

RESEARCH SPOTLIGHT

You Get What You Pay For

BY STEPHEN SLIVINSKI

When the government tries to measure inflation by constructing the Consumer Price Index (CPI), it must distinguish between a change in the overall price level of the goods surveyed and a change in the relative prices between those goods. The issue is further complicated by recognizing that quality changes in the good will occur over time. For instance, when a new model of a computer hits the market, it may be priced higher than the previous model because of its increased functionality and speed. If the government decides to count that as an increase in the overall price level for computers — that is, attributes it to a rise in overall inflation rather than in quality — it overstates the general rise in the price of computers. Instead, a better comparison would be between two comparable computer models.

Mark Bil's, an economist at the University of Rochester, took a look at the datasets used to construct the CPI between 1988 and 2006 to determine whether inflation was overstated because of a failure to fully adjust for quality improvements in goods. To understand his methodology, it helps to know how the CPI is constructed. The Bureau of Labor Statistics (BLS)

tracks the prices of about 90,000 nonhousing goods and services each month. Because consumer habits change, roughly every four years the BLS draws a new sample of stores and products within a geographic area to better reflect current spending. These are called scheduled rotations.

If the BLS continues to keep track of a particular product after a scheduled rotation, it has to make adjustments when a product model stops being carried by the stores in the survey. In that case, the BLS has to use another model by way of comparison. Bil's calls these "forced substitutions," and they occur nearly once per year for consumer durable items, such as computers, furniture, bicycles, or sewing machines, just to name a few.

Bil's finds that scheduled rotations generate a price increase of just over 2 percent annually, while forced substitutions usually lead to price increases of nearly 4 percent. Yet rotations and forced substitutions are treated differently by the BLS. As Bil's points out, both reflect the same economic phenomenon — older goods being replaced by newer goods that typically sell at higher prices. When a rotation takes place, the changes in price are implicitly treated

as a change in quality. By contrast, forced substitutions directly compare prices between the new and old versions of the good, and the implicit assumption is that they vary little in quality.

Bil's analysis suggests that two-thirds of the price increase for new versions of goods should usually be treated as quality growth, not inflation. This translates to an overstatement of inflation for durable goods by 2 percentage points during the time frame studied.

Additionally, this CPI data are used in the government's measurements of productivity growth. If a change in quality goes unrecognized in the CPI data, it also fails to show up in the productivity data. Bil's concludes that this implies U.S. productivity has been routinely understated by 2 percentage points per year as well.

**"Do Higher Prices for New Goods
Reflect Quality Growth or Inflation?"**

by Mark Bil's.

Quarterly Journal of Economics,
May 2009, vol. 124, no. 2, pp. 637-675.

To test the premise that the price increases mostly indicate changes in quality instead of overall price inflation, Bil's analyzes how consumers react to the price changes. He takes a look at automobiles — goods that are frequently subject to forced substitutions by the BLS — to determine how the price increases affect market share.

Bil's employs a standard assumption: If the higher price of a new good does not indicate an increase in the good's quality, that good will lose market share relative to cheaper versions of the same good as buyers flock to the cheaper product instead. In the case of automobiles, the forced substitutions in the BLS data correspond to an increase of 14.2 percent in market share. In fact, a price increase in an old model actually causes a reduction in the market share for comparable vehicles, just as you might expect. Thus, the price increases seen in the data after the forced substitution by the BLS are most likely the result of an increase in quality: Many consumers would not be interested in buying a higher-priced car if it didn't include more desirable features.

The results of Bil's analysis have obvious implications for monetary policy debates. The Federal Reserve is mandated to pursue price stability and maximum employment. Experience has shown that those goals are complementary: Low and stable inflation is crucial to economic growth and a well-functioning labor market over the long run. Making sure we have an accurate picture of how prices react to changes in technology is vital to the task of pursuing a policy consistent with the Fed's objectives. **RF**