TABLE 1. INDEXED ENTITLEMENT PROGRAMS

Program	Date of Indexation	Estimated 1981 Outlays (billions of dollars)
1. Federal Judiciary Survivors Benefits	1956	0.002
2. U.S. Coast Guard Retirement Pay	1958	0.232
3. Civil Service Retirement System	1962	17.326
4. Military Retired Pay	1963	13.781
5. U.S. Presidents' Pensions	1963 (effective 1964)	0.0002
6. Public Health Service Commissioned Officers Retirement	1965	0.077
7. Federal Reserve Board Employees Retirement	1965	0.004
8. CIA Retirement and Disability System	1964 (effective 1966)	Classified
9. Federal Employment Compensation Act	1966	0.376
10. Special Benefits for Disabled Coal Miners (HHS)	1969	1.057
11. Guaranteed Student Loan Program (Special Allowances)	1976	0.401
12. Federal Old Age Survivors and Disability Insurance (OASDI)	1972 (effective 1975)	140.117
Child Nutrition Programs	Benefits:	3.790
13. National School Lunch Program (Commodity Subsidy)	1973,1975,1978 Eligibility: 1971,1977	
14. National School Lunch Program (Cash Subsidy)		

(Continued)

TABLE 1. (Continued)

Program	Date of Indexation	Estimated 1981 Outlays (billions of dollars)
15. School Breakfast Program (Cash Subsidy)		
16. Summer Food Service (Cash Subsidy)		
17. Child Care Feeding (Commodity Subsidy)		
18. Child Care Feeding (Cash Subsidy)		
19. Special Benefits for Disabled Coal Miners (Department of Labor)	1974	0.922
20. Railroad Retirement Benefits	1974 (effective 1975)	5.296
21. Supplemental Security Income	1974 (effective 1975)	7.438
22. Foreign Service Retirement and Disability Fund	1976	0.174
Department of Defense	1972,1974,1978	0.322
23. Survivor Benefit Plan		
24. Retired Serviceman's Family Protection Plan		
25. Guaranteed Minimum Incorporated		
26. Veterans' Pensions	1979	3.844
Total Outlays		195.159

- they are appropriations subject to discretionary review by Congress,
- the benefit level is not one of their indexed provisions,
- the indexed provision may be inoperative under certain circumstances, or
- the indexed provision may operate as a ceiling or floor and thus be binding on only a fraction of total outlays.

The list of these programs is shown in Table 2. Their expenditures in fiscal year 1981 are projected at more than $177 billion. The sensitivity of their expenditures to changes in an index level varies widely among these programs. The most sensitive, based on past experience, are programs with benefit levels tied to an index and tending to behave as entitlements even though subject to an appropriation by Congress. Although there is no guarantee that they will continue to behave in the same way in the future, past expenditure levels have kept in step with the relevant index. The most important of these is the Food Stamp Program.

Next in importance are the programs in which benefit payments or claim reimbursements are subject to a floor or ceiling that is indexed, as in Medicare and Medicaid. The ceilings or floors may not always be binding on all of the claims paid, so movements in the index do not necessarily affect the total of program expenditures in a predictable way. Because of the size of the outlays involved in these programs and the degree to which the ceilings and floors have been binding in recent years, however, their indexation has a significant impact on government expenditures.

An area in which indexation may at times play an important role is that of agricultural price supports. In these programs the government purchases certain farm commodities in sufficient quantities to maintain the market price at a target level. The expenditures are triggered whenever forces of changing supply or demand cause the market price to fall below the support level. The support level is determined by a parity formula that in turn is based on the ratio of an index of prices paid by farmers to an index of prices received by farmers.

Another set of programs involving substantial levels of expenditures includes federal civilian and military pay and the

TABLE 2. INDEXED PROGRAMS OTHER THAN ENTITLEMENTS, AND QUASI-INDEXED PROGRAMS

Program	Classification	Date of Indexation	Estimated 1981 Outlays (billions of dollars)
Price Support Loans:	Quasi-indexed	1949, 1954	0.068
1. Rice	Entitlement	1977, 1978	
2. Honey			
3. Tobacco			
4. Upland Cotton			
5. Wool			
6. Mohair			
7. Dairy Price Supports	Quasi-indexed Entitlement	1949	0.925
8. Medicare (Part A)	Quasi-indexed Entitlement	1965 (effective 1966)	27.625
9. Medicare (Part B)	Quasi-indexed Entitlement	1972 (effective 1973)	12.650
10. Medicaid	Quasi-indexed Entitlement	1974	16.026
11. Special Milk Program	Quasi-indexed Entitlement	Benefits: 1974 Eligibility: 1973	0.163
12. Food Donations Elderly Feeding Program	Quasi-indexed Entitlement	1975	0.085
13. Commodity Export Suspension Protection	Quasi-indexed Entitlement	1977	0.0
Deficiency and Disaster Payments (Target Price Programs):	Quasi-indexed		
14. Wheat	Entitlement	1979	0.753
15. Feedgrains			
16. Cotton			
17. Rice			

(Continued)

TABLE 2. (Continued)

Program	Classification	Date of Indexation	Estimated 1981 Outlays (billions of dollars)
18. Grants to States for Social Services	Quasi-indexed Entitlement	1979	3.283
19. Overseas Station Allowances (Dept. of Defense)	Quasi-indexed Appropriation	1949	0.486 (obligation)
20. Overseas Station Allowances (Dept. of State)	Quasi-indexed Appropriation	1949	0.011 (obligation)
21. OPM Cost-of-Living Allowance Program	Quasi-indexed Appropriation	1949	0.120
22. Dept. of Interior Water & Power Resources Service Construction Program	Quasi-indexed Appropriation	1954	0.590 (obligation)
23. Military Barracks and Officer Quarters Construction Program	Quasi-indexed Appropriation	1968	0.228
24. Military Pay	Quasi-indexed Appropriation	1968	33.588
25. Federal Civilian Pay (General Schedule)	Quasi-indexed Appropriation	1970 (effective 1971)	38.969
26. Federal Civilian Pay (Blue Collar)	Quasi-indexed Appropriation	1968 (effective 1972)	10.368
27. Food Stamp Program	Indexed Appropriation	1971	10.954
28. Legal Services	Quasi-indexed Appropriation	1972	0.317

(Continued)

TABLE 2. (Continued)

Program	Classification	Date of Indexation	Estimated 1981 Outlays (billions of dollars)
Community Services Administration, Community Action Operations:	Quasi-indexed Appropriation	1972	0.488
29. Local Initiative			
30. Senior Opportunities			
31. State Economic Opportunity			
32. Community Food and Nutrition			
33. Energy Conservation Services			
34. Youth Sports Program			
Health Scholarships:	Indexed Appropriation	1976	0.038
35. National Health Service Corps Scholarships			
36. Indian Health Scholarships			
37. Foster Grandparents	Quasi-indexed Appropriation	1973 (effective 1974)	0.048
38. Senior Companions	Quasi-indexed Appropriation	1973 (effective 1974)	0.013
39. Basic Education Opportunity Grants	Indexed Appropriation	1974	2.353
40. Supplemental Education Opportunity Grants	Indexed Appropriation	1974	0.370
41. Senior Community Service Employment and Training Service	Quasi-indexed Appropriation	1974	0.265
42. Lower Income Housing Assistance (Sec. 8)	Indexed Appropriation	1974	3.070

(Continued)

TABLE 2. (Continued)

Program	Classification	Date of Indexation	Estimated 1981 Outlays (billions of dollars)
43. Community Services Administration Energy Crisis Intervention Service	Quasi-indexed Appropriation	1975	a/
44. Territorial & International Affairs--Grants for the Northern Mariana Islands	Quasi-indexed Appropriation	1976	0.024 (obligation)
45. Territorial & International Affairs--Guam and Virgin Islands Construction Project	Quasi-indexed Appropriation	1976	0.032 (obligation)
46. Bureau of Indian Affairs, Navajo Indian Irrigation Project	Quasi-indexed Appropriation	1976	0.495 (authorization)
47. Department of Energy Weatherization Aid	Quasi-indexed Appropriation	1976	0.193
48. Follow Through	Quasi-indexed Appropriation	1976	0.044
49. Head Start	Quasi-indexed Appropriation	1976	0.870
HSA Grants for Community Health Services:	Indexed Appropriation	1976,1977	0.372
50. Community Health Centers			
51. Migrant Health Services			
52. Home Health Services			

(Continued)

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TABLE 2. (Continued)

Program	Classification	Date of Indexation	Estimated 1981 Outlays (billions of dollars)
Comprehensive Employment & Training Program (CETA):	Indexed Appropriation	1978 (effective 1979)	7.194
53. Comprehensive Employment and Training (Title II)			
54. Youth Employment and Training Program (Title IV-A)			
55. Job Corps (Title IV-B)			
56. Summer Youth Employment Service (Title IV-C)			
57. Countercyclical Public Service Employment Program (Title VI)			
58. Private Sector Incentive Program (Title VII)			
59. Special Supplemental Food Program for Women, Infants, & Children (WIC)	Quasi-indexed Appropriation	1978 (effective 1979)	0.862
60. Vocational Rehabilitation Program	Quasi-indexed Appropriation	1978 (effective 1979)	0.956
61. Health Profession Scholarship Program	Indexed Appropriation	1979	0.025
62. Low Income Energy Assistance Program (HHS)	Quasi-indexed Appropriation	1979	1.850
63. College Work Study	Indexed Appropriation	1980	0.550
64. National Direct Student Loans	Indexed Appropriation	1980	0.201
Total Outlays			177.522

a/ Budget authority for the CSA Energy Crisis Intervention Program beginning in 1981 is transferred to the HHS Low Income Energy Assistance Program.

Comprehensive Employment and Training Act (CETA). These programs are called quasi-indexed because, while they contain certain indexed provisions, other factors influence the actual levels of expenditure.

A special group of programs are those construction programs containing explicit indexed provisions in the authorization language but whose outlays are nonetheless subject to appropriations. The authorization for the appropriation of funds for a given construction project is explicitly indexed, and acts as an indexed entitlement for those funds over the life of the project. The changing composition of projects within each program, however, makes it difficult to estimate the "costs" of indexation.

Another special group of programs are military and foreign service station allowances, for which outlays depend both on the level of costs in the United States or a given city, and on the level of costs in a foreign country or noncontiguous state. The difference in movements of the two price indexes drives the level of expenditures for a given level of coverage, and not the change in any one index.

Detailed information on the indexing provisions of these programs is contained in Appendix A.

The effect of indexation on programs in this category is to put upward pressure on expenditure levels. In some cases the pressure is all but automatic, while in others it is indirect and perhaps muted by other influences. Consequently, it is not practicable to estimate the sensitivity of expenditures to a change in the level of the relevant index.

HOW PROGRAMS ARE INDEXED

The preceding discussion has shown that indexation practices among federal programs are far from uniform. Important differences exist in the types of provisions indexed and in the statistical measures employed. There are also differences in the formulas used for adjusting benefit levels. The differences are summarized below.

Provisions Indexed and Measures Used

Major indexed provisions in federal programs are:

- o benefit levels,
- o eligibility criteria,
- o ceilings or floors on benefits payable, and
- o agricultural parity formulas.

Benefit Levels. Indexation of benefit levels produces the greatest sensitivity of outlays to changes in the statistical measure used for indexation. In most cases, the provision calls for a proportional escalation of benefit levels with changes in the measure used for indexing. The CPI is the index most commonly used for this purpose, but there is inconsistency in the choice between the available versions: the index for all urban consumers (CPI-U) and an index for urban wage earners and clerical workers (CPI-W). Until now the two measures have diverged only slightly. This cannot be guaranteed, however, for the future.

In a number of cases, where the benefits are to be used only for certain types of purchases, special indexes are used that reflect more directly the cost of the goods on which benefits are to be spent--the Food Stamp Program being the most prominent example.

Eligibility Criteria. Eligiblity criteria are employed in programs targeted at low-income recipients. Since changing prices alter the significance of a particular income eligibility level, it is necessary to readjust the nominal terms of this provision from time to time. The sensitivity of outlays to changes in the eligibility criteria is not always easy to predict. If wages are rising more rapidly than prices, upward changes in the eligible income provision may actually be accompanied by a drop in the number of eligible participants. On the other hand, even at a moderate rise in the price level, if wages are rising more slowly, or if joblessness has increased, there may well occur a sharp rise in the number of people eligible. Also, the sensitivity of outlays to changes in the eligibility criteria will depend on the distribution of incomes among those close to the defined poverty or eligible income level.

One of the major issues involved in the choice of a measure for indexing eligibility criteria is whether the CPI accurately represents the consumption habits of the target population. To

the extent that the buying patterns of low-income consumers differ from those of the average population, the CPI may be less than ideal as the basis for indexing the poverty income level.

Ceilings. Indexation of ceilings on benefits payable is a prominent feature in the Medicare and Medicaid programs. The ceilings are designed to prevent excessive claims. The statistical measure used to adjust ceilings is an index of prices of input costs for the services covered by the program. One of the weaknesses of indexing the ceilings is that it reduces the incentive of doctors, hospitals, nursing homes, and other health care providers to control or minimize the costs, because the ceiling on reimbursements will rise automatically as costs rise. Moreover, physicians are in a position to influence directly the movement of the ceiling index through increases in their own fees.

The sensitivity of outlays to movements in the ceiling depends on the variation in the range of prices charged for medical services. The ceiling may be binding on only a fraction of the claims, but if inflation is rapid the time lag in adjusting the ceiling may conceivably cause it to become binding on an increasing number of claims. In this case, its upward adjustment could affect a sizable portion of program expenditures.

Agricultural Parity. The agricultural parity formula is a measure of the relative prices of the goods that farmers buy compared to the prices of the goods they sell. The formula, which is used as a reference for determining the degree of support for farm incomes, is based on a ratio of two indexes. The numerator is an index of prices paid by farmers scaled so that the years 1910-1914 equal 100. The denominator is a similarly based index of prices received by farmers for their products, currently a sample of 44 commodities. The parity price for a particular crop or product is determined by multiplying this ratio times the average price of the product. If the support target is, say, 85 percent of the parity price, then whenever the market price falls below the designated level farmers can, in effect, count on the federal government to purchase the crop at the support price. If market forces keep the product price above the designated parity level, the support program becomes inactive.

The numerator in the parity ratio--prices paid by farmers--is made up of the CPI plus the costs of production inputs, interest costs, taxes, and wages for farm labor. The weighting of these components is periodically revised.

Several criticisms have been made of the parity formula. First, the reference base is completely outdated. Neither consumption habits nor production techniques today are what they were in 1910-14. Second, the formula has no explicit means of taking into account the rather large productivity gains that have occurred over this period, and thus greatly overstates the price levels necessary to provide a purchasing power comparable to that of 1910-1914. Finally, it contains a feedback mechanism that tends to inflate agricultural prices. If, for example, the support price for milk is raised to a certain level, this will eventually be reflected in the CPI through higher milk prices. The higher CPI then leads to a readjustment of support prices via the parity formula.

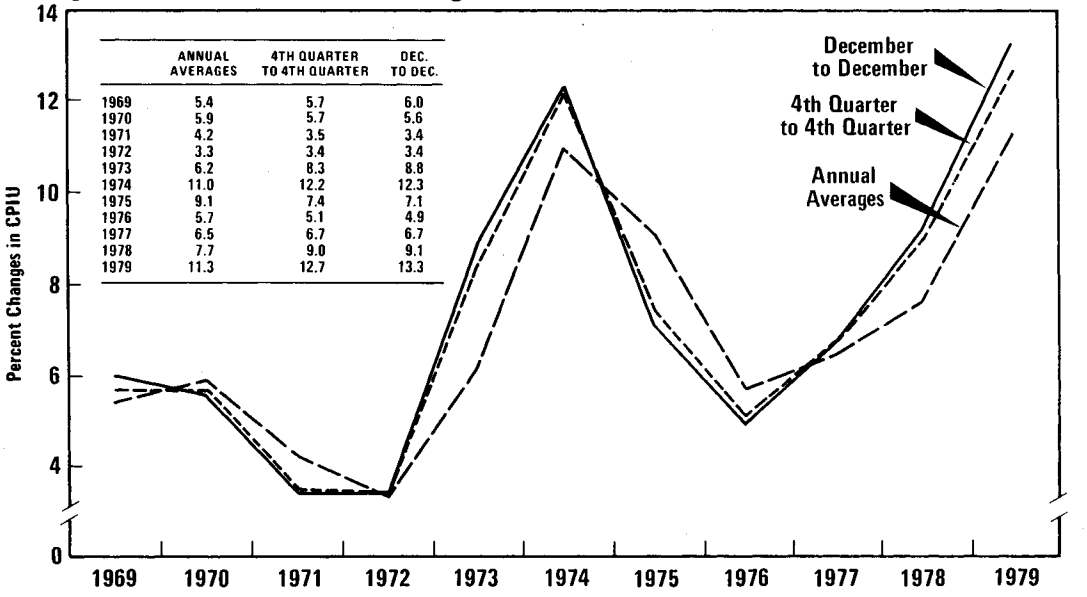
Formulas for Indexing

Indexes can be calculated and applied in a number of ways. They differ mainly in the type of interval used for measurement, the frequency of adjustment, and the length of the lag between the time they are calculated and the time they are applied.

The interval of measurement and the frequency of adjustment correspond in the major indexed programs. Annual adjustments implement annual changes; semiannual adjustments implement six-month changes.

Type of Interval. The measurement of index change over a given interval can be computed in different ways. For yearly intervals there are three possibilities. The first is a point-to-point measure, as from December of one year to December of the following year. The second compares a quarter--using a three-month average--to the same quarter a year earlier. Finally, one can compare the average index level for an entire year with the average level of the previous year. In the long run these three methods will produce virtually the same results. In the short run, however, rather large differences may occur if the index is accelerating or decelerating. The year-over-year average--and, to a lesser extent, the quarter-over-quarter average--produces a smoother, less volatile series of changes than point-to-point measurement. This can be seen in Figure 3, which plots the three variants for the CPI for the past ten years. The accompanying figures showing rates of change show how large the differences can be for a given year. Besides smoothness, another feature of the different methods of calculation is the implicit lag. The year-over-year calculation gives equal weight to all months of the years being compared. If the rate of change is a constant one, this

Figure 3.
Comparison of Consumer Price Index Growth Rates Using Alternative Index Change Calculations



	ANNUAL AVERAGES	4TH QUARTER TO 4TH QUARTER	DEC. TO DEC.
1969	5.4	5.7	6.0
1970	5.9	5.7	5.6
1971	4.2	3.5	3.4
1972	3.3	3.4	3.4
1973	6.2	8.3	8.8
1974	11.0	12.2	12.3
1975	9.1	7.4	7.1
1976	5.7	5.1	4.9
1977	6.5	6.7	6.7
1978	7.7	9.0	9.1
1979	11.3	12.7	13.3

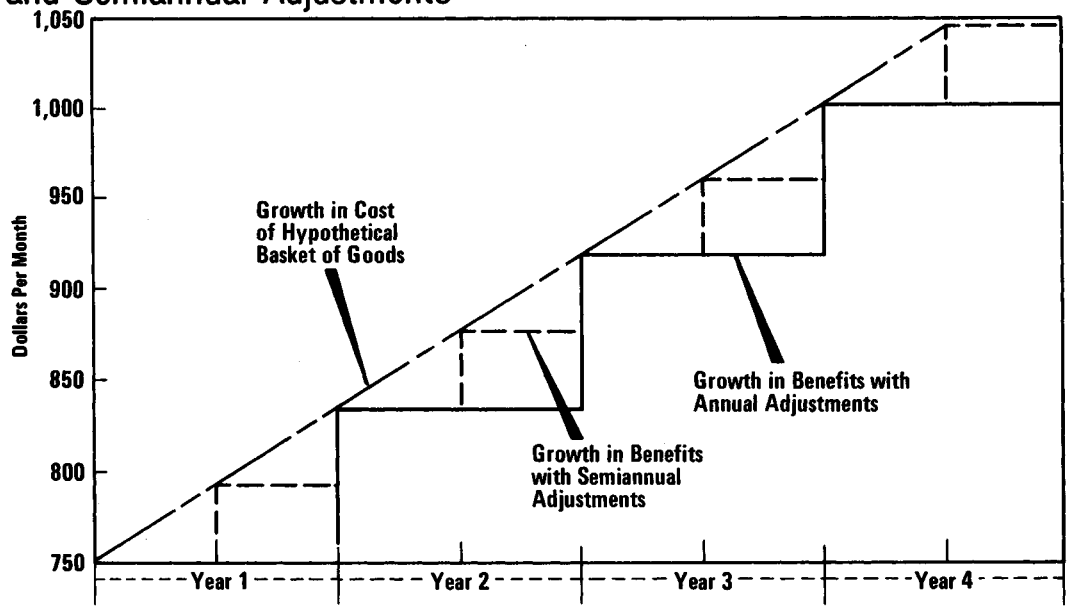
amounts to comparing the mid-points of the two years. In contrast, the point-to-point measure from December to December reflects annual change over a period more recent by six months. In other words, averaging lengthens the lag between the underlying change and its full incorporation into readjusted indexed provisions.

The primary advantage of semiannual indexation is its shorter lag. Usually employing a point-to-point measure, semiannual indexation reduces the amount of purchasing power lost as prices rise more or less continuously while adjustment of benefits is done only at discrete intervals. The difference can be seen in Figure 4.

Time Lag. In most indexed programs, there is a lag between the time when the index change is calculated and the time when it is reflected in program benefits. The longer this lag, the more purchasing power is lost during a period of rising prices. To give one example, Social Security benefits are adjusted by the

Figure 4.

Comparison of Growth in Benefits with Annual and Semiannual Adjustments



amount of change of the first-quarter average of the CPI of the current year from that of the previous year, but the adjustment is not implemented until the following July. This means that beneficiaries may never quite catch up to where they once were in purchasing power if prices have increased between the interval for which they were measured and the time of the benefit adjustment several months later. 3/

3/ The loss of purchasing power between the interval used for the index calculation and its time of implementation was of concern to those who framed the indexing provisions of the federal civilian and military retirement programs. To make up for the loss an additional percentage point was added to the calculated change every time an adjustment was made. The problem with this solution was that the 1 percent "kicker" was permanent but the purchasing power loss was temporary, so that the provision resulted in overindexation. For this reason it was discontinued in 1976.

Asymmetry. Finally, another notable feature of many indexing formulas is that they adjust benefits only when prices increase. However unlikely the prospect of falling prices may seem--it has occurred in only two years since World War II--such a development would lead to a decrease in nominal benefits for some programs but not for others. Among those that would not be adjusted downward if prices fell are Social Security benefits.

THE COST OF INDEXATION

Indexing provisions vary so widely in their formulas that it is difficult to estimate their overall effects on outlays. A rough estimate can be made, however, by calculating the effect of an index change on those programs for which funding is fairly predictable, and then adding the effect of other program outlays calculated under some simplifying but arbitrary assumptions.

The group of entitlement programs with indexed benefit levels account for $195 billion or about 30 percent of estimated 1981 federal outlays. A 1 percent change in the relevant indexes would raise expenditures by $1.9 billion--not counting possible changes in participation rates. If it is assumed that other programs that have in the past behaved like entitlements continue to do so--principally the Food Stamp Program--the cost sensitivity rises to about $2.0 billion. If it is further assumed that the Medicare and Medicaid programs are affected by only one-fifth of the rise in the relevant index, the sensitivity figure rises to $2.1 billion. If federal civilian and military pay rise by one-half of the rise in measured comparability pay, this increases the sensitivity figure to $2.4 billion. Very modest assumptions as to the sensitivity of CETA funds to rising index levels, and the effects of higher benefits on participation rates in entitlement programs, raise the sensitivity figure to over $2.5 billion at the 1981 level of federal outlays.

To put the sensitivity figure in perspective several comments should be added. First, it is not a measure of the full effect of inflation or rising prices on federal outlays. The full effect would be larger because of the existence of implicit or informal indexation, which has not been discussed in this report. The sensitivity figure calculated here refers to the effect of formal, explicit indexation alone. Second, the $2.5 billion in added cost can be broken down into two sums: Slightly under $2 billion of it represents the amount of additional cost that cannot be avoided

without a change in existing law. The other $0.5 billion is a conservative estimate of the cost of continuing past practices with regard to the indexing of nonentitlement programs.

CHAPTER V. A SURVEY OF ALTERNATIVE INDEXES

This chapter is a guided tour of a number of statistical measures that may be of interest for purposes of indexation. The CPI--the most widely used measure for indexation--receives initial attention as a standard against which other measures are compared. These include indexes based on the national income accounts and indexes based on wages and earnings. First, however, some issues in the construction and definition of index numbers are discussed.

SOME DESCRIPTIVE AND DEFINITIONAL ISSUES

An index number is a constructed measure whose variations are designed to reflect the increase or decrease of a variable that is impossible to measure directly--such as the aggregate change in the prices of consumer goods. The function of the index is not to measure the absolute level of this variable but only to indicate changes in its level from a base period, usually set equal to 100.

Indexes can be constructed in many ways, but three types of construction are used for the indexes surveyed below. These are:

- Base-period fixed-weight indexes (known as Laspeyres indexes);
- Current-period weighted-indexes (known as Paasche indexes); and
- Chain indexes.

The feature that distinguishes these three ways of constructing indexes is the weighting procedure. Since an index measures an aggregation of many items--in this case, prices of goods and services--some way must be chosen to combine them. Simply adding them together and dividing by the number of items will yield an arithmetic average that gives equal weight to each item. But in measuring the cost of a basket of goods it is preferable to weight items according to their importance in the actual market basket.

Fixed-Base-Weighted Indexes (Laspeyres)

In the Laspeyres index--which is the formula used for the CPI--current prices are compared with prices in a base period by using the shares of the items in expenditures during the base period as weights for aggregation. Thus the same basket of goods is priced throughout the time period in question. In contrast to the other index types discussed below, the fixed market basket insures that changes in the index represent pure price movements throughout the period, making it possible to compare price behavior over different intervals on a consistent basis. The disadvantage of a Laspeyres index is that over time the base-period market basket may become increasingly unrepresentative of actual consumption patterns. Changes in the consumption mix can result from changing levels of income, changing tastes, and, most importantly, from substitution between commodities in response to relative price changes. For example, a rapid increase in the price of an item--say, gasoline--will lead consumers to reduce their purchases of the item. A fixed base-weighted index takes no account of this change; subsequent changes in gasoline prices continue to receive the same weight as they did in the base period.

Current-Period-Weighted Indexes (Paasche)

The Paasche index--which is the formula used for calculating the implicit price deflators for components of gross national product--uses the current-period consumption pattern for weighting purposes. Whereas the Laspeyres index compares today's prices with yesterday's using yesterday's consumption pattern, the Paasche index makes the same price comparison using today's consumption pattern. While the Laspeyres index, because of substitution, has a tendency to overestimate the true change in the cost of living, the Paasche index, using end-period weights after substitution has occurred, will tend to underestimate the true change. Like the Laspeyres index, however, its degree of bias is influenced by the size and extent of substitution.

Another contrast between the Paasche and Laspeyres indexes is that the latter uses a single market basket for comparing each period's prices to those of a base year, whereas the Paasche formula requires that the market basket be updated each period in order to compare that period's prices with the base year. Using the Laspeyres formula, interperiod comparisons elsewhere in the series can be made on a comparable, consistent basis. In the

Paasche formula, however, each pairing of a different current year with the base year uses a new set of weights, so that interperiod comparisons are not consistent.

If an implicit deflator is used to compare this year's prices with last year's prices--assuming that last year was not the base year--it will not measure pure price change. Since the comparison is being made with two different sets of weights, it will reflect composition change as well as price change. It is possible, in principle, for an implicit deflator to rise or fall even when no actual price change occurs, because of a change in weights from one period to the next.

Chain Indexes

The chain index--which, in addition to the Paasche and Laspeyres formulas, is one of the three forms in which GNP price information is published--includes features of both fixed-weight and current-weight indexes. To understand the operation of a chain index it is useful to examine an analogous construction in the long-run history of the CPI. The fixed market basket of the CPI has been revised at about ten-year intervals because of the growing obsolescence of a given consumption pattern over time. When a new index base is constructed, a continuous historical series is maintained by linking together the last period measured using the old base with the first period using the new base. Each ten-year segment of the historical series is thus like a link in a chain. The point at which they are connected is where the switch is made from one base to the next. Comparisons of price change across links are complicated by changes in the weights used in each segment, while comparisons within a segment represent pure price change.

The chain index is, then, like a Laspeyres index that changes bases each period rather than at ten-year intervals. Prices are compared between last period and this period using the former's consumption pattern as weights. Between such adjacent periods the index reflects pure price change as does a Laspeyres index. Comparisons of price change between nonadjacent periods are, however, compounded with nonprice changes because of the differences in weights. The implicit deflator has this problem for all comparisons except those using the base period. If, however, one needs a measure of recent price change, say between last year and this year, the chain index offers significant advantages:

first, it measures only pure price change, an advantage over an implicit deflator; second, it employs a very current (last period's) consumption pattern as weights, an improvement over the Laspeyres index. These advantages are reduced if the chain index is used to compare nonadjacent periods.

THE CONSUMER PRICE INDEX

The CPI-W, which currently is the most widely used index for escalation of federal programs, attempts to measure the prices of a fixed basket of goods and services representing the consumption patterns of urban wage earners and clerical workers (less than 40 percent of the U.S. population). A second CPI, designated CPI-U, was added in 1978 to extend the population coverage to include the salaried, unemployed, self-employed, and retired (about 80 percent of the population). Both of these monthly indexes are based on a 1972-1973 Bureau of Labor Statistics survey of consumer expenditures, of points of purchase, and of the pattern of specific items sold by retail outlet.

The two indexes have deviated very little from each other at the all-items level, although this is not true of some of the component groups. There is no guarantee that the all-items indexes may not diverge in the future, however; if they should diverge, there is little basis for predicting which might move more rapidly. A choice between them might be based simply on their reference bases. The broader-based CPI-U, although it adds the salaried and the self-employed to the population reference base, has a lower average income level because it also includes the retired and the unemployed.

The CPI is an attempt to approximate an expenditure-based cost-of-living (COL) measure but it is not without shortcomings in that attempt. In addition, it shares some of the disadvantages that are characteristic of this type of COL measure. Six problem areas are discussed below:

- The treatment of homeownership;
- The fixed market basket;
- The aggregation of family budgets by expenditure weights instead of population weights;

- The treatment of taxes;
- The treatment of nonmarket consumption; and
- The use of an aggregate or average consumption pattern for escalation of income to a specific demographic group.

The first three are shortcomings of the CPI itself; the next two are shortcomings of the expenditure-based COL concept; and the last is a problem resulting from the use of a single index for a variety of applications.

The Treatment of Homeownership

The most substantial shortcoming is the treatment of homeownership. The current treatment has by one method of estimation exaggerated the rise in overall consumer prices by as much as 1.1 percentage points in 1978, by 2.4 percentage points in 1979, and by 1.6 points in 1980. 1/ Currently, each percentage-point change in the CPI will directly trigger an additional $2 billion in federal expenditures alone.

The distortion in the measure of homeownership stems from the durable nature of housing. Since the services of a house are consumed over a long period of time, its treatment as just another commodity means that it receives a tremendously large weight compared to other consumption expenditures. 2/ Moreover, a house

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1/ This method compares the current CPI-U with the BLS's experimental X-1 rental equivalence measure of the CPI. Comparison of annual changes covers up the extraordinary measurement discrepancy of 3.6 percentage points (at an annual rate) during the first half of 1980, followed by a difference of -0.1 point (at an annual rate) in the second half of the year, as shown in Figure 5.

2/ The large weight is also influenced in some part by the high level of house construction activity in the base-period survey of consumer expenditures. In general, the treatment of durables in the CPI shows the extent to which an index of prices of items purchased can differ from a true cost-of-living index.