Improvements in CPI Procedures

Sample augmentation

The April 1990 *Detailed Report* announced that the Consumer Price Index had implemented a procedure, in May 1990, to increase (augment) the number of outlets from which prices are collected. *Augmentation* of the outlet sample was done in addition to the regular updating of samples that occur each year in one-fifth of the geographic areas. The process proved to be successful. Beginning in 1992, outlet sample augmentation will occur on an annual basis in areas not scheduled for regular updating.

The increase in price quotes gained through outlet sample augmentation is small, less than 5 percent of the quotes used in the CPI. It enables the CPI to replace the price quotes that are lost over time through attrition, however. (Attrition occurs for many reasons: When outlets go out of business, move out of the area, or change the items they carry or their type of business.) The statistical sampling techniques used to select outlets for augmentation are identical to those used for the regular updating of the outlet sample. (These procedures are described in *BLS Handbook of Methods*, chapter 19.) While users of the index will not see a change as a result of the augmentation of the outlet sample, overall index accuracy will increase due to the use of a larger sample of prices.

For additional information on this procedure write to the Bureau of Labor Statistics, Division of Consumer Prices and Price Indexes, Room 3216 BC, Washington, D.C., 20212, or call Charles Mason at (202) 272-2604.

Improvements in CPI Procedures

The Bureau of Labor Statistics (BLS) continually evaluates the Consumer Price Index (CPI) program to identify needed improvements. Effective with the calculation of the CPI for November 1992, BLS will improve the methodology used to impute consumer price change. Imputation is the process used to estimate price movements when specific prices are either missing or not directly comparable to previous prices collected.

The CPI attempts to measure as closely as possible the average change in prices paid by consumers for a fixed market basket of goods and services. Developing a price index for an item where versions of that good or service change or are replaced over time by new versions presents conceptual problems. For example, when a new model-year car or truck replaces the previous model year in the CPI, usually the new version is either of *comparable* quality to the old model, or the quality differences between the two models can be factored out. In either case, only the pure, or constant-quality price change associated with the model changeover is used in index calculations. If the new model is significantly different in quality from the old version, however, and the quality differences between the two models cannot be factored out (in this case the two versions are considered to be *noncomparable),* it is not possible to isolate the pure price change between the two different model years. Instead, an estimate of constant-quality price change is made by *imputation.*

Current imputation procedures.

Prior to the change in November 1992, price change between the old version and the noncomparable, new version has been typically imputed in one of two ways. The first type of imputation in the CPI involves the treatment of "sale" prices (versus "regular" prices). In the CPI, a "sale" price was considered to be a temporary reduction in the regular or market price of an item. If a new, noncomparable item in the CPI was initially on sale, that price information was not used in CPI calculations until a month when the new item was reported at a "regular" price. Similarly, if an item priced in the CPI was discontinued, and the last collected price was designated a "sale" price, that sale price was not used in CPI calculations. Instead, the last previously-reported "regular" price of that discontinued item was used in index calculations as the imputed current-period final (overlap) price for the discontinued version. (This type of imputation and treatment of sale prices will be phased out over the next year and replaced by the new imputation procedure described later in this article.)

The second type of imputation of price change in the CPI occurs if the discontinued version is last reported at a "regular" price. In this instance, the price change between the old version and the noncomparable, new version is imputed from the average price change for all similar items used in CPI calculations that month in the same geographic area.

In short, the type of imputation currently used in the CPI is dependent upon whether or not the discontinued version was "on sale". In the new imputation strategy described below, the type of imputation used for a given item will depend upon whether or not price change for that item is closely associated with the introduction of new lines or models.

New imputation procedures.

For most nonfood commodities (e.g., apparel, new vehicles, household furnishings), price change is closely associated with the annual or periodic introduction of new lines, models, or versions. BLS research has established that imputation by all similar items creates a potential bias for items where such a relationship exists between price change and the introduction of new versions. For example, our research indicates that the average price change for *all* apparel items in a month (newly-introduced apparel lines as well as continuing apparel lines) is not the best approximation of the price change for noncomparable, new apparel items. Rather, imputation by the average price change for *comparable* new apparel lines is a much better approximation of price change for *noncomparable* new apparel lines. That is, price changes *within* the same version should not be used to impute price change*s between* different versions.

Therefore, beginning in November 1992, for most nonfood commodities, only price changes that occur between versions of comparable or constant quality will be used to impute price changes for new noncomparable versions. (This alternative imputation procedure—imputing prices using only constant-quality price changes of new lines or models—has been in place for new cars and trucks since October 1989).

For most food and service items, where price change is not closely related to the introduction of new versions, price change between an old version and a noncomparable, new version will be imputed from the average price

change for all similar items used in CPI calculations that month in the same geographic area.

For additional information on this change, write to the Bureau of Labor Statistics, Division of Consumer Prices and Price Indexes, Room 3615 PSB, Washington, DC 20212-0001, or call Kenneth J. Stewart at (202) 606-7000.