

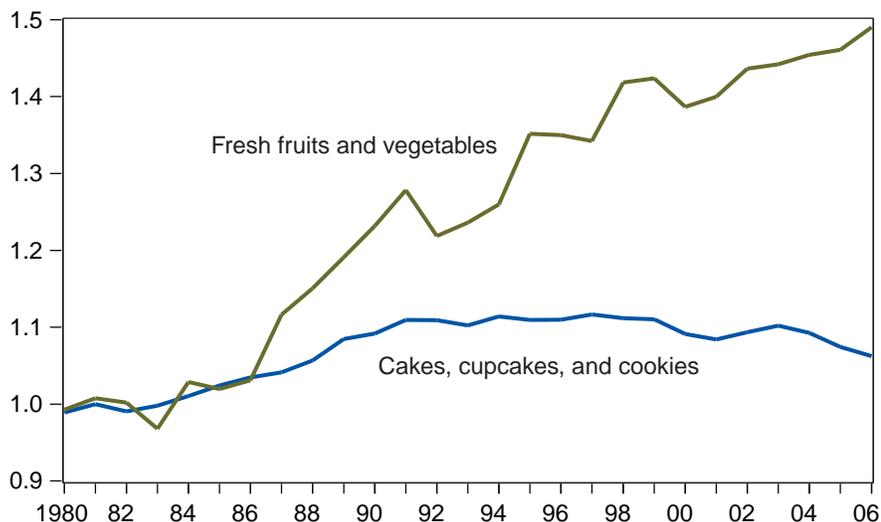
Price Indices May Not Adequately Account for Quality Change

The standard method for analyzing price trends examines movements in price indices. BLS constructs price indices, the CPI, and indices of a wide variety of goods precisely so price trends can be examined and changes in relative prices over time may be measured. One such index, the food and beverage price index, is built from a variety of food-related indices. These include the index for fresh fruits and vegetables, among others.

BLS calculates the CPI from month-to-month movements in price changes for a sample of goods and services. This sample reflects the consumption sector of the U.S. economy and includes tens of thousands of items bought for day-to-day living. The importance of any particular good or service is proportional to the share of total consumer spending represented by that item. That is, monthly movements in the CPI are derived from weighted averages of monthly price changes of the sampled items. For example, frequently purchased fresh fruit and vegetable products, such as baby carrots and bagged spinach, are likely to be among items underlying the CPI. Over time, these products have accounted for a larger share of consumers' expenditures on fresh fruits and vegetables (starting from zero in the early 1990s). Price changes in these items would now have a greater effect on the CPI for fresh fruits and vegetables than in early years.

Two food-related indices are shown in figure 1, the index for fresh fruits and vegetables—generally recognized as healthy food—and the index for cakes, cupcakes, and cookies—recognized as foods that should be consumed in moderation. Both indices are presented relative to the CPI for all goods (for urban consumers). Displaying the indices relative to the CPI for all goods shows how prices for the two classes of foods have changed relative to everything else consumers purchase.

Figure 1
**Consumer price index for fresh fruits and vegetables
and consumer price index for cakes, cupcakes, and cookies
(both relative to CPI-U for all items)**



Source: BLS Consumer Price Index-All Urban Consumers data.

The line plots clearly show that, compared with all other goods purchased, Americans are paying relatively more for fresh fruits and vegetables now than they did 27 years ago. The indices were constructed so they would each equal 100 during the 1982-84 base period. Over the course of 27 years, the fresh fruits and vegetables index rose 49 percent. By contrast, the price index for cakes, cupcakes, and cookies increased until the early 1990s, and then decreased, leaving it 6-percent higher in 2006 than in 1980. In 2006, the fresh fruits and vegetables index stood 40-percent higher than the index for cakes, cupcakes, and cookies. The graph suggests that prices for healthy fresh fruits and vegetables are diverging from those for less healthy cakes, cupcakes, and cookies.

However, the CPI is widely believed to overstate the rate of inflation over much of the time period shown in figure 1. That is, prices have not risen as fast as the CPI suggests. The degree to which the CPI accounts for the value consumers place on quality improvements is among the reasons posited for this problem. Quality changes could be problematic for many food-related indices, such as that for cakes, cupcakes, and cookies. But, among foods, the fresh fruits and vegetables index is believed to be the component most likely to overstate price increases (see “Appendix: CPI Overstates the Rate of Increase in Food Prices, Especially for Fresh Fruits and Vegetables”).

Holding Quality Constant: What Can We Learn About How Relative Prices Have Changed?

Consumers may place value on the increased variety of foods available as well as on the convenience of many of these foods. If we could net out the value of the improved quality, we would hold quality constant and price comparisons would still be meaningful. To remove the value of quality improvements from price comparisons, the price of the improved product would have to be adjusted downward by the value consumers place on the quality of the improvement. In practice, such a task is not trivial and, so far, most price statistics do not incorporate the notion.

Tracking changes in the prices of many different foods is an alternative to examining price indices. Our approach is to look at price trends for foods that have not undergone substantial quality change. Foods considered for selection must have been commonly consumed in the 1980s. A long time series on the price of each food must also be available. Since we chose foods that we hope did not change much, we cannot extrapolate our results to all food prices. The food prices we examine are not representative of all food prices. However, results will point to whether relative prices have changed.

BLS reports monthly retail prices going back to 1980 for many specific foods, such as Red Delicious apples and broccoli. This report uses a subset of the U.S. city average price series. An attractive feature of these data is that BLS maintains each price series as long as its probability-based sampling generates sufficient observations to report prices reliably. With long time series, researchers can also see how relative prices have changed over time and how consumers' ability and incentive to choose a healthy diet may have changed. Long time series reveal consumers' changing ability and incentive to alter dietary quality without being confounded by unusual or unique, short-run events (like a freeze in California's Central Valley that leads to a temporary short supply of oranges and unusually high prices).

There are many reasons why the price trends we examine might display different patterns than the price indices. First, even if we interpret trends in price indices as conclusive evidence that Americans pay more annually for fresh fruits and vegetables, that the index for fresh fruits and vegetables has been rising means only that many fresh fruit and vegetable prices have been rising. The rising index does not necessarily mean that prices for all fresh fruits and vegetables are rising equally. Like any average, the index is composed of a diverse set of movements.

Second, we will be examining average price trends for foods with relatively less quality change than newer fresh fruit and vegetable products. More traditional foods embody a smaller quantity of marketing inputs than do the newer foods, which are likely to comprise a growing share of the CPI.

Another factor may be that BLS accounts differently for changes in the economy, such as the mix of retail outlets at which consumers shop, when calculating price indices and average price data. Many analysts have argued that the growth of "big box" retailers, like Wal-Mart, has dampened infla-