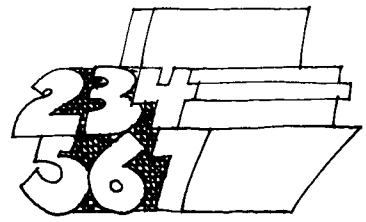
The Anatomy of Price Change



Reconciling the CPI and the PCE Deflator: first quarter 1982

JULIE A. BUNN AND JACK E. TRIPLETT

This reconciliation of the Federal Government's two major inflation measures—the Consumer Price Index (CPI), published by the Bureau of Labor Statistics, and the Implicit Price Deflator for Personal Consumption Expenditures (PCE Deflator), produced by the Bureau of Economic Analysis—extends the data through the first quarter of 1982.[1]

Reconciling period-to-period changes. For only the second time in the past 3 years, the Consumer Price Index for All Urban Consumers (CPI-U) rose more slowly than the comparable PCE price measure (the "PCE: Chain-Weight" index)[2] in the first quarter of 1982 (table 1). The most recent quarter is the first time that all three elements—differences in the measurement of housing costs, differences in weighting, and the effect of "all other" factors—of the reconciliation operated to slow the CPI-U relative to the "PCE: Chain-Weight" index.

For the second quarter in a row, the CPI-X1, the version of the Consumer Price Index which approximates a "rental equivalence" measure of housing identical to that employed in calculating the PCE Deflator, increased at a faster rate than the CPI-U. Thus the "housing effect" in table 1 was negative (meaning that, in the most recent quarter, the treatment of housing has contributed to the PCE measure rising faster than the CPI-U).

For the third quarter in a row (and contrary to what is usually expected) the "PCE: Chain-Weight" index, which draws its weights from the immediately preceding period has risen more rapidly than an index based on the same price data, but using 1972 weights.[3] This creates a negative "weighting effect" in table 1.

Julie A. Bunn is an economist in and Jack E. Triplett is assistant commissioner of the Office of Research and Evaluation, Bureau of Labor Statistics.

Finally, the "all other" effect, which measures the influence of compilation and computational differences other than the drawing of weights from different periods and the treatment of owner-occupied housing, continues the first quarter behavior of previous years, but stands out as the largest negative "all other" effect in more than 3 years. Differing seasonal adjustment methods account for part of the "all other" effect.

The most striking result from table 1 is the emergence of negative values for the weighting effect. It is usually expected that an index that uses 10-year-old weights will rise somewhat more rapidly than one that uses recent or current weights, and the weighting effect bore out this presumption for earlier periods (even though weights have never contributed very much to the difference in CPI and PCE movements). In the seven quarters since mid-1980, however, the weighting effect has taken on its expected positive sign in only one quarter (1981–I); in three other quarters, different weighting periods made no difference in the index measurement,

Table 1 "Reconciliation" of annual and quarterly percent changes in the CPI-U and the Personal Consumption Expenditure price measures, 1980 to 1982–I

Difference	1980	1981	1981[1]				1982
			I	II	III	IV	I
CPI-U[2]	13.5	10.4	11.0	7.8	11.8	7.7	3.2
PCE: Chain-Weight[3]	10.6	9.0	10.3	6.5	8.7	7.4	5.7
Total difference[4] (CPI-U minus PCE: Chain-Weight)	2.9	1.4	0.7	1.3	3.1	0.3	−2.5
Housing treatment[5]	2.3	0.9	0.4	0.5	2.7	−0.5	−1.3
Weighting effect[6]	0.4	0.1	0.6	0.0	−0.5	−0.2	−0.5
"All other" effect[7]	0.2	0.4	−0.3	0.8	0.9	1.0	−0.7

[1] Owing to changes in seasonal adjustment factors, the quarterly figures, seasonally adjusted annual rates, may differ slightly from those which appeared in table 1, p. 43, January 1982, *Monthly Labor Review.*

[2] Annual and quarterly changes in the CPI-U are taken from tables provided by the Office of Prices and Living Conditions, Bureau of Labor Statistics. The changes are compiled from 1967 based indexes.

[3] Data for the "PCE: Chain-Weight" were obtained from the Bureau of Economic Analysis, U.S. Department of Commerce.

[4] CPI-U minus "PCE: Chain-Weight" equals the sum of "housing treatment", "weighting", and "all other" effects.

[5] Change in CPI-U minus change in CPI-X1. See September 1981 *Monthly Labor Review,* p. 21, for fuller explanation. Source of CPI-X1 data is same as footnote 2.

[6] Change in "PCE: 1972-Weight" minus change in "PCE: Chain-Weight." See September 1981 *Monthly Labor Review,* pp. 8–9, for fuller explanation. Data source for "PCE: 1972-Weight" changes is same as for footnote 3.

[7] Change in CPI-X1 minus change in "PCE: 1972-Weight." See September 1981 *Monthly Labor Review,* p. 6, for fuller explanation.

Table 2. "Reconciliation" of the CPI-U and the Personal Consumption Expenditure price measures: cumulative percent change from 1972 to the date shown

Difference	1980	1981	1981[1]				1982
			I	II	III	IV	I
CPI-U (1972 = 100)[2]	197.0	217.4	210.3	214.3	220.4	224.6	225.9
PCE Deflator (1972 = 100) (Current-Weight)[3]	178.9	193.8	188.5	191.5	195.7	199.4	201.8
Total difference (CPI-U minus PCE Deflator)[4]	18.1	23.6	21.8	22.8	24.7	25.2	24.1
Housing treatment[5]	11.7	14.5	13.3	13.7	15.4	15.5	14.9
Weighting effect[6]	5.4	7.2	7.3	7.4	7.2	7.0	7.4
"All other" effect[7]	1.0	1.9	1.2	1.7	2.1	2.7	1.9

[1] Owing to changes in seasonal adjustment factors, quarterly figures may differ slightly from those which appeared in table 2, p. 44, January 1982, *Monthly Labor Review.*

[2] Annual data for the CPI-U were computed by the Office of Research and Evaluation (BLS) from unadjusted monthly data provided by the Office of Prices and Living Conditions (BLS). The quarterly data for 1980 and 1981 were computed by the Office of Research and Evaluation employing seasonally adjusted monthly data provided by the Office of Prices and Living Conditions.

[3] Data for the Implicit PCE Deflator, or "PCE: Current-Weight" index, were provided by the Bureau of Economic Analysis. The data incorporate revisions released in April 1981.

[4] CPI-U minus PCE Deflator equals the sum of "housing treatment", "weighting", and "all other" effects.

[5] CPI-U minus CPI-X1. See September 1981 *Monthly Labor Review*, p. 5, for fuller explanation. Data source for the CPI-X1 is the same as footnote 2.

[6] "PCE: 1972-Weight" minus "PCE: Current-Weight." See September 1981 *Monthly Labor Review*, p. 6, for fuller explanation. Data source for the "PCE: 1972-Weight" is same as footnote 3.

[7] CPI-X1 minus "PCE: 1972 Weight." See September 1981 *Monthly Labor Review*, p. 6, for fuller explanation.

while in the three most recent quarters values for the weighting effect have negative signs, reflecting the fact that the index with the most recent weights has registered the larger increase.

Reconciling cumulative changes. Table 2 presents a cumulative reconciliation of the CPI-U and the PCE Deflator (or PCE: Current-Weight), from 1972 to the first quarter of 1982. This table continues the cumulative comparisons of previous reconciliation articles. □

FOOTNOTES

[1] The initial reconciliation and technical basis for the analysis is contained in Jack E. Triplett, "Reconciling the CPI and PCE Deflator," *Monthly Labor Review*, September 1981, pp. 3–15.

[2] As discussed in Triplett, pp. 7, 13–14, the "PCE: Chain-Weight" index is comparable to the CPI-U for the purpose of making period-to-period comparisons, while the PCE Deflator, a Paasche-formula index, is used for the cumulative reconciliation because Paasche-formulas lend themselves to statistical interpretation only when referring back to the base year (in this case, 1972).

[3] See footnote 7 to table 1 and the Triplett, "Reconciling the CPI and PCE Deflator," for information on the computation of the weighting effect.