Economic Policy Institute

Briefing Paper

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REVISING THE CONSUMER PRICE INDEX

CORRECTING BIAS, OR BIASED CORRECTIONS?

by Dean Baker

The claim by Federal Reserve Board Chairman Alan Greenspan that the consumer price index (CPI) significantly overstates inflation is ill-founded. Furthermore, his proposal, which the Senate seems likely to accept, that Congress set up a commission to uncover all sources of high-side bias in the index will sacrifice the integrity of government economic data to the policy goals of raising taxes and cutting benefits. The suggestion that Social Security cost-of-living adjustments be less than the level now reported in the CPI is particularly inappropriate, since there is evidence that the CPI currently understates the increase in living costs for the elderly.

EVIDENCE OF CPI BIAS

Greenspan's claim that the CPI overstates inflation by 0.5% to 1.5% annually is based on an unpublished Federal Reserve Board working paper. It is not the sort of work that would usually provide the basis for economic policy. The paper is marked, "not to be quoted without the permission of the author" (underlining in original), indicating that it is still in draft form. It contains no original research on the CPI, and assessing the CPI's accuracy is not even its purpose. The authors themselves note that "the literature exploring the potential measurement error in our official measures of prices is sparse."

In fact, a more serious assessment by the Congressional Budget Office (CBO) found some evidence that the CPI overstates inflation, but CBO's estimate of the degree of overstatement was much smaller. In addition, the Bureau of Labor Statistics (BLS) introduced a new procedure in January 1995 that should significantly reduce the most serious source of high-side bias.

There are also reasons for believing that the CPI understates inflation. With the procedural change put in place in January, the bias toward understatement might be at least as large as the remaining factors that bias the CPI toward overstatement.

Sources of Overstatement of Inflation

The recent CBO study ("Is the Growth of the CPI a Biased Measure of Changes in the Cost of Living?") identified four possible sources of an upward bias in the CPI. The most well-documented source was a bias that stemmed from the way in which new products were rotated in the sample. Based on BLS research, CBO placed the range of this bias at 0.2% to 0.3% annually. BLS altered its sample rotation procedures in January 1995, so this source of bias should have largely been eliminated.

The second likely source of bias is the failure of the CPI to allow substitutions toward commodities that rise less rapidly in price. Since the CPI attempts to measure the price change of a fixed basket of goods, it continues to include a good that is rising rapidly in price (e.g., beef) even if a good substitute exists that is rising less rapidly (e.g., chicken). The research cited by CBO places this bias at an average of 0.2% or less, annually.

Third, there is evidence of an upward bias in the treatment of prescription drugs. A high-end estimate of this bias is 4% per year, but since prescription drugs account for less than 1% of the CPI, the effect of this bias on the whole index would be at most 0.04% annually. Fourth, there is reason to believe that new goods that fall rapidly in price, such as VCRs, are inadequately accounted for in the CPI. High-end estimates about the importance of such goods would lead to a bias of about 0.05%.[1] The sum of these last two biases is, then, almost certainly less than 0.1%. Taken together with the substitution bias, they probably lead the CPI to overstate inflation by less than 0.3% annually.

Sources of Understatement of Inflation

CBO examined sources of understatement as well. In particular, it concluded that treating new pollution control equipment in automobiles as quality improvements caused the CPI to understate inflation by slightly less than 0.05% annually. Since pollution control equipment does not directly benefit the immediate consumer, it should not properly be counted in the CPI. This problem also arises from gasoline price increases attributable to pollution reduction; these also are counted as quality improvements rather than price increases. (The decision to count the cost of pollution control equipment as a quality improvement rather than a price increase was a political decision. The judgment of BLS was that these costs should be counted as price increases.)

There are several other possible sources of understatement that were not considered in the CBO report:

- *Over-counting of quality improvements.* BLS attempts to account for price increases attributable to quality improvements by estimating the market value of the improvement on products in which it is already available. This practice has the effect of overstating the value of the improvement for consumers who would not have chosen to purchase it. For example, for many consumers car air conditioning or government-mandated safety equipment may be of relatively little value yet, when these items are incorporated as standard equipment in an

automobile, the full cost is counted as a quality improvement. Adding color to computer screens presents a comparable problem.*

There is no obvious way to determine the extent of this understatement, but its impact on the inflation measure for new cars, where it is most important, gives some idea of its magnitude. Had the CPI not adjusted for the quality improvements in new cars from 1967 to 1994, their measured rate of inflation would have been nearly 1.6% higher per year. The weight of new cars in the CPI is currently approximately 4%. Used cars which are now subject to similar quality adjustments have a weight of approximately 1%, making the combined weight over 5%. This means the maximum possible understatement of inflation in the CPI attributable to this source is approximately 0.08% a year. However, because these quality improvements have significant value to many consumers, the true understatement may be half this amount.

The impact of quality attributions is even larger in determining price changes for computers, but computers account for a much smaller weight in the CPI. (The category of information-processing equipment, which includes home computers, accounted for 0.198% of the CPI in December 1986 when it was first introduced; it had fallen to 0.099% by December 1994 due to the enormous fall in the price of computing power.) However, the importance of computers will be much greater after the next revision of the CPI in 1998. If quality changes continue to be counted in the same manner, then price increases due to new features that are of little value to most users will lead the CPI to significantly understate inflation in the future.[3]

- *The treatment of health cure insurance.* The health care insurance component of the CPI counts only the difference between premiums paid by consumers and benefits paid by insurance companies. This gives a measure of increases in the cost of administering health care plans and the profits of insurance companies. It does not measure increases in the cost of the services, which are calculated separately. This method can lead to a significant undercounting of the increase in the cost of obtaining health care services through insurance.

  For example, when New York State prohibited insurance companies from turning down applicants based on pre-existing conditions, and required insurers to adopt a policy of community rating, the resulting increase in average insurance rates was not measured as a price increase in the CPI. Instead, the higher prices are entirely attributed to increased provision of services.

  BLS found that an experimental index that measured the cost of insurance premiums increased on average 5.55% more rapidly than the health insurance component of the CPI for the years 1977 to 1983 (Armknecht and Ginsburg 1992).

  The impact of this possible source of bias is difficult to determine, since the weights of the two measures of insurance are different: the current CPI simply measures administrative costs and insurance company profits, while the premium method counts the vast majority of all health care expenditures for the insured population. The current weight of medical expenditures in the CPI is approximately 6.2%. Therefore, an extreme range might place the weight of this shift in the measure of insurance costs at between 1% and 4% of the CPI, creating the possibility of a downside bias of between 0.06% and 0.22% annually.

- *Deterioration in service quality.* There is at least anecdotal evidence that the quality of many services has deteriorated in ways that are not picked up in the CPI. Perhaps foremost in this category is medical insurance. Consumers are likely to spend far more time shopping around and comparing various plans than in the past, and they are likely to spend far more time filling out forms and pursuing payment of claims. The CPI, by just examining the dollar expenditure on health care, would ignore these costs.

  While there is no reliable evidence of the direction or magnitude of the bias in the CPI due to inadequate adjustments for changes in the quality of services, a recent BLS study found that adjusting for quality change in apparel increased the measured rate of price increase (Liegey 1994). More research is needed to determine the actual impact of quality changes in services, but the implicit assumption of many economists, that goods and services always improve in quality, is clearly wrong.

- *Use of outdated population weights.* Current population-expenditure weights are based on data from the 1980 Census. It is possible that this method leads to an understatement of inflation, since areas with rapidly growing populations are likely to see more rapid price increases than average, while areas of comparatively slow population growth are likely to see less rapid price increases. Using outdated population data undercounts the former and overcounts the latter.

- *The higher cost of living for the elderly.* There are reasons to believe that the cost of living rises more rapidly for the elderly than for other age groups. BLS constructed an experimental index for people over 62 and compared it to the CPI for the period 1987-93. The index rose on average 0.3% a year faster than the CPI, mostly due to the greater weight of medical care and housing in this index. Since these goods have risen much faster than the overall CPI and are likely to continue to rise relatively rapidly for the foreseeable future, the CPI understates the true increase in the cost of living for the elderly. Therefore, if the purpose of the cost-of-living adjustment for Social Security is to preserve living standards, then the adjustment should be greater than the CPI measurement, not less.

Taken together, these sources of understatement could lead the CPI to understate the increase in the cost of living by as much as 0.5% annually overall, 0.8% for the elderly. Whether the factors that bias the CPI downward are large enough to offset the sources of high-side is impossible to determine without further research. However, it seems probable that low-side bias for the elderly is sufficiently large that it would exceed any of the remaining sources of high-side bias.

The Impact of Lowered Measured Inflation on Taxes and Benefits

If the measured rate of inflation were lowered, then the federal deficit could be reduced in two ways: through higher tax revenues, since tax brackets are adjusted to the CPI, and through lower benefit payments, particularly to Social Security recipients, whose benefits are raised each year in accordance with the CPI.

For Social Security recipients, a downward adjustment of the CPI, say from 3% to 2%, would mean that benefits would rise by only 2%, causing their purchasing power to fall by 1%. Similarly, the point at which tax brackets change would move up by only 2% instead of 3%. As an example, if the cutoff point between the 15% bracket and the 28% bracket were $20,000 in one year, it would rise in the next year to $20,400 under a 2% adjustment, instead of to $20,600 under a 3% adjustment. Therefore, anyone earning over $20,400 would face a higher tax bill. The size of the tax increase would grow year by year as this process was repeated, and it would also be larger for individuals in higher income brackets.

Ultimately, the impact of this CPI adjustment on tax revenues will far exceed its impact on Social Security benefits. In Social Security, only the increases are indexed to the CPI; the amount that a person receives at the point of retirement depends on actual wages in the economy at that time. By contrast, the lower indexation of the tax code will continually increase the tax burden.

For example, if the Greenspan-adjusted CPI reports 1% lower inflation each year for 20 years, then in 2015 the tax bracket change points will be approximately 20% lower than they otherwise would have been. However, the Social Security payment received by a person retiring in 2015 would be completely unaffected. The only people who would have received a 20% reduction in Social Security benefits in that year are those who had been on Social Security in 1995. They will likely constitute a small proportion of Social Security recipients in 2015.

Implications of a CPI Overstatement of Inflation

The actions of both Alan Greenspan and the current Congress are inconsistent with the belief that the CPI significantly overstates inflation. In the case of the Federal Reserve Board, its interest rate policy, if the CPI is now overstating inflation, would pose a serious threat to the economy. If inflation is 0.5% to 1.5% lower than indicated by the CPI, then the monetary policy pursued by the Federal Reserve Board has been extraordinarily contractionary in recent years. An overstatement of this degree means that the real federal funds rate (the key short-term rate set by the Fed) *never* fell below 1%, even at the depths of the recession. It also means that the current real federal funds rate is approximately 4%, a level almost certain to bring on a recession.

Furthermore, if Chairman Greenspan relied on his beliefs about the true inflation rate in formulating monetary policy, then he has misled Congress about the stringency of the policy he has been pursuing. Since knowledge of the real interest rate, and therefore the true inflation rate, is essential for the conduct of monetary policy, it is also remarkable that Greenspan never commissioned a serious Federal Reserve Board study to examine the extent of the bias in the government's inflation measures, both at present and historically. This failure is a particularly grievous act of negligence, since the Federal Reserve Board, unlike the Bureau of Labor Statistics, has an essentially unlimited budget to carry out economic research.[4]

The Congress' current concern over budget deficits is also misplaced if the CPI significantly overstates inflation. The economic rationale for reducing the budget deficit is that lower deficits in-

crease national saving. Higher levels of national saving in turn should lead to higher levels of investment, followed by more rapid productivity growth and, ultimately, more rapid real wage growth and higher living standards. Many of the links in this argument are questionable, but the point is that the ultimate purpose of lowering budget deficits is to bring about more rapid real wage growth.

If the CPI has overstated inflation by as much as has been alleged, then average wages must have been growing at a reasonable pace all along. However, the problem of deteriorating living standards created by growing wage inequality still remains. *Therefore, the issue of inequality should take on greater importance, while the issue of overall growth is relatively less important than previously thought.* To redress this inequality, Congress should be seeking to expand and improve precisely the sorts of programs it is currently cutting.

In other words, if the CPI really overstates inflation by the amount claimed, then there is no basis for the concern that our children will experience declining living standards because of current rates of saving and investment, since average wages are apparently growing at a healthy pace. There is, therefore, no economic basis for the extreme fiscal austerity currently being pursued. However, there is a real concern that most of our children will experience deteriorating living standards because of growing wage inequality. This, then, should be the central issue for those concerned about the well-being of future generations.

CONCLUSION

There is no clear evidence at this point that the CPI overstates the cost of living, and there is no reason to believe that the CPI overstates the cost of living to anywhere near the extent claimed by Alan Greenspan in his congressional testimony. The BLS has acted to reduce or eliminate sources of bias when they have been identified, and has already eliminated the clearest source of bias identified in the paper cited by Greenspan. It is not clear whether the remaining biases lead the CPI to understate or overstate the true changes in the cost of living. There is clear evidence, however, that the CPI understates increases in the cost of living for the elderly, the population that would be most affected by lower indexation of government benefits.

If Congress establishes a commission to investigate the accuracy of the CPI, then it must examine sources of bias on both sides, not just the sources of high-side bias. The effort to eliminate only biases on the high side is an intellectually dishonest exercise that is clearly intended to produce a measure that underestimates inflation. If Congress wishes to raise taxes and cut benefits, it should do so by explicit policy changes, not through the manipulation of economic data.

April 1995

ENDNOTES

1. Some estimates place the bias from inadequate counting of price declines of new goods considerably higher (e.g., Trajtenberg 1990). These higher estimates stem from a small subset of new goods that experience enormous declines in price. The counting of such goods raises a basic conceptual issue in the concept of a cost-of-living index. Since price changes are weighted by the share of total expenditures on specific goods and services, the expenditures of wealthy individuals have greater weights. This means, for example, that large falls in the prices of extremely expensive goods that are consumed only by very wealthy people could lead to considerably lower measured inflation in an accurate CPI. For this reason, the CPI can be considered a plutocratic index, rather than a democratic one in which each person's consumption has equal weight (Pollak 1989).

Most of the supposed bias in the CPI resulting from the failure to register initial price declines of new goods stems from the fact that the CPI is not likely to include a good until its price has fallen enough so that a significant subset of consumers already consume it. For example, hand calculators were very expensive when they were first introduced, and few people purchased them. The price soon fell, though, and they became far more common. The CPI's product rotation system is likely to miss this first period of rapid price decline, and only include the calculator when a significant portion of the population can afford to purchase it. Although this procedure leads to a high-side bias from the standpoint of the construction of a fully accurate plutocratic index, concern over this source of bias seems dubious from the standpoint of the CPI's practical applications.

2. This way of dealing with bundled attributes is the other side of the CPI's failure to account for substitution toward products with less rapid increases in price. When the CPI estimates the change in price of a fixed bundle of goods, it is not attempting to measure the level of expenditures needed to maintain a fixed quality of life. This point is explicitly acknowledged in BLS documentation of its treatment of quality changes in automobiles. Counting the full market value of a new attribute as a quality improvement rather than as a price increase, even when consumers are forced to purchase the improvement in order to get the basic product, understates the true change in the cost of living in exactly the same way that not calculating the impact of consumers' substitution toward goods that have risen less rapidly in price overstates inflation.

3. As an example of the sort of problem that quality adjustments in computer pricing can lead to, ***The New York Times*** reported that the fastest growing software in 1994 was a program called "Uninstaller" ("A 'Killer App' Indeed," March 27, 1995). This program removes unwanted software from the computer's hard drive. In some hedonic pricing systems, all the additional software that becomes standard in a computer would be treated as a quality adjustment, leading to a lower inflation-adjusted price. The market success of the Uninstaller would suggest that some of these programs constitute a deterioration in quality.

4. The Federal Reserve Board's budget is not subject to congressional approval. The Board is essentially free to use as much money as it considers necessary to meet its operating expenses.

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