

Special Article

Historical Changes in CPI-Food Weights

Gerald E. Schluter¹

The Consumer Price Index (CPI) for food is probably the most widely used measure of changes in food prices. To the shopper in the neighborhood supermarket, with its abundant array of different foods and different brands, the analytical value of representing the prices and quantities of all these foods with one index number may seem surprising. Yet representing prices and quantities by index numbers is an indispensable tool not only of applied economic analysis, but of informed policy analysis as well. For example, a reliable estimate of the change in overall food prices allows both economists and policy analysts to split estimates of the changes in consumer food spending into two components:

- 1) Changes in actual consumption of food and food-related services, and
- 2) Changes in prices paid for food and food-related services.

Presumably, the change in actual consumption of food and food-related services has changed the level of consumer well-being. Presumably, except for their effect on the consumers' budget constraint, changes in prices paid for food and food-related services have not affected the level of consumer well-being.

The supermarket shopper may be apprehensive about one number representing the prices of all foods. The advantage of index numbers is that they summarize, in one number, information that is contained in an array of numbers—in this case, prices for food items. Analysts who construct the CPI index numbers do so by choosing representative consumer items to represent various classes of consumer spending. The prices of these representative consumer items are

weighted by their shares in consumer spending. This article reviews annual changes in these weights for CPI-Food since 1980.

A review of changing weights is not a simple evenly evolving story. The CPI weights are based on changing consumer spending patterns and thus are subject to periodic revisions. Butter, as a representative food commodity, illustrates the underlying dynamics of maintaining meaningful weights. In 1960, when per capita butter consumption was 7.5 pounds, butter was one of five unique commodities representing “Dairy Products” with a weight of 0.4 in the CPI-All items index. By 1980, butter had lost its unique commodity status as per capita butter consumption had fallen to 4.5 pounds. Butter then became a representative commodity within the processed dairy products group, with a weight of 0.083 in the overall CPI for all urban consumers (CPI-U). With the 1987 change to the item structure (which introduced 1982-84 expenditure weights) and per capita butter consumption stable, butter remained in the processed dairy products group, but was included in a new group, “other dairy products, including butter.” The group had a weight of 0.123 in 1986 (the first revision year), but butter did not have an individual weight. The introduction of blended butter-margarine products made it impossible to separate dairy fat and vegetable fat products in consumer spending. Butter, therefore, was moved from “other dairy products, including butter” to a new “other food at home” category under the “fats and oils” subcategory in the “butter and margarine” group. With the 1998 change to the item structure (and the introduction of 1993-95 expenditure weights), the group had a weight of 0.091 in 1997 (the first revision year). Again, butter did not have an individual weight.

¹ The author is an agricultural economist with the Food and Rural Economics Division, Economic Research Service, USDA.

CPI-Food in CPI-U

As an economy's per capita income grows, its consumers normally spend a smaller share on essentials such as food. This expected behavior appears in the CPI-Food weights and is reflected in a downward trend for the CPI-Food weights as a percentage of the CPI-U index. The share declined from 28.5 percent in 1960 to 21.99 percent in 1970. The index did not differentiate a Food and Beverage share for alcoholic beverages from 1960 to 1970. Therefore, it is unclear if these estimates are comparable to the 18.309 percent share for Food and Beverages in 1980 or the 17.322 percent share for Food in 1980. By 1990, the share had fallen to 17.706 percent for Food and Beverages (including alcoholic beverages) and 16.188 percent for Food. The latest estimates continue this trend, with 16.310 percent for Food and Beverages and 15.326 percent for Food.

CPI-Food-at-Home Versus CPI-Food-Away-From-Home

The effects of rising affluence are not the only factors responsible for decreasing the share of consumer spending on food. The rise in two-income households, the share of women in the workforce, and time constraints associated with modern lifestyles also have changed the nature of consumer spending on food. The CPI-Food comprised 28.5 percent of the total 1960 CPI and was split 23.6 percent (82.8 percent of total food) for food at home and 4.9 percent (17.2 percent of total food) for food away from home. Since then, this mix has steadily changed so that by 1997 the CPI for Food accounted for 15.326 percent of the total CPI, and was split 9.646 percent for food at home (62.9 percent of total food) and 5.680 percent (37.1 percent of total food) for food away from home. From 1960 to 1997, the weight for CPI-Food-Away-from-Home slowly increased. All the adjustment for the lower food share of consumer spending was absorbed by the CPI-Food-at-Home category.

Broad Expenditure Categories of CPI-Food-at-Home

Before the 1998 revisions, the CPI-Food-at-Home index was a weighted average of five broad component groups:

- 1) Cereals and bakery products,
- 2) Meats, poultry, fish, and eggs,
- 3) Dairy products,
- 4) Fruits and vegetables, and
- 5) Other food at home.

This section will discuss trends through 1997 for the first two groups and through 1996 for the last three groups. With the 1998 revision to the item structure (which introduced 1993-95 expenditure weights), the last three groups changed. The previously discussed revisions involving butter changed the dairy products and other food at home groups. In addition, BLS defined a new broad group, nonalcoholic beverages and beverage materials, that includes nonalcoholic beverages from group 5 (other food at home) and juices from group 4 (fruits and vegetables).

Cereals and Bakery Products

The share of consumers' at-home food spending and therefore the weights representing cereals and bakery products have increased from 1.507 to 1.561 percent since 1980. While bakery products are the dominant representative commodity group, much of the growth has been in cereals.

Meats, Poultry, Fish, and Eggs

The share of consumers' at-home food spending and, therefore, the weights representing meats, poultry, fish, and eggs have decreased since 1980 (table 24). While meats dominate this group, their weights have fallen steadily since 1980 and at a faster pace than the CPI-Food-at-Home weights. Only pork has maintained its share compared with the CPI-Food-at-Home index. Poultry has been the growth commodity within this group, its weight within CPI-U increasing 13 percent and its share within CPI-Food-at-Home increasing 35 percent. The range of changes in weights for fish and eggs combined elements of the changes noted for the meats and poultry categories. Their weights within CPI-U decreased 4 and 8 percent, respectively, while their share within CPI-Food-at-Home increased 14 and 9 percent.

Dairy Products

The share of consumers' at-home food spending and, therefore, the weights representing dairy products have decreased since 1980. While the components of this group were not consistent enough to examine trends at a more detailed level, this group's weights within CPI-U have fallen 22 percent since 1980. Moreover, dairy weights have fallen faster than the CPI-Food-at-Home weights, with a 7-percent decrease in its share within CPI-Food-at-Home.

Fruits and Vegetables

The share of consumers' at-home food spending and, therefore, the weights representing fruits and vegetables have increased since 1980. Much of this growth has been in fresh fruits and vegetables. The fresh fruit weight within CPI-U was 88 percent higher in 1996 than in 1980, and the fresh vegetable weight was 17 percent higher. Through 1996, the weights for processed fruits fell 9 percent and were 32 percent lower for processed vegetables. The 1998 revisions eliminated separate categories for processed fruits and processed vegetables. Fresh fruits' share within CPI-Food-at-Home more than doubled to 8 percent, while fresh vegetables' share grew 40 percent. Despite the 9-percent drop in processed fruits' weight, its share within the falling CPI-Food-at-Home weight grew 8 percent. Processed vegetables' share within the falling CPI-Food-at-Home weight dropped 19 percent.

Other Food at Home

The share of consumers' at-home food spending and, therefore, the weights representing other food at home decreased from 1980 to 1996. Of the subcategories comprising other food at home, only the other prepared food (other foods after the 1998 revisions) group had a higher CPI-U weight (3 percent) in 1996 than in 1980. This higher weight resulted in a 24 percent higher share within CPI-Food-at-Home in 1996 than in 1980. Sugar and sweets dropped 34 and 22 percent in its CPI-U weight and CPI-Food-at-Home share, respectively. Fats and oils dropped 26 and 12 percent, and non-alcoholic beverages fell 45 and 34 percent.

Conclusion

The picture that emerges from an examination of recent historical CPI-Food weights is of food accounting for a shrinking share of consumer spending, but more of this spending is for food away from home. Within broad food commodity categories, we find consumers spending larger shares of their food expenditures on fresh fruits and vegetables, cereals and bakery products, poultry, fish and seafood, eggs, processed fruits (through 1996), and other prepared foods. Smaller shares were spent on meats, dairy products, processed vegetables (through 1996), sugar and sweets, fats and oils, and non-alcoholic beverages. These trends reflect broad demographic and economic changes and change in consumer tastes that have reverberated and continue to reverberate through the food marketing sector.