

Some proposals to improve the Consumer Price Index

Two students of price measurement examine limitations of the CPI, urge changes in the way homeownership is measured, suggest experimental averaging of current- and base-weighted indexes

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The Consumer Price Index is a good index for its intended purpose—a measure of average price changes in the goods and services that consumers purchase. Some of the complaints made—that the CPI does not reflect the price changes for this or that group properly—are a misinterpretation of the purpose of the CPI and would not provide desirable guidelines for revising the index. Nor would any of the other available price indexes serve as well the purpose stated above for which the CPI is designed. While the CPI has serious limitations as a cost-of-living index for escalation purposes to hold standards of living constant, we know of no practical remedies for many of the most serious limitations. In view of the wide-ranging public functions served by the CPI, nothing is to be gained by indiscriminate criticism of it that could undermine the public's confidence in its acceptability. We believe that a constructive approach is to focus on feasible improvements.

Over the years, the CPI has been improved, and there is room to improve it further. Our review of problems

with the CPI leads us to the following recommendations concerning the weights of the index, its housing component, and how to deal with its limitations as an escalator.

The changing market basket

The CPI pertains to a fixed basket of goods and services, which does not allow for substitution in consumption as a result of changes in relative prices. An index measuring the cost of a constant standard of living, on the other hand, would allow for substitutions that consumers make from higher to lower priced goods, provided that their standard of living is not changed thereby. In the escalation of pension payments, for example, a major objective is to maintain the standard of living of the pensioners. Since the CPI does not allow for substitutions of lower priced items that maintain the same standard, to that extent it overstates the escalation needed.

To allow for substitutions that provide the same standard of living as the original market basket is not, however, a simple matter. Critics of the CPI frequently overlook the point that simply substituting an item that has become cheaper for one that has become more expensive, say a pound of chicken for a pound of beef, will not ordinarily hold the standard constant. The substitutions must be equivalent in utility as judged by the consumer, and this usually means substituting a larger

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quantity of the cheaper item for a smaller quantity of something else. Estimating what these equivalent quantities are is the problem. The practical difficulties of doing so, in view of the differences in tastes among consumers, make the simplicity of a fixed basket attractive.

While past studies indicate that the upward bias of the fixed market basket has been quite small, it should be monitored, nonetheless. In 1978, the Bureau of Labor Statistics instituted a quarterly survey of consumer expenditures which, 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.

We believe that it would be worthwhile to experiment with, and perhaps eventually to adopt, an average of a base-weighted and current-weighted index as the official index for escalation purposes. Such a combined index would avoid some of the upward bias of the present base-weighted index and some of the downward bias of a current-weighted index. Even if these biases are small over short periods, they may add up, over a period of many years, to an amount that is significant for escalating contracts or social security benefits. The combined index could be expected to approximate more closely than would either one separately an index representing the cost of a constant standard of living.

The homeownership factor

Housing presents special problems, some of a controversial nature. Some of the controversy is based on misinformation. A common but erroneous view is that the CPI assumes that every homeowner purchases his home every month at the going price and pays the going mortgage interest rate. The BLS should do everything possible to correct these impressions by explaining, in easily understood terms and in prominent places, exactly how the housing component is calculated.

The homeownership part of the housing component comprises the cost of houses, mortgage interest, insurance, taxes, and repairs. Each of these parts is priced and incorporated into the index according to its weight in the Consumer Expenditure Survey period, 1972–1973. Insurance, taxes, and repairs are recurring expenses and provide no special problems. It is the treatment of house purchases and mortgage interest payments that has attracted attention. The index uses *current* house prices and *current* mortgage interest rates. They receive a weight in the index according to the amount of expenditure made or contracted for by the

households surveyed in 1972–73. If a household bought a house in that period, the total purchase price was counted as a current expenditure in the survey, while the current sales of houses by the same or other households were subtracted. The interest cost of the mortgage financing over the first half of its life (since the average mortgage is terminated about halfway) was also counted as a current expenditure. The fact that the actual interest payment and amortization stretch over a period of years was ignored. For those households that did not purchase a house in the survey period, no house purchase or mortgage interest expenditure was recorded, whether these households then owned a home or not and whether they were making mortgage payments or not.

In the 1972–73 survey period, about 3 percent of households per year bought new houses. It is only the amount paid for houses and for mortgage interest by this 3 percent that determined the weights for these two items (after deducting house sales by households in the sample). The remaining 97 percent of households did not spend anything on the purchase of a house or take out a new mortgage. The rents paid by nonhomeowners are, of course, included as a separate item in the housing component. Many people find the zero house purchase and mortgage expenses for the 97 percent to be puzzling and are critical of it, but the explanation is simply that these households did not purchase houses or commit themselves to mortgages *in the survey period*. Their purchases or commitments were made before the survey period. In view of the large swings in the volume of purchases of new houses, the development of a current-weighted index is especially important for the housing component. Its existence would help to dispel much of the controversy about this part of the CPI by revealing what difference it would make if current patterns of expenditure were taken into account.

Alternative measures. The main controversial issue in the housing component is whether to stick with the present method, which treats the purchase of houses as a current consumer outlay, or to switch to a method which treats houses as an investment and includes only the current cost of their services. The main practical difference between these two is that the present method includes house prices with a weight based on the total value of house purchases in a 1-year period, whereas a cost-of-services method includes the capital cost of housing based on a rate of return to homeowners' equity. Both methods are the same in including other housing costs on a current expense basis, namely, mortgage financing, maintenance and repair, taxes, and insurance.

Each of the two methods has its advantages and disadvantages. The present outlays method is relatively

straightforward and has been the traditional practice for many years. However, it gives more weight to current house purchases than the cost-of-services method does. The latter, on the other hand, is more complex, requires estimates and assumptions regarding the appropriate rate of return to equity, and is harder to explain to the public. Some of the seeming arbitrariness in this method, as exemplified in the various experimental indexes the BLS now publishes, could be reduced by focusing on a single version which would reflect as far as possible the actual average capital cost to homeowners over the period since they purchased their current house. This involves a moving average of equity and financing costs over a period of years, weighted to reflect the actual experience of homeowners. Such a moving average of capital costs would be a smoother version of the experimental X-3 index now compiled by the BLS. Any index based on moving averages is not an up-to-date reflection of housing costs, however, and would be insensitive to the latest changes in house prices and interest rates. The present method has the advantage of reflecting current changes in house prices, but the other method is more representative of the trend rate of change of actual housing costs and, over a long period, would be more accurate for escalation purposes.

The equity costs in the cost-of-services method cannot be measured unambiguously, however, since there is no market transaction that supplies information on the capital cost of the equity to homeowners. Partly for this reason, most other countries largely ignore homeownership costs in their consumer price indexes. A rental equivalent measure of owner-occupied housing costs is the most attractive approach, if a sample of rental housing can be developed that is representative of owner-occupied housing. A rental index obviates the need to estimate housing costs for each of its components and in particular avoids the ambiguities of capital costs.

An alternative to the rental equivalent measure involves construction of an index of the costs of the services of owner-occupied housing—a user cost index. The proposal is to add up the current costs that the homeowner has to pay for housing services. These costs are equivalent to the rent that would be charged if someone were to provide these services in a competitive market (and if the renter cared for the house as though he owned it). The rent would have to cover not only the usual outlays for maintenance and repairs, taxes, and insurance, but in addition the cost of the capital funds tied up in the house. The latter can be viewed as the investment return on an asset, namely: (1) the alternative market rate of return on the homeowner's equity and the interest rate on the mortgage, and (2) the change in market price of the asset over the period (an addition to or subtraction from the return, which re-

fects the combination of physical depreciation due to aging and capital gain or loss due to market price developments).

The basic problem with user cost is that the alternative rate of return on homeowners' equity is ambiguous because it is not clear what the alternative is. Since such a rate cannot be defined and measured, it must be inferred. The BLS has proposed to approximate it by the rate of interest on new mortgages (probably the best proxy that could be chosen), but this clearly gives an inaccurate approximation for many years and produces anomalous results. When capital gains on homeowners' equity due to increases in house prices are deducted from the assumed alternative return on equity, housing costs fluctuate widely from year to year, and even an arbitrary smoothing still leaves large fluctuations that would appear mystifying and unreal to the average homeowner and the general public. To avoid the fluctuations, one of the BLS experimental series omits the capital cost of equity, but this destroys the rationale of the user cost approach.

We strongly recommend, therefore, that high priority be given to a study to determine whether a realistic rental equivalent method of measuring homeownership costs can be developed and implemented. At the same time, an experimental cost-of-services index along the lines outlined above could be published for a year or two so that users can become familiar with it. At the end of an experimental period, a decision would be made whether to adopt the rental equivalent or cost-of-services method, and whether to produce two indexes—one for escalation purposes using one of these methods, and another for indicating current price developments using the present treatment of house purchase prices. The rental equivalent index is the only one of these options that would be appropriate for both purposes. If the present treatment of house purchase prices is retained, we recommend that the weight of this item be reduced to allow for the purchases in the base period that increased the ownership of housing relative to the population of households.

The mortgage rate dilemma. In either the cost-of-services or the present method, mortgage financing costs can be based on the current rate for new mortgages or on a moving average of the rates contracted in the past that homeowners are currently paying. The present method treats mortgage interest as a commitment made at the time a house is bought and a new mortgage is obtained, with the "price" being the total amount of interest that will be paid by the average purchaser. We recommend the alternative, which corresponds better to what homeowners think of as their cost, namely the interest payments they are currently paying. This is based

upon a loan contract that is currently in effect, much like a rental contract, even though the rate may have been agreed upon years before. It is part of the cost of occupying the house and can be treated in the same manner as property taxes, insurance, maintenance, and repairs, some of which may also be contracted for in advance. The effect will be to reduce the fluctuations in the mortgage interest component, because the effective rate will be a weighted moving average of current and past rates, depending on the age distribution of outstanding mortgages. In addition, it would resolve a potentially troublesome problem with the present method, which will arise if the variable rate mortgage becomes popular. With this type of mortgage, the assumption that the current rate will apply for half the average term of the mortgage will no longer be tenable.

If a weighted moving average of mortgage interest rates were adopted for the CPI, subsequent changes in the index would be smaller than under the present treatment. If mortgage interest rates subsequently declined, the moving average would decline less rapidly, and indeed might rise for some time. If mortgage rates subsequently rose, the moving average would rise less rapidly. For example, during 1979, when interest rates rose rapidly, the use of the moving average (as in the BLS experimental index) would have reduced the rate of increase in the CPI (December to December) from 13.3 percent to 11.7 percent.

However, aside from the difference in the rates of change, such a revision creates a difference in the level of the index that is a problem for escalation purposes. Up to the time of the revision, the index would reflect the current level of the mortgage rate; thereafter, it would reflect the level of the moving average. Consequently, the index would continue to be affected by some of the same rates that had previously been reflected in the index. Under present circumstances, where there has been a substantial upward movement in mortgage interest rates during the past several years, the index would be higher than if the new method had been used exclusively throughout.

The best solution to this double counting of past mortgage rates, we believe, is to recalculate the index as it would be at the time of revision and measure the discrepancy from the present index at that time. This would include all the double counting that existed at the time of revision. This discrepancy could then be gradually eliminated, over a period of years, by an adjustment factor starting at the point of revision. For example, a discrepancy of, say, 2 percent at the time of revision could be eliminated by an adjustment factor of one-tenth of 1 percent per month. This adjustment could work in either direction depending on the direction of the discrepancy. If it were not actually incorpo-

rated in the official index, it might nevertheless be used in escalation contracts. We would recommend, however, that this method of adjustment be utilized in the index at the time of any revision for whatever reason. It would leave previously published index figures intact but correct gradually over a future period for any discrepancy the revision revealed. The end result would be a more accurate index.

Data base modifications. The FHA sample of prices and of new and existing houses as used in the CPI has various defects, including a downward bias (because purchasers of homes priced above the established loan maximum are not eligible for the program) and delays in recording the data. It should be supplemented with other data sources; such as regional data on multiple listings and house appraisals and the Census Bureau's quarterly index of new house prices based on a survey of builders. The data on multiple listings and house appraisals entail compilation costs, but the additional expense may be worthwhile.

Although the Census Bureau's index pertains only to newly built houses, it is not clear that the CPI sample need include any but new house prices. The prices of new and old houses may move closely together, in which case the distinction would not matter. In any event, the prices paid for old houses are presumably largely netted out in the CPI weights, since the purchases and sales of old houses are mainly transactions between households, which cancel out in the aggregate. For purposes of calculating capital gains or losses on homeowner equity in the cost-of-services method, however, a measure of price changes of existing houses would need to be continued.

And, finally, we recommend that, if feasible, consideration be given to the exclusion of land values from house prices in the present treatment of housing costs. Unlike houses, land can be viewed as a physically nondepreciable asset, and its purchase is thus closer to being an investment than a consumption expenditure. The present treatment overweights house purchases because of the omission of capital gains on homeowner equity, and any method for reducing the investment part of homeownership seems desirable to us, despite the inconsistency in ignoring the fact that houses are also partly an investment. If land values are excluded, it would be necessary also to exclude the taxes on land from the weights for property taxes and, in principle at least, to exclude them from measures of the current change in the level of property taxes. A proportionate adjustment of mortgage interest costs would be desirable as well, reflecting the fact that part of the mortgage principal is devoted to purchasing land.

In summary, our recommendations on the CPI treat-

ment of homeownership can be listed as follows:

- Construct a rental equivalent index of homeowner costs. If this proves to be feasible, the remaining recommendations would not apply.
- Use a moving average of mortgage interest rates that conforms to actual payments on outstanding mortgages.
- Improve the sample of house purchase prices, restrict it to new houses, and eliminate from the weights the purchases that increase the incidence of homeownership per household.
- Construct a cost-of-services approach to the housing component in which the capital cost of homeowner equity (including capital gains or losses) reflects the actual experience of the average household in purchasing and eventually selling a house.
- Exclude land from house purchase prices and make a corresponding adjustment in property taxes and mortgage interest costs.

Adoption of any of these recommendations does not necessarily call for adoption of the others. Since the development and testing of a rental equivalent index may take some time, we recommend that consideration be given to an interim revision based upon the other proposals.

The CPI as an income escalator

The CPI is not an index of the cost of a constant standard of living, which its use in escalator agreements presumes to be the case. The index may overstate or understate the cost of a constant standard. One problem is simply inaccuracies in the data that we recommend be corrected, such as downward bias in the rent index due to aging of rental units and in the FHA house prices due to price limits. Another more general problem is bias due to quality changes in products, for which there is no easy solution other than continual alertness by the BLS staff to manifestations of the bias and care in handling the price data to remove such bias as far as possible. Additional efforts by manufacturers, consumers, and analysts to call to the attention of the BLS evidence of bias in their price data and ways of correcting for it would be desirable. Housing costs present a special set of problems, as discussed above.

The CPI also departs from the concept of a cost-of-living index by not explicitly holding constant the standard of living provided by consumer expenditures when substitutions are made among products as a result of changes in relative prices. The present fixed-weight index records larger price increases than consumers need to pay to maintain the same standard of living. From the available evidence this upward bias appears to be

small, but we recommend that it be monitored by the construction of a current-weighted index on a national basis, using weights derived from the new continuing survey of consumer expenditures. A combination of this current-weighted index with the present base-weighted index would help correct this bias if it proves to be serious.

A different set of problems in using the CPI as an escalator is posed by price changes that reflect changes in real national income per capita. These result from changes in the supply prices of resources or declines in productivity, adverse changes in the terms of foreign trade, and mandated increases in production costs due to environmental and safety regulations. The latter may, however, provide equivalent benefits to the public that are not included in real national income as conventionally measured. Finally, an increase in excise taxes will raise the CPI but not change real national income, even as conventionally measured.

These problems of using the CPI for escalation become more important in periods of high inflation. They cannot be handled by changes in the construction of the CPI without altering the purposes for which it was designed. Escalation requires, instead, that estimates be made of the implication of changes in real national income per capita (arising from such factors as resource depletion, higher pollution control costs, or declining productivity) and of changes in taxes, and that escalation agreements specify how these changes are to be handled.

In the use of cost-of-living estimates, escalation agreements should specify to what extent, if any, increases in real income per capita as well as any decreases are to affect the escalation. Escalation provisions in many wage contracts already implicitly allow for such increases and decreases by placing limits on the amount of escalation, while specified wage increases are provided to match expected advances in labor productivity. Moreover, contracts are renegotiated every few years, which permits adjustments to be made for unanticipated developments since the last contract.

Escalation provisions in pension plans, including social security benefits, present a more serious problem because full escalation is commonly provided, contracts are not usually renegotiated, and periodic adjustments are not made. Pension contracts could be rewritten and social security legislation amended to specify how the effects of the above income changes and tax changes are to be handled.

We recommend that the construction of estimates of such effects be studied and undertaken for escalation uses, but this is not a job particularly for the BLS, and we do not believe the matter should be treated in a price index.

We do not look with favor upon special CPI indexes for particular groups, such as retired persons living in Florida, welfare recipients in California, or Federal employees in New York City. Such indexes would be expensive to construct properly because of the need to collect prices from the outlets where the groups make their purchases, and there seems to be no limit to possible requests for such indexes. Special indexes seem largely unnecessary, so far as the use of different weights is concerned, because the evidence indicates

that indexes for different demographic groups would show relatively small differences compared with the large differences among individual households within as well as between these groups. It is also questionable whether special indexes are appropriate for escalation purposes, since their use implies that the particular expenditure pattern of the group should be compensated for regardless of what factors determine that pattern. We view the previous recommendations as more important uses for a limited BLS budget.

The causes of continuing inflation

Efforts to respond over the last decade to the frustrating problem of inflation clearly demonstrate that today's dilemma is more complex than the traditional emphasis on excess aggregate demand might suggest. There are two separate aspects of the inflation problem. First, with hindsight, it is not difficult to identify factors that initiated past inflation, including both excess total demand and sudden changes in supply or demand conditions in major individual markets. But it is far more difficult to explain the second aspect—the stubborn persistence of inflation long after the initiating forces have been reversed or removed. It is the latter problem that has repeatedly defied policy remedies.

The worsening inflation of the 1970's has resulted primarily from the increased frequency and magnitude of the shocks and disruptions that have impacted on the economy. These events also have served to highlight the importance of accumulated structural changes in the economy. These structural changes, which have stretched over several decades, have reduced the ability of the economy to absorb these shocks in a noninflationary fashion. In combination, they have reduced gradually the sensitivity of inflation to short-run fluctuations in demand. In effect, competitive market restraints on some price and wage increases have become limited.

—*A Quarterly Report of the
Council on Wage and Price Stability*, No. 13
(Washington, Executive Office of the President, 1978),
p. 3.