

Research Department  
Federal Reserve  
Bank of  
San Francisco

March 4, 1983

## The New CPI

Last week, the Bureau of Labor Statistics published a new version of the Consumer Price Index for Urban Consumers (CPI-U). The new index, patterned after the experimental index CPI-U-X1 published the last two years, changes the statistical treatment of owner-occupied dwellings. From measuring the investment costs of housing, including the costs of purchase and financing, the new index shifts to measuring the cost of current shelter. This concept is not new as the Personal Consumption Expenditure price deflator in the national income and product accounts already uses the same approach. On the basis of the revised CPI-U, all consumer prices rose an average 0.2 percent (2.5 percent at an annual rate) in January; the unrevised CPI-U measured virtually no change in prices.

The Consumer Price Index is the leading means of comparing the average cost to consumers of a fixed bundle of goods in different periods of time. Dating back to 1917, the CPI contains within its market basket of goods the cost of housing. In recent years, the calculation of the cost of housing for owner-occupied dwellings has caused a major jump in the importance of housing (compared to that of other goods) in the overall CPI. The distortion has made the CPI a less representative measure of the inflation that consumers encounter. And the distortion has ramifications for the public and private sectors as almost all labor contracts and virtually all government programs that contain a cost-of-living adjustment are indexed to a version of the CPI.

### Background

Since it originated as a means of determining a "fair wage scale" in World War I shipyard labor disputes, the CPI has undergone several major changes. Until 1978, the CPI, designated CPI-W, included wage earners and clerical workers and covered 40 percent of the total population. In 1978, the CPI-U

was developed to cover all urban consumers. By adding retired persons, professional and salaried workers, the self-employed and the unemployed, the CPI-U increased coverage to 80 percent of the population. Nevertheless, the CPI-W continued to be published because almost all cost-of-living adjustment contracts were still linked to it.

The cost of homeownership came into the index as part of a revision in 1953. Prior to this revision, the costs of shelter were represented solely by a rental index. The rationale behind the decision to include the cost of a home and the mortgage interest cost reflected for the most part the belief that they represented current expenses. While not immediately consumed, the purchased home was treated in a manner similar to that for new and used autos and household durable goods (also not immediately consumed) that were already part of the CPI basket.

The effects of including the costs of home purchase in the CPI were not immediately evident. When only rental costs were measured, the relative importance of housing to the total index declined from 33.7 percent of consumer expenditures in the mid-1930s to 33.5 percent for the 1947-49 consumer expenditure survey. It increased only slightly, after the costs of home purchasing were counted, to 34.9 percent in the 1960-61 survey. However, by the 1972-73 expenditure survey on which the CPI-U was based, the relative importance of housing in the CPI for all urban consumers had risen to nearly 43 percent. A major reason for the increase was a rise of over 4 percentage points in mortgage rates from the early 1960s to 1972-73.

### Homeownership costs—the problems

Five separate components are involved in determining the costs of homeownership in

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the CPI-U. Three of them represent the routine costs of running a household: property taxes, insurance and maintenance and repairs. The other two components—house prices and mortgage costs—have been the major targets of critics of this method of calculating homeownership costs.

*Home prices.* The major criticism directed against the series of home prices that the BLS uses in the CPI-U has been that the data sample is biased downward. The sample is taken from the list of persons obtaining FHA home mortgages, but because there is a ceiling on the size of such mortgages, higher priced houses are excluded from the sample. As Dr. Alice Rivlin, director of the Congressional Budget Office, has pointed out, the upper limit on FHA eligible mortgages was not raised as rapidly as the surge in home prices in the late 1970s. As a result, the home prices from this source became less and less typical of home prices at large.

*Mortgage interest—the major problem.* The costs of financing a new home present more statistical problems to the construction of the CPI than do house prices. The mortgage cost component of the CPI does not simply measure the current mortgage rate. It is based upon the mortgage cost of half of (what used to be) the standard 30-year fixed rate mortgage, or the mortgage cost for 15 years, given the current market interest rate.

In the past two to three years, housing finance has changed to such an extent that there simply is no “typical” mortgage package as far as interest rates and maturity are concerned. The variable rate mortgage and shorter mortgage maturities have been adopted by lenders to protect themselves against capital losses in the event of future inflation. The mortgage market has been further complicated by the advent of “creative” financing, wherein home sellers assume a part of the financing package that was generally at rates below those offered by the usual sources of mortgage funds.

#### **Rent as shelter costs**

The solution adopted by the BLS for the problems posed by direct measurements of homeownership costs is the use of a “rental equivalent” to homeownership. The rationale for this alternative measure is simple enough: the cost of shelter consumed by homeowners should represent the rental income they forego by occupying their units instead of renting them out. In this way, one would measure the value of the flow of shelter services rather than the asset value of a house. House prices would not necessarily reflect this value because houses are assets and, consequently, are valued for their potential for capital gains (or losses) as well as their value as shelter.

The Bureau of Labor Statistics has used an index of rental costs since the inception of the CPI. For rental units, the BLS merely compiles data on rent payments. But for owner-occupied units, the BLS has had to solve the problem of finding an adequate sample of neighborhoods that contain both houses that are rentals and houses that are owner-occupied. Furthermore, the houses from each group must be roughly equivalent in quality. Then, the BLS must estimate the rental equivalent of owner-occupied houses on the basis of actual rent payments for the rental units.

The BLS has been working for several years with alternative approaches to the cost of shelter, and the one that appeared most likely to solve the homeownership problem is the rental equivalence alternative, called CPI-U-X1. In Chart 1, the annual rates of change for the two major parts of the homeowner component of the CPI—house prices and contract mortgage costs—are compared with changes in the residential rent index. The annual rate of change in mortgage interest costs ranged from -7 percent in 1971 to +44 percent in 1980. The annual rate of change in home purchase price dropped as low as one percent in 1973, later rose to over 15 percent at the end of 1979, and fell to an annual rate of change of 6.5

Chart 1  
COMPONENTS OF THE CONSUMER PRICE INDEX  
ANNUAL RATES OF CHANGE

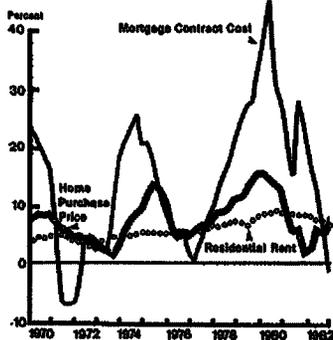
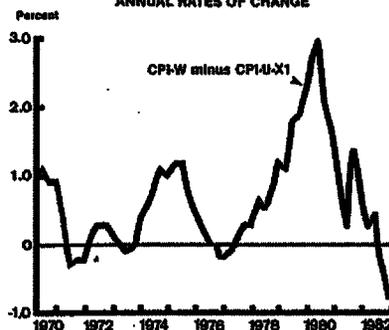


Chart 2  
DIFFERENTIAL IN  
ANNUAL RATES OF CHANGE



percent in the second half of 1982. The range of annual rate changes in the last 12 years for residential rent was much narrower, running from a little over 3 percent to just over 9 percent. It was averaging about 7½ percent in the second half of 1982. Clearly, house prices and mortgage interest costs were major factors in the increase of the CPI in 1974-75 and again in 1979-80.

The switch to an index using the rental equivalence measure of the costs of current shelter for homeowners would also change the relative importance of other components of the CPI. A comparison of their respective weights in the CPI-U and CPI-U-X1 at the end of 1981 (when house prices and mortgage interest costs had already begun to fall) indicates that the costs of homeownership, which had a relative weight of 26.1 percent when treated as the cost of acquiring and financing an asset, would have had a relative weight of 13.8 percent had they been treated on an imputed rental basis. The importance of other items in the consumer's market basket would have risen. The estimated importance of food (17.5 percent to 20.4 percent), apparel (4.6 percent to 5.4 percent), transportation (19.3 percent to 22.5 percent) and energy (11.1 percent to 13.0 percent) would have played a greater part in determining the cost of living.

#### Impact on the economy

The ultimate impact of the revised CPI-U must await the test of experience. However, we can expect the influence of interest rate changes to be much smaller on the revised index. The only use scheduled to be made of the revised index is in the indexation of income brackets for the federal income tax in 1985, but the BLS also intends to discontinue the CPI-W in that year.

As mentioned earlier, almost all labor contracts and virtually all government programs, such as social security and government pensions, that contain a cost-of-living adjustment, are indexed to the CPI-W. Because both the CPI-W and the unrevised

CPI-U were constructed on the same basis, the annual rate of change has rarely varied between the two, and when it did, it has never varied by more than 0.2 percent. If one were to examine the differential between the rate of change in the CPI-W and the rate of change in the experimental CPI-U-X1 for the period 1970-1982, the CPI-W would seem to have overstated the rate of inflation by 2 percent in 1980 and to have underestimated the rate of inflation by 0.8 percent at the end of 1982 (see Chart 2).

In the past dozen years, the CPI-W has consistently overestimated the rate of inflation by an average annual rate of 0.6 percent when compared to the CPI-U-X1. A 1979 study by the General Accounting Office estimated that federal payments to individuals (about 30 percent of federal budget expenditures, 90 percent of which are indexed) increased between \$1.5 billion and \$2.5 billion for each additional percentage point of inflation. Thus, the use of the CPI-W as the basis for cost-of-living adjustments (COLAs) probably resulted in a significant overadjustment in the cost of living. Moreover, there are questions of equity involved when one population group is over-compensated for inflation while other groups not so protected suffer a loss of real income due to inflation.

The new Consumer Price Index being introduced by the Bureau of Labor Statistics appears to eliminate much of the overstating (and occasionally understating) of the observed rate of inflation. However, since virtually all cost-of-living adjustments in labor contracts and in federal budget expenditures are presently still tied to the CPI-W, the individuals affected by the new index may face lower COLAs than those not similarly affected and be undercompensated for the inflation rate; workers, for example, may face pay cuts. Still, since a better statistical method has been devised for measuring the rate of inflation, there is every reason to change existing institutional and political arrangements to take advantage of the new index.

Herbert Runyon

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**BANKING DATA—TWELFTH FEDERAL RESERVE DISTRICT**

(Dollar amounts in millions)

Selected Assets and Liabilities	Amount Outstanding 2/16/83	Change from 2/9/83	Change from year ago	
			Dollar	Percent
<b>Large Commercial Banks</b>				
Loans (gross, adjusted) and investments*	163,341	283	4,739	3.0
Loans (gross, adjusted) — total#	142,076	231	4,971	3.6
Commercial and industrial	45,014	32	2,185	5.1
Real estate	57,319	72	677	1.2
Loans to individuals	23,671	- 17	279	1.2
Securities loans	2,365	- 192	424	21.9
U.S. Treasury securities*	7,570	29	1,306	20.9
Other securities*	13,694	23	- 1,538	- 10.1
Demand deposits — total#	40,042	1,894	- 1,490	- 3.6
Demand deposits — adjusted	27,420	- 255	853	3.2
Savings deposits — total	62,170	881	31,615	103.5
Time deposits — total#	72,481	-1,601	- 17,822	- 19.7
Individuals, part. & corp.	64,037	-1,384	- 16,945	- 20.9
(Large negotiable CD's)	24,263	- 926	- 10,391	- 30.0
<b>Weekly Averages of Daily Figures</b>	<b>Week ended 2/16/83</b>	<b>Week ended 2/9/83</b>	<b>Comparable year-ago period</b>	
<b>Member Bank Reserve Position</b>				
Excess Reserves (+)/Deficiency (-)	95	40		151
Borrowings	73	0		63
Net free reserves (+)/Net borrowed(-)	22	40		88

\* Excludes trading account securities.

# Includes items not shown separately.

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