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DROUGHT, FOOD PRICES, AND FOOD ASSISTANCE PROGRAMS: A REPORT TO CONGRESS

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EXECUTIVE SUMMARY

During the late spring and early summer of 1988, the United States experienced one of the worst droughts of the century. Record rainfall deficits and extreme temperatures in large parts of the country resulted in sharp declines in the supply and increases in the price of basic farm commodities. Although prices paid to farmers are only one component of the ultimate costs to consumers for food, there was concern that sharp increases in commodity prices would translate into higher retail costs.

In response to such concerns, the Disaster Assistance Act of 1988 (Public Law 100-387) directed the U.S. Department of Agriculture (USDA) to survey food and commodity prices as of December 1988 to determine the effects of the drought and related conditions on recipients of Federal nutrition benefits and recommend appropriate actions that may be taken by the Secretary or Congress. This report presents the results of that analysis.

Retail food prices increased more rapidly in 1988 than in 1987. The cost of food purchased for home consumption--based on the Consumer Price Index (CPI) for food at home--increased 5.6 percent from December 1987 to December 1988, compared to an increase of 3.5 percent the previous year. Because food costs are one of the more volatile sectors of the economy, the comparison of year-end to year-end changes can overstate the underlying trend. The average cost of food at home--using the CPI for food at home averaged over the calendar year--was 4.2 percent higher than the average in 1987. Nearly half of the increase during 1988 occurred in the first half of the year, even before the full effects of the drought occurred. Between June and December 1988, the cost of food at home increased 2.8 percent, only slightly above the 2.7 percent increase between December 1987 and June 1988.

Drought-induced crop reductions and subsequent price increases for some farm commodities accounted for only a small portion of the increase in food prices during 1988. The effect of the drought on consumer food prices was smaller than might have been expected given the severity of the drought, the steep declines in major crop production reported during 1988, and the size of the increases in consumer food costs over the last six months of the year. The drought added about four-tenths of a percentage point to the increase in retail food prices during the last half of 1988. Measurable price increases occurred in three food groups because of the drought: fruits and vegetables, cereal and bakery products, and fats and oils. A combination of factors--including the onset of late summer and early fall rains, the diversity of

the U.S. food supply, the sale of stored crops carried over from previous years, and the relatively small contribution of farm prices to retail food prices--dampened the drought's effect on food prices.

Given the small contribution of the drought to changes in overall food prices, the consequences for domestic food assistance programs and participants were minimal. Each USDA food assistance program includes features which respond to changing food prices. Specifically, food stamp benefits and Federal subsidies to school food service programs are regularly indexed to accommodate changing food prices. In other programs, the effects of price changes are more indirect, influencing the availability of commodities, or the number of people served with a fixed grant.

Food stamp benefits were last updated on October 1, 1988, increasing the maximum benefit for a family of four to $300. (This update included a 0.65 percent increase enacted in the Hunger Prevention Act of 1988.) The actual cost of the Thrifty Food Plan (TFP) for a family of four in December 1988 was $309.00, an increase of 3.7 percent since June--the reference point for the cost-of-living adjustment--when the TFP was $298.10. While the 6-month increase is larger than in recent years, only a portion of the higher cost of the TFP--about nine-tenths of a percentage point--can be attributed to the drought. The balance reflects an unavoidable difference between maximum allotments and the current cost of the TFP under any schedule of retrospective cost-of-living adjustments. Even with the drought, food stamp benefits relative to the December TFP are about equal to the average over the last ten years.

The cost of the TFP increased faster, and the effect of the drought was larger, than the broader measure of the cost of food at home embodied in the CPI. These differences can be traced to differences in the composition of the TFP and CPI market baskets. The categories of fruits and vegetables, cereals and bakery products, and fats and oils make up nearly 60 percent of the TFP and only 30 percent of the CPI market basket. These are the foods most affected by the drought. The combination of faster price increases in more heavily weighted food groups pushed up the cost of the TFP more rapidly than the CPI for food at home.

Most beneficiaries of school food service programs--namely, children from low-income families--are largely unaffected by changes in food costs whether caused by the drought or by other factors. About 41 percent of the meals served under the National School Lunch Program and 83 percent of the meals served under the Breakfast Program are served free to children from families with income less than 130 percent of the poverty line; another 7 percent of the lunches and 5 percent of the breakfasts are served at a reduced price (which cannot exceed 40 cents for each lunch

and 30 cents for each breakfast) to children from families with income more than 130 percent but less than 185 percent of the poverty line. These children are entitled to these benefits regardless of changing food prices. The reimbursement rates to meal providers were last adjusted in July 1988 based on price changes through May--before the onset of the drought--and will be adjusted again in July 1989. The 1988 increase in the index used to adjust these rates, however, was actually less than the average of the last 10 years.

In grant programs such as the Special Supplemental Food Program for Women, Infants and Children (WIC), the number of participants served is a function of the cost of the food package. Food price inflation does not affect the benefit offered to participants but raises the cost of benefits for each recipient and thereby affects the number that can be served by the appropriation provided.

In practice, however, the drought had only a small influence on the number of participants served. The average WIC food package is dominated by foods unaffected by the drought (infant formula, milk, cheese, and juice). Although cereal and bakery products were affected by the drought, cereal accounts for only 11 percent of the average WIC food package. Thus, drought-induced increases in cereal prices could have increased food package costs by only 0.2 percent between June and December. This effect was extremely small in comparison to the effects of cost containment efforts (notably infant formula rebates) which tended to lower the average cost per recipient and free funds to serve additional participants within the appropriation.

While the total value of commodities distributed through all of the domestic food assistance programs fell about 15 percent in 1988 compared to 1987, the reduction was largely unrelated to the drought. Changes in farm policies and market conditions that discouraged overproduction and reduced government acquisitions had significantly reduced the supply of excess commodities available for distribution well before the onset of the drought. The drought had some effect on the types of commodities available for donation, but USDA was able to substitute more readily available items to minimize the effect of the drought.

While no additional special responses to the drought beyond those already taken are necessary or recommended, USDA will continue to monitor consumer food prices. Last year's production losses mean that crop supplies are tighter than they have been for some time. If the drought persists through another year, commodity and retail food prices could increase more rapidly than currently expected.

Introduction

During the late spring and early summer of 1988, the United States experienced one of the worst droughts of the century. Record rainfall deficits and extreme temperatures in large parts of the country resulted in major crop yields significantly lower than expected. Sharp declines in the supply of basic farm commodities were expected to lead to higher prices for those commodities. Although the prices paid to farmers are only one component of the ultimate costs to consumers for food, there was concern that sharp increases in commodity prices would translate into higher retail costs. Food price increases would affect all consumers but, it was feared, would have a particularly serious effect on low-income families and others with limited resources who rely on Federal food assistance programs to help meet their nutritional needs.

In response to such concerns, the Disaster Assistance Act of 1988 (Public Law 100-387) directed the U.S. Department of Agriculture (USDA) to survey food and commodity prices as of December 1988 to determine the effects of the drought and related conditions on recipients of Federal nutrition benefits. In addition, the Act required the Department to assess the adequacy of benefits under Federal nutrition programs with respect to any food price

inflation that occurred because of the drought and recommend appropriate actions that may be taken by the Secretary or Congress. This report presents the results of that analysis.

Retail food prices increased more rapidly in 1988 than in 1987, but drought-induced crop reductions and subsequent price increases for some farm commodities accounted for only a small portion of the increase. The cost of food purchased for home consumption increased 5.6 percent from December 1987 to December 1988, compared to an increase of 3.5 percent the previous year.[1] Between June and December 1988, the cost of food at home increased 2.8 percent.

While food prices increased faster during 1988 than they have in recent years, last summer's drought offers only a partial explanation. The drought added about four-tenths of a percentage point to the increase in the last half of 1988. A combination of factors--including the onset of late summer and early fall rains,

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[1] This increase is the percentage change in the Consumer Price Index (CPI) for food at home (all urban consumers). The average cost of food at home in 1988--using the CPI for food at home averaged over the calendar year--was 4.2 percent higher than the average in 1987 compared to a 4.3 percent increase the year before. The annual average smooths out some of the monthly price fluctuations that obscure the underlying trend in food prices. The December to December change is reported here to conform to the Congressional directive to survey food prices as of December 1988. Unless otherwise indicated, the reference period throughout this report is a calendar, rather than the Federal fiscal, year.

the sale of stored crops carried over from previous years, the relatively small contribution of farm prices to retail food prices, and the diversity of the U.S. food supply--dampened the drought's effect on food prices. As a consequence, the effect of the drought and related conditions on the recipients of Federal nutrition benefits was reduced.

The following sections of this report describe: (1) the extent of the drought, (2) its effect on farm production and commodity prices, (3) the extent of consumer food price increases over the course of 1988, (4) the contribution of the drought to those increases, and (5) the effect of drought-induced food price increases on Federal domestic food assistance programs and recipients.

The Drought of 1988

The drought of 1988 was one of the worst on record for the central United States and adversely affected many other areas.[2] The area of the contiguous United States with severe or extreme drought was smaller than the great droughts of the 1930's and 1950's. However, the precipitation deficits and extreme heat were especially pronounced during early vegetation and critical

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[2] This description of the drought and its effects on agricultural production is taken from The Drought of 1988: Final Report of the President's Interagency Drought Policy Committee, December 30, 1988.

reproductive crop growth stages in the Northern Plains and Midwest, resulting in record or near-record reductions from normally expected yields for major crops. Drought conditions continued from previous years for the Southern Appalachian and Tennessee Valley regions, resulting in record precipitation deficits in those regions. The Southwest was the only region with above-normal precipitation.

Large parts of the Midwest, South, and Northern Plains received less than half of normal precipitation between April 1 and June 30, 1988. In general, wide bands adjoined these areas where the rainfall was 50 to 75 percent of normal. July rains helped ease the extreme deficits in the Delta Southeast and eastern Cornbelt. However, the drought continued to intensify in parts of the western Cornbelt and Northern Plains. Beginning in August and continuing into September, the geographic coverage of the drought declined considerably, albeit too late to alleviate extensive damage to the spring wheat, feed grain, and soybean crops. Favorable rains in many parts of the country during August were accompanied by extremely high temperatures in the East and Midwest, leaving subsoil moisture levels very low. The lack of significant rainfall into September over parts of Illinois, Iowa, and Montana added to the severe conditions in those areas.

Favorable rains in September sharply reduced the areas with extreme rainfall deficiencies. By the end of September, the drought, which had at one time stretched from Oregon across the northern tier of States through the Great Lakes to the Mid-Atlantic coast and curled back to east Texas, had broken up considerably. Still, in many areas the amount of rainfall did not reverse trends of diminishing subsoil moisture. Because of large soil moisture deficits in the Northern Plains and parts of the western Cornbelt, those regions will likely enter the 1989 growing season with less than normal soil moisture.

The Effect of the Drought on Farm Production and Prices

Hot, dry weather during critical growing stages damaged crops and reduced yields. Indicative of the drought's severity, the 1988 average corn yield was 31 percent below trend, the largest drop since the mid-1930's, and the soybean yield was 17 percent below trend, the largest decline over the past 60 years. Based on January 1989 conditions, 1988 spring wheat production was down 54 percent from 1987, corn production was down 30 percent, feed grain production was down 31 percent, soybean production was down 20 percent, and total wheat production was down 14 percent. Although the year's grain and soybean harvests were reduced by the drought, total supplies, including relatively large stocks carried over from 1987, were adequate to meet domestic and foreign demand.

Although most fresh vegetables are produced under irrigation in California during the summer, significant vegetable volume is produced across the United States. The drought's greatest effects on U.S. vegetable crops were on dry edible beans (down 26 percent), potatoes (down 9 percent), green peas, sweet corn, and snap beans for canning. The effect on total production of fruit was small. Other major crops such as rice were largely unaffected by the drought.

The drought's effect on livestock was moderated by Government actions to bolster forage and feed supplies. Hay production in 1988 dropped 15 percent but would have been even lower if haying had not been permitted on acreage previously idled under acreage reduction and conservation reserve programs. Short forage supplies caused some producers to sell cattle during June and July; some were sold for slaughter and others went to producers with forage available. Both cattle and hog slaughter in 1988 were about 1 percent larger than expected, reflecting producers' reactions to smaller forage supplies and rising grain prices.

Farm prices for a number of commodities increased in 1988. A combination of drought-reduced crop yields, strong consumer demand for crop and animal products, and other factors pushed prices for farm food commodities up an average of 3.7 percent from 1987 and 9.6 percent between December 1987 and December

1988, but some sectors increased more rapidly than others. The farm value of poultry, eggs, cereal and bakery products, and fats and oils all increased about 30 to 35 percent.

Consumer Food Prices in 1988

Overall retail food prices increased more rapidly in 1988 than in 1987, but drought-induced crop reductions and subsequent farm commodity price increases accounted for only a small portion of the increase. Table 1 summarizes changes over the course of 1988 for four measures of retail food prices--the Consumer Price Index for food at home, for food away from home, and for all food; and the Thrifty Food Plan (TFP)--plus a measure of overall price inflation.[3]

The cost of food purchased for home consumption (measured by the CPI for food at home) increased 5.6 percent from December 1987 to December 1988, compared to a 3.5 percent increase from December 1986 to December 1987. The cost of food purchased for consumption away from home increased 4.4 percent in 1988, compared to 3.6 percent the year before. Overall food prices increased 5.2 percent in 1988, compared to 3.5 percent in 1987.

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[3] The Thrifty Food Plan is a nutritious, low-cost food plan developed by USDA's Human Nutrition Information Service. It is composed of different types of food households might buy, or obtain from other sources, to provide nutritious meals and snacks. The cost of the TFP for a family of four (a couple ages 20 to 50 years and children ages 6 to 8 and 9 to 11 years) is used to set food stamp allotments.

Table 1. Consumer food price changes in 1988

	December 1987	June 1988	December 1988	Percent Change Dec-Dec	Percent Change June-Dec
Thrifty Food Plan	$290.60	$298.10	$309.00	6.3%	3.7%
Consumer Price Index (1982-84 = 100)					
Food at Home	112.8	115.8	119.1	5.6%	2.8%
Food away from Home	118.9	121.5	124.1	4.4%	2.1%
All Food	114.7	117.6	120.7	5.2%	2.6%
All Items	115.4	118.0	120.5	4.4%	2.1%

Source: USDA Human Nutrition Information Service and Bureau of Labor Statistics

Notes: The cost of the Thrifty Food Plan is for a family of four consisting of a couple, age 20-50 years, and children, ages 6-8 and 9-11 years. The Consumer Price Index is for all urban consumers and is not seasonally adjusted.

Finally, the cost of the TFP for a family of four increased 6.3 percent from December 1987 to December 1988, compared to 4.2 percent in 1987.[4]

Each summary measure represents a different aspect of the retail market for food. Each consists of a "market basket" of particular foods. The varying rates of increase among these measures over the course of 1988 reflect the differences in (1) the composition of the market baskets and (2) the pace of inflation for the components of each. The CPI for food at home, for example, reflects the average consumption patterns of all urban consumers. The TFP, on the other hand, more closely reflects the average consumption patterns of low-income families and individuals.[5] The cost of these two market baskets will diverge to the extent some food prices increase faster or slower

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[4] Food costs are one of the more volatile sectors of the economy. Comparing month-to-month changes in food prices can overstate the underlying trend. For most analyses it is more appropriate to look at the average change in prices from one year to the next rather than the change from December to December. The Congressional directive to survey food prices as of December 1988, however, implies an interest in the pattern of price changes throughout the calendar year and especially during the last half of the year after the onset of the drought. By way of comparison, the average CPI for food at home in 1988 was 4.2 percent higher than the year before, the CPI for food away from home was 4.1 percent higher, the CPI for all food was 4.1 percent higher, and the average cost of the TFP for a family of four was 4.6 percent higher. The changes in the annual averages are smaller than the December-to-December changes in every instance.

[5] The composition of the TFP market basket, however, is also constrained by the need to meet certain dietary standards at a given cost. Thus, the TFP does not reflect actual consumption patterns of low-income persons perfectly.

than others. The somewhat larger increase in the cost of the TFP implies that it is weighted more heavily towards foods that experienced larger price increases in 1988 than the CPI. Few families or individuals, of course, actually buy the market basket in either of these indexes, so the prices paid by any particular consumer may have risen faster or slower than the average. In addition, consumers can lessen the effect of food price increases by substituting less expensive items for foods with larger price increases.

About half of the total increase in food prices during 1988 occurred in the first half of the year. The broadest measure of the consumer's cost of food purchased for home consumption--the CPI for food at home--increased 3.0 points between the end of 1987 and June 1988, and 3.3 points between June and December 1988; 48 percent of the total increase for the year occurred in the first six months. Similarly, the CPI for food away from home increased 2.6 points in both halves of the year. The rise in the cost of the TFP for a family of four, however, accelerated in the second half of the year. The TFP increased $7.50 between December 1987 and June 1988 and $10.90 between June and December 1988. Thus, 41 percent of the total increase for the year occurred in the first six months and 59 percent occurred in the second. During the last half of 1988, the TFP for a family of four increased 3.7 percent, the cost of food at home increased

2.8 percent, and the cost of food away from home increased 2.1 percent.[6] These differences across the measures of food costs again reflect the differences in the composition of the underlying market baskets.

While food prices increased faster during 1988 than they have in recent years, the increases during 1988 were about average compared to the historical trend of food price inflation over the last 10 years. Table 2 presents the percent change in each of the indicators of consumer food prices for 1988, for the 10-year period from 1978 to 1987, and for selected years during that decade in which inflation was particularly high or particularly low. The increases seen in 1988 are comparable to the average for the previous decade--higher for the cost of food at home and the TFP and lower for food away from home and all consumer goods. The most recent increases are substantially less than those seen in the highly inflationary years of the late 1970's although higher than in the low inflation years of the early to mid-1980's.

The Effect of the Drought on Consumer Food Prices

The drought was only one of many factors which influenced food prices in 1988. The complex interactions between various

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[6] June is used as a reference point in this discussion because of its importance for setting food stamp allotments.

Table 2. Consumer food price changes, 1978-1988

		Average for Years of:		
	1988	1978-87	High Inflation	Low Inflation
Thrifty Food Plan	6.3%	5.3%	10.9%	2.2%
Consumer Price Index				
Food at Home	5.6%	5.3%	10.9%	2.1%
Food away from Home	4.4%	6.5%	10.4%	4.3%
All Food	5.2%	5.6%	10.7%	2.8%
All Items	4.4%	6.5%	11.6%	3.8%

Source: USDA Human Nutrition Information Service and Bureau of Labor Statistics

Notes: All price changes are measured from December to December. The years of high inflation include 1978, 1979, and 1980 when the cost of food at home increased about 10 percent or more each year. The years of low inflation include 1982, 1983, and 1985 when the cost of food at home increased about 2 percent each year.

The cost of the Thrifty Food Plan is for a family of four consisting of a couple, age 20-50 years, and children, ages 6-8 and 9-11 years. The Consumer Price Index is for all urban consumers and is not seasonally adjusted.

determinants of retail food prices make it difficult to isolate the effect of any one factor--such as the drought--on price changes. In addition, quantifying the overall effect of the drought on retail food prices requires knowledge of what would have occurred in its absence, information that simply does not exist. Analysts can only speculate about what would have happened to food prices without the drought.

It is clear, however, that the changes in overall food prices during 1988 mask somewhat larger increases in certain food groups more susceptible to the effect of last summer's drought. Table 3 presents additional detail on the price changes during 1988 for major food groups. According to USDA's Economic Research Service, measurable price increases occurred in three food groups because of the drought: fruits and vegetables, cereal and bakery products, and fats and oils.

The drought damaged many local vegetable crops, leaving grocery stores dependent on California and other sources. Fruit and vegetable prices normally decline in the summer quarter due to seasonal production patterns but increased in the summer of 1988, particularly for vegetables.[7] Fresh vegetable prices declined to pre-drought levels by December after peaking in September.

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[7] Prices of fruits were not significantly affected by the drought.

Table 3. Consumer food price changes in 1988, by major food groups

Consumer Price Index (1982-84 = 100)	December 1987	June 1988	December 1988	Percent Change Dec-Dec	Percent Change June-Dec
Food at Home	112.8	115.8	119.1	5.6%	2.8%
Fruits and vegetables	123.4	126.1	131.0	6.2%	3.9%
Cereals and bakery products	116.8	120.8	126.6	8.4%	4.8%
Dairy products	106.7	107.2	111.4	4.4%	3.9%
Meats, poultry, fish, eggs	110.3	114.6	116.1	5.3%	1.3%
Fats and oils	107.7	111.5	118.5	10.0%	6.3%
Sugar and sweets	111.0	113.3	116.7	5.1%	3.0%
Other prepared foods	115.0	117.1	120.7	5.0%	3.1%
Beverages	104.8	107.1	107.8	2.9%	.7%

Source: Bureau of Labor Statistics and USDA Economic Research Service

Note: The Consumer Price Index is for all urban consumers and is not seasonally adjusted.

Processed vegetable prices rose during the period and reached a new plateau.

Prices for cereals and bakery products were affected by several factors, including higher grain prices, strong consumer demand, and increased marketing costs. Part of the increase reflected smaller supplies and higher farm prices for food grains such as oats, barley, durum wheat, and other spring wheats. However, the farm value of cereal and bakery products accounts for only a small portion--about 9 percent--of the retail price, moderating the drought's consequences for consumers.

Retail prices of fats and oil products rose during the drought on the prospect of smaller soybean harvests, but ample supplies of vegetable oils kept prices level since October. Higher processing and marketing costs also contributed to higher retail prices.

Other major food groups were not significantly affected by the drought. Price increases for meat, poultry, fish, and eggs were due to strong consumer demand, particularly for poultry during the summer.[8] In past drought years, higher feed costs often caused livestock producers to liquidate animal inventories,

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[8] Within this category, drought-related increases in feed costs forced egg producers to reduce production, causing higher egg prices, but the drought's effects on prices of meats, poultry, and fish were not significant.

leading to increased consumer supplies and lower retail prices. In 1988, Government actions bolstered forage and feed supplies and producers absorbed some higher feed costs. Some liquidation occurred, but strong consumer demand kept market prices strong.

Table 4 presents the Economic Research Service's best estimates of drought-caused consumer food price increases. The table shows the separate effect of the drought and other factors on the cost of food at home and the TFP by major food groups.[9] Food prices measured by the CPI for food at home in December were 2.8 percent higher than June price levels and 3.7 percent higher for the TFP market basket.[10] The contribution of the drought to the increase in overall food prices was relatively small, adding about four-tenths of a percentage point to the increase in the CPI for food at home and about nine-tenths of a percentage point to the increase in the TFP between June and December.[11]

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[9] The effects of the drought were estimated by comparing May 1988 forecasts of price levels in December 1988 with the actual reported values and adjusting for factors not associated with the drought (such as an unanticipated increase in commercial demand for poultry products). The difference is attributed to the drought. Because the forecasts are subject to error, the estimates presented here should be taken as an indication of the order of magnitude of the drought's effect on food prices.

[10] June was chosen as the starting point because drought effects were just beginning at this time. It also corresponds to the month in which TFP costs are used as the basis for Food Stamp Program benefit adjustments.

[11] To calculate the overall effect on each market basket, the percentage changes in the CPI for each food group is multiplied by the respective weight for that group in the CPI for food at home and the TFP. For example, the effect of the drought-induced price increases for fruit and vegetables on the

Table 4. Contribution of drought and other factors to consumer food prices, by major food groups, June to December, 1988.

	Food group CPI's			Thrifty Food Plan				CPI-Food at Home			
	Change due to:				Change due to:				Change due to:		
	Drought	Other	Total	Weight	Drought	Other	Total	Weight	Drought	Other	Total
	----percent----			----percent----				----percent----			
Fruits and vegetables	.98	2.92	3.90	.2621	.26	.77	1.02	.1554	.15	.45	.61
Cereals and bakery products	1.80	3.00	4.80	.2423	.44	.73	1.16	.1233	.22	.37	.59
Dairy products	*	3.90	3.90	.1214	*	.47	.47	.1232	*	.48	.48
Meats, poultry, fish, eggs	*	1.30	1.30	.2179	*	.28	.28	.3432	*	.45	.45
Fats and oils	2.00	4.30	6.30	.0840	.17	.36	.53	.0266	.05	.11	.17
Sugar and sweets	*	3.00	3.00	.0316	*	.09	.09	.0361	*	.11	.11
Other prepared foods	*	3.10	3.10	.0298	*	.09	.09	.1037	*	.32	.32
Beverages	*	.70	.70	.0109	*	.01	.01	.0885	*	.06	.06
Total				1.0000	.86	2.81	3.67	1.0000	.43	2.36	2.78

Source: USDA Economic Research Service

Note: Sum may not equal totals due to rounding. An (*) indicates the effect of the drought was too small to measure.

The difference in the rate of increase and the estimated effect of the drought on the TFP and the broader measure of the cost of food at home can be traced to the differences in the composition of the TFP and CPI market baskets. The categories of fruit and vegetables, cereal and bakery products, and fats and oils make up nearly 60 percent of the TFP and only 30 percent of the CPI. These are precisely the foods most affected by the drought, each increasing between 1 and 2 percent between June and December 1988 in response to drought-induced production shortfalls. The combination of faster price increases in more heavily weighted food groups pushed up the cost of the TFP more rapidly than the CPI for food at home.

The estimated effect of the drought on consumer food prices is smaller than might have been expected given the severity of the drought, the steep declines in major crop production reported during 1988, and the size of the increases in consumer food costs over the last six months of the year. The explanation for the relatively small drought-related increase lies in the mix of factors which ultimately determine consumer food prices.

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increase in the TFP is calculated by multiplying the share of total expenditures in the TFP for fruits and vegetables by the percentage price increase in the fruit and vegetable CPI (.2621 x .98 = .26). The corresponding effect on the CPI for food at home is calculated in the same manner using the CPI market basket weights (.1554 x .98 = .15).

First, the smaller harvests and higher farm commodity prices in 1988 were only partially due to the drought. The United States has substantial cropland acreage idled under Government programs. In 1988, the combination of 78 million acres idled under Government programs and the severe drought reduced harvested cropland to about 290 million acres--the second lowest level of harvested crop acreage since 1972. The Government's farm programs alone reduced crop acreage from a year earlier by 4 million acres. Of the 78 million acres taken out of production by Government programs, about 54 million acres were idled under annual programs and can be brought back into production rather quickly.[12]

Second, although this year's grain and soybean harvests were reduced by the drought, total supplies, including relatively large stocks carried over from 1987-88, were adequate to meet continuing domestic and foreign demand, albeit at higher prices. Furthermore, production shortfalls in the United States have been moderated by grain and oilseed production elsewhere. Foreign grain production, for example, is projected to be up by about 1 percent from 1987-88.

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[12] Acreage reduction programs for the 1989 wheat and feed grain crops have been sharply lowered. Consequently, planted acreage of major crops is expected to increase 20 to 25 million acres next year.

Third, the prices paid to farmers for their products account for a relatively small share of the retail prices ultimately paid by consumers. Less than one-third of every retail food dollar goes to farmers. The rest goes to processing, packaging, distributing, and related marketing costs. In recent years, the costs of processing and marketing foods accounted for about 70 percent of the retail cost of food in grocery stores. Only about 30 percent has gone to farmers. Processing and marketing costs account for a major share of the retail price, and these costs generally change with the average price level in the economy. Consequently, retail prices tend to be less volatile than farm prices. A change in farm commodity prices thus often results in a smaller change in consumer food prices.

The farmers' share of the retail food dollar varies substantially depending on the type of food and the amount of processing and marketing each product requires (see Table 5). In particular, the farmers' share of each retail dollar spent on cereal and bakery products--one of the categories most affected by the drought--is less than 10 cents. Thus, even if farm prices for food grains increase 50 to 60 percent, the rise in farm prices could add only about 5 percent to retail prices of cereal and bakery products. Furthermore, cereal and bakery products make up only 12 percent of the market basket for food at home, so a 5 percent increase in retail prices for this category could add only 0.6 percent to overall food prices.

Table 5. Farmers' share of retail food dollars

	1987	1988
Meats	46.7%	45.2%
Dairy products	42.3%	39.7%
Poultry	44.6%	48.6%
Eggs	53.9%	51.3%
Cereal and bakery products	7.6%	9.2%
Fresh fruits	26.5%	24.5%
Fresh vegetables	31.3%	28.7%
Processed fruits and vegetables	24.2%	27.6%
Fats and oils	18.4%	24.9%
Average	30.5%	30.2%

Source: USDA Economic Research Service

Fourth, the U.S. food supply is diverse. Although the drought was both severe and widespread, it did not affect all areas and all types of food commodities equally. When one type of food increases in price, consumers can sometimes substitute another, less expensive, purchase. Food companies often seek new sources to augment supplies. And production cuts in one region can encourage expansion by producers in other regions with different growing conditions or seasons.

The Effect of the Drought on Food Assistance Programs

USDA administers 13 domestic food assistance programs with a total cost of over $21 billion in Fiscal Year 1988.[13] Three programs (the Food Stamp Program, the Nutrition Assistance Program in Puerto Rico, and the Food Distribution Program on Indian Reservations) help meet the basic needs of low-income families and individuals. The remaining programs provide supplemental benefits to groups with special needs, especially those at different developmental stages: infants, children, child-bearing women, and the elderly.

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[13] These include the Food Stamp Program, the Nutrition Assistance Program in Puerto Rico, the National School Lunch Program, the School Breakfast Program, the Special Milk Program, the Child Care Food Program, the Special Supplemental Food Program for Women, Infants and Children, the Commodity Supplemental Food Program, the Temporary Emergency Food Assistance Program, the Food Distribution Program on Indian Reservations, Commodities for Charitable Institutions, the Nutrition Program for the Elderly, and the Summer Food Service Program.

Five programs--Food Stamps; National School Lunch; the Special Supplemental Food Program for Women, Infants, and Children (WIC); the Temporary Food Assistance Program; and the Nutrition Assistance Program in Puerto Rico -- paid out more than $17 billion in benefits to program participants in Fiscal Year 1988, more than 90 percent of all food assistance benefits. The Food Stamp Program alone provided $11 billion in benefits to participants, more than 55 percent of all food assistance benefits in Fiscal Year 1988.

Each program includes design features which respond to changing food prices. In some instances, most obviously the Food Stamp Program, the program's design explicitly adjusts participants' benefits in direct response to changing food prices, albeit with some delay. In other instances, as in the array of school food service programs, most participants' benefits are largely unaffected by changing food prices, but the program's design explicitly adjusts subsidies to meal providers in response to rising food prices. In still other instances, the effects of price changes are more indirect, influencing the availability of commodities, for example, or the number of people that can be served with a fixed amount of money.

Thus the drought of 1988 could have affected Federal food assistance programs and participants by reducing the purchasing

power of food stamp benefits; increasing the cost of preparing and providing meals in schools and other settings; reducing the number of participants served by certain programs; or reducing the amount and variety of surplus commodities available for distribution. But, given the relatively small contribution of the drought to the increase in consumer food prices during 1988, the consequences of the drought of 1988 for domestic food assistance programs and participants were also relatively small. The following sections describe these effects for the Food Stamp Program, school food service programs, WIC, and commodity distribution.

Food Stamp Program: The maximum food stamp allotment is legislatively indexed to ensure that the value of food stamp benefits keeps pace with changing food prices. Maximum food stamp benefits are adjusted each October based on the cost of the TFP for a family of four in the previous June. The Hunger Prevention Act of 1988 (Public Law 100-435) increases maximum benefits over a 3-year period beginning with Fiscal Year 1989 to 103 percent of the cost of the TFP.

Food stamp benefits were last updated on October 1, 1988, based on the cost of the TFP in June 1988 ($298.10). A 4-person family with no other income is currently entitled to receive $300 in food stamps per month. The maximum food stamp benefit was 2.9

percent less than the actual cost of the TFP in December ($309.00).[14]

While the cost of the TFP increased more rapidly over the last half of 1988 than it has in recent years, only a small portion of this difference can be attributed to the drought. USDA's Economic Research Service estimates the drought added nine-tenths of a percentage point to the total increase in the cost of the TFP since June.[15]

The difference between the maximum food stamp allotment and the cost of the TFP in December 1988 is comparable to, although slightly larger than, the average difference over the previous 10 years. In December 1988, three months after the October 1988 update, the maximum allotment for a family of four was 2.9 percent below the current monthly cost of the TFP. On average, allotments in the third month after a cost-of-living update are 2.6 percent below the current cost of the TFP. Thus, even with

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[14] Under the rules in place before enactment of the Hunger Prevention Act, the maximum allotment for a family of four would have been $298, $11.00 less than the actual cost of the TFP in December, a difference of 3.6 percent.

[15] Table 4 shows the TFP for a family of four increased 3.7 percent between June and December 1988. The drought added 0.9 percentage points to the increase, so the TFP would have increased 2.8 percent (3.7 - 0.9) if the drought had not occurred. Applying this estimated increase to the actual cost of the TFP in June ($298.10 x 1.028) and rounding to the nearest dime implies that the cost of the TFP would have been $306.40 in the absence of the drought.

the drought, the purchasing power of food stamp benefits relative to the December TFP are close to average.[16]

Maximum allotments almost always lag behind the current cost of the TFP. As shown in Figure 1, the pattern of maximum allotments over time is a series of upward steps at each adjustment followed by a period of no change until the next adjustment. Food prices, meanwhile, continue to increase over the course of a year. The Congressional Budget Office examined indexing practices in the Food Stamp Program in 1981 and concluded that reliance on the TFP for adjusting food stamp benefits is appropriate; no alternative index would offer greater advantage.[17] They also noted that substitution of cheaper foods for more expensive items is widely practiced among food shoppers at nearly all income levels. Thus, when large relative price increases occur within food groups--as they did during the last six months of 1988--the TFP is likely to exaggerate changes in the overall price level.

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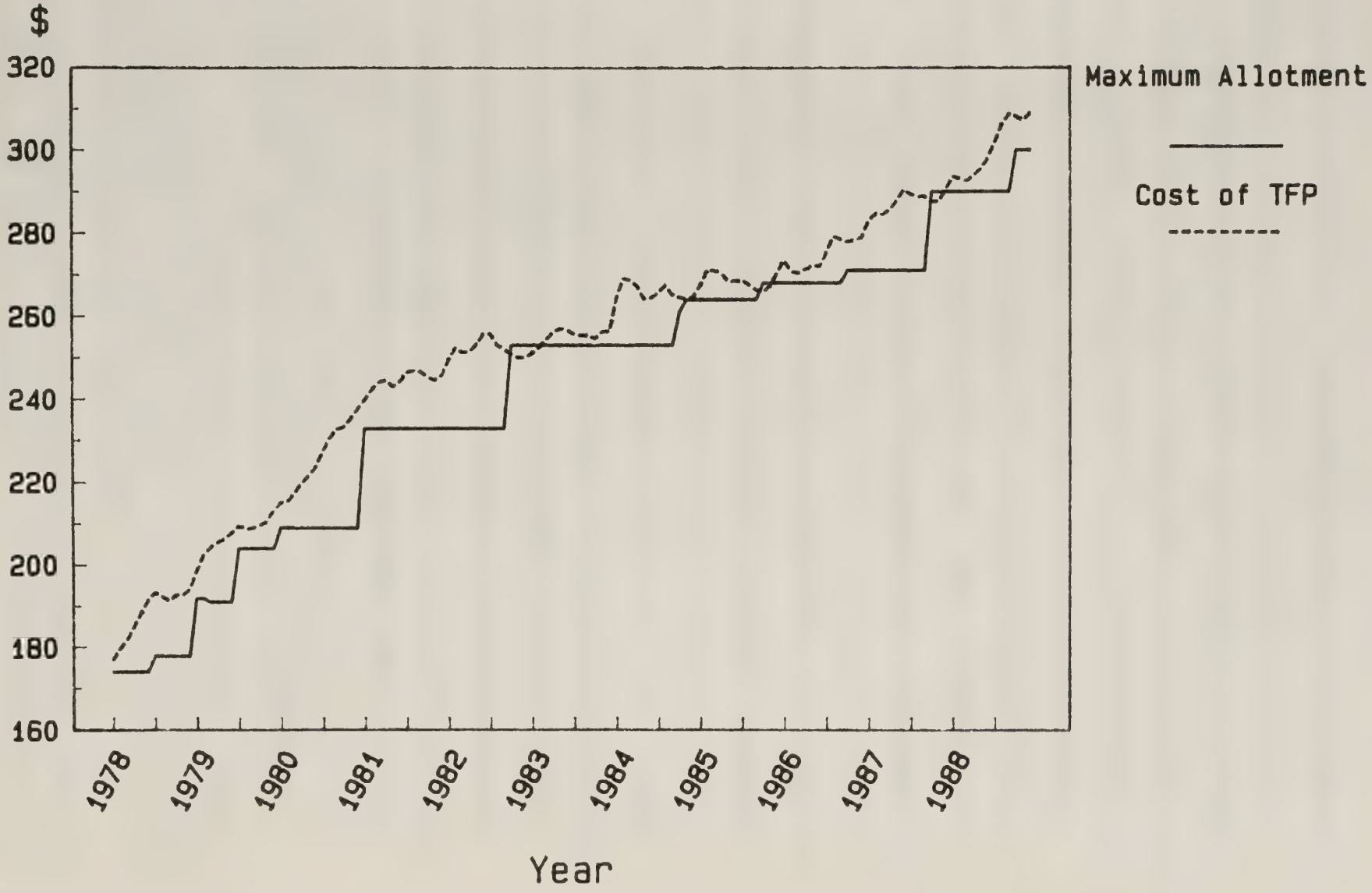
[16] Maximum food stamp benefits have usually, but not always, been set equal to 100 percent of the cost of the TFP. The Food Stamp Act Amendments of 1982 (P.L. 97-253) reduced maximum benefits to 99 percent of the TFP for Fiscal Years 1983, 1984, and 1985. (A subsequent change returned the maximum to 100 percent in November 1984.) The Hunger Prevention Act of 1988 raised the maximum to 100.65 percent of the TFP for Fiscal Year 1989. If these legislated adjustments are ignored and the comparison made as if benefits had always been equal to 100 percent of the TFP, the difference between allotments and the current cost of the TFP would have been 3.6 percent in December 1988 and 2.4 percent on average over the previous 10 years.

[17] See Indexing with the Consumer Price Index: Problems and Alternatives, Congressional Budget Office, June 1981.

Figure 1. Maximum allotments and TFP costs
1978-1988



School Food Service Programs: In contrast to the Food Stamp Program, Federal assistance under the array of school food service programs is provided to meal providers--as a subsidy for obtaining food and preparing meals--rather than the ultimate beneficiaries (i.e., children from low-income families). While the subsidy to meal providers is legislatively indexed to accommodate changing food prices, the benefit to the participants--the lunch or breakfast, for example--is largely independent of any changes in food prices.

Under the National School Lunch and Breakfast Programs, children who are members of households with income less than 130 percent of the poverty line can receive a free lunch or breakfast. Similarly, children in households with income more than 130 percent but less than 185 percent of the poverty line can receive a reduced-price lunch or breakfast (the price of which cannot exceed 40 cents for lunch and 30 cents for breakfast). In both cases, the benefit to the participating children does not depend on the actual cost of preparing each meal. Children entitled to a free lunch in participating schools receive the meal at no cost regardless of changing food prices; those entitled to a reduced-price lunch pay no more than 40 cents.

On the other hand, school food service programs do adjust the value of Federal subsidies for the cost of food purchases and meal preparation to accommodate changing food prices. The

reimbursement rates for each free, reduced- or full-price lunch or breakfast, for example, are adjusted each July based on changes in the CPI for food away from home though the previous year ending in May.[18] These rates were adjusted in July 1988 and will be adjusted again in July 1989. Between July 1988 and June 1989, the reimbursement rate is 14 cents for each paid lunch, about $1.06 for each reduced-price lunch, and about $1.46 for each free lunch.[19] The rates are 14 cents for each paid breakfast, about 49 cents for each reduced-price breakfast, and about 79 cents for each free breakfast.[20] The Hunger Prevention Act of 1988 will add 3 cents to the reimbursement rates for each breakfast in addition to the normal cost-of-living adjustment in July 1989.

While the effect of the summer's drought on food costs will not show up in revised reimbursement rates until next July, the increase in the CPI for food away from home during 1988 was actually less than the average of the last 10 years (see Table 2): the cost of purchasing food away from home increased 4.4

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[18] Reimbursements under the Special Milk Program are adjusted by changes in the Producer Price Index for Fresh Processed Milk.

[19] Reimbursements are 2 cents higher for each meal in areas serving 60 percent or more meals free or at reduced price in the second preceding year. Reimbursements in Alaska and Hawaii are higher than those for other States.

[20] The free and reduced-price reimbursement rates are about 15 cents higher for schools in "severe need" because they serve a high percentage of needy children.

percent in 1988, substantially less than the 6.5 percent average increase in the preceding decade. The cost of food away from home also increased less than the cost of food at home over the last six months of 1988. Furthermore, the benefits to the children of low-income families are unaffected by the increase: 41 percent of the lunches and 83 percent of the breakfasts served are served at no charge and an additional 7 percent of the lunches and 5 percent of the breakfasts are served at a reduced price despite the increases in the cost of food away from home.

Special Supplemental Food Program: The extent of food assistance and the number of individuals served by non-entitlement grant programs are determined by the amount of the appropriation available each year. In WIC, for example, the number of participants served is a function of the cost of the food package. Low-income pregnant and postpartum women, infants, and children typically receive vouchers which can be redeemed for a monthly food package based on their nutritional needs. By law, the value and types of foods in a WIC package may not be reduced because food prices change. Thus food price inflation does not affect the value of the food benefits offered to participants in WIC. Rather, it raises the cost of benefits for each recipient and thereby affects the number of recipients that can be served by the appropriation provided.

In practice, the small contribution of the drought to food price increases could have only a small influence on the number of participants served. The WIC food package primarily consists of foods that were not affected by last summer's drought. Over 80 percent of the average monthly food package cost in Fiscal Year 1987 bought infant formula, milk, cheese and juice, categories with no measurable increase in cost due to the drought (see Table 4). The balance was predominately cereal (both infant and adult), with smaller amounts of eggs, peanut butter and dried beans.[21] Although retail costs of cereal and bakery products increased 1.8 percent between June and December as a result of the drought--one of the largest estimated drought-related increases among all food groups--cereal accounts for only 11 percent of the average WIC food package cost. Thus, the drought-induced increases in cereal prices could have increased food package costs by only 0.2 percent (1.8 x .11) between June and December. This amounts to about 7 cents per month based on an average package cost of about $33 (.002 x $33).

Furthermore, a changing mix of women, infants, and children served by WIC counters the effects of rising food prices. As WIC serves more and more eligible infants, additional participation increases are more likely to come from the pool of eligible

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[21] The specific contributions of these foods to the average food package cost are: infant formula (37 percent), milk and cheese (31 percent), juice (14 percent), cereal (11 percent), eggs (4 percent), and peanut butter and dried beans (3 percent). More recent information for Fiscal Year 1988 is not yet available.

children. The average WIC food package cost declines as a result since a child's food package costs less the package for other types of participants.[22] These changes are accelerated by a variety of cost containment efforts (most notably infant formula rebates), leading to a lower average cost per recipient and freeing funds to serve additional participants within the fixed grant. Thus, while the effect of the drought might be real, albeit small, it cannot be seen in the current environment of the WIC program.

Commodity Distribution: USDA spent nearly $1.9 billion for direct commodity food assistance to schools, institutions, and needy families during Fiscal Year 1988. Commodity assistance takes two forms: entitlement commodities for which the level of assistance is provided on a per meal basis (currently at a level equivalent to 12.25 cents for each school lunch) and bonus commodities which are normally made available to recipient agencies in amounts they can use without waste. The availability of bonus commodities also depends on the extent of excess, uncommitted foods acquired by USDA under its price support and surplus removal programs.

Compared to 1987, the total value of commodities distributed through all of the domestic food assistance programs fell about

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[22] In Fiscal Year 1987, the estimated average monthly food package cost was about $30 for women, $44 for infants, and $27 for children.

15 percent in 1988. The value of commodities distributed as entitlements increased about 6 percent, but the value of bonus commodities decreased by 24 percent (see Table 6). The largest reduction occurred in the Temporary Emergency Food Assistance Program. The reduction in the value of bonus distribution, however, was largely unrelated to the drought.

Between Fiscal Years 1982 and 1987, USDA donated over $5 billion worth of bonus commodities that had accumulated over a number of years. These sizable donations, coupled with farm policies and market conditions that discouraged overproduction and reduced government acquisitions, reduced the supply of surplus commodities available for distribution. By the beginning of 1988, well before the onset of the drought, inventories of cheese, nonfat dry milk, rice, and honey had dropped sharply. Changes in the dairy price support program under the Food Security Act of 1985 (Public Law 99-198) and accelerated donations and sales had signficantly larger effects than the drought on the size of USDA's commodity stockpiles and thus the level of commodity donations.

While the drought had no significant effect on the <u>total value</u> of commodities distributed in Fiscal Year 1988, it did have some effect on the <u>types</u> of commodities available. As a result of smaller vegetable crops and increased consumer demand, USDA could

Table 6. Value of commodities distributed, in millions of dollars

Program	Entitlement Commodities			Bonus Commodities		
	FY 1987	FY 1988	% Change	FY 1987	FY 1988	% Change
School Food Service	$449	$484	7.9%	$440	$387	-11.9%
Nutrition Program for the Elderly	132	135	2.2%	8	9	13.2%
Charitable Institutions	32	34	6.6%	121	117	-3.7%
TEFAP	N/A	N/A	N/A	895	582	-35.0%
Other	90	92	2.1%	44	45	2.7%
Total	702	744	6.1%	1,507	1,140	-24.4%

Source: USDA Food and Nutrition Service

Notes: School food service category includes National School Lunch Program and School Breakfast Program. Other category includes: Child Care Food Program, Summer Food Service Program, Food Distribution Program on Indian Reservations and the Trust Territories, Commodity Supplemental Food Program and Disaster Feeding Program.

Sum may not equal total due to rounding.

Entitlement commodities also include value of cash-in-lieu of commodities.

not secure green beans, green peas, corn, and mixed vegetables as entitlement commodities for the School Lunch Program. USDA was also unable to purchase sufficient tomatoes and cling peaches to meet demand. However, USDA was able to substitute more readily available fruits and vegetables, although fruit and vegetable purchases, generally, were the lowest in years. USDA also purchased quantities of beef and pork that entered the market as a result of drought-related livestock liquidations for distribution to schools as bonus commodities.

The prices USDA paid on the wholesale market for many commodities were higher in 1988 than a year earlier, suggesting that each dollar spent bought less. While some portion of the higher cost might be attributable to last summer's drought, other factors--such as non-drought related influences on production levels and farm prices, rising processing and marketing costs, and changing commercial and consumer demand--also had a role. The separate effect of the drought cannot be determined but is likely to have been small given the best estimates of the drought's effect on retail food prices. Moreover, USDA has some flexibility to substitute cheaper, more readily available commodities for more expensive, less available varieties. This flexibility can be used to moderate some of the adverse consequences of rising prices.

The Hunger Prevention Act of 1988 requires USDA to supplement the surplus foods available under the Temporary Emergency Food Assistance Program with $120 million of commercial purchases in each of Fiscal Years 1989 and 1990. For 1989, USDA plans to obtain peanut butter, raisins, canned vegetarian beans, canned pork, and egg mix for distribution. The Hunger Prevention Act also requires USDA to purchase $40 million of additional commodities in 1989 and 1990 and $32 million in 1991 for distribution to soup kitchens, shelters, and food banks. For 1989, USDA plans to purchase and distribute canned pork, canned lunch meat, beans, split peas and lentils, dehydrated potatoes, canned pears, grapefruit and orange juice, and sweet potatoes.

Summary and Conclusions

Last summer's record rainfall deficits and higher than normal temperatures, sharp declines in the supply of basic farm commodities, and subsequently higher farm prices were expected to exert considerable pressure on consumer food prices in the last half of 1988. Although the prices paid to farmers are only one component of the ultimate costs to consumers for food, there was concern that sharp increases would translate into higher retail costs. Yet despite the severity of the drought, it had relatively little effect on consumer food prices.

USDA's analysis of the drought and its consequences for food prices and domestic food assistance programs can be summarized as follows:

- Given the small contribution of the drought to changes in overall food prices, the consequences for domestic food assistance programs were minimal. Program features designed to respond to changing food prices were adequate in the face of the drought-related increases of the size observed during 1988.

- Consumer food costs increased more rapidly during 1988 than the previous year, but the increase in 1988 was only slightly above average for the preceding 10 years.

- The contribution of the drought to the increase in overall food costs was relatively small, adding about four-tenths of a percentage point to the increase in the cost of food as indicated by the broadest measure of food purchased for home consumption and about nine-tenths of a percentage point to the cost of the TFP for a family of four over the last half of the year.

- The potentially adverse effects of the drought were moderated by (1) reductions in stocks of basic farm commodities carried over from previous years to meet

continuing domestic and foreign demand; (2) the relatively small contribution of farm prices to retail food prices; and (3) the diversity of the U.S. food supply.

Last year's production losses mean that crop supplies will be tighter at the end of the 1988-89 crop year than they have been for some time. Historical data, however, suggest that crop production should rebound in 1989 and stocks should start to grow. Of course, no one can predict 1989's weather with certainty. If the drought persists into the new growing season, yields could again be below trend.

Food prices are expected to increase another 3 to 5 percent in 1989, but the continuing effect of last year's drought on this year's prices will be too small to measure. Prices could increase more rapidly if the drought persists through another year. USDA will continue to monitor changes in consumer food prices and take appropriate action if future circumstances require special attention. No additional special responses to the drought--beyond those already taken--are necessary or recommended.