

# Issues



## in Labor Statistics

U.S. Department of Labor  
Bureau of Labor Statistics

### Addressing Potential Biases in the CPI

On December 4, 1996, the Senate Finance Committee received the report of the Advisory Commission to Study the Consumer Price Index (CPI). The Commission, chaired by Professor Michael J. Boskin, examined measurement issues bearing on the accuracy of the CPI.

The December *Monthly Labor Review* on improving the CPI reports on the forthcoming general revision of the CPI program, the sixth that BLS has undertaken since first collecting consumer price data in 1917. (See exhibit.) It is not the Bureau's response to the Commission. BLS Commissioner Katharine G. Abraham's December 19, 1996, briefing on the BLS reaction to the *Final Report of the Advisory Commission to Study the Consumer Price Index* is excerpted below.

*On the recommendation that the Bureau of Labor Statistics adopt production of a cost-of-living index as its objective in measuring consumer prices:* "The BLS already operates within a cost-of-living framework in producing the Consumer Price Index (CPI) and will continue to do so. As is stated in the *BLS Handbook of Methods*, this framework guides operational decisions about the construction of the CPI.

*On the recommendation to adopt the geometric mean formula below the stratum level, arguing that it more accurately reflects consumer substitution:* "BLS is about to begin producing a monthly experimental geometric mean index for users to see and evaluate. In some strata, cookies and cupcakes, for example, assuming a high degree of substitutability seems reasonable. There are other strata, for instance, physician's services, in which the assumption about substitutability embedded in the

geometric mean formula seems less obviously appropriate. Following a period of evaluation, the BLS will make a decision regarding adoption of the geometric mean formula in producing the CPI. Any such adoption most likely would not apply to all strata."

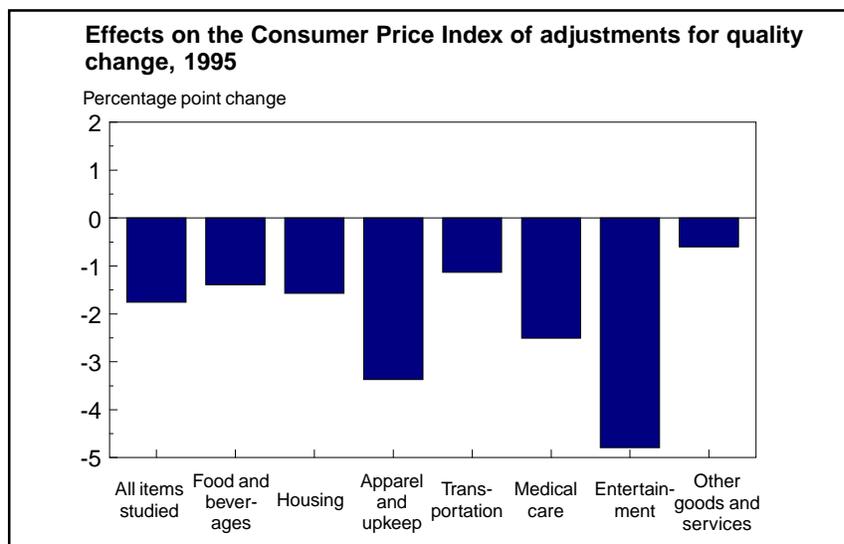
*On the recommendation that aggregation of the CPI subindexes be carried out using a "superlative" index formula, specifically a "trailing Tornqvist" formula:* "Superlative measures use special formulas and current expenditure data. Under certain assumptions about, for example, market equilibrium, they accurately measure changes in the cost of living by taking account of how consumers are actually substituting in response to relative price change. These superlative indexes cannot be produced in real time precisely because they require current expenditure data, which is impossible to collect and process on a monthly turnaround."

"The Commission proposes that BLS replace the formula currently used to aggregate the component subindexes to

form the overall CPI with a geometric mean formula using annually-updated expenditure weights. Such a measure would not be a true superlative index. The specific measure proposed almost certainly would understate the true change in the cost of living."

*On the recommendation to produce an annual supplemental measure that would use a superlative formula:* "Such a measure probably would be similar to several experimental superlative indexes that we have been publishing since 1993 (using Fisher and Tornqvist formulas, chained and fixed-base weights). We are receptive to the spirit of this recommendation.

*On the issues involving quality, new goods and new kinds of outlets:* "Nearly two-thirds (0.7 percent per year) of the 1.1 percent per year overall bias in the CPI as estimated by the Commission comes from alleged deficiencies in the treatment of changes in the quality of goods and services and the emergence of new goods (0.6 percent) and the



emergence of new kinds of outlets (0.1 percent)."

"Some seem to have the impression that the BLS makes no adjustments for quality changes in computing the CPI. This is not a correct impression. The latest estimates of the impact of quality adjustments on the CPI cover the year 1995 and measure the effect of all such adjustments made in the routine compilation of a CPI sub-index covering approximately 70 percent of the total index, with shelter the principal exclusion. During 1995, more than half of the price change reported for goods and services items was adjusted out: the price increase in this part of the index was 3.9 percent over the year before quality adjustment versus 2.2 percent over the year after the quality adjustments applied to produce the official index. This does NOT mean that the methods used in constructing the CPI capture quality change perfectly, only that the quality adjustment procedures currently in place have a profound impact on reported price change." (See chart.)

"The Commission's estimates of other biases rely heavily on the members' best judgment as to the value to consumers of various market place

developments, such as increased varieties of food, greater reliability of cars, and improved house furnishings, as opposed to a comparison of the CPI against any alternative measure the Commission suggests the BLS implement. In general, the discussion of quality/new product biases does not include explicit recommendations regarding the adoption of procedure to correct the problems the Commission believes exist."

*Progress on the quality adjustment front:* Dealing with the quality adjustment issue is the "house-to-house combat" of constructing price change measures. Although it is not clear that a satisfactory means of dealing completely with quality change will ever be found, BLS believes further progress can be made and will continue to work toward that end. Activities that could be undertaken in support of this effort in the reasonably near term, resources permitting, include:

- Use of hedonics for some additional components of the index.
- Adoption of more aggressive procedures for identifying new

goods and incorporating them more promptly into the samples of items priced.

- Expansion of resampling efforts might allow the BLS to capture the emergence of new outlets more quickly.

*In conclusion:* "The issues identified in the Commission's Report are not new problems. BLS has been aware of the measurement issues concerning the CPI and, over the years, has made efforts to study and advise users of the data about them. At the same time, we welcome new information and are confident that public debate will contribute to the development of new and improved methods for constructing the CPI.

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**Exhibit: Previous revisions to the Consumer price Index**

Release of revised CPI	Expenditure base period	Notable innovations
1940 1953 1964	1934-36 1950 1960-61	Introduced the concept of a sample of cities and items, and the principle of imputation Expanded population coverage to represent all Urban Wage Earner and Clerical Worker families Expanded population coverage to represent individuals as well as families; Introduced computer processing
1978	1972-73	Expanded population coverage to represent all urban consumers; Improved methodology for construction of outlet sample frame; Introduced probability sampling techniques into the selection of the item and outlet samples
1987	1982-84	Expanded scope of systematic outlet rotation. Introduced advanced sample allocation model.

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