139
Other Dairy products		5.8		5.8	—
Meat, Poultry, Fish, and Eggs	36.4	100.0	35.4	100.0	86
Beef and Veal		40.4		39.7	89
Pork		22.4		22.9	98
Poultry		10.9		12.5	55
Fish		5.9		8.0	177
Other Meats		12.1		11.6	94
Eggs		8.3		5.6	59
Fruits	7.0	100.0	7.2	100.0	82
Fresh		53.0		54.2	82
Processed		47.0		45.8	81
Vegetables	9.8	100.0	9.7	100.0	96
Fresh		54.8		53.5	79
Processed		45.2		46.5	113
Fats and Oils	3.5		3.3		99
Sugar and Sweets	2.9		3.1		131
Other Foods	15.1		16.5		129

Sources: USDA Household Food Consumption Survey, 1965; USDA Nationwide Food Consumption Survey, 1977; Bureau of Labor Statistics.

¹Butter is included in the Fats and Oils food group rather than the Dairy Group.

²May not add to 100 because of rounding.

the same period. The ESS survey found that 10 percent of respondents changing diets because of health or nutrition concerns reduced their consumption of bread, probably for weight reduction purposes. Also, 14 percent of those respondents were using a different type of bread, primarily whole grain rather than white.

Cheese has grown in importance in the dairy product group. The percentage of dairy expenditures allocated to cheese rose from 17.8 percent to 28.1 percent during the period between the two surveys. The share of dairy expenditures allocated to fresh milk, cream, and frozen desserts declined from 62.6 percent in 1965 to 54.7 percent in 1977.

Processed vegetables and fresh fruits became more popular from 1965 to 1977. The share of vegetable expenditures spent on processed vegetables increased during this period from 45.2 percent to 46.5 percent. In contrast, the share of fruit expenditures spent on processed fruits decreased from 47.0 percent to 45.8 percent.

Other Factors

Many factors other than changes in relative price influence the level and mix of food expenditures. Researchers have found that income is important in determining the mix of foods purchased and the amount spent on away-from-home food. But it's less important in determining the amount spent on at-home food. Also, household size influences both the level and mix of food expenditures.

Statistical analysis of expenditure data in the 1977 survey showed that income had a much larger affect on expenditures for food-away-from-home than for food at home. A 10-percent increase in income is associated with increased total food expenditures of 3.2 percent. This increased spending is comprised of an 8.1-percent increase in away-from-home food spending but only a 1.5-percent increase in spending for food at home.

The greater responsiveness of away-from-home eating to income changes is due in part to the greater likelihood that higher

income households have more than one adult working outside the home. In two-income households, the greater convenience of eating out is an important factor in food expenditure decisions. Also, away-from-home eating has an entertainment element and higher income households tend to spend more for entertainment.

Expenditures for cereal products, pork, and eggs declined as income increased. For the remainder of the food groups and major sub-categories, increased incomes result in increased expenditures. As expected, as incomes rose, people bought more higher priced substitutes—beef and cheese instead of poultry; fresh rather than processed fruit and vegetables.

Household size is another factor that influences the level and mix of food expenditures. Changes in household size have a larger impact on spending for food eaten at home than away-from-home food spending. A 10-percent increase in household size results in a 5.7-percent increase in total food spending. This increase is comprised of a 1.1-percent increase in away-from-home spending, and a 7.3-percent increase in at-home food spending.

This suggests there is both an income constraint on larger families forcing them to eat more meals at home and a greater likelihood that one adult does not work outside the home. Because of the greater numbers of children in larger families, expenditures for such items as cereal products, fresh milk, cocoa and soft drinks, also tend to follow an increase in size of household. ■

Responsiveness of Food Expenditures to Changes in Income and Household Size

Food Expenditure	Percent Change in Expenditure Due to a 10-Percent Change in		Food Expenditure	Percent Change in Expenditure Due to a 10-Percent Change in	
	Income	Household size		Income	Household size
Total Food	3.20	5.68	Sugars and Sweets	0.47	9.55
Food away from home	8.14	1.14	Fats and Oils	0.68	7.71
Food at home	1.47	7.27	Fresh Fruits	2.41	5.32
Cereal Products	-1.18	11.00	Processed Fruits	1.66	5.74
Bakery Products	1.49	8.44	Fresh Vegetables	1.82	4.47
Fresh Milk	0.48	10.36	Processed Vegetables	0.81	8.09
Cheese	3.21	5.36	Juices	1.81	5.24
Beef	2.28	6.98	Coffee	1.44	3.82
Pork	-0.05	8.74	Cocoa	1.54	13.38
Poultry	0.66	6.98	Soft Drinks	1.89	8.07
Fish	3.28	4.25			
Eggs	-0.63	7.49			

Sources: USDA Nationwide Food Consumption Survey, 1977.

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The Beneficiaries of Food Stamp Expenditures

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In fiscal 1980, over 21 million people received food stamps valued at about \$9 billion. While the 21 million Food Stamp Program (FSP) participants are the most apparent, they are not the only beneficiaries of the program. Estimates of the increased food spending in 1980 resulting from the FSP range from \$720 million to \$4.1 billion which is shared by farmers, retailers and wholesalers, processors, transporters, restaurateurs, fishermen, and foreigners.

The total food stamp budget overstates the additional food spending which results from FSP because food stamps, although redeemable only for food, may replace some of the money which recipients previously spent on food. The money previously spent for food could be used to purchase non-food items. Furthermore, to the extent that food stamps are a transfer of money from the general population to food stamp recipients, the increase in food expenditures by recipients will be partially offset by a decline in food expenditures by non-recipients.

Estimates of the share of the food stamp dollar received by each of these food system participants can be constructed using USDA studies of food expenditures and marketing costs. These estimates measure only the initial purchase benefits. The approach used does not include the secondary effects of FSP expenditures such as additional expenditures by manufacturers for machinery which may be induced by the larger food demand created by the FSP.

The Effect of the FSP on Food Expenditures

Expenditure patterns of food stamp recipients can be analyzed by treating the food stamp as a simple increase in total purchasing power, keeping in mind that there are considerable constraints on how a portion of the family's total budget can be used.

If the increased purchasing power makes up a large portion of the recipient's income, the percentage of income spent on food provides a good estimate of the FSP's impact on food expenditures. Estimates based on the Consumer Expenditure Survey and a recent study by James N. Morgan of the



University of Michigan indicates that low-income families spend 30 to 45 percent of their income on food.

If the increased purchasing power is a very small part of the recipient's total income, then the percentage of each additional dollar of income spent on food could be used to estimate the FSP's impact on food expenditures. Estimates by USDA's Larry Salathe, and Saul Hymans and Harold Shapiro of the University of Michigan put that percentage at 8-15 percent for low-income families.

In a few cases the recipient's food budget, in the absence of the FSP, may be less than the amount of stamps received. This phenomenon results in the effect of the FSP to be understated by about 5 cents for every food-stamp dollar distributed. This 5 cents is offset by reduced food spending by taxpayers, whose net incomes are reduced by the taxes levied to pay for food stamps.

Thus, the FSP increases food expenditures from 8 to 45 percent of the value of the food stamps distributed, or from \$720 million to \$4.1 billion, in FY 1980, based on disbursements of \$9 billion in food stamps.

The Impact of Increased Expenditures for Food on the Food Industry

Data on food expenditure patterns, marketing spreads, and farm input costs, enable rough estimates of how these increased food expenditures are distributed in the food system. Low-income households spend 69 percent of their food expenditures in grocery stores for domestically produced food and 13 percent for domestically produced food consumed away from home. About 18 percent of the average American's food expenditures is spent on fish and imported food. We have assumed a similar percentage for low-income consumers.

For food consumed at home, the farm value averages 38 percent of the retail value, with 62 percent going to the food processing and distribution sector. For food consumed away from home, the farm value is 19 percent of the retail value. For fish and imported food, it is assumed that the U.S. processing and distribution sector collects about 50 percent, with the other 50 percent

Beneficiaries of the Food Stamp Program

	Low estimate	High estimate
	(million dollars)	
Total Increase in Food Expenditures	720	4050
Farmers (29 percent of total)	209	1175
Retail Stores (22 percent of total)	158	891
Processors (17 percent of total)	122	689
Wholesalers (10 percent of total)	72	405
Fishermen and Foreigners (9 percent of total)	65	365
Restaurants (8 percent of total)	58	324
Transport (5 percent of total)	36	203

Labor Productivity and Labor Force Growth

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going to fishermen and foreign producers, processors, and distributors.

The beneficiaries range in importance from transportation with 5 percent of the total increase in food expenditures to farmers with 29 percent. While food stamps cannot generally be used for restaurant meals, restaurants capture about 8 percent of the total increase in expenditures for food. This occurs because, for many recipients, the food stamp is similar to an increase in income. As such, other income which may previously have been used for purchase of food for at-home use can now be used for other purposes, including restaurant meals. ■

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The "productivity problem" in the U.S. economy has attracted widespread attention. Declining productivity is generally cited by economists, business leaders, and public policy makers as one of the factors contributing to our falling growth rate of disposable income and real Gross National Product (GNP). The growth rate of labor productivity in the whole U.S. economy fell from 3.2 percent per year in the 1947-65 interval to 2.4 percent annually in 1965-73. In the 1973-79 period, U.S. labor productivity growth had declined to an average annual rate of .8 percent. In U.S. food manufacturing, labor productivity grew at an annual rate of 4.2 percent from 1947 to 1965. It declined to 3.6 percent annually in the 1965-73 period and decreased again during 1973-80 to 3.3 percent.

From 1973-78, labor productivity for food stores fell at a rate of 1.4 percent per year after rising at an annual rate of 2.7 percent from 1958 to 1973. Declining labor productivity growth is not isolated to food industries.

Productivity Factors

Labor productivity measures the amount of output per labor-hour. High levels of labor productivity represent more products and services provided by each person in the work force. High rates of growth of labor productivity are usually accompanied by higher real—uninflated—wages and rising standards of living.

Increases in labor productivity are due to several factors. The output of a worker increases as the amount of physical capital (plant and equipment) that he has to work with expands. A simple example is the greater amount of land a farmer can till using a tractor, compared with the amount he can till using a horse. Therefore, increases in physical capital per worker should lead to increases in output per worker. Secondly, a worker will be more productive, the more skilled he is. The quality of the workforce improves with higher levels of experience, educational attainment, training, and health of the labor force. Technological advances and improvements in methods of production also increase labor productivity.

Effects of a Growing Labor Force

Many causes of lagging productivity growth have been suggested in recent years. Often mentioned are declines in spending for new capital goods, perceived declines in work effort innovation, and increases in Government taxation and regulation. It is far less common to see attention devoted to the dramatic changes in the size and composition of the labor force.

The size of the U.S. labor force has grown steadily since 1945, and the rate of growth has been increasing since 1965. This growth came from two sources: the post-war "baby boom" and the entry of increasing numbers of women into the labor force. From 1945 until 1960 the birth rate averaged 25 births per 1,000 individuals per year. This was 37 percent higher than the average rate through the Depression years of the 1930's, and 60 percent higher than average birth rates in the 1970's. The labor force started to grow rapidly in the late 1960's and 1970's as the members of the baby boom generation matured. The decline in the birth rate of the last 20 years will be mirrored in slower labor force growth in the 1980's and 1990's.

The second source of unusual labor force growth is the entry of women. From 1950 through 1979, the proportion of the female population in the labor force increased by 52 percent. The entry of women led to a sharp change in the demographic characteristics of the workforce. From 1950 to 1979, while total employment in food manufacturing fell by 100,000, the number of women employees rose by 80,000. Women may not continue entering the labor force at the same rate. It is chiefly this uncertainty which makes it hard to forecast labor force growth in the next 20 years. However, the declining birth rate should cause the labor force to grow more slowly, at least until the turn of the century.

Changes in the growth rate of the labor force have, over time, clearly affected labor usage in food manufacturing. The interval 1947 to 1965, was a period of slow overall labor force growth. During this time total employee hours worked in food manufacturing industries fell by 20 percent, as physical capital was substituted for labor.



In 1965, this trend stopped and total hours worked have remained nearly constant since then.

These labor force developments affect productivity growth in two ways. First, the entering workers have been relatively young and inexperienced. This change in the composition of the labor force is illustrated in Table 3, which shows the proportion of the labor force made up of males who are at least 25 years old. Historically, this group has had greater experience and a more permanent attachment to the labor force than others. More experience and permanent labor force attachment are associated with greater skills and training and therefore greater productivity. As relatively inexperienced groups make up larger proportions of the labor force, the average skill level of the labor force declines. As new workers remain in the labor force their work experience and training will rise.

Table 1—Growth in Labor Productivity and Labor Force

Year	Percent change, per year	
	Labor productivity	Labor force
1948-65	3.2	1.3
1965-73	2.4	2.0
1973-79	.8	2.5

Source: Economic Report of the President, 1981 pp. 69, 264.

Table 2—Female Labor Force Participation Rate

Year	Percent of Female Population in the Labor Force
1950	33.9
1965	39.3
1973	44.7
1979	51.6

Source: Bureau of Labor Statistics, 1980 Handbook of Labor Statistics p. 13, 14.

Table 3—Shifts in the Composition of the Labor Force

Year	Proportion of the labor force that is male and at least 25 years old
1950	58.6
1965	53.7
1973	47.9
1979	44.9

Source: Bureau Labor Statistics, 1980 Handbook of Labor Statistics, p. 7, 8.

The second way in which labor force growth affects labor productivity is by changing the relative cost of labor and altering the physical capital to labor ratio. Large increases in the supply of labor should reduce the cost of labor relative to capital and should lead producers to substitute labor for plant and equipment. Even if the

amount of capital grows at a constant rate, an increase in the growth rate of the labor force will reduce the growth of the capital to labor ratio. A decrease in the growth of capital per worker will reduce the growth of labor productivity.

To illustrate these effects, Table 4 presents data on the growth of capital costs relative to labor costs, investment spending per worker, and the capital labor ratio for the United States in general. From 1948 to 1965, capital costs rose only 69 percent as fast as labor costs. From 1965 to 1973 capital costs rose 76 percent as fast as labor costs, and by the mid-1970's, capital costs were rising faster than labor costs. Precisely the same pattern of recent declines in labor costs relative to capital costs has occurred within food manufacturing.

Rising energy prices and inflation-induced tax increases on capital made significant contributions to the rise in capital costs. Environmental and worker safety regulations may also have contributed to the rise in capital costs of production in the 1970's. At the same time, the labor force was growing rapidly, constraining labor costs. As a result, producers faced a strong incentive to reduce the rate of growth of capital per worker.

These labor force developments may not have had an important direct effect on agriculture. The agricultural labor force is of a different composition than the national labor force. The proportion of female agricultural employment is less than half the national average, and prime age (25+ years) men still make up 60 percent of agricultural employment. In addition, there has been a long-term decline in the importance of labor in agricultural production, so that labor market changes have rather muted effects on most of agriculture.

While agriculture has been relatively unaffected by recent labor force trends, other portions of the food system have reacted in the same way as the economy at large. Production methods in the food system have been affected by changes in the

characteristics of the work force and the relative costs of capital and labor. Input suppliers, food processors, and firms in food distribution and the food service sector have faced strong incentives to increase their use of labor and to reduce the growth of capital per worker. Employment in grocery stores grew 22 percent from 1973 to 1979, while employment in eating and drinking places expanded 62 percent in the same period.

Future Labor Productivity

How are future labor force developments likely to affect labor productivity? Fewer

young workers will be entering the labor force between now and the turn of the century. The extent to which women will continue to enter the labor force is difficult to forecast. In Table 5, several projections of labor force growth are presented, assuming high, medium, and low rates of future entry of women into the labor force. Each growth path projects a steadily declining rate of labor force growth over time. This alone should increase capital to labor ratios and labor productivity. In addition, as the average age of the labor force increases and as the experience, job attachment, and skill levels of recently entered women rise, labor force quality should also increase. This should also enhance labor productivity.

These labor force developments have been unique to the United States and Canada among the industrialized countries of Western Europe, North America, and Japan. Canada's labor force has actually grown more rapidly than that of the U.S., while the labor forces of France, Germany, Great Britain, Italy, and Japan have grown less than half as fast (the German labor force has declined). Labor productivity in the latter five countries has grown faster than that in Canada and the U.S. Given the rapid growth of labor forces in the North American countries, the United States and Canada would have needed a much higher growth in their capital stocks to match the productivity growth performance of Western Europe and Japan.

This simple international comparison also indicates, however, that labor force trends are not the only important factor affecting productivity trends. All seven countries, even those with no labor force growth, have had declining rates of productivity growth since 1973. An important factor faced by all seven since 1973 has been rising real energy prices. If a rising price of energy has increased the cost of new capital and decreased effectiveness of old capital stocks, then this too could be an important factor in the post-1973 decline in productivity growth rates among industrial countries. ■

Table 4—Growth Rates of Capital Costs

Year	Growth Rates (annual averages)		
	Capital Costs	Investment Labor Spending per Worker (1972 dollars)	Capital/Labor ratio
1948-65	.69	3.2	2.99
1965-73	.76	2.2	2.20
1973-79	1.05	.3	1.06

Sources: 1981 Economic Report of the President, pp. 234, 265, 276, 295, and Bureau of Economic Analysis, Dept. of Commerce.

Table 5—Civilian Labor Force Growth Rates

Growth Path	Annual Percent Change		
	1979 to 1985	1985 to 1990	1990 to 1995
High Growth	2.4	1.6	1.0
Middle Growth	1.9	1.3	.8
Low Growth	1.4	1.0	.7

Source: Howard N. Fullerton, Jr. "The 1995 Labor Force: A First Look" Monthly Labor Review, Dec. 80, p. 12, Table 1.

Legislation

The key features of the Administration's proposal for the major crop commodities are nonrecourse loans, a farmer-owned wheat and feed grain reserve, and the authority to implement an acreage diversion program when and if needed.

Loan Rates

Basic loan rates for major crop commodities will continue to be set at levels that will allow U.S. commodities to compete in world markets. However, the loan rates will be high enough to provide an effective safety net and help farmers with their short-term financing needs for production and marketing. For the crops of grain and soybeans for 1982 and beyond, the Secretary of Agriculture will analyze the supply and demand conditions surrounding each crop and make his decision accordingly. The loan rate for cotton will continue to be determined by a formula that reflects world price levels.

Farmer-Owned Reserves

The farmer-owned grain reserve will protect against extreme fluctuations in grain supplies and prices. The reserve will operate by accumulation of wheat and feed grains during periods of excessive supplies and releasing those supplies during periods of shortage. The primary purpose of the reserve will not be to either enhance prices or place a lid on prices, but rather to guard against extreme fluctuations so that our livestock producers and our foreign customers can be assured of a reliable source of supply.

To encourage grain to move into the reserve, entry loan levels will be determined each year. As in 1981, these levels will reflect costs, excluding land, in major producing areas and will reflect other relevant economic factors such as world supply and demand conditions.

Other incentives to participate in the farmer-owned reserve will be adjusted each year in response to supply and demand conditions. Annual storage payments will reflect storage costs and other factors.

Storage payments are expected to run somewhere between 20 and 30 cents per bushel per year, barring some unusual developments. The authority to waive the

cost of interest charged to farmers during the second and third years of the program is also being requested by the Administration.

Under this proposal, farmers will be given the opportunity to enter the reserve program directly. Once they have signed a contract to participate in the reserve for a 3-year period, they will be required to hold their grain in reserve until the price reaches a release trigger. This trigger will be based on the full cost-of-production in major producing areas, as well as other factors. This proposal will allow for a wider corridor in which prices may move, reflecting basic supply and demand conditions.

The Secretary will use discretionary authority to set this level each year. Unlike the present reserve program, once the release trigger is reached, the storage payment will stop and farmers will have the choice of keeping their grain in the reserve or removing it. If they choose to remain in the reserve, they will be charged the full-market rate of interest.

There is no "call" provision in the Administration proposal, and steps will not be taken to force grain onto the market, as the current program does. However, authority to call the loans if highly unusual circumstances unfold will be retained under the Administration proposal.

To prevent the reserve from becoming too large and too costly, the Administration is recommending that the size of the reserve be limited to no more than 12-15 percent of annual U.S. feed grain output and 18-20 percent of annual wheat production. This would be in addition to the 4 million tons of wheat in our Food Security Wheat Reserve. These levels are maximums; the quantity that will be held in the reserve at any given time will reflect actual market conditions.

Production Controls

Once the reserve is full, the Administration will stand ready to offer producers a voluntary paid diversion program—if global supply prospects indicate another large crop in the offing. To further simplify the

operation of commodity programs and reduce Government regulations, it is being recommended that the authority to use set-asides and the requirement to calculate Normal Crop Acreage (NCA) be abolished.

To eliminate direct Federal payments and reduce budget exposure, it is proposed that target prices and deficiency payments be eliminated beginning with the 1982 crops of wheat, feed grains, rice, and cotton.

The Administration is also proposing that low-yield and prevented-planting disaster payments be eliminated. The Administration feels they are no longer necessary as a result of passage of the comprehensive Federal Crop Insurance Act of 1980.

Dairy

The Administration has proposed a more flexible milk price support program. While the structure of the program would remain unchanged, the support level would be set between 70 and 90 percent of parity, adjusted as needed. The support level on October 1, 1981, would not be lower than the current \$13.10 per hundredweight. While price-support levels above 70 percent of parity may be appropriate in many years, the Administration has requested the flexibility to adjust the support level so that supply and demand are in balance.

One commodity that remains closely regulated by a Federal Government program is peanuts. In order to see the United States become more competitive in the production and export of peanuts, the Administration has requested further changes in the peanut program which the 1977 Act started when it first modified permanent legislation. The proposal would eliminate acreage allotments and reduce poundage quotas by 10 percent annually over the next 4 years.

Food Stamp Program

The Administration has sent changes in the Food Stamp Program to the Congress with the intention that program savings can be achieved at the earliest possible time by including them in the President's Economic Recovery Program. These proposed changes have been discussed in another article in this issue of the NFR (see Proposed Food Stamp Program Changes). ■

Publications

Rural and Small Town Population Change, 1970-80, by Calvin L. Beale. ESS, USDA, ESS-5, February 1981.

During the 1970's, the population growth rate in the United States was higher in nonmetropolitan than in metropolitan areas. Preliminary counts from the 1980 Census of Population show that the nonmetropolitan counties grew in population by 15.4 percent from 1970 to 1980. This compares with a 9.1-percent increase for metropolitan counties, and a 10.8-percent increase for the Nation as a whole.

Agricultural Statistics 1980. ESS, USDA. Report is on sale by Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402. \$7.50.

This report presents statistics on agricultural production, supplies, consumption, facilities, costs, and returns. Foreign agricultural trade statistics include Government shipments to foreign countries. Statistics presented in many of the tables are actual counts of the items covered. Statistical estimates for crops, livestock, and poultry give timely State and national totals and averages. These estimates are based on data obtained by sample surveys of farms and of people who do business with farmers.

Inflation: A Food and Agricultural Perspective, by Paul T. Prentice, and Lyle P. Schertz. ESS, USDA, AER-463, February 1981.

Inflation, a rise in the general price level, affects agriculture in four basic ways. It increases prices of farm products and inputs, encourages farmers to purchase more capital inputs, increases the wealth of those who own the land, and strengthens the relative economic position of high-income people, farm and nonfarm, in buying land.

Since the late sixties, changes in prices paid for farm inputs and changes in prices received for farm products have closely corresponded to changes in the general price level. This report provides a basis for understanding of the causes and effects of inflation as related to agriculture and the conflicting objective of aiding clientele groups and stopping inflation.



Nonmetro Youth in the Labor Force, by Sigurd R. Nilsen. ESS, USDA, RDRR-27, February 1981.

Both metro and nonmetro areas face severe youth employment problems. Twenty-five percent of the total U.S. labor force is comprised of youth aged 16-24; however, youth account for 50 percent of the total number of persons unemployed. Unemployment rates for metro and nonmetro youth are equal; however, a lower proportion of nonmetro youth are in the labor force. This means a lower proportion of nonmetro youth are employed.

U.S. Winter Fresh Tomato Price and Quantity Projections for 1985, by G. A. Zepp. ESS, USDA, ESS-4, February 1981.

New Caribbean-area supplies of winter fresh tomatoes exported to U.S. markets would increase total supplies, raise per capita consumption, lower gross income for both Florida and Mexican growers, and lower fresh tomato retail prices for consumers by 1985. Florida's projected share of the U.S. fresh tomato market rises from 49 percent in 1979 to 51 percent by 1985, while Mexico's share declines from 49 to 46 percent. This report projects winter fresh tomato prices, consumption, and supplies to 1985 under most likely, rapid inflation, and slower inflation situations, and estimates the effects of new imports and raising and lowering import duties on these projections.

Food Consumption, Prices, and Expenditures. ESS, USDA, SB-656, February 1981.

Food prices rose 10.9 percent in 1979. Consumer food expenditures rose 11.3 percent, but the percentage of disposable income spent on food dropped slightly to 16.4 percent. U.S. per capita consumption of all foods totaled 1,643 pounds in 1979. Per capita meat consumption rose slightly as strong gains for pork and poultry offset continued declines for beef and veal. Egg use gained in 1978 and 1979, after prolonged slippage. Lower dairy product consumption featured a sharp drop for fluid whole milk but further rises for lowfat milk. A sharp gain in corn sweetener use offset lower use of refined sugar.

Economic Indicators of the Farm Sector: State Income and Balance Sheet Statistics, 1979. ESS, USDA, SB-661.

The five leading States for farm cash receipts in 1979 were California, at \$12.6 billion; Texas, \$10.0 billion; Iowa, \$9.5 billion; Illinois, \$7.0 billion; and Nebraska, at \$6.0 billion. Newly revised accounts for the balance sheet of the farming sector and for farm income, by State, are presented for 1977-79. Comparable State data for the original accounts, plus cash receipts by State under the original format, are presented for 1949-79.

Developments in Farm to Retail Price Spreads for Food Products in 1980, ESS, USDA, AER-465, April 1981.

Reports 1980 developments in retail food prices, farm value, farm to retail price spreads for retail foods, expenditures by consumers for farm-produced foods, and recent trends in food industry costs, profit, and productivity.

Publications noted in this section may be obtained by writing the sources listed. For publications without addresses call (202) 447-7255 or write Publications Unit, Room 0054, Economics and Statistics Service, U.S. Department of Agriculture, Washington, D.C. All publications are free of charge unless otherwise noted.

Statistical Highlights

Consumer Price Index for all Urban Consumers, U.S. Average (not seasonally adjusted)

	Annual				1980						1981
	1977	1978	1979	June	July	Aug	Sept	Oct	Nov	Dec	Jan
						1967 = 100					
Consumer price index, all items	181.5	195.4	217.4	247.6	247.8	249.4	251.7	253.9	256.2	258.4	260.5
Consumer price index, less food	178.4	191.2	213.0	245.5	245.1	246.3	248.6	250.9	253.2	255.5	257.6
All food	192.2	211.4	234.5	252.0	254.8	258.7	261.1	262.4	264.5	266.4	268.6
Food away from home	200.3	218.4	242.9	266.6	267.8	269.5	271.4	273.1	275.3	277.7	280.9
Food at home	190.2	210.2	232.9	248.0	251.5	256.3	258.9	260.0	262.1	263.9	265.6
Meats ¹	174.2	206.8	241.9	238.1	243.3	251.1	257.8	258.7	261.1	260.0	259.7
Beef and veal	163.6	201.0	255.8	263.8	267.9	273.1	277.5	275.8	277.9	275.3	275.3
Pork	188.8	213.1	216.4	190.4	200.3	212.0	222.7	225.8	228.6	229.1	228.2
Poultry	156.7	172.9	181.5	177.9	187.9	197.5	205.2	209.1	204.1	202.7	202.4
Fish	251.6	275.4	302.3	329.1	330.1	331.8	335.8	336.6	343.0	346.9	358.0
Eggs	166.9	157.8	172.8	147.9	154.2	178.3	179.9	175.3	185.2	206.6	190.2
Dairy products ²	173.9	185.6	207.1	227.2	228.6	229.7	230.6	232.7	235.4	238.0	240.1
Fats and oils ³	191.4	209.6	226.3	240.0	239.3	242.0	243.6	246.0	247.4	251.9	260.4
Fruits and vegetables	191.6	212.9	230.0	250.1	253.9	258.4	257.4	254.2	253.3	255.6	257.6
Fresh	193.4	218.5	235.0	260.0	265.8	273.0	269.6	262.3	258.3	262.0	263.9
Processed	188.8	208.7	226.6	241.4	243.0	244.5	246.3	247.5	250.1	250.9	253.0
Cereals and bakery products . . .	183.5	199.9	220.1	245.9	247.8	249.2	250.3	253.7	255.8	258.5	262.9
Sugar and sweets	229.4	257.5	277.6	342.0	353.1	355.1	361.1	369.0	381.3	386.3	385.4
Beverages, nonalcoholic	322.4	340.8	357.8	395.9	397.4	402.8	403.9	404.9	405.5	405.2	409.7

¹Beef, veal, lamb, pork, and processed meat.

²Includes butter.

³Excludes butter.

Average Retail Price of Meat Per Pound, U.S.

Year	Jan.	Feb.	Mar.	Apr.	May	Beef, Choice grade						Av.	
						June	July	Aug.	Sept.	Oct.	Nov.		Dec.
1965	78.7	78.0	77.3	79.4	81.2	84.9	85.8	84.9	83.7	83.1	83.9	83.6	82.0
1970	100.2	100.0	102.3	102.8	102.4	101.5	103.8	103.5	101.9	101.0	100.8	99.7	101.7
1979	204.9	215.3	225.9	232.8	240.2	233.6	232.2	220.9	226.6	224.3	226.2	232.6	226.3
1980	234.5	234.8	236.2	233.3	230.4	230.6	237.8	242.2	244.9	241.6	242.3	242.9	237.6
						Pork							
1965	56.9	56.1	56.8	56.5	60.2	66.0	69.8	71.1	71.7	70.7	70.5	76.6	65.2
1970	81.4	81.1	80.7	79.3	79.4	79.4	80.0	79.1	76.1	74.0	70.2	67.9	77.4
1979	154.2	157.1	156.9	150.7	149.3	144.5	142.4	135.9	135.6	134.3	132.2	136.3	144.1
1980	135.3	133.2	133.3	127.8	123.6	124.4	136.2	145.7	150.7	153.8	156.3	153.8	139.5

¹Estimated weighted average price of retail cuts. Compiled by Economics and Statistics Service.

Producer Price Indexes, U.S. Average (not seasonally adjusted)

	Annual		July	Aug	1980			Dec	1981
	1980	1979			Sept	Oct	Nov		Jan
					1968 = 100				
Finished goods ¹	246.8	216.1	246.6	251.4	251.4	254.7	255.6	256.9	259.8
Consumer foods.....	239.4	226.3	239.5	246.5	246.5	247.4	248.5	248.8	250.6
Fruits and vegetables ²	238.5	229.0	247.5	253.8	266.0	240.4	246.6	244.7	257.7
Eggs.....	171.0	176.5	159.3	176.9	188.4	175.2	194.0	217.5	185.7
Bakery products.....	247.7	221.7	247.1	247.7	249.0	251.9	255.2	258.9	261.3
Meats.....	235.8	240.6	240.1	254.0	249.6	251.2	244.8	242.3	241.3
Beef and veal.....	260.2	252.2	269.0	278.7	266.7	264.9	254.6	252.0	254.7
Pork.....	196.7	205.0	199.8	219.2	221.4	225.9	222.6	218.7	214.8
Poultry.....	193.3	188.6	215.5	213.6	227.6	213.1	207.7	203.3	203.2
Fish.....	371.0	383.8	364.3	370.3	367.5	350.0	357.8	355.4	373.0
Dairy products.....	230.7	211.2	230.5	233.0	234.1	238.4	240.6	242.7	245.2
Processed fruits and vegetables.....	228.9	221.9	229.5	230.6	231.9	234.5	235.2	237.1	237.4
Refined sugar ³	214.4	116.3	212.9	232.3	228.9	281.5	282.3	230.2	230.2
Vegetable oil end products.....	233.2	223.7	232.7	240.6	240.3	235.7	237.5	236.9	235.0
Consumer finished goods less foods.....	247.9	208.2	251.4	252.2	251.8	255.0	256.1	257.6	260.9
Beverages, alcoholic.....	175.6	161.3	173.6	179.1	179.8	180.0	180.9	181.2	181.7
Beverages, nonalcoholic.....	259.1	227.7	264.1	264.8	267.0	269.5	275.9	275.9	289.5
Apparel.....	172.2	160.3	174.1	174.8	174.7	175.5	176.0	177.0	178.6
Footwear.....	233.2	217.8	232.9	233.9	235.7	236.8	237.7	237.1	238.6
Tobacco products.....	245.5	217.7	247.6	247.6	247.6	248.9	253.9	254.2	254.3
Intermediate materials ⁴	280.2	242.7	280.3	284.3	285.3	286.9	288.6	291.7	295.5
Materials for food manufacturing.....	263.7	223.5	262.6	277.3	275.9	292.7	296.2	277.0	277.9
Flour.....	187.6	172.1	188.0	190.0	193.5	197.4	198.6	194.5	197.9
Refined sugar ⁵	210.5	119.3	205.3	225.6	222.6	276.6	287.2	221.1	225.4
Crude vegetable oils.....	202.6	243.7	193.3	209.4	219.4	210.9	216.4	204.6	199.8
Crude materials ⁶	304.2	282.2	316.3	317.0	319.3	322.6	323.2	320.8	321.3
Foodstuffs and feedstuffs.....	259.1	247.1	263.3	276.8	276.7	279.1	277.3	271.6	270.6
Fruits and vegetables ²	238.5	229.0	247.5	253.8	266.0	240.4	246.4	244.7	257.7
Grains.....	239.0	214.8	244.8	256.5	260.6	269.2	270.9	265.2	277.7
Livestock.....	252.7	260.3	260.5	275.7	266.8	263.0	254.8	251.4	244.3
Poultry, live.....	202.1	194.3	227.2	224.5	241.0	222.9	221.0	218.9	213.1
Fibers, plant and animal.....	271.1	209.9	267.0	274.6	295.2	278.5	287.2	294.1	284.1
Milk.....	271.2	250.0	265.8	271.6	275.5	280.9	284.7	290.5	288.4
Oilseeds.....	249.2	245.5	258.5	259.7	278.7	283.1	295.8	310.4	316.7
Coffee, green.....	430.3	416.2	424.2	401.2	403.5	403.0	404.4	399.3	409.1
Tobacco, leaf.....	n.a.	207.8	217.7	217.7	n.a.	n.a.	225.6	240.6	234.3
Sugar, raw cane.....	413.0	209.8	380.8	482.7	457.6	586.6	562.3	401.8	416.8
All commodities.....	268.6	235.5	269.8	273.8	274.6	277.0	278.4	280.3	283.5
Industrial commodities.....	274.5	236.5	275.6	278.2	278.8	281.2	282.7	286.1	289.9
All foods ⁷	244.5	266.5	245.4	254.1	254.3	258.8	259.3	253.9	255.1
Farm products and processed foods and feeds.....	244.6	229.8	246.1	255.1	256.3	258.8	260.1	256.5	257.3
Farm products.....	249.3	241.4	253.9	263.8	267.0	263.4	264.9	265.3	264.4
Processed foods and feeds.....	241.0	222.5	241.1	249.4	249.8	255.4	256.5	250.8	252.4
Cereal and bakery products.....	235.9	210.2	234.6	235.8	238.3	241.3	245.4	248.5	250.8
Sugar and confectionery.....	321.2	214.7	313.7	347.1	341.4	399.9	403.4	334.6	338.6
Beverages.....	232.4	210.8	234.4	237.1	236.2	236.7	238.1	238.1	240.4
Wholesale spot prices, 9 foodstuffs.....	264.3	255.6	270.0	283.7	284.8	290.3	289.4	272.6	267.7

¹Commodities ready for sale to ultimate consumer.

²Fresh and dried.

³Consumer size packages. Dec. 1977 = 100.

⁴Commodities requiring further processing to become finished goods.

⁵For use in food manufacturing.

⁶Products entering market for the first time which have not been manufactured at that point.

⁷Includes all processed food (except soft drinks, alcoholic beverages, and manufactured animal feeds) plus eggs and fresh and dried fruits and vegetables.

n.a. = not available.

Per Capita Food Consumption Index¹ (1967 = 100)

	1960	1970	1973	1974	1975	1976	1977	1978	1979 ²
	1967 = 100								
Meat, poultry, and fish	90.2	104.8	100.4	105.9	102.9	109.7	109.3	107.2	106.1
Meat	91.9	104.0	97.7	104.6	101.2	107.9	107.0	103.0	100.4
Poultry	75.6	107.5	109.2	111.1	109.2	116.6	120.1	125.8	136.5
Fish	97.0	110.6	121.0	114.6	114.6	121.7	120.3	127.1	124.3
Egg	104.2	97.0	91.6	89.9	87.2	85.3	84.8	86.7	88.2
Dairy products ³	104.3	99.3	100.6	99.6	100.3	102.2	101.7	102.2	101.8
Fats and oils	96.9	105.9	107.9	104.9	105.5	109.8	106.0	109.5	113.0
Animal ⁴	120.0	88.0	75.2	75.0	67.7	63.7	64.8	65.7	70.1
Vegetable	79.9	119.0	131.8	126.8	133.3	143.7	136.3	141.6	144.6
Fruits ⁵	107.0	102.0	99.8	99.1	107.7	108.8	107.0	104.9	107.5
Fish	115.2	100.8	93.9	97.2	104.6	106.7	104.0	103.4	105.8
Processed	96.6	103.5	107.4	101.5	111.7	111.5	110.8	106.8	109.7
Vegetables ⁶	98.4	102.0	105.1	104.4	103.4	105.0	104.1	104.6	106.7
Fresh	106.5	100.6	100.6	101.3	100.7	106.4	100.5	102.2	103.1
Processed	84.3	100.4	113.0	109.8	108.1	111.4	110.5	108.7	113.0
Potatoes and sweet potatoes	94.6	107.8	106.9	103.9	108.7	107.3	113.6	114.7	120.1
Fish	134.0	94.8	84.0	80.1	90.8	85.2	88.9	80.8	87.9
Processed	58.4	119.7	128.0	125.8	125.2	127.7	134.4	145.9	149.5
Beans, peas, and nuts	95.8	98.1	105.3	102.9	106.5	104.1	101.8	106.8	111.5
Flour and cereal products	102.5	97.8	100.2	99.1	102.0	104.8	102.3	101.4	105.8
Sugar	95.3	106.3	110.4	107.5	104.2	110.8	114.0	113.9	117.0
Coffee, tea, and cocoa	97.7	93.4	97.7	95.3	89.1	93.8	77.5	79.1	84.4
Total food	97.3	102.3	101.9	102.4	101.9	105.7	104.8	104.4	105.7
Animal products	96.3	102.0	98.7	101.7	99.5	103.8	103.5	102.5	102.0
Plant products ⁷	98.5	102.6	105.4	103.2	104.6	107.8	106.1	106.5	109.8

¹Civilian consumption only. Quantities of individual foods are combined in terms of 1967-69 retail prices.

²Preliminary.

³Excludes butter.

⁴Includes butter.

⁵Includes melons and baby food.

⁶Excludes soup, baby food, dry beans and peas, potatoes, and sweet potatoes.

⁷Includes melons, nuts, soup, and baby food in addition to groups shown separately.

Selected Livestock Products: Per Capita Consumption Indexes, Quarterly¹

	1979				1980			
	II	III	IV	I	II	III	IV	
Meat	98.4	99.1	104.8	102.2	102.2	100.3	101.4	
Poultry	135.3	137.6	149.8	131.0	135.7	135.2	147.2	
Eggs	89.4	90.4	93.4	91.4	87.5	88.5	91.4	
Total	101.7	102.6	108.8	104.3	104.4	102.4	107.3	

¹Civilian consumption. Retail weight equivalent. Meat includes beef, pork, veal, lamb and mutton. Poultry includes chicken and turkey.

All data are preliminary

Civilian Per Capita Consumption of Major Food Commodities (retail weight)¹

	1960	1970	1973	1974	1975	1976	1977	1978	1979 ²
	Pounds								
Meats	134.1	151.4	142.6	152.5	145.5	155.4	154.7	149.3	147.1
Beef	64.3	84.1	81.1	86.4	88.9	95.7	93.2	88.8	79.6
Veal	5.2	2.4	1.5	1.9	3.6	3.3	3.2	2.5	1.6
Lamb and mutton	4.3	2.9	2.4	2.0	1.8	1.8	1.6	1.5	1.3
Pork	60.3	62.0	57.6	62.2	51.2	54.6	56.7	56.5	64.6
Fish (edible weight)	10.3	11.8	12.9	12.2	12.3	13.1	12.9	13.6	13.3
Poultry products:									
Eggs	42.4	39.5	37.3	36.6	35.4	34.7	34.5	35.3	35.8
Chicken (ready-to-cook)	27.8	40.5	40.7	41.1	40.6	43.3	44.9	47.5	51.5
Turkey (ready-to-cook)	6.2	8.0	8.5	8.9	8.6	9.2	9.3	9.3	10.1
Dairy products:									
Cheese	8.3	11.5	13.7	14.6	14.5	15.8	16.4	17.0	17.6
Condensed and evaporated milk	13.7	7.1	6.0	5.6	5.0	5.0	4.5	4.1	4.2
Fluid milk and cream (product weight)	321.0	296.0	293.0	288.0	291.1	292.0	288.4	286.7	283.2
Ice cream (product weight)	18.3	17.7	17.5	17.5	18.7	18.1	17.8	17.7	17.5
Fats and Oils—total fat content	45.3	53.0	54.3	53.2	53.5	56.0	54.5	56.2	57.7
Butter (actual weight)	7.5	5.3	4.8	4.6	4.8	4.4	4.3	4.5	4.6
Margarine (actual weight)	9.4	11.0	11.3	11.3	11.2	12.2	11.6	11.4	11.5
Lard	7.6	4.7	3.4	3.2	3.0	2.7	2.3	2.2	2.6
Shortening	12.6	17.3	17.3	17.0	17.3	18.1	17.5	18.2	18.9
Other edible fats and oils	11.5	18.2	20.8	20.3	20.3	22.0	21.6	22.6	23.1
Fruits:									
Fresh	90.0	79.4	74.5	76.6	81.3	83.7	80.3	80.4	81.3
Citrus	32.5	28.0	26.7	26.9	28.7	28.5	25.9	26.2	24.0
Noncitrus	57.5	51.4	47.8	49.7	52.6	55.2	54.4	54.2	57.3
Processed:									
Canned fruit	22.6	23.3	21.3	19.6	19.4	19.2	19.9	19.1	19.4
Canned juice	13.0	14.5	15.1	13.2	14.8	14.8	13.9	16.8	17.3
Frozen (including juices)	9.2	9.3	12.2	12.1	14.2	13.8	14.0	12.6	12.3
Chilled citrus juices	2.1	4.7	5.2	5.2	5.7	6.2	5.8	6.2	5.6
Dried	3.1	2.7	2.6	2.4	3.0	2.6	2.5	2.2	3.1
Vegetables:									
Fresh ³	96.0	91.0	90.8	92.3	91.2	92.4	90.5	92.2	94.2
Canned	45.7	52.9	57.7	56.9	55.1	55.7	55.9	54.2	55.7
Frozen (excluding potatoes)	6.9	9.6	10.6	10.1	9.6	10.2	10.3	10.9	11.5
Potatoes ⁴	87.9	74.9	71.1	67.9	74.5	70.3	75.3	70.6	75.0
Sweet potatoes ⁴	6.4	5.1	4.5	4.9	4.9	4.8	4.5	4.9	5.1
Grains:									
Wheat flour ⁵	118.0	111.0	114.0	112.0	116.0	120.0	117.0	117.0	120.0
Rice	6.1	6.7	7.0	7.6	7.7	7.2	7.6	5.8	9.2
Other:									
Coffee	11.6	10.4	10.1	9.7	9.4	9.6	6.9	7.9	8.6
Tea6	.7	.8	.8	.8	.8	.9	.7	.7
Cocoa	2.9	3.1	3.4	3.0	2.6	3.0	2.7	2.7	2.6
Peanuts (shelled)	4.9	5.9	6.6	6.4	6.5	6.3	6.4	6.9	7.1
Dry edible beans	7.3	5.9	6.4	6.7	6.5	6.2	6.1	5.9	6.4
Melons	23.2	21.2	19.8	17.1	17.3	18.6	19.3	20.3	19.5
Sugar refined	97.4	101.8	101.5	96.5	90.2	94.6	95.7	93.1	91.1

¹Quantity in pounds, retail weight unless otherwise shown. Data on calendar year basis except for dried fruits, fresh citrus fruits, peanuts, and rice which are on a crop-year basis.

²Preliminary

³Commercial production for sale as fresh produce.

⁴Including fresh equivalent of processed.

⁵White, whole wheat, and semolina flour including use in bakery products.

Note: Historical consumption and supply-utilization data for food may be found in *Food Consumption, prices, and Expenditures*. Ag. Econ. Report 138 and annual supplements. USDA.

Market Basket of Farm Foods

	Annual	1979				1980			
	1980	II	III	IV	I	II	III	IV	
Market basket:¹									
Retail cost (1967 = 100).....	238.8	223.8	224.3	225.3	229.8	233.7	242.7	249.2	
Farm value (1967 = 100).....	240.3	234.0	223.4	225.3	226.1	226.5	253.8	255.2	
Farm-retail spread (1967 = 100).....	238.0	217.8	224.8	225.3	232.0	237.9	236.2	245.6	
Farm value/retail cost (%).....	37.2	38.7	36.9	37.0	36.4	35.9	38.7	37.9	
Meat products:									
Retail cost (1967 = 100).....	248.8	250.0	241.3	239.4	224.6	240.0	250.7	259.9	
Farm value (1967 = 100).....	234.0	250.7	222.8	223.5	226.9	215.8	248.6	244.7	
Farm-retail spread (1967 = 100).....	266.1	249.1	263.0	258.1	265.4	268.2	253.2	277.7	
Farm value/retail cost (%).....	50.7	54.1	49.8	50.4	50.0	48.5	53.5	50.8	
Dairy products:									
Retail cost (1967 = 100).....	227.4	203.9	208.7	215.4	219.4	225.3	229.6	235.4	
Farm value (1967 = 100).....	254.9	228.8	237.1	245.2	244.7	251.5	258.4	266.2	
Farm-retail spread (1967 = 100).....	203.5	182.2	184.0	189.4	197.4	202.4	204.6	208.3	
Farm value/retail cost (%).....	52.2	52.2	52.9	53.0	51.9	52.0	52.4	52.5	
Poultry:									
Retail cost (1967 = 100).....	190.8	188.4	179.4	172.7	183.7	177.2	196.9	205.3	
Farm value (1967 = 100).....	211.7	215.6	181.6	186.0	194.9	178.2	239.0	234.4	
Farm-retail spread (1967 = 100).....	170.5	162.1	177.2	159.9	172.8	176.2	156.1	177.1	
Farm value/retail cost (%).....	54.6	56.3	49.8	53.0	52.2	49.5	59.7	56.2	
Eggs:									
Retail cost (1967 = 100).....	169.7	171.4	166.1	172.4	166.6	152.5	170.8	189.0	
Farm value (1967 = 100).....	190.9	191.9	189.6	200.5	181.6	162.5	198.7	220.5	
Farm-retail spread (1967 = 100).....	139.2	141.7	132.2	131.7	145.0	138.0	130.5	143.5	
Farm value/retail cost (%).....	66.5	66.2	67.5	68.8	64.4	63.0	68.8	69.0	
Cereal and bakery products:									
Retail cost (1967 = 100).....	246.4	216.2	223.1	229.2	236.7	244.1	249.1	256.0	
Farm value (1967 = 100).....	221.1	184.5	203.3	203.1	205.0	211.8	226.6	242.1	
Farm-retail spread (1967 = 100).....	251.7	222.7	227.2	234.5	243.1	250.8	253.8	258.9	
Farm value/retail cost (%).....	15.4	14.6	15.6	15.2	14.9	14.9	15.6	16.2	
Fresh fruits:									
Retail cost (1967 = 100).....	271.8	259.8	293.9	254.8	242.3	272.4	303.6	268.8	
Farm value (1967 = 100).....	242.7	232.3	266.8	245.9	213.3	353.6	289.6	219.2	
Farm-retail spread (1967 = 100).....	284.8	272.1	306.0	258.8	255.3	281.8	309.9	291.1	
Farm value/retail cost (%).....	27.7	27.7	28.1	29.9	27.3	28.8	29.6	25.3	
Fresh vegetables:									
Retail cost (1967 = 100).....	242.2	220.1	211.1	218.8	216.0	242.5	249.8	260.6	
Farm value (1967 = 100).....	215.8	198.3	184.7	182.8	164.7	214.0	238.9	244.5	
Farm-retail spread (1967 = 100).....	254.7	230.4	223.6	235.7	240.1	255.8	255.0	268.2	
Farm value/retail cost (%).....	28.5	28.8	28.0	26.7	24.4	28.8	30.6	30.0	
Processed fruits and vegetables:									
Retail cost (1967 = 100).....	242.5	224.5	229.2	231.1	236.0	239.7	244.6	249.5	
Farm value (1967 = 100).....	242.6	234.6	237.2	242.8	241.6	236.2	243.8	248.3	
Farm-retail spread (1967 = 100).....	242.4	222.3	227.4	228.5	234.8	240.6	244.8	249.7	
Farm value/retail cost (%).....	18.1	18.9	18.8	19.0	18.6	17.9	18.1	18.1	
Fats and oils:									
Retail cost (1967 = 100).....	241.2	224.7	229.3	232.4	235.6	239.3	241.6	248.5	
Farm value (1967 = 100).....	249.9	286.1	289.0	263.3	247.5	224.7	261.0	267.3	
Farm-retail spread (1967 = 100).....	237.8	201.1	206.3	220.5	230.9	244.9	234.1	241.2	
Farm value/retail cost (%).....	28.8	35.4	35.0	31.5	29.2	26.1	30.0	29.9	

¹Market basket statistics are based on the weighing structure of the Consumer Price Index for all urban consumer, (CPI-U). Retail costs are based on indexes of retail prices for domestically produced farm foods from the CPI-U published monthly by the Bureau of Labor Statistics. The farm value is the payment to farmers for quantity of farm product equivalent

to retail unit, less allowance for byproduct. Farm values are based on prices at first point of sale and may include marketing charges such as grading and packing for some commodities. The farm-retail spread, the difference between the retail price and the farm value, represents charges for assembling, processing, transporting, and distributing these foods.

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