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How to Fix the CPI

Phillip Cagan and Geoffrey H. Moore

The consumer price index has been widely criticized for its inadequacies as a measure of inflation, primarily because of how it measures the cost of housing. But the criticism often arises out of ignoramce of how it is actually constructed and why. Statements are made, for instance, that the index assumes that all homeowners buy a new house every month and pay the current mortgage interest rate. That is not true. Almost as fallacious is the view that one could readily correct what is wrong with the CPI by substituting another index for it—without recognizing that every known alternative is beset with problems of its own. In short, there are trade-offs, and any proposal to change the CPI should recognize that the benefit to be gained is almost bound to be at the expense of some other valuable consideration, which should be weighed. Nevertheless, we believe the CPI can be improved.

HOMEOWNERSHIP COSTS

Since the CPI aims to measure the current price level of goods and services bought by consumers, it is hardly unreasonable that the current price of houses and the current level of mortgage interest rates should enter into it. It is also obvious that only a small fraction of

Phillip Cagan, Professor of Economics, Columbia University, and Geoffrey H. Moore were asked by the Business Roundtable to study the problems of the CPI and recommend solutions. This chapter, a synopsis of their full report published by the American Enterprise Institute, is reprinted from *Across the Board*, The Conference Board Magazine (April 1981).

people are currently in the market for houses or mortgages. Furthermore, in order that the CPI reflect only movements in prices, not changes in the amounts purchased, it is based on the concept of a *fixed market basket*, representative of what consumers bought during a certain period, namely 1972–1973. Consequently, the index measures the total expenditure on house purchases (net of sales) that would be incurred currently by the same small fraction of households that acquired houses in 1972–1973. It also measures the total interest payment that would be currently committed by these households over the average life of a mortgage at the time of purchase. The great majority of homeowners, who had already purchased houses before the 1972–1973 survey, of course, are not included in this computation, since the prices and interest rates involved in *their* transactions had already been included in the index at the appropriate dates. Their continuing current expenses for upkeep (insurance, repairs, and taxes) are covered in the CPI.

Nonetheless, the housing component has contributed significantly to recent increases in the CPI because of the rapid rise of house prices and mortgage interest rates. These two items contributed three percentage points to the 14 percent rise in the index for the fiscal year ended June 1980. For those who were not buying houses or borrowing on mortgages during this period, this may seem to be an unwarranted impact, and for them it is. But a single market basket cannot represent every individual family, and it may not even represent the average family beyond the period for which the survey was made. These are problems that no index can meet perfectly.

Another difficulty is that, although the current prices of houses, like the prices of hamburgers and haircuts, are among the prices that consumers pay, buying a house is also a long-term investment, unlike the hamburger or haircut. Viewed as an investment, homeownership provides a continuing series of services at a cost—not only maintenance and financing costs, which are now included, but also the capital costs of the homeowner's equity, adjusted for capital gains or losses. As a theoretical proposition, the CPI should allow the capital gains on houses to offset some of the other costs, and include as the true cost the alternative rate of return the homeowner could obtain by investing his equity somewhere else. But this alternative cannot be identified with any quoted rate of return in the market, and the capital gains can only be measured when realized—when the house is sold. Hence, such a measure would be highly speculative and at least as controversial as what is now being done.

An alternative would be to determine, through a broad survey, whether rents on houses representative of owner-occupied housing can be obtained to provide a valid measure of what this housing

would rent for. The existing CPI rent index is designed to cover only rental housing, largely apartments in urban centers, and contains a serious downward bias, so that using it as the rental equivalent for owner-occupied housing is not a reasonable solution. We believe that the development of a valid rental-equivalent measure deserves high priority, for it would avoid all the questions of how to treat house prices and mortgage interest. They would no longer be needed in the index. The Bureau of Labor Statistics (BLS) has announced that it would design an appropriate rental survey to measure home ownership costs. (Postscript: The BLS has since adopted the method.)

In view of the time required to establish a valid rental-equivalent measure, the present treatment should. in the meantime, be modified in several respects. For mortgage interest costs we would use the actual interest paid currently on *all* mortgages instead of the interest committed to be paid on new mortgages. This means treating mortgage interest payments the same way that other long-term commitments, such as rental payments on leases, are now treated in the CPI. That is, of the two ways to handle such commitments—when they are committed and when they are paid—we would choose when they are paid. Then the rates for all mortgage borrowers would enter into the calculation and the impact on the CPI of sharp fluctuations in current rates, both upward and downward, would be greatly diminished. In 1979, for example, this modified treatment of mortgage interest rates would have reduced the rate of increase in the CPI from 13.3 percent to 11.7 percent (December to December).

At the same time, we would make other modifications in housing cost measures. Land should be eliminated from the house purchase price and from the property tax component, because land is a nondepreciable investment-good like stocks, bonds, and other assets whose purchase is excluded from the CPI. Similarly, we would exclude the portion of house purchases that reflects increased homeownership per household. The combined effect of these two changes in 1979 would have been to reduce the weight of house purchases by 28 percent.

A CHANGING MARKET BASKET

Oil price increases and other developments have produced changes in the typical market basket since the survey that determined its content was taken in 1972–1973. With fixed quantity weights, prices that rise faster than others become relatively more important in the index, even though consumers tend to shift their expenditures in favor of lower priced products. Many consumers have shifted from heating oil to wood (where it is less expensive), or have conserved

energy in other ways. An index that measures the cost of a given standard of living would allow for such substitutions while holding the standard constant. By comparison, the present index tends to be biased upward because it does not allow for these substitutions.

Past studies indicate that this bias has been quite small. Still, it should be monitored. In 1978 the BLS instituted a quarterly survey of consumer expenditures that, though less comprehensive than the major surveys made every dozen years or so, can provide the basis for more frequent revisions of weights. In addition, this makes it possible to construct an index weighted by current expenditures and to extend it back in time for comparison with the present base-weighted index. This would show how much difference frequent updating of the weights would make.

Under ordinary circumstances a current-weighted and a base-weighted index bracket an index that measures the cost of a constant standard of living. Hence, economists have long advocated an average of these two indexes as the best approximation to an index of the true cost of living. We recommend that the Bureau of Labor Statistics construct, on an experimental basis, such an average index.

A related problem with the CPI, especially in connection with its use as an escalator of wages and retirement benefits, is that it records price changes that reflect a change in the standard of living of the entire population, and it is not clear that such price changes should be escalated. OPEC, for example, has raised the price we pay for imported oil in exchange for our exports. This reduces our real national income. Instead of everyone's sharing this burden, indexed wages and benefits compensate for it.

In early 1980 Denmark removed imported oil from its consumer price index as part of a compromise to hold down wage escalation. That is not a desirable solution, however, because the deletion of particular items from the index is arbitrary. Instead, such foreign shocks to the economy can be removed from indexation by adjusting for changes in the cost of total imports relative to exports (the terms of foreign trade). The adjustment can be estimated by changes in a price index for imports relative to one for exports, weighted by the ratio of imports to GNP. From 1973 to 1979 this adjustment called for a reduction of indexation by about three-tenths of 1 percent a year. It is not large, because it has been held down by the large price increases of some exports and because imports are less than 10 percent of GNP. If the terms of trade improve, of course, the adjustment would be upward.

In principle, also, adjustments can be made in escalation agreements to allow for changes in real national income that are of domes-

tic as well as foreign origin. Some of these reduce real national income, such as depletion of resources, higher costs of controlling pollution, or declining productivity. Others increase real income, as was true of productivity changes over most of our history. These are not matters that can be handled by the CPI or by any price index, however, without completely departing from the concept of a measure of general price change. The problem requires explicit recognition in escalation agreements themselves, by specifying how changes in real national income are to affect the escalation, whether of wages, pensions, or other types of payments. Some practicable formulas for doing this need to be worked out.

QUALITY BIAS

Product improvements are widely believed to bias the CPI upward. If the quality of a product improves, its effective price has been lowered even if its nominal price is unchanged. An example is the occasional medical finding that the proper dosage of a drug should be reduced, thus cutting the cost of its services even if the price per ounce remains the same. The Bureau of Labor Statistics, however, already makes many adjustments for such changes. If the detailed specification of any item in the index changes, the item is taken out of the index, unless the change can be attributed to a change in production costs and information on the latter is provided by the manufacturers, in which case the BLS adjusts the price. Such adjustments are applied to automobile prices when optional equipment becomes standard or when safety items or antipollution devices are mandated by the government. When items that change are left out of the index, the index is biased only if the prices of the items removed tend to rise more or less than the remaining prices.

Hence, the quality bias in the index is not necessarily upward. In fact, two major sources of downward bias have been identified. In the rent index the disregard of deterioration due to aging of the same rented unit produces a substantial downward bias. In house purchase prices, where the BLS relies on FHA quotations, there is a downward bias because of ceilings that prevent more expensive houses from being financed under these programs. The BLS is conducting studies to correct these two items.

REVISIONS

Unlike most other economic statistics, the CPI, once published, is not revised. This is a deliberate policy, and has much to recommend

it in view of the wide use of the index in contracts. It is, however, a drawback whenever a substantial conceptual or other change in the index is made, since it can perpetuate inconsistencies between what was done prior to and subsequent to the change. For example, when the new market basket was adopted as a result of the 1972–1973 survey, the index as of December 1977 was left unchanged. In effect, the old basket was used until that date, the new basket only after that date. But this means that the index after December 1977 does not strictly represent the increase in cost since 1967 (the base of the index) of the 1972–1973 basket. That increase would probably be less than what the index shows, because any difference that might have existed as of December 1977 was wiped out. The increase to that point represents the increase in the cost of the old (1960–1961) basket, which very likely exceeded the increase in cost of the new one. Thus, the index lacks a straightforward interpretation.

Another example would occur if our proposal to change the mortgage interest component were adopted. Up to the time of the change, current mortgage interest rates would have been used in the index. Beyond that time, an average of past rates would be used, which of course includes the current rates already employed in the index. If the new index is simply linked on to the old, the increases in current rates that have already been counted in the index would be counted again in the future. The index would continue to reflect increases that had already been included. This can only be avoided by computing the index by the new method up to the date the revision is to start and allowing the level of the new index to reflect the effect of the change in method.

Since the principle of no historical revisions of the CPI should probably be preserved, and since sharp changes as of the date of revision should doubtless be avoided, we believe that a new principle is required. This would incorporate the effect of any revision gradually in the index over a period of months, at a fixed rate of, say, one-tenth of 1 percent per month. Thus if the total effect of a revision were to reduce the index, say, by 2 percent as of the date of revision, this would be incorporated by reducing the calculated rate of change in the index by one-tenth of 1 percent per month for the next 20 months. This would, it is true, introduce a small distortion into the index during that period, but it would be of known amount, and, once the adjustment period was over, the index would be at its correct level. Under present procedures the index never reaches its correct level. That is an unfortunate thing to have to say about an index that is as carefully constructed as the CPI.