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The Consumer Price Index: Coverage, limitations, and accuracy

by Janet Norwood

The Consumer Price Index (CPI) affects almost all Americans in some way. As the most widely used measure of inflation for the U.S. economy, the CPI is a key indicator of the effectiveness of government economic policy. The President, Congress, Federal Reserve Board, and many financial and economic consultants use the CPI to formulate and evaluate fiscal and monetary policy. Business executives, labor leaders, and other private citizens also use the index as a guide in economic decision making. The CPI and its components are used as deflators for other economic series to adjust for price changes and transform the series into inflation-free dollars. Examples include retail sales figures, components of gross national product, and financial reporting under Financial Accounting Standards Board FAS 33.

The CPI is also used to escalate income payments. As a result of statutory action, the index affects the income of more than 60 million persons: 38 million Social Security beneficiaries; over 3 million military and federal Civil Service retirees and survivors; and about 19 million food stamp recipients. Changes in the CPI also affect the cost of school lunches for 24 million children. In addition, over 3 million workers are covered by collective bargaining agreements that tie wages to the CPI. Some private firms and individuals use the index to keep rents, royalties, alimony, and child support payments in line with changing prices. And finally, since 1985, the CPI has been used to adjust the federal income tax structure to prevent inflation-induced increases in tax rates. Each 1% annual change in the CPI results in an increase of $2.8 billion in federal entitlement programs. In a period of 4% annual inflation, the change could amount to 8% of the projected federal deficit. The effect of CPI changes in the private sector is not known but may be even greater.

Coverage

The CPI, which measures the average change in prices over time for a fixed market basket of goods and services, is available from the Bureau of Labor Statistics (BLS) on a monthly basis for two population groups. The first, and broadest, measure covers all urban families (CPI-U) while the other covers only wage earners and clerical workers (CPI-W). The CPI-W is a continuation of the historical index introduced well over a half-century ago for use in wage negotiations. As new uses were developed for the CPI in recent years, the need for a broader and more representative index became apparent. The CPI-U, introduced in 1978, is representative of the buying habits of about 80% of the noninstitutional population, compared to 32% represented by the older index. The methodology for producing both indexes is the same; only the population coverage differs.

The CPI is based on a sample of prices for goods and services people buy for day-to-day living, i.e., food, clothing, shelter and fuels, transportation, medical care, entertainment, etc. Change is measured by pricing essentially the same market basket of goods and services at regular intervals and comparing aggregate costs with the costs of the same market basket in a selected base period. Prices are collected in 85 urban areas across the country from about 19,000 retail establishments and 57,000 housing units. Indexes are published for about 425 items or groupings of items at the national level for the CPI-U. Indexes also are published for 27 individual metropolitan areas as well as aggregations of the 85 areas by region and population-size class.

Limitations

While the CPI reflects price change for all urban consumers, it may not be representative of the experience of demographic subgroups such as the elderly or the poor. Measurement of price change for such subgroups would require specifically designed surveys to determine the precise market baskets of items, retail outlets, and pricing structure applicable for the group when computing their price index. Second, area indexes cannot be used to determine relative living costs. Individual geographic area indexes measure only how much prices have changed in the respective areas over the specific time period. They do not indicate whether prices or living costs are higher or lower in one area relative to another. Finally, because the index is estimated from a sample of consumer purchases, the results may deviate slightly from those that would be obtained if all consumer transactions were covered. These estimating or sampling errors are statistical limitations of the index.

A different kind of error in the CPI can occur when a respondent provides BLS field representatives with inaccurate or incomplete information. BLS attempts to minimize these errors by obtaining prices by personal observation wherever possible and by correcting errors immediately upon discovery. The field representatives, technicians, and commodity specialists who collect, process, and analyze the data are trained to watch for deviations in reported prices that might be due to errors. Also, an independent audit staff conducts a systematic evaluation of all CPI collection and processing activities.

Accuracy

The Market Basket: The American economy is quite dynamic and continually changing. Consumer spending patterns, therefore, change over time. New products such as personal computers, VCRs, compact disc players, etc., emerge. Consumer tastes and preferences change as shown in the decline in purchases of food for home consumption. Consumers also substitute commodities and services, one for the other, in response to change in relative market prices as demonstrated by the shift in demand to lighter, more fuel-efficient automobiles following the energy crisis of the mid-1970s. This, of course, implies that the consumers'

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CPI cont'd

market basket changes. The CPI, however, is based on price movement for a fixed market basket and does not reflect shifts over time in the quantities of goods purchased. These shifts occur gradually and there is no clear evidence to indicate the frequency with which the market basket should be updated. Historically, the CPI market basket has been held fixed for a period of 10 years or so. The past three market basket revisions took place in 1964, 1978, and 1987, reflecting consumer spending patterns during 1960-61, 1972-73, and 1982-84, respectively. Beginning in 1980, annual consumer expenditure surveys have been conducted so that changes in consumers spending can be monitored and the need for more frequent revisions to the market basket can be evaluated.

Sample Design: The two most recent CPI revisions were also accompanied by markedly improved sample designs that increased the CPI's efficiency and quality. The 1978 revision introduced full multi-stage statistical probability sampling into the CPI, greatly improving its reliability. The 1987 revision introduced an optimum design using a cost constrained minimum variance model and further improved the statistical reliability. Because of budget reductions in 1988, the sample of cities was reduced from 91 to 85. Even with these cuts, the new design still produces estimates of price change that have less variation than those based on the sample of cities prior to the 1987 revision. BLS is in the process of compiling measures of sampling variance and should have them available for release in the fall of 1989.

Future enhancements

The worldwide explosion in new technology presents new challenges and opportunities for the future of the CPI and BLS. Barring further budget cuts, a number of projects underway should yield future improvements. Current research exploring new index methodologies could allow for more frequent and less costly updating of the CPI market basket. New survey technologies that use computer-assisted telephone-interviewing techniques are also being evaluated to determine whether they will speed the introduction of new products into the CPI framework. Similar technologies should aid in the collection of more consistent, higher quality information in respondent dependent interviews by controlling the flow and editing data during the interview. In addition, plans are being developed to use knowledge-gathering expert systems to aid commodity specialists in ensuring consistent decisions when determining product comparability and measurable quality differences.

The BLS continues to strive for improvements in quality, timeliness, and accuracy of all economic information it produces despite the tight budgetary climate. Similar efforts are being made in the other programs on prices, unemployment, employment, wages, productivity, and occupational injury statistics for which BLS has responsibility.

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Behind the scenes: The Social Security COLA for 1988

by Bruce D. Schobel

On October 21, the Bureau of Labor Statistics (BLS) released the Consumer Price Index (CPI) for September. With that figure, the Social Security Administration calculated the Social Security cost-of-living adjustment (COLA) for December 1988, which was 4.0%. This COLA was announced in the *Federal Register* October 31, and nearly 39 million beneficiaries received that increase with their December checks, payable on January 3, 1989. Although the COLA announcement was quite routine, much was going on behind the scenes.

Automatic cost-of-living adjustments have been part of the Social Security Act since 1972. The first automatic COLA was effective for June 1975. The only major change in the procedure came when the Social Security Amendments of 1983 shifted the COLA effective date from June to December. Since 1984, the COLA has been equal to the percentage increase in the average CPI for the third calendar quarter of the year over the corresponding average for the third quarter of the previous year, rounded to the nearest 0.1%. (The 3% "trigger," which never took effect, was repealed in 1986.)

The law does not say which CPI to use for the COLA because when automatic adjustments were enacted, only one existed. That CPI, now called the CPI for Urban Wage Earners and Clerical Workers (CPI-W), is specified in Social Security regulations as the one to use. The use of this index to adjust Social Security benefits has been criticized, especially by former Senator John Melcher, past Chairman of the Senate Special Committee on Aging, because it excludes the vast majority of beneficiaries, who are not currently wage earners or clerical workers. (Senator Melcher lost his bid for reelection in 1988 and is not a member of the 101st Congress.)

In 1987, Congress directed BLS to study the concept of a special CPI based on a market basket of goods and services purchased by the elderly (although not all beneficiaries are elderly). The BLS report, issued in June 1988, emphasized the limitations of such a special index. When BLS Commissioner Janet Norwood testified before the Senate Committee on Aging in October, she repeated the conclusions of the June report but was willing to conduct a more thorough, three-year study of the matter.

In the meantime, the Senate adopted a compromise position – that the CPI for All Urban Consumers (CPI-U) be substituted for the narrower

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