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Honorable James Saxton
Chairman
Joint Economic Committee
Congress of the United States
Washington, D.C. 20510

Dear Mr. Chairman:

I am responding to your request at the February 1 Joint Economic Committee hearing for a summary of the recent and planned improvements in the Consumer Price Index (CPI).

As we previously have noted, criticism of the CPI has tended to center on three perceived weaknesses: (1) lack of currency of the spending patterns and the samples of priced items that underlie the index; (2) failure to reflect in the index the effects of consumer substitution in response to relative price change; and (3) failure to adjust adequately both for improvements in the quality of existing consumer goods and services and for new product introductions. In what follows, I have attempted to provide information on the improvements we have made since the end of 1998 in each of these areas.

New Schedule for Updating Expenditure Patterns

The CPI has a two-tiered weighting structure; at the upper level the weights are based upon data from the Consumer Expenditure Survey. Historically, these expenditure weights were updated about every 10 years. On December 18, 1998, however, we announced that the consumer expenditure weights in the CPI would be updated in the future at 2-year intervals, beginning with the introduction of expenditure weights for the 1999-2000 period effective with the release of data for January 2002. The 1999-2000 expenditure weights have now replaced the weights for the 1993-95 period that had been introduced in January 1998. At the time of their introduction last month, the new expenditure weights were 2 years old. In contrast, the previous, 1993-95, expenditure weights were 3½ years old when first used in the index. Expenditure weights will next be updated to the 2001-02 period effective with release of data for January 2004. Finally, I should note that while we now are updating the expenditure weights at 2-year intervals, the CPI's geographic area and housing unit samples are not being

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updated on a 2-year basis. However, we have undertaken an evaluation of the feasibility of a program for continuous rotation of these samples.

New Schedule for Updating Items and Outlets

The samples of items priced for the CPI and the retail stores and service establishments in which they are collected now are being updated on a 4-year cycle. Prior to this improvement, these samples were updated every 5 years. In addition, because of improvements to the survey from which these samples come, it is now possible to focus updating efforts on those areas of consumer spending in which goods and services tend to change rapidly.

Another major enhancement is being planned through an initiative funded in the Fiscal Year 2002 budget. Beginning in 2003, we will reselect many CPI item samples midway between the scheduled 4-year outlet sample rotations. That is, these item samples will be rotated every 2 years. This will be a further step in making the CPI more representative of current consumer spending as well as more reflective of new goods and services in the marketplace.

Accounting for Consumer Substitution

As noted, the CPI has a two-tiered weighting structure. Data from the survey of consumer expenditures do not provide enough detail to weight and combine prices at the individual item level. The weights for these items are presently derived from a survey of where consumers shop called the Telephone Point-Of-Purchase Survey. Within the two-tiered scheme of calculating the CPI, consumer substitution can and does occur at both levels--i.e., within and across item categories. In order to approximate the effect of consumers' responses to changes in relative prices at the lower level of aggregation, the Bureau of Labor Statistics (BLS) introduced a geometric mean estimator for averaging prices within most of the 211 index item categories.

The geometric mean is consistent with the assumption that consumers maintain constant expenditure shares at the elementary aggregate level. That is, it assumes that consumers substitute within item-area categories such that any increase in price of an item is offset by a corresponding decline in quantity purchased, and thus the item's expenditure share remains constant. The arithmetic mean, by contrast, is consistent with the assumption that

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consumers purchase fixed quantities of items within an item category and do not substitute in response to changes in relative prices.

The new formula is now being used in categories that, at the time of its introduction in February 1999, comprised approximately 61 percent of total consumer spending represented by the CPI for All Urban Consumers (CPI-U). The remaining 15 index categories continue to be calculated as they previously had been, using an arithmetic mean. The geometric mean formula was chosen for those categories within which consumers are likely to change their spending in response to changes in relative prices. The arithmetic mean formula was chosen for those categories within which consumers are unlikely to respond to changes in relative prices.

New Supplemental Index of Consumer Price Change

On February 20 we announced our plans to introduce a new consumer price index called the Chained Consumer Price Index for All Urban Consumers (C-CPI-U), effective with release of July data in August 2002. This index will employ a Tornqvist formula and utilize expenditure data in adjacent time periods in order to reflect the effect of any substitution that consumers make across item categories in response to changes in relative prices. The new measure, said to be a "superlative" index, is designed to be a closer approximation to a "cost-of-living" index than the present measures. The use of expenditure data for both a base period and the current period in order to average price change across item categories distinguishes the C-CPI-U from the existing CPI measures, which use only a single expenditure base period to compute the price change over time. I have enclosed a copy of our announcement which provides more detail on this new index. In addition, one should note that the CPI's reflection of consumer substitution at the upper level is based upon empirical data, in contrast to the handling of substitution at the lower level, which of necessity is based on assumed behavior.

Quality Changes and New Goods

As you are aware, the BLS long has had an active program to address the complex issues stemming from changes that occur in the quality of the goods and services consumers buy. Beginning in Fiscal Year 1999, the BLS received funding for special data collection to support the expansion of hedonic

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quality adjustment as part of a broad CPI improvement initiative. Although BLS has been applying hedonic quality adjustments in the housing and apparel components of the CPI for more than a decade, the recent focus has been on consumer electronic and appliance goods. BLS researchers have employed a regression procedure, called hedonic modeling, that decomposes the price of an item into implicit prices for each important feature and component. This yields a mechanism for capturing the price change that may occur as new models replace old ones in the market place without counting the value of quality improvements as price increases. The products selected for hedonic modeling are at varying points in their development stream, some being fairly new and undergoing very rapid technological improvements, others having been on the market for some time. The hedonic model for the first of these products--personal computers--actually was introduced in 1998. This was followed in 1999 by the introduction of a model for adjusting television prices for changes in quality. Hedonic models subsequently were introduced in Calendar Year 2000 for audio and video products, video cassette recorders (VCRs), Digital Versatile Discs (DVDs) players, refrigerator/freezers, microwave ovens, college textbooks, washing machines, and clothes dryers.

In addition to the enhanced outlet and item resampling procedures mentioned above, we are engaged in efforts that are explicitly targeted at including new goods in the index in a systematic and timely way. Since 1999, we began augmenting or replacing CPI samples in selected item categories that are characterized by high rates of new product introduction. Our primary focus thus far has been on the categories of prescription drugs and personal computers. I should emphasize, however, that these improvements are not, by themselves, a complete solution to the problem of the treatment of new goods in the CPI.

As we have noted before, I believe it is clear that the BLS has made, and will continue to make, real progress in improving the accuracy of the CPI. At the same time, however, it is also clear that we do not have solutions for all of the vexing measurement issues we face in producing this important index. Evidence of this is clear in the recent release of the BLS-sponsored report by the Committee on National Statistics, "At What Price? Conceptualizing and Measuring Cost-of Living and Price Indexes," which outlined a number of recommendations for research and improvements in the CPI.

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Should you have any further questions concerning the Bureau's ongoing effort to improve the CPI, please let me know.

Sincerely yours,

A handwritten signature in cursive script, appearing to read "Lois L. Orr". The signature is written in dark ink and is positioned above the typed name.

LOIS L. ORR
Acting Commissioner

Enclosure

NOTE ON A NEW, SUPPLEMENTAL INDEX OF CONSUMER PRICE CHANGE

The Bureau of Labor Statistics will begin publishing a consumer price index (CPI) called the Chained Consumer Price Index for All Urban Consumers, effective with release of July data in August 2002. Designated the **C-CPI-U**, the index will supplement the existing indexes already produced by the BLS: the CPI for All Urban Consumers (CPI-U) and the CPI for Urban Wage Earners and Clerical Workers (CPI-W).

The **C-CPI-U** will employ a Tornqvist formula and utilize expenditure data in adjacent time periods in order to reflect the effect of any substitution that consumers make *across* item categories in response to changes in relative prices. The new measure, said to be a “superlative” index, is designed to be a closer approximation to a “cost-of-living” index than the present measures. The use of expenditure data for both a base period and the current period in order to average price change *across* item categories distinguishes the **C-CPI-U** from the existing CPI measures, which use only a single expenditure base period to compute the price change over time. In 1999, the BLS introduced a geometric mean estimator for averaging prices *within* most of the index’s item categories in order to approximate the effect of consumers’ responses to changes in relative prices *within* these item categories. The geometric mean estimator will be used in the **C-CPI-U** in the same item categories in which it is now used in the CPI-U and CPI-W. (See *Monthly Labor Review*, October 1998, pp. 3-7.)

Expenditure data required for the calculation of the **C-CPI-U** are available only with a time lag. Thus, the **C-CPI-U** will be issued first in preliminary form using the latest available expenditure data at that time and will be subject to two subsequent revisions. Accordingly, at the time of its introduction in August, “final” values of the **C-CPI-U** will be issued for the 12 months of 2000. “interim” values will be issued for the 12 months of 2001, and “initial” values will be issued for January-July of 2002. In February 2003, with release of the January 2003 index, revised interim indexes for the 12 months of 2002 will be published, and the index values for 2001 will be revised and will become final. Then, in February 2004, when the monthly expenditure data from calendar year 2002 become available, **C-CPI-U** indexes for the 12 months of 2002 will be issued in final form and values for the 12 months of 2003 will be revised and issued as interim. The **C-CPI-U** index revisions are expected to be small, but in principle each monthly index could be revised from its previously published level.

BLS previously has calculated superlative indexes on an experimental basis, although these are not comparable to the **C-CPI-U** in all computational details. (See, for example, *Monthly Labor Review*, December 1993, pp. 25-33.) Based on BLS research, the **C-CPI-U** is estimated to increase at an average annual rate of 0.1 to 0.2 percentage point less than the CPI-U.

The **C-CPI-U** will be issued for national averages only and will not be seasonally adjusted. It will employ a December 1999=100 reference base. Data for periods prior to December 1999 will not be calculated. The component series that will be published are listed below:

All items	Medical care
Food and beverages	Medical care commodities
Food	Medical care services
Food at home	Recreation
Food away from home	Education and communication
Alcoholic beverages	Education
Housing	Communication
Shelter	Other goods and services
Fuels and utilities	Services
Household furnishings and operations	Commodities
Apparel	Durables
Transportation	Nondurables
Private transportation	All items less food and energy
Public transportation	Energy

These indexes will be published monthly in the CPI news release and the CPI Detailed Report, and the series will be available electronically at the same site as other CPI data: <http://www.bls.gov/cpi/>.

The Bureau of Labor Statistics will brief reporters and other CPI users on the new **C-CPI-U** index at 10:00 a.m. EST, Friday, Feb. 22, in Conference Center Rooms 1 and 2 of the Postal Square Building, 2 Massachusetts Ave., N.E.

For more information on the **C-CPI-U**, write to:

Bureau of Labor Statistics
 Division of Consumer Prices and Price Indexes
 2 Massachusetts Ave. NE, Room 3130
 Washington, DC 20212

Or contact Patrick Jackman or Rob Cage either by telephone at (202) 691-6952 or by electronic mail at Jackman_P@bls.gov or Cage_R@bls.gov.