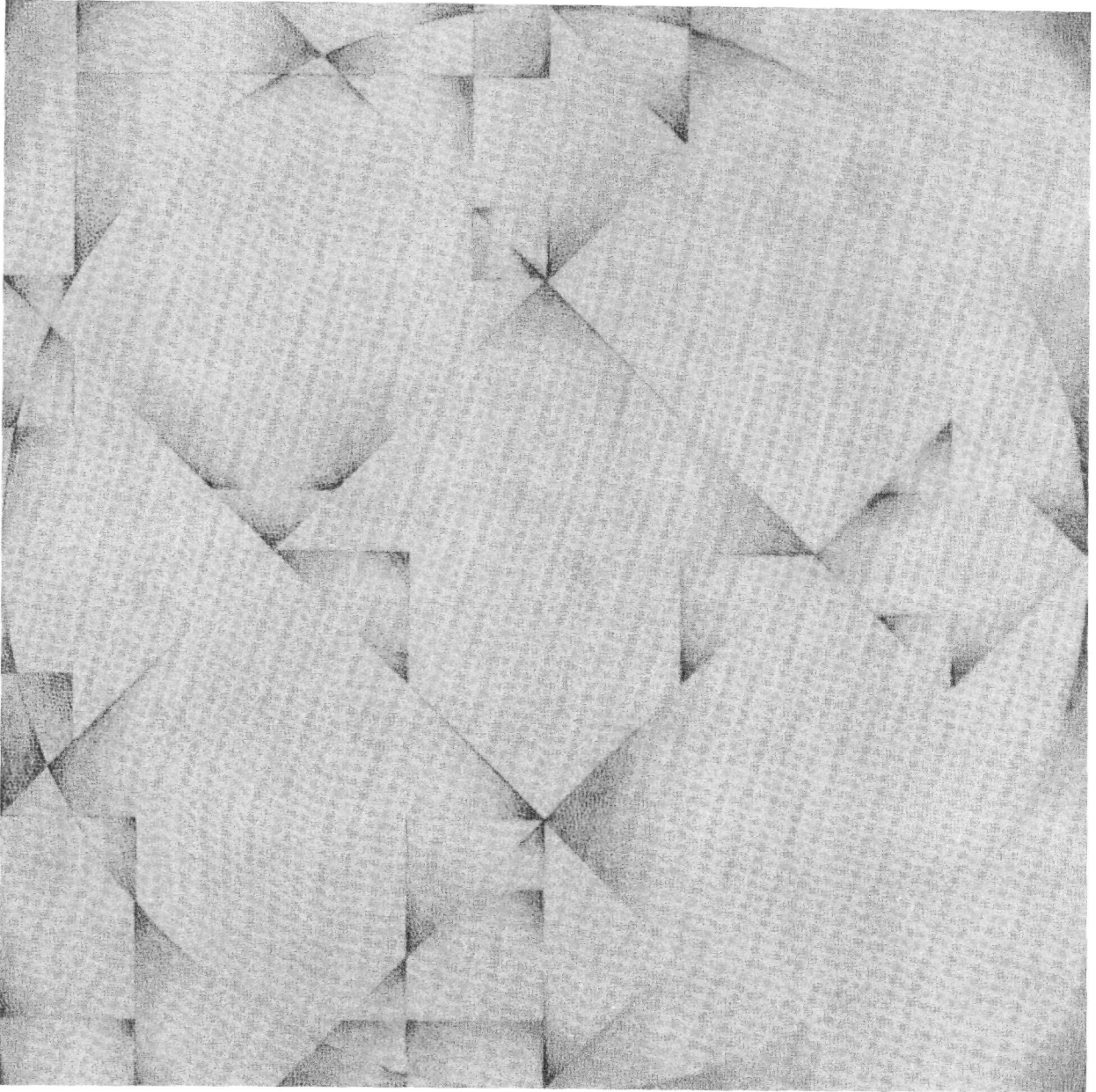


# INDEXING WITH THE CONSUMER PRICE INDEX: PROBLEMS AND ALTERNATIVES

June 1981

As required by Public Law 96-249



CONGRESS OF THE UNITED STATES



CONGRESSIONAL BUDGET OFFICE



INDEXING WITH THE CONSUMER PRICE INDEX:  
PROBLEMS AND ALTERNATIVES

The Congress of the United States  
Congressional Budget Office

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PREFACE

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For the past several years, the behavior of the Consumer Price Index (CPI) has differed noticeably from that of other measures of price changes. This, together with the growing impact of indexation on the federal budget, has raised concern about current indexing practices. The Food Stamp Act Amendments of 1980 (P.L. 96-249) instruct the Congressional Budget Office (CBO) to review the CPI and various alternative price measures, examining the limitations of each and the reasons why they differ in their measurement of inflation or the cost of living. The purpose is to develop information that will assist the Congress in determining whether the CPI is the most appropriate indexation base for the Food Stamp Program, or whether alternative measures may better reflect changes in consumer prices or the cost of living. In keeping with CBO's mandate to provide objective and impartial analysis, this study offers no recommendations.

Lawrence E. DeMilner of CBO's Fiscal Analysis Division wrote the report. Robert W. Staiger assisted in its preparation and was primarily responsible for Appendix A. Sandra Christensen of CBO's Human Resources and Community Development Division prepared Appendix B under the supervision of Nancy M. Gordon. The author gratefully acknowledges helpful comments and information from James E. Annable, Jr., Stephen Chaikind, Robert A. Dennis, Heywood Fleisig, and Frederick O. Ribe of CBO, and G. William Hoagland and Robert D. Reischauer, formerly of CBO. In addition, information and comments were provided by Walter Lane and Jack E. Triplett of the Bureau of Labor Statistics, Vee Burke of the Congressional Research Service, Joseph J. Minarik of the Brookings Institution, and Robert J. Gordon of Northwestern University. In accordance with the legislation mandating this study, designated officials of the Departments of Agriculture, Commerce, and Labor were consulted in its preparation. In January of this year, a draft was submitted to the House Agriculture Committee and the Senate Agriculture, Nutrition, and Forestry Committee. Francis S. Pierce edited the manuscript; Kathleen M. Quinn, Marsha L. Mottesheard, Debra M. Blagburn, Dorothy J. Kornegay, and Margalo Ashley-Bennett typed the many drafts.

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Director

June 1981



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## SUMMARY

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The purpose of this study is to assess the appropriateness of current indexation practices in the Food Stamp Program. Many of the issues discussed here will have relevance for other indexed federal programs as well. In particular, the study addresses the stated concern over the accuracy of the Consumer Price Index (CPI) and its consistency with other inflation measures.

### THE INDEXATION PROBLEM

Considerable growth has occurred in the practice of indexing federal transfer programs in the last decade and a half. Between 1966 and 1980, the number of individual programs containing indexed provisions grew from 17 to 90. At present, almost a third of federal expenditure is directly linked to the CPI or related price measures, and over half of the federal budget is affected if indirectly indexed expenditures are added. A one percent increase in the CPI will automatically trigger nearly \$2 billion of additional federal expenditures, at 1981 program levels.

The CPI, the measure most widely used for indexation, has been criticized for exaggerating increases in the cost of living. As the table shows, for the better part of the past decade the CPI has registered larger increases than has an alternative measure of consumer prices--the PCE chain index. Most of this discrepancy is attributable to a difference in the way homeownership costs are measured. Because the CPI does not distinguish between a home as an investment and as a source of shelter services, the rapid rise in the asset value of homeownership has been treated as an increase in the cost of living rather than as the increase in wealth that it has been for anyone already owning a home. In addition, homeownership is given an unrealistically large weight in the index because mortgage costs are counted along with the full purchase price. This makes the CPI very sensitive to swings in the mortgage rate of interest.

Another reason why the CPI has tended to overstate the rise in the cost of living is to be found in the use of a fixed market basket of goods and services for tracking price changes. Consumption patterns change over time, particularly in response to changes

SUMMARY TABLE 1. COMPARISON OF TWO PRICE INDEXES

| Year | CPI  | PCE Chain Index | Difference |
|------|------|-----------------|------------|
| 1973 | 8.3  | 7.6             | 0.7        |
| 1974 | 12.2 | 11.0            | 2.2        |
| 1975 | 7.4  | 6.4             | 1.0        |
| 1976 | 5.1  | 4.9             | 0.2        |
| 1977 | 6.7  | 6.3             | 0.4        |
| 1978 | 9.0  | 8.0             | 1.0        |
| 1979 | 12.7 | 9.9             | 2.8        |
| 1980 | 12.5 | 10.4            | 2.1        |

NOTE: Figures represent percent changes at annual rates, fourth quarter to fourth quarter.

in relative prices. A fixed market basket measure compares the cost of the market basket in the base year with its cost today. But this does not provide an accurate measure of the change in the cost of living between recent years if current consumption patterns differ from those of the base year. Reductions in the share of gasoline in overall consumption since 1973 illustrate the importance of this point.

Although these two features account for most of the discrepancies between the CPI and the alternative measures of consumer prices, other features of the CPI also bear on its usefulness as an indexation measure. First, the importance of individual items in the market basket is determined by expenditure weights rather than by population weights. This means that when the expenditures of a wealthy family are averaged together with those of a poor family, the buying patterns of the former receive a larger weight. Consequently, luxury goods are given a higher weight and necessities such as food a lower weight than would be the case if each family were treated with equal importance. Second, taxes are treated



asymmetrically. Increases in sales taxes show up directly in the CPI, but increases in income taxes do not. Substitution of one tax for another could, in principle, change the CPI without any real change occurring in prices. Third, nonmarket goods such as cleaner air and water and better safety and health are not included in the market basket, although their production requires resources and leads to higher prices for goods whose unregulated production would create noxious by-products. This suggests that some of the price increases during the 1970s may have reflected not just a higher cost of living but also a higher standard of living. Fourth, the use of an aggregate CPI to index programs that are targeted at certain demographic groups may not accurately reflect increases in the prices paid by those groups. Data suggest that the poor and the elderly may have somewhat different consumption patterns than the rest of the population. Finally, the CPI reflects changes in the prices of imported goods; if the intention of indexation is to redress the internal redistribution of income that results from inflation and not to cushion the public from a fall in real income resulting from higher import prices, the CPI is not a suitable measure. It should be added that, except for the home-ownership and fixed market basket problems, almost all of these drawbacks are shared by other price measures.

#### ALTERNATIVES TO INDEXING WITH THE CPI

In considering alternatives to present indexation practices, it is useful to bear in mind the specific purpose of a given indexing provision--such as to maintain a certain minimum absolute living standard or to maintain a consumption standard that is constant in relative terms. It is also important to bear in mind the consequences of indexing to different kinds of price change. Indexing to across-the-board, generalized inflation tends to preserve the existing income distribution. In contrast, indexing that also includes relative price changes tends to redistribute income, since those who receive indexed income tend to gain at the expense of those who do not (see Chapter III).

#### Other Indexes

The CPI X-1. The Bureau of Labor Statistics now publishes a series of experimental price measures that offer alternative treatments of homeownership costs. While these measures in their current state contain some shortcomings they are, at least conceptually, improvements over the present CPI. The most intuitively

appealing measure is the X-1, which isolates the investment aspect of home purchase from the consumption of shelter services by using the measure of market rent as a proxy for the implicit rent that the homeowner pays himself or forgoes by living in the house instead of renting it out.

The PCE Chain Index. A chain-weighted index for personal consumption expenditures is produced as a part of the National Income Accounts. It measures essentially the same market basket as the CPI but employs different concepts for certain items. The most important of these is a rental equivalence treatment of homeownership like that employed in the experimental CPI X-1. In addition, the PCE chain index uses an up-to-date market basket reflecting relatively current consumption patterns. The chain index thus avoids the upward bias associated with fixed-weight indexes and at the same time does not compound shifts in consumption patterns with price change as does the better-known implicit deflator form of PCE.

GNP Measures. By accepting a price measure that is somewhat broader than the one confined solely to consumption goods, it is possible to measure price change with the direct impact of import prices removed. This can be done with the index of gross national product prices, which measures all goods and services produced by the United States. Alternatively, subsets of GNP that are still free of the direct effect of import prices include GDBP (gross domestic business product), which subtracts principally the government sector, and PNB (private nonfarm business), which additionally subtracts the sometimes volatile farm sector. Personal consumption is the dominant component of each of these, accounting for nearly four-fifths of PNB. As is the case with the PCE, these series are available as fixed-weight, chain-weight, and implicit deflator measures, with the chain-weight being most suitable for measurement of period-to-period price change using up-to-date consumption patterns.

Wage Measurements. Wages can be used for indexation, instead of prices, as in a number of European and South American countries. Indexation with wages tends to preserve a relative standard of living in contrast to an absolute standard. As the economy expands through gains in productivity, these gains are reflected in higher wages. Wage indexation enables those receiving indexed benefits to share in this growth. Similarly, declines in wage growth relative to prices will also be transmitted to indexed benefits. One candidate for a wage index is the Hourly Earnings Index (HEI), which contains adjustments for overtime hours and employment

shifts between high- and low-wage industries and occupations that might otherwise affect the measure of wage growth. Another candidate is the Spendable Earnings series that, although lacking the refinements of the HEI, has the advantage of providing a measure of after-tax wage income. This is done by subtracting an estimate of worker payments for Social Security and federal income taxes from gross weekly earnings. Indexation with the latter measure would result in changes in indexed benefits paralleling the spendable earnings of wage earners.

### The Switching Proposal

A much-discussed proposal is to use either a wage or a price index, whichever has increased the least. The argument for this proposal is that it is unfair to give more inflation protection to federal beneficiaries than wage earners can obtain, particularly since the benefits are financed largely through payroll and income taxes on wage earners. One consequence of this proposal, however, would be to reduce progressively the real level of indexed federal benefits. Benefits would be reduced when real wages fell, but not restored when real wages rose. This difficulty could be overcome through a modification of the switching proposal that would reduce benefit levels when real wages fell but would make this reduction only temporary until real wages resumed their former level. When real wages resumed growing, the switch back to a price index would be delayed until benefits had reached their previous level in real terms.

### Other Approaches to Indexing

Other approaches to indexing include putting a cap on benefit increases. Two variants have been proposed. One would cap benefit increases at some fraction of the CPI increase, say at 75 or 85 percent. The drawback of this formula is that it is arbitrary and automatic. Another approach would use a discretionary cap, similar to the manner in which federal pay is adjusted. Beneficiaries could receive the full index change unless the President proposed a lesser amount and the Congress did not override his proposal. This would have the advantage of being flexible so that it could be adapted to changing economic circumstances and different types of price behavior.

## THE FOOD STAMP PROGRAM

At present, three provisions of the Food Stamp Program are indexed:

- o The level of the standard allotment is indexed to the prices of the Thrifty Food Plan;
- o Applicants' income, for purposes of determining eligibility and benefits, is adjusted by a standard deduction that is indexed to changes in the CPI less food, and by itemized deductions the limit on which is indexed to a specific index developed from CPI data;
- o Eligibility criteria are based on the poverty level defined by the Office of Management and Budget, which is adjusted by year-to-year changes in the CPI.

### Policy Options for Indexing the Food Stamp Program

Thrifty Food Plan. The prices of the Thrifty Food Plan resemble the CPI food-at-home category except that some items are excluded and the remainder reweighted to reflect adequate nutritional standards and the consuming habits of low-income households. This method of indexing the level of food stamp allotments is tailored to maintaining the value of the specific benefits provided by the program. It suffers the shortcomings of a fixed, base-weighted index in not allowing for substitution or changing consumption patterns, and this may be more important within the food category where relative price changes are sometimes larger than in an overall consumption measure like the CPI. But these food price changes are often transient, and to capture their effects would require frequent updating of the market basket.

Currently there is no alternative index that would provide greater advantages in indexation, assuming that the purpose of indexation is to hold constant the absolute purchasing power of the food stamp benefits.

Standard Deduction Adjustment. Prior to the Food Stamp Act of 1977, low-income households were allowed to deduct a number of specific expenditures from their gross incomes for determining both eligibility and benefits. The 1977 legislation replaced these itemized deductions for expenditures with a standard deduction in order to simplify program administration. Since the specific

expenditures and, therefore, the itemized deductions would have increased automatically over time with price inflation, indexation of the new standard deduction was proposed to maintain real benefits.

The CPI less food was chosen to index the standard deduction since the indexation of food was explicitly reflected in the Thrifty Food Plan index. The shortcomings of this index are essentially the same as those of the overall CPI--a tendency to overestimate because of the fixed market basket and because of the treatment of homeownership. An alternative measure without these shortcomings would be the PCE chain index with the food portion subtracted.

Itemized Deductions. The limit on the deduction for dependent care and for excess shelter costs is indexed to the shelter, fuel, and other utilities component of the CPI. The relationship, however, between dependent care expenses--which presumably would be spent on babysitting, day care, or perhaps home nursing--and this component of the CPI is questionable. Variation in the level of these costs might be better approximated by the behavior of wage rates or some magnitude such as the minimum wage, which is how babysitting prices are currently measured for the CPI.

In the case of excess shelter costs, the CPI shelter component has the shortcomings with regard to homeownership discussed earlier, but here the effect is intensified because the subcomponent measure is undiluted by the other 80 percent of the CPI. It is, furthermore, doubtful that food stamp recipients are numbered among current home buyers. A USDA survey indicates that 80 percent of beneficiaries rent their dwellings. Of the remainder, it is unlikely that a significant number are currently buying houses. In any case the CPI measure of rent would be a more representative index for this purpose.

Indexing the Poverty Level. The alternatives to the CPI as a general consumption price measure have been discussed above. Among currently available measures, the index that corrects the chief shortcomings of the CPI is the PCE chain index. But more is involved here than choosing the most appropriate price index. Articulation of the programs' objectives might include consideration of a relative standard that would adjust the poverty level according to changes either in a general wage index such as the HEI or in a Spendable Earnings series. Alternatively, if a demographic-specific CPI that reflected consumption habits of the low-income population were to become available at some time in the

future, it might be a suitable means of indexing the poverty level, particularly if changes were made in the CPI to correct the home-ownership problem and to update the market basket more frequently. Finally, a more flexible approach to indexing might be adopted that would permit adjustments for exceptional circumstances, such as falling real wages or large relative price changes, while permitting increases in benefit levels when productivity gains raised real per capita incomes.

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## CHAPTER I. INTRODUCTION

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The Food Stamp Act Amendments of 1980 (P.L. 96-249) require the Congressional Budget Office to review the Consumer Price Index (CPI) and various alternative consumer price or cost-of-living measures such as the Personal Consumption Expenditure deflator. The review is to examine the limitations of each alternative and the reason why the indexes differ in their measure of inflation or the cost of living. The purpose is to determine whether the CPI is the most appropriate index for the Food Stamp Program or whether alternative measures may better reflect changes in consumer prices or the cost of living.

The concern over indexation procedures in the Food Stamp Program and in other federal programs arises from questions as to:

- o The growing impact of indexed programs on the federal budget;
- o Accuracy in the CPI--the most widely used index measure;
- o The adequacy of an aggregate measure like the CPI as a gauge of the cost of living of groups such as the poor and the elderly; and
- o The fairness of allowing beneficiaries of federal programs to keep up with inflation when wage earners are falling behind.

### Impact on the Budget

The circumstances leading to this study derive primarily from the impact of inflation on federal benefit programs during the 1970s. One response to inflation was to index provisions that were specified in current dollar amounts. From 1966 to 1980 the number of programs containing indexed provisions grew from 17 to 90.

In most of these programs, an increase in the Consumer Price Index will automatically lead to an upward adjustment of program benefits (or, in some cases, of eligibility criteria specified

in current dollar terms). At 1981 levels of expenditure, a 1 percent change in the CPI or related indexes causes federal spending to increase by about \$2 billion.

An alternative to indexing would have been for the Congress to continue legislating changes from time to time on an ad hoc basis. Indexing was felt by some to be preferable because ad hoc adjustments risk repeated reopening of debate on other aspects of the programs involved, arouse uncertainty on the part of beneficiaries as to future benefits, and create a temptation to raise real benefits during election years.

With time and continued high rates of price increase, however, it has become apparent that a significant portion of the budget is, in effect, on automatic pilot. In fiscal year 1980 nearly one-third of federal outlays were for indexed entitlement programs. These automatic increases of expenditure make it increasingly difficult to reduce the size of the federal budget. Moreover, when inflation is combined with a stagnating economy, these programs consume an increasing share of national output.

#### Accuracy of the CPI

Perhaps the most critical development in the growing unease over indexed spending has been the criticism that the CPI--the most widely used measure for indexation--exaggerates the rise in the cost of living. If estimates of the distortion in the CPI are correct, many billions of dollars have been unnecessarily spent over the last several years.

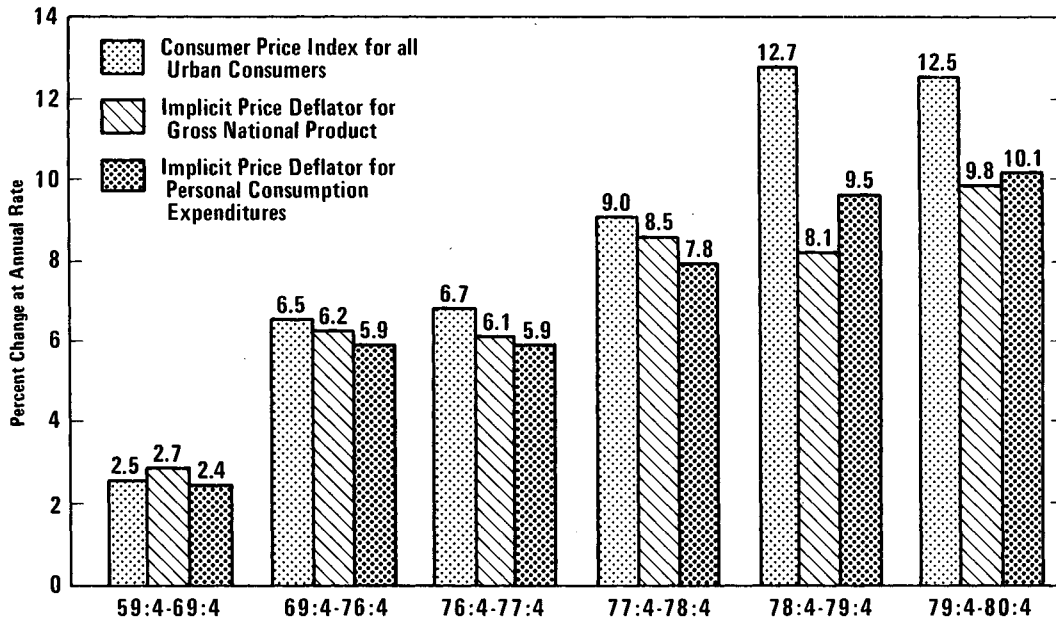
Concern as to the behavior of the CPI gained the most attention over the last year or two, when its rate of increase significantly exceeded those of alternative price measures. Figure 1 compares the performance of the CPI with that of a broad measure of prices in the economy--the gross national product (GNP) deflator--and with that of a close substitute for measuring consumer prices--the personal consumption expenditure (PCE) deflator. <sup>1/</sup> The three measures show very little divergence until the mid-1970s, but in the years after that the CPI departs radically from the other two.

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<sup>1/</sup> The GNP and PCE deflators are not without shortcomings as measures of the cost of living. These are discussed in Chapter V.



Figure 1.  
Comparison of Alternative Inflation Measures



#### Representativeness of the CPI

In addition to the criticism that the CPI has been distorting the aggregate measure of consumer price change, there have also been complaints that it is an inaccurate measure of prices paid by certain demographic groups. The consumption habits of the poor and the elderly differ from the market baskets used in the CPI-U or CPI-W--the two consumer price measures currently produced by the Bureau of Labor Statistics. The budgets of the poor are dominated by expenditures on necessities, while the elderly spend relatively more on medical expenses. If the prices of such items rise faster than other prices measured by the CPI, then current indexation practices may not adequately compensate these groups for changes in their cost of living.

## Fairness

An additional concern about current indexation practices is that of fairness. In the struggle to keep up with rising prices, some groups have been more successful than others. The less successful groups have seen their real wages and purchasing power fall. Meanwhile, federal beneficiaries on the whole appear to have been fully compensated for rising prices. This disparity in the treatment of wage earners and federal beneficiaries has been aggravated by the recent increases in Social Security payroll taxes.

## Organization of the Study

Chapter II outlines some of the primary, but not always explicit, objectives of indexation, explaining how they affect the actual practice of indexing. Chapter III describes the environment of price changes in which indexing is done, and the implications of indexing to different kinds of price change. Chapter IV briefly surveys the scope of indexation provisions in federal programs. (Appendix A lists federal programs that employ explicit indexation features.) Chapter V examines in detail the shortcomings of the CPI and presents some alternative measures that overcome certain of the CPI's deficiencies. The indexed provisions of the Food Stamp Program and possible improvements to existing practices are discussed in Chapter VI. Finally, the alternatives for a general consumption index and their budgetary implications are treated in Chapter VII.

Indexation is a response to a persistent rise in the level of prices, or--put another way--a persistent fall in the purchasing power of the dollar. The fall in the value of the dollar erodes the value of payments called for by contracts or by federal laws. Indexation is an effort to protect real benefits over time through escalators, cost-of-living adjustments, and similar provisions. The task is complicated, however, by the fact that other things are changing at the same time, such as the pattern of employment, the composition of consumption, asset values, and demographic patterns.

#### Alternatives to Indexation

Indexation is not the only solution to the problem of maintaining the real level of benefits in the face of rising prices. In the private sector, contracts can be made of shorter duration. In government programs, benefit levels can be readjusted more frequently.

Several objections may be made to such alternatives. The necessity of readjusting benefit levels at more frequent intervals requires time and effort; moreover, it may reopen debate on other provisions of a program. There is, also, a cost to recipients in the form of uncertainty about whether benefit levels will be maintained in the future. Finally, under a regime of repetitive one-time adjustments pressure may develop, particularly during election years, to overcompensate for price increases. This was one of the reasons cited for the adoption of indexation in the Social Security program.

Given the difficulties of frequent decisions about benefit levels, indexation has a certain appeal. Yet indexation may create other problems. First, it makes changes in expenditure levels automatic, and the larger the proportion of expenditures that are indexed the more difficult it becomes to control the federal budget. Second, indexing is not a straightforward matter--a point that is developed at some length in this report.

### Provisions That May Be Indexed

Indexation is applied to many provisions of federal programs. Benefit levels are usually specified in dollars, and must be readjusted if their real value is to be preserved when prices increase. Many federal programs are targeted at certain demographic groups--for example, welfare programs for the poor--and employ indexed eligibility provisions to ensure continued service to those targeted groups. Other programs are designed to operate only under certain circumstances--such as farm support programs when agricultural prices are low--and employ indexation to ensure that trigger mechanisms will continue to operate correctly. Still other programs contain provisions that limit the amount of benefits paid--such as on Medicare claims--and employ indexation as a way to maintain benefit ceilings at a constant real level. Without indexation, eligibility requirements would become increasingly restrictive, trigger mechanisms would cease to operate, and ceilings would begin to reduce real benefit levels.

### Complications

In a dynamic economy indexing is complicated by the fact that many things are changing besides the level of prices. Changes in employment, output, value of assets, and demographic patterns affect the welfare of various groups in the economy. Some of the nonprice changes are triggered by price movements, while others may occur independently. This means that the statistical measures used for indexation may reflect more than simply inflation. For example, the CPI will be affected by an increase in sales taxes or by a rise in values of durable assets like houses, or by changes in the quality of goods not fully adjusted for in the CPI. Straightforward indexation in these cases may not reflect actual changes in the cost of living.

Because both price and nonprice changes affect the standard of living, and because of the limitations of available statistical measures in providing the desired information, it becomes necessary to examine the purpose of indexation more carefully in order to evaluate the performance of existing indexation measures.

## Purposes of Indexation

A number of different possible objectives for indexing have been either stated or implied in the public discussion of this topic.

- o Holding constant the ability of beneficiaries to purchase a fixed basket of goods

This is the approach that underlies current indexation practices. Its advantage is that of being easy to understand and relatively straightforward to measure--for example, with the CPI. It would be most suitable if the only changes taking place were those of prices. In an environment of more complex changes, some shortcomings become clear. The index will reflect increases in sales, excise, or--to some extent--payroll taxes. If the same revenue is raised through income taxes it will not appear directly in the CPI and may not register to any significant extent, even indirectly. This raises the question whether indexation ought to protect against tax changes as well as price changes.

Another difficulty with this approach is that over time consumers will not stick to a fixed basket of goods; they will substitute new products for old ones, and cheaper items for those that become more expensive. An index based on a fixed basket of goods will tend to rise faster than one based on a consumption mix that preserves a fixed level of satisfaction or well-being.

A third difficulty with the fixed-basket approach is that it ignores other conditions in the economy bearing on the equity of such indexation, and on the ability of the economy to pay its costs. For example, if wages are rising less rapidly than prices, beneficiaries of indexed federal programs will improve their living standard relative to that of the working population. Under these conditions, the burden of financing the benefits will tend to grow as a share of total economic output.

- o Holding constant a standard of living obtainable with the program's benefits

This approach would recognize changes in consumption habits. It thus requires that the market basket be updated frequently.

When treated rigorously, it also requires that factors other than market consumption be taken into account. Changes in the provision of public goods--such as better safety and health, cleaner air and water, more secure national defense--will raise the standard of living. Moreover, since the provision of such items is usually reflected in either higher prices or higher taxes, counting their costs without considering their benefits would lead to overindexation. In addition, overindexation will occur if one ignores the fact that the rising real values of durable goods such as houses or silverware represent increases in wealth for their owners. Whereas the CPI would register this as a loss in purchasing power, in reality it means the possibility of an improved standard of living for the owners if they alter their savings habits or liquidate some of their increase in wealth.

The drawbacks to this approach are that it is more abstract and harder to understand; requires much more information; and in many instances is difficult to quantify. Nevertheless, it is useful as a concept to which other approaches can be compared.

- o Holding constant a relative standard of living that is gauged to the income levels of the working population

This approach abandons the attempt to preserve the value of benefits in real or absolute terms. Instead, it ties benefit levels to the performance of the economy. In place of the goal of an absolute level of benefits it substitutes a relative notion--something closer to a constant share of an economic pie whose size may be changing. <sup>1/</sup> One way of approximating such a standard is by indexing to wage changes instead of to price changes. This puts beneficiaries in the position of sharing with wage earners the burden of economic setbacks. Moreover, it tends to keep the costs of indexation more in line with the ability of the economy to bear those costs. The other side of this coin is that beneficiaries would share with wage earners the dividends of productivity growth. This is because productivity growth enables wages to rise faster than prices in the long run.

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<sup>1/</sup> Qualification must be made when demographic changes cause a shift in the ratio of the beneficiary population to the working population, thus changing the relative burden of indexation in the economy.

- o Holding constant the benefits' purchasing power over a basket of goods excluding certain goods that may be subject to wide and uncontrollable price swings

This approach is suggested by the current difficulty of adjusting to relatively large changes in certain prices--notably the price of imported oil. These changes have had a large effect on the CPI, and thus on the costs of indexation, at a time when net income growth is slow. The unavoidable consequences of the oil price increases are that the nation must either reduce its level of oil consumption or else cut back on other consumption. Indexation has the effect of insulating beneficiaries from these consequences. By raising their benefits in line with all price increases, it gives them enough purchasing power to continue consuming the same basket of goods. Thus a larger share of the burden must be borne by those whose incomes are not indexed. While operationally it is possible, at the cost of redistributing income shares, to carry out such indexation for a portion of the population, it should be apparent that it is impossible to do so for everyone.

Excluding imports from the indexed basket of goods would mean that everyone, including the beneficiaries of federal programs, would share in the burden of adapting to the new economic circumstances resulting from the rise in oil prices.

#### Other Considerations

It may be that a single standard or approach to indexing will not suffice for all federal programs. The goals of a particular program may determine its indexing requirements. Programs that seek to provide some minimum standard of living may require indexing to a market basket; the Congress may desire to exempt persons covered by these programs from the burdens borne by active wage earners. On the other hand, some federal benefits may be amenable to other indexing approaches.

Another consideration in designing an indexing formula is the burden it will impose on the economy, particularly in times of slow growth. Certain of the approaches mentioned above accommodate themselves to changing conditions--but even the most flexible may sometimes be more than a nation can afford. Accordingly, proposals have been made to discount the index measure by an arbitrary amount, say by limiting increases to only 85 percent of the increase in the CPI. If this were continued over a period of years, however, it would mean a cumulative decline in real benefits.

Another proposal is to switch back and forth between a price index and a wage index, using whichever rises the least. This proposal would reduce the real value of federal benefits whenever real wages fell, in line with the lower capacity of the economy to finance such benefits. The difficulty with this proposal is that benefits once reduced would never regain their initial position even if economic stagnation was replaced with rapid economic growth. The implications of the proposal, and some alternative formulations, are discussed further in the next chapter.

Other considerations in setting the goals of indexation include the types of price behavior that are likely to be encountered. It may make a difference if all prices are rising or if only some prices are rising; and if only some prices are rising, it may make a difference if they are the prices of necessities such as food, of luxuries such as gold and silver, of investments such as houses, of imports such as oil, or of taxes that are included in retail prices (even if those tax increases are offset by cuts in other kinds of taxes). Because price changes occur as a result of a variety of forces, it will be useful to examine the implications of indexing to different kinds of price changes.



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CHAPTER III. TYPES OF PRICE CHANGE AND THEIR IMPLICATIONS FOR INDEXATION

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Indexation is an effort to adjust benefit levels so as to neutralize the effects of price change. Can indexation succeed in preserving living standards from change stemming from price movements? The answer depends on the types of price change encountered, and on whose standard is to be protected. This can be most usefully illustrated by defining two special cases of price behavior.

TYPES OF PRICE CHANGE

A distinction may be made between two types of price movement. One is an upward movement of all prices at about the same rate, or generalized inflation, and the other is an increase in the price of one or several goods relative to all others.

Generalized Inflation

Generalized inflation is characterized by a persistent and widespread rise in prices. It is synonymous with a fall in the value or purchasing power of money. Although economists differ as to the details of causality, the fall in the value of the dollar is generally associated with a rise in the money supply in excess of the growth in real activity. The most important feature of this kind of price behavior is that all prices are rising at about the same rate, including the price of labor--wages. <sup>1/</sup> If wages keep up with prices, then both the level and composition of consumption will likely be little affected.

At first glance it would appear that generalized inflation is merely a change in the numbers used to carry out economic activity. In actuality, even the most general movement of prices would not

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<sup>1/</sup> For the sake of simplicity, productivity growth--which tends to cause wages to increase faster than prices--is not discussed.

have an equal impact on everyone. In the short run, unexpected inflation, or unexpected changes in the rate of inflation, can redistribute income between borrowers and lenders. Second, some wage earners in the economy may have less market power than others, and not be able to get increases that keep up with the full change in prices. Third, persons receiving fixed non-wage income such as pensions, transfer payments, or interest on bonds will see the real value of these payments fall, and, in addition, those holding cash will be penalized. Finally, if the income tax system is progressive, generalized inflation will lead to an increasing tax burden as people move into higher tax brackets.

### Relative Price Change

The other special case is that of relative price change. This is a change in the price of one or several goods relative to the prices of all other goods--as would occur if the price of butter were to go up 50 percent while that for margarine rose only 10 percent, or if electricity doubled in cost while natural gas stayed the same. The most important feature of a relative price change is that it disturbs the relationship among prices of different goods. It is a signal that supply or demand conditions for a particular good have changed, and that there must be changes in consumption as well as in production. This is the sort of adjustment that takes place if a frost reduces Brazil's output of coffee, or if an oil embargo reduces the available supply of oil. Where possible, consumers substitute cheaper goods for those that have become more expensive; if substitution is difficult, consumption has to be cut back--either that of the more expensive good or that of other goods. It should be added that these consequences of a relative price change apply in the aggregate and not necessarily for each individual. To the extent they apply in the aggregate, however, they are real changes rather than nominal changes. Indexation cannot undo aggregate real effects but only redistribute them.

Relative price changes play an important role in the economic system. They are responsible for the reallocation of consumption patterns and the redirection of productive activity in response to changes in economic circumstances. To suppress the signals being sent by relative price changes is to risk increasing resource misallocation, leading to a standard of living far below the nation's potential.

## Actual Price Behavior

Actual price change has been a mixture of both kinds: The relationship among prices has been changing, while at the same time the aggregate level of prices has risen. There are a number of reasons why this is so. One reason is that the forces that produce each special type of price behavior can be present at the same time. Another reason is that, through the working of economic institutions, relative price changes have tended to cause increases in the aggregate price level. The conventional description of this latter process is that prices in the economy move upward more readily than downward. If one or several prices rise, and other prices fail to decline, the result will be a rise in aggregate expenditure and an increase in the demand for money. If the money supply does not expand, demand will be constrained by the relatively tighter money supply and economic activity will slacken until prices adjust. Unfortunately, postwar experience suggests that this adjustment has tended to be somewhat slow and that it imposes a cost in the form of unemployment and lost output. Attempts to restore the trend rate of economic growth through accommodative increases in the money supply lead to a new, higher absolute level of prices. The process can be a gradual one, with the initial relative price change diminished by the partial catching up of the prices of other goods in the economy, followed by a reestablishment of the relative price change. For example, the real price increase of OPEC oil in 1974 was diminished by inflation in the ensuing four years, and was not fully reestablished until the oil price increases of 1979.

Thus government policy can be a partner in the transformation of a relative price change into a rise in the aggregate price level. In the past the government affected the process chiefly through its commitment to high levels of employment and output. Its attempts to stimulate economic growth led to increases in the money supply. But government policy can create relative price changes as well. This is done in two ways. The first of these is associated with the provision of social goods. Social goods are goods and services that everyone consumes in some sense but that are not bought and sold in the marketplace. The clearest examples are cleaner air, cleaner water, safer working and living conditions, and better levels of support for the poor and unemployed. The provision of these goods through antipollution and safety regulations ultimately leads to higher prices for chemicals, steel, electric power, paper, and other final products. Similarly, increased levels of unemployment compensation impose costs on

producers that show up in higher prices. It is through these higher prices that society pays the cost of the social goods. The question as far as indexation is concerned is whether recipients of government benefits should be protected from or excused from paying these costs.

Another way in which government policy has created relative price changes is through efforts to regulate the working of private markets for the benefit of particular groups. A change in the rules that affects the economic circumstances of a particular group can bring substantial economic benefits to that group. Unless the change in the rules itself increases economic output or wealth, however, the economic benefits will be achieved at the expense of other groups in the economy. When the government guarantees milk support prices to dairy farmers, when it protects the steel industry from the competition of cheaper imports, when it regulates competition in transportation, and when it requires that teenagers be paid the minimum wage, the benefits provided to the target groups are funded by higher prices paid by consumers.

Actual price behavior, then, has been a composite of inflation and relative price changes. To some extent the large relative price increases of recent years for commodities such as oil have contributed to successive increases in the overall level of prices. In addition, relative price increases have originated not only from shocks to the economic system but also from the efforts of government policymakers to redistribute income through intervention in the marketplace.

#### Meaning of "Cost of Living"

Rising prices and inflation are associated with changes in the cost of living, and frequently the terms are used interchangeably. But the cost of living is a broader concept than the others. Because it is often mentioned as a basis for indexation, the cost of living concept requires closer examination. An effort is made below to provide a general understanding of the notion and how it is applied. 2/

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2/ For a fuller discussion, see Jack E. Triplett "Cost of Living Questions and Cost of Living Indexes," U.S. Department of Labor, Bureau of Labor Statistics (processed), and its bibliography.

The concept of a measure of the cost of living (COL) is usually expressed as an answer to a question such as, "What is the change in cost of maintaining a given level of living (satisfaction) between two periods with different prices?" The question can be phrased in a number of ways in order to give it specific content. The key to understanding the various ways of phrasing the question is that it is an attempt to measure a constant or fixed level of living in the sense of well-being or satisfaction. Depending on the kinds of economic forces bearing on this level of living, the question may have to be more probing or comprehensive in order to measure the cost of a constant or fixed level of satisfaction. For example, the CPI, which is an attempt to approximate the COL, is based on the question, "What is the expenditure necessary at today's prices to maintain the living standard of the base period?" An alternative but related concept is embodied in the question, "What would have been the cost in the base period of consuming a basket of goods representing today's standard of living?" This concept underlies the construction of the implicit price deflators employed in the GNP accounts. Both concepts compare prices of two different periods, but they use different baskets of goods for that purpose. While they can yield very similar results, they tend to diverge the further apart in time are the two periods and the larger have been changes in relative prices.

A different approach to the COL concept is to ask "What is the income required at today's prices to maintain the standard of living of the base period?" This measure will yield the same result as the expenditure approach unless there has been a change in income taxes. The expenditure approach is insensitive to such a change while the income approach is not. On the other hand, even if such a measure were available, it is not clear that it should be substituted for the CPI in all uses. For example, a change in income taxes would cause the income-based COL to rise even if all prices in the economy remained unchanged. In other words, such a measure might be misleading when used for some analytical purposes.

If the objective of indexation is to maintain a given standard of living, then still more comprehensive COL questions need to be devised, questions in which the standard of living is affected by changes in wealth--as with the rise in value of a portfolio of stocks or an increase in the value of a house--or questions in which changes in the level of nonmarket consumption occur. For example, in the latter case, a statistical measure like the CPI will register higher product prices resulting from pollution and

safety requirements but will not reflect the benefits received, and is thus a distorted measure of the cost of living.

The more sophisticated COL approaches are not practical to use because they require too much information and are difficult to construct. But they throw light on the limitations of presently available measures. And periods may actually occur in which the only essential changes are price changes, so that an expenditure COL such as the CPI may be quite adequate for indexation purposes.

#### THE CONSEQUENCES OF INDEXATION

The consequences of indexation vary according to the kinds of price change taking place and the kinds of statistical measures used. The major consequences can be described with a few examples.

##### Indexation to Generalized Inflation

When prices are rising across the board, indexation has the fewest complications. Its application to those in the economy whose incomes are fixed in nominal terms merely restores their initial condition and keeps them at relative parity with everyone else. Living standards are preserved in both an absolute and a relative sense. Indexation thus corrects or neutralizes one of the few real consequences of generalized inflation. It does not, of itself, cause government expenditures to rise as a share of GNP. Moreover, the choice of a statistical measure for indexation is greatly simplified under these conditions. As a result of the more or less uniform rate of price increase throughout the economy, any statistical measure should yield the same results. Different demographic groups, even if they have different consumption patterns, will experience the same nominal changes in consumption costs.

##### Indexation to Relative Price Changes

The consequences of indexing to a relative price change are quite different. A rise in the price of a single good will have two effects: people will consume less of it by substituting more of other goods; and because of the drop in their purchasing power, they will tend to consume a little less of all goods. Indexation

restores the lost purchasing power so that they are capable of continuing to consume the same basket of goods. <sup>3/</sup> If the cause of the relative price change was a drop in supply, it should be clear that indexation cannot restore that supply. If everyone's income is indexed, then attempts to purchase the original amount of the scarce good will only drive the price higher, until the burden of reduced consumption is somehow allocated. And if only part of the population has indexed incomes, the burden of reducing consumption falls on the rest of the population. Thus, while indexing to generalized inflation tends to preserve the initial income distribution, indexing to relative price changes redistributes income. The reason, of course, is that one of the most common causes of relative price changes is a drop in real output--as with the increase in food prices in the second half of 1980.

The signal that is given by a relative price change of the need to modify consumption patterns and resource allocation can be muted by indexation if indexation is very widespread. Indexation is already well established--and growing. It affects one-third of the federal budget formally and as much as one-half of it if indirect or quasi-indexation is counted. In the private sector, the number of wage earners with formal cost-of-living escalators has been estimated to be as high as 9 million, with many others receiving wages that are implicitly indexed. In such a setting, when the CPI rises in response to a relative price change, a significant portion of the population will be compensated for that price change. This means that the remainder of the population must bear the burden of reducing consumption. If they resist this burden and attempt--through the use of market or political power--to bargain for higher nominal incomes, then the general price level will begin to rise. The demand for the particular good will not have been reduced to match the supply, and relative prices must

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<sup>3/</sup> In fact, consumers will be better off than before by consuming less of the higher priced good even if they have an adequately compensated income. The reason is that a unit of the more expensive good can now be traded off for more of other goods than before. This is why a fixed-weight index that uses the original market basket and ignores substitution tends to overestimate the cost of restoring consumers to the same level of satisfaction.

again readjust. This process will continue until it has allocated the reduced consumption among the population. Given the lags that occur between the various steps in the process, a considerable time may be required for large relative price changes to work through the system. Thus, the amount of generalized inflation that accompanies a relative price change, and the length of time required to reach a new stable level of prices, may be directly affected by the scope or extent of indexation.

### Indexation to Wage Changes

The consequences of using a wage measure for indexation would depend on the behavior of prices. In the case of generalized inflation, the consequences would be the same as with the CPI or some other price measure assuming that wages rise at the same rate as other prices. If the level of wages is rising more rapidly than prices (as happens when there are gains in productivity), then wage indexation leads to a rise in real benefits. Indexed benefits will tend to be a constant share of total economic output, however, unless the ratio of beneficiaries to the labor force changes.

In the case of a relative price increase, wage indexation should lead to a somewhat slower rate of benefit increase than with price indexation. The extent of the difference will depend upon how wages respond to a relative price increase. Wages for workers covered by cost-of-living escalators will rise, of course, to compensate for at least part of the increase. Many other wage earners, both unionized and nonunionized, will have enough market power to obtain similar compensation. But others will not. Thus, the aggregate wage may rise in response to a relative price change, but by less than the increase in aggregate prices. The increase in wages will, however, trigger another round of price increases, and these will be much more widespread than the initial relative price increase. There will then likely be a readjustment of the initial relative price change in order to restore its relationship to other prices. This process will repeat itself until it finally damps out. The more widespread is indexation in the economy, and the greater the extent of full versus partial indexation, the longer the process will persist.

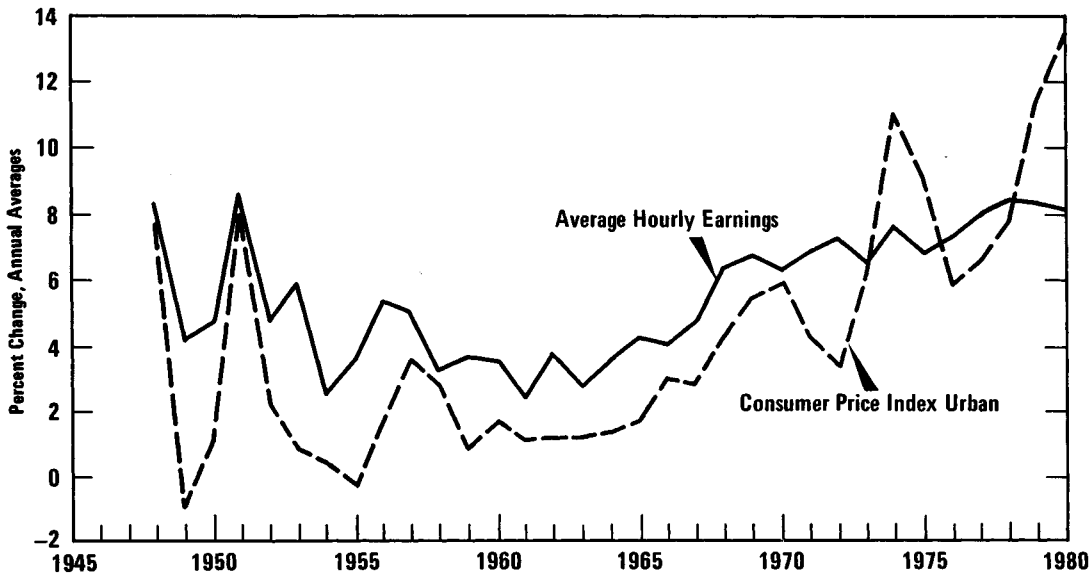
### The Switching Proposal

A proposal that has received considerable attention in recent months is to index to either wage change or price change, whichever



Figure 2.

### Comparison of Changes in the Consumer Price Index and in Average Hourly Earnings



is lower over a given period. The advantage of doing so would be to lower the cost of indexation when price increases exceed wage increases--that is, when real wages fall. The lower cost may be a significant consideration by itself, but it is of particular importance when falling real wages make it more difficult to finance the indexed benefits through tax revenues. Advocates of the proposal also argue its fairness. Unlike the present system, which in a period of falling real wages offers more purchasing power to federal beneficiaries than those in the labor force can provide for themselves, the switching proposal would require the beneficiaries to share in the burden felt by wage earners.

The appeal of this proposal is offset by three additional considerations. First, as shown in Figure 2, there have been relatively few instances in the postwar period when wages have risen less rapidly than prices. For most of the period the switching proposal would have given the same results as current procedures. Second, there were two rather pronounced episodes of falling real wages in the 1970s. Such episodes could, if they occurred repeatedly, lead to progressive reductions in real benefit

levels through the switching proposal. Not only can a relative price shock cause a drop in real wages, but temporary episodes of falling real wages could occur merely because wage changes tend to lag changes in prices. With low levels of productivity growth, even cyclical movements in prices could temporarily outrun wage increases. If repeated episodes of falling real wages were to occur, the principal implication of indexation with this technique would be progressive reductions in real benefit levels of government programs. This would happen because the switching proposal is, in effect, a ratchet mechanism. When real wages fall benefits will also fall, but when wages catch up benefits will not. The third consideration concerns the fairness criterion. Some may question whether beneficiaries should share in the economic losses but never in the economic gains. Moreover, depending on the actual goals of indexation, the switching mechanism, if it were applied to programs that attempt to insure some minimum welfare level, might one day render them incapable of doing so.

The switching proposal could, of course, be modified to include a catch-up mechanism that would delay the switch back to a price index until real benefits had been restored to their former level. Alternatively, benefits could be adjusted by changes in whichever index was lower relative to a base period. This would mean that real benefit levels would be reduced only when the level of real wages fell below the level of a given base period. Under both of these modifications, in a growing economy temporary economic setbacks would at most lead only to a temporary reduction in real benefits.

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CHAPTER IV. WHAT FEDERAL PROGRAMS ARE INDEXED, HOW, AND AT WHAT COST

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A Brief History

Precedents for indexing federal programs go back more than a century to 1870, when increases in military retirement benefits were first adjusted to reflect increases in active-duty pay in a procedure known as "recomputation." This discretionary procedure was made into an automatic one by the Joint Service Pay Act of 1922. This form of indexation to wages was replaced temporarily in 1958 by an annual 6 percent cost-of-living payment adjustment for military retirees.

In 1962 the Congress undertook to index the Civil Service Retirement System. Initially it favored institution of a wage-linked index. The Civil Service Commission, while agreeing on the need for a long-term alternative to the time-consuming and difficult task of repeated one-time adjustments, argued for an index linked to prices. Wage changes, they contended, were needed to attract and retain active employees and had no necessary bearing on the needs of retirees. As a result, CPI indexation was adopted for civil service retirement benefits in 1962 and for military retirement benefits the following year. Price indexation had been applied to several smaller programs during the 1940s and 1950s--including construction programs, agricultural support programs, and compensation for overseas employees--but civil service retirement represented the first major federal program to be formally linked to a price index, setting a powerful precedent for indexation activity in the future.

During the 1960s several other workers' compensation and retirement programs were formally indexed but it was not until the 1970s that more widespread indexing of federal programs took place. An upsurge in indexation came after 1972 when Social Security benefits--the largest of all indexed federal programs--were linked to changes in the CPI. Along with the ensuing indexation of other major retirement and workers' compensation programs, the expansion of indexation to include transfer programs began to take place. The Food Stamp Program had already been indexed in 1971--the only major income transfer program to be indexed before the indexation of Social Security in 1972.

## FEDERAL PROGRAMS THAT ARE INDEXED

Indexed programs may be divided into indexed entitlement programs, indexed programs other than entitlements, and quasi-indexed programs.

### Entitlement Programs

The programs listed in Table 1 have in common the fact that their benefit levels are indexed. This, together with their status as entitlement programs, means that under current law a change in the appropriate index will automatically trigger a predictable rise in the level of per capita nominal benefits. 1/ For the programs in Table 1, the estimated level of total expenditures in fiscal year 1981 is \$195 billion. A 1 percent change in the appropriate price index would, at this level of expenditure, trigger approximately \$1.9 billion of additional federal outlays. 2/ This estimate assumes that everything else, particularly participation rates, remains the same. In fact, however, if indexed benefits increase faster than the other income of the group participating in a program, it is likely that the rate of participation among those eligible will also increase, raising total outlays still further.

### Other Indexed Programs

Another group of indexed programs is made up of programs that are not entitlements, and/or of what might be called quasi-indexed programs. They differ from the group of indexed entitlement programs in Table 1 in that either:

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1/ Entitlements are benefits prescribed by law for all persons meeting a program's eligibility requirements. The total outlays are not determined by an annual appropriations decision of the Congress.

2/ The sensitivity is slightly less than proportional because of instances where indexation is not applied uniformly to the total benefit payment, such as in the Railroad Retirement Program.

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                                      |
| 13. Child Nutrition Programs<br>National School Lunch Program (Commodity Subsidy) | Benefits:<br>1973, 1975, 1978<br>Eligibility:<br>1971, 1977 | 3.790  |
| 14. National School Lunch Program (Cash Subsidy)                                  |   |  |

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(Continued)

TABLE 1. (Continued)

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

- o they are appropriations subject to discretionary review by Congress,
- o the benefit level is not one of their indexed provisions,
- o the indexed provision may be inoperative under certain circumstances, or
- o 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<br>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  |

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(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   |                             |                    |  |

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(Continued)

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                  | <u>0.201</u>                                 |
| 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. Eligibility 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

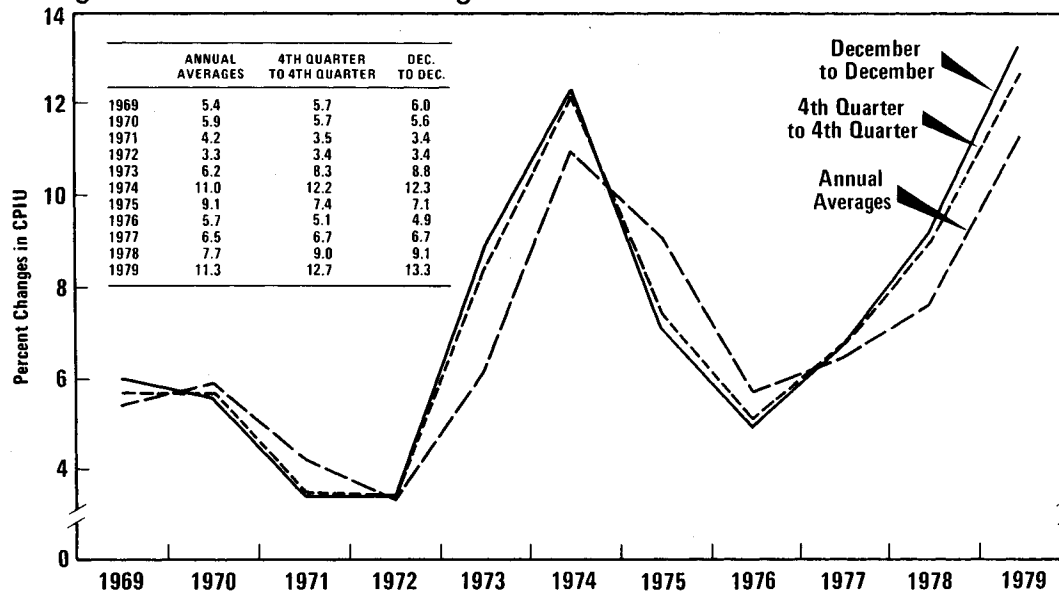
Indexes can be calculated and applied in a number of ways. They differ mainly in the type of interval used for measurement, the frequency of adjustment, and the length of the lag between the time they are calculated and the time they are applied.

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

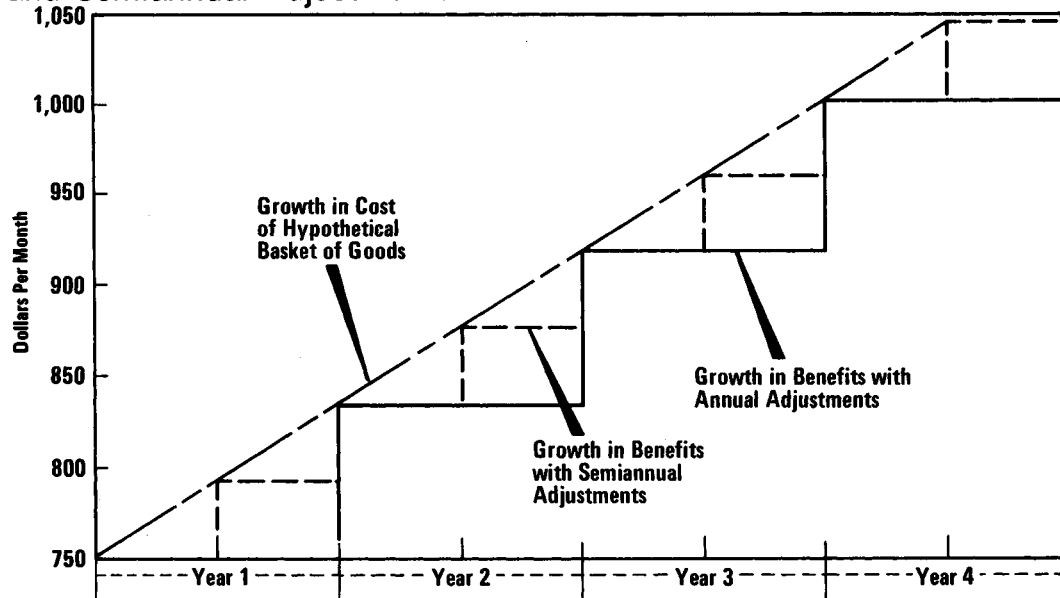


amounts to comparing the mid-points of the two years. In contrast, the point-to-point measure from December to December reflects annual change over a period more recent by six months. In other words, averaging lengthens the lag between the underlying change and its full incorporation into readjusted 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. <sup>3/</sup>

<sup>3/</sup> 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.

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:

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

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



- o The treatment of taxes;
- o The treatment of nonmarket consumption; and
- o 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.

can be resold, and the resale possibility means that changes in the supply or demand for housing not envisioned at the time of initial purchase can bring significant capital gains to the owner. Such capital gains, represented by increases in the price of housing, are increases in wealth. If such an increase in wealth is made liquid by refinancing or by the lowering of other forms of saving, higher levels of current consumption are possible. Therefore, higher house prices, for the more than 90 percent of homeowners who do not buy a house in a given year, are more like a fall in the cost of living than an increase--as suggested by the CPI.

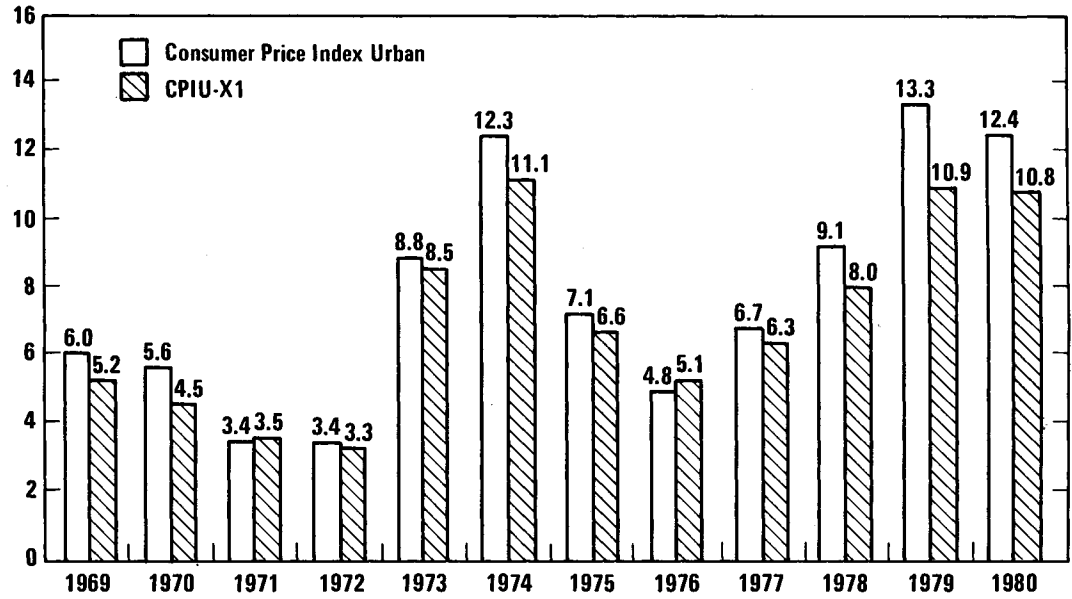
Another difficulty in the current treatment of homeownership is the very large weight given to mortgage interest costs. These are weighted both by the purchase price of the house and by the total undiscounted mortgage interest payments over the expected life of the mortgage. For example, the current relative importance of mortgage interest costs in the CPI is about 9.8 percent. If the mortgage rate were to change from 10 percent to 11 percent in a given month, this alone would cause the overall CPI to rise by almost 1.0 percent, or at an annual rate of more than 12 percent.

Another approach to the measurement of homeownership costs is to think of a house, because of its durable nature, as having two functions, one as a source of shelter services and the other as an investment that provides a return and can be resold for a possible capital gain. The price of the house represents both of these functions. While we wish to record the cost of the first function in our cost-of-living index, we do not wish to include investment goods--any more than we would wish to include the Dow Jones average or changes in bond prices. One way to separate the two functions is to treat the owner of a house as an investor who has bought it for income purposes--both current income and capital gains--and then rented it out to himself. This is the approach taken in the national income accounts. The value of a house to a renter is only that of the shelter services it provides. A measure of the value of shelter services can be obtained by measuring market rental rates. House price changes in excess of rental rate changes can be assumed to represent changes in the investment value of the house.

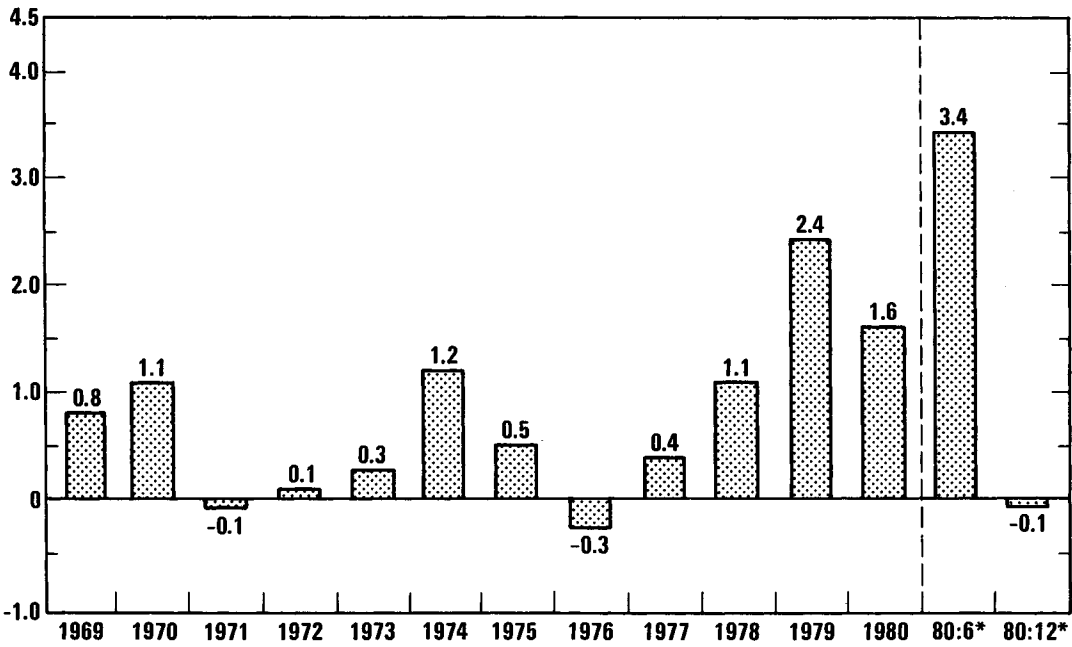
Such a rental equivalence concept is now being employed by the Bureau of Labor Statistics as a proxy in one of a series of experimental homeownership concepts. The effect of substituting this measure--called CPI X-1--results in the large reductions in the CPI changes mentioned above and shown in Figure 5. There is not, however, a complete consensus on which of the experimental

Figure 5.  
**Comparison of Alternative Consumer Price Indexes**

Percent Change December to December



Difference in Percentage Points



\*These are not seasonally adjusted, since seasonal adjustment processes for CPI-U and CPIU-X1 are not comparable.

BLS alternatives is the most suitable, and further work may have to be undertaken before an acceptable solution is found. 3/

### The Problem of the Fixed Market Basket

A Laspeyres index holds the base-period quantity weights constant over the run of the index. This permits the index to reflect only pure price changes. Over time, however, an increasingly out-of-date consumption pattern is used for measuring today's cost of living. The index continues to answer the question, "What is the cost of the base-period consumption basket at today's prices?" but does not tell how much the cost of current consumption patterns has changed since the last or more recent period. The consequences of using an out-of-date market basket are that the index tends to overstate actual period-to-period changes in the cost of living. This is because people generally reduce their consumption of items whose prices increase, and substitute consumption of items whose prices have decreased or at least increased at a less rapid rate. Thus the share of gasoline in total personal consumption fell from 3.5 percent in 1972 to 2.8 percent in 1980, or by a fifth. In the CPI, however, gasoline continues to have the same weight as it had in the days prior to the rapid increase in world oil prices. Given the rapid changes in gasoline prices over the past seven years, this overweighting has driven the overall CPI up faster than actual living costs.

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3/ The current CPI rent data are collected from a renter-occupied housing sample. Some objections have been raised to the use of this as a proxy for homeownership costs. The criticisms are based on the difference in characteristics between rental housing and owner-occupied housing such as size, neighborhood, and physical condition. While these factors are assumed to account for a difference in the level of rent between the two types of housing, it is not known whether their rates of change differ from each other. This problem could be reduced by redesigning and reweighting the sample of rental units.

Fuller information on the problem of measuring the cost of owner-occupied housing can be obtained from the lengthy series of technical working papers by Robert Gillingham and others of the Bureau of Labor Statistics, and from the General Accounting Office report Measurement of Homeownership Costs in the Consumer Price Index Should Be Changed, PAD-81-12 (April 1981).

The magnitude of this substitution bias in the CPI is somewhat cumbersome to estimate. <sup>4/</sup> One recent attempt concluded that for the 15 years ending in 1973 the bias was about 3 percent of the total rise in prices. <sup>5/</sup> One would expect, however, that the bias would be larger, the greater is the change in relative prices and the greater is the responsiveness or elasticity of purchases to changes in prices. The most dramatic relative price changes have occurred since 1973. Also, one would expect substitution to be greater in the long run, as adaptation takes place, than in the short run. This suggests that the substitution bias in the CPI may have become substantially larger in the different price environment of the years since 1973.

One approach to this problem is to update the market basket at more frequent intervals. This is what is done with the chain index, and BLS will have the opportunity to update more frequently in the future with data from the continuing expenditure survey now under way.

#### Aggregation of Family Budgets

The BLS bases its market basket on data from surveys of consumer buying habits. It aggregates the expenditure data over the sample of families surveyed. This means that when a high-income family is averaged with a low-income family the consumption pattern of the wealthier family receives a greater weight because of its larger expenditures than the consumption pattern of the low-income family. While in some uses such a weighting is desirable, the practical effect on the CPI is to make it less representative of average consumption behavior. Consumption goods that are income-elastic--that is, which assume larger proportions of total expenditures as income grows--receive a greater weight. Consumption items that are thought to fall in this category are housing, entertainment, and education. Conversely, necessities

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<sup>4/</sup> A quick approximation of the distortion due to an out-of-date market basket can be gleaned from the comparisons of the fixed-weight and chain versions of the Personal Consumption Expenditure indexes discussed later in this study.

<sup>5/</sup> Steven D. Braithwait, "The Substitution Bias of the Laspeyres Price Index: An Analysis Using Estimated Cost-of-Living Indexes," American Economic Review (March 1980), pp. 64-77.

such as food are underweighted. An alternative method would be to calculate the budget share of each item by family and then aggregate or average these shares using equal population weights. This would correct the overweighting of luxury goods and underweighting of necessities.

#### Tax Treatment

The CPI includes sales and excise taxes in its market basket, and, to the extent that they are passed on by producers, the CPI will also pick up payroll taxes and other indirect business taxes. Income taxes, however, do not enter directly into the CPI. Even though there is no reason to think that one type of tax affects the standard of living any differently than another (provided it cannot be evaded) the CPI will rise more or less immediately in response to some kinds of taxes, but not apparently to an income tax. <sup>6/</sup> This is a characteristic shared by other price indexes as well, and stems from their relationship to the expenditure-based COL concept.

Along with the inconsistency that this treatment of taxes lends to a COL measure, it has another drawback. Because the CPI is a widely watched economic barometer, it may tend to bias legislators against tax increases that directly affect the CPI as opposed to income tax increases that do not. This bias could exist in the absence of any evidence that one tax affects the standard of living any differently than another. It may also obscure from consideration the fact that one type of tax (a consumption tax) will have different allocative effects over time than an income tax. In other words, the asymmetric treatment of taxes in the CPI may strongly influence the choice of tax policy to the detriment of efficiency and other considerations, such as growth.

#### The Treatment of Nonmarket Goods

The benefits of cleaner air, cleaner water, and better worker safety and health require resources for their production and

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<sup>6/</sup> This insensitivity to income taxes presumes that increases in income taxes are not passed on by workers to the prices of the goods they produce--that is, that workers bargain with employers over pretax earnings instead of take-home earnings. This seems to be borne out in the U.S. experience to date, although it does not appear to be true in, for example, Britain.

improve the standard of living. Yet these goods are not counted in the consumption basket of any statistical measure. But the higher product prices that result from the cost of producing these benefits push up the CPI as though the same quality of living had become more expensive. Again, this shortcoming is shared by other price indexes. The fact that considerable progress was made in the 1970s toward better air, water, and safety standards suggests that this may have been a source of upward bias in the CPI.

#### The Problem of Representativeness

The accuracy of the aggregate CPI in measuring changes in the cost of living for any particular person or group depends on the degree to which people's consumption habits are the same. For example, older people consume more medical services than others, and hence it has been argued that when these costs are rising rapidly--to the extent they are not covered by Medicare--the retirees' real cost of living is underestimated by the aggregate CPI. But it is also argued that homeownership cost is a relatively smaller portion of the budgets of the elderly, so that they have benefited from the overweighting of this fast-rising item in the CPI.

Examination of individual's budgets reveals statistically significant differences when persons are grouped by age, income level, and certain other demographic variables, but it also reveals a large amount of variation within these groups after those factors are taken into account. <sup>7/</sup> Furthermore, the influences of age and income on consumption patterns do not appear to be stable over time. To determine whether these demographic groups actually experience a consistent and statistically significant difference in cost of living from that measured by the current CPI would require a study of survey-based samples of the items purchased and points of purchase of these demographic groups. Given that the majority of indexed federal programs are targeted at the elderly or poor,

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<sup>7/</sup> R. Michael, "Variation Across Households in the Rate of Inflation," Journal of Money, Credit, and Banking (February 1979), pp. 32-46; and Hagemann, R.P., Inflation and Household Characteristics: An Analysis of Group Specific Price Indexes, U.S. Department of Labor, Bureau of Labor Statistics, Working Paper No. 110 (December 1980).

such demographic indexes would have ready application. With present information, however, it is guesswork as to whether such indexes would show a faster rate of change or whether any differences would be consistent ones.

#### Other CPI Issues

The CPI reflects changes in prices of imported goods such as automobiles, televisions, and oil. Price increases in these items can take place for reasons having nothing to do with the domestic economy. They may be relative price movements or changes in the terms of international trade that require an increased share of U.S. economic output to pay for them. <sup>8/</sup> Indexation exempts certain groups from sharing in this burden, an income transfer that may or may not be desired depending on the purposes of indexation. If it is not desired, the inability of the CPI to render a measure of only domestic price change constitutes a drawback of this index.

Finally, despite many improvements over the years, certain technical measurement problems continue in the CPI. One of these is the difficulty of distinguishing pure price change from price movements associated with change in the quality of the goods in the market basket. Although the BLS makes some effort to adjust for these changes, a number of criticisms remain. Another problem is that the samples used in collecting house price and rental rate information are not as representative as would be desired.

#### THE PRODUCER PRICE INDEXES (PPI)

There are three separate indexes of producer goods prices at different levels of processing--for crude materials, intermediate goods, and finished goods. (Simple aggregation of these into one index would result in double counting, as a price rise in a crude material is reflected in prices of goods using that material.) The indexes cover a limited universe of goods, principally in the mining, manufacturing, and agricultural sectors. They do not include construction, transportation, and other services. Prices are collected from a variety of sources including questionnaires,

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<sup>8/</sup> Higher import prices could also result from a fall in the exchange value of the dollar which, under a flexible exchange rate system, is what would occur in the presence of the generalized domestic inflation described in Chapter III.



industry publications, and government agencies. Normally, these are prices quoted by sellers rather than buyers, and while an effort is made to obtain actual transaction prices, in practice this cannot always be done. Similarly, the collected data reflect a mixture of order prices for future shipments and the shipping prices of finished output. For goods with a considerable time lag between order and delivery, such inconsistency can create ambiguity about the timing of price changes.

Weighting of price changes within the three PPIs is based on the value of shipments of each category of goods in 1972. Thus the PPIs are Laspeyres indexes with 1972 weights, although, like the CPI, they have a reference base of 1967.

The PPI measures would not be very appropriate for general indexation purposes because of the limited universe they cover and because they measure the prices only of certain inputs into the creation of consumer goods and services. The prices of this limited universe of goods may rise at a different rate from other sectors of the economy, thus yielding an inaccurate measure of changes in the cost of living. Similarly, the costs of some inputs may change at different rates than the prices of final goods and services because the particular inputs are a small portion of total value added--for example, the value of the wheat contained in a loaf of bread. The PPI indexes may, however, be used for specialized purposes such as escalating purchase contracts and deflating inventory measures. As they tend to be rather sensitive to supply and demand changes, one of their major uses is as an analytical tool for observing in detail the effects of changing economic conditions. Another major use is for deflating portions of the national income accounts.

#### THE GNP INDEXES

The gross national product is the total value of goods and services produced in the economy. It includes consumption, investment, and government services, with exports added and imports subtracted. It is the broadest concept for which a price measure exists. GNP price measures are available in all three index forms--Laspeyres, Paasche, and chain-weighted. The Paasche form of the GNP index is created by detailed deflation (adjustment of nominal value to remove the effect of price change) of each item category in the national output. When these items are reaggregated, the resulting series is called constant-dollar or real GNP. When nominal GNP is divided by real GNP, the result is an implicit

price deflator. As mentioned before, one characteristic of such a measure is that it does not measure pure price change from period to period but is contaminated by changes in the quantity weights. It has a tendency because of these shifts in weights to underestimate the true change.

In addition, a fixed-weight version of the GNP price index is produced using 1972 expenditure weights. These are drawn not from a statistical sample as in the CPI, but from the aggregate data collected for the national income accounts. The GNP index is also produced in a chain-weighted version that uses weights from the previous period's expenditure pattern.

The usefulness of the three GNP price measures stems from several features. First, they are indicators of domestic rather than foreign prices. This is a consequence of the GNP accounting framework that adds export prices but subtracts import prices. Thus indexes are obtained with the direct effect of foreign price changes removed. While it is true that U.S. consumption includes imported goods, and also true that someone else consumes U.S. exports, attempts to index to import price changes will, as discussed earlier, lead to successive rounds of price increases (see Chapter III). The advantage of using a GNP index to adjust federal benefits is that it would require beneficiaries to share in the burden of adjusting to foreign price changes.

Second, the GNP measures are useful because they are so broad, including all sectors of the economy, and thus give a better measure of the value of the dollar in all its uses.

Third, the existence of three different GNP index forms provides better insight into problems of determining the true change in the cost of living. Comparison of the chain-weighted form with the fixed-weight form reveals the differences created by substitution in the market basket.

Fourth, the GNP measures can be decomposed into various subindexes that may be more appropriate for certain tasks of indexation. Some of the more important of these are discussed below.

#### Gross Domestic Business Product (GDBP)

This subset of GNP covers the private business portion of the economy and accounts for about 85 percent of GNP. It is created

by subtracting government purchases from GNP and by making minor adjustments to the consumption and net export sectors (to remove household and nonprofit activity from the former, and to remove payments to U.S.-owned factors of production abroad from the latter).

GDBP indexes have some of the advantages of the GNP indexes, notably that import prices are removed. They are also available in the three index forms. Their advantage over the GNP indexes is that they concentrate on the private sector, reflecting the activity of market forces.

#### Private Nonfarm Business (PNB)

This measure is a subset of GDBP, created by excluding the output of the farm sector. Economic activity in the farm sector is sometimes rather volatile and subject to random forces such as the weather, pests, and diseases. Furthermore, government agricultural policy may also strongly influence the level of activity as well as prices in this sector. By excluding this sector, one obtains a measure that is to a much greater extent reflective of market forces on private business activity. Use of such a measure would, for example, make it easier to conduct farm policy without adverse effects on cost-of-living escalators. If such a price measure were used in computing the parity concept underlying crop support programs, it would also reduce the feedback of boosts in crop support levels on parity. Like the other GNP-based indexes mentioned above, the PNB indexes exclude import prices. And, like the other measures, the trade-off for this advantage is that the measure is not strictly confined to consumption goods. 9/

#### Personal Consumption Expenditure (PCE)

The coverage of this subset of GNP is the closest of all the GNP subsets to that of the CPI. It includes the economywide purchase of goods and services for consumption by individuals. In addition, it contains the smaller components of the operating expenses of nonprofit institutions, and some of the value of goods

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9/ Since the benchmark revision of December 1980, the chain and fixed-weight versions of this price measure are available only on an annual basis, in contrast to the quarterly publication of other GNP-based indexes.

and services received in kind by individuals. Thus, while the concept of the PCE indexes is quite similar to that of the CPI, both the scope and population coverage are somewhat broader. PCE accounts for nearly two-thirds of total GNP.

Although the PCE indexes are very similar to the CPI in concept, there are both major and minor differences in coverage, weighting, and concepts of measurement. <sup>10/</sup> The most important difference is in the treatment of housing. Homeownership in the PCE indexes is treated in a manner similar to that of the experimental X-1 CPI measure, as a rental equivalence. In the national income accounts, home purchase is treated as an investment purchase, not as consumption. The flow of shelter services consumed by those who own their houses is measured by the proxy of rental rates. This practice treats homeowners as investors who have rented out the use of the home to themselves. It gives housing a significantly lower weight in the PCE, which, when combined with the slower rate of increase of rental rates as opposed to house prices, explains the larger part of the difference between the recent behavior of the CPI and of the PCE measure.

Another item treated differently in the PCE indexes is the purchase of used cars. Since the national income accounts are concerned with the measurement of currently produced goods and services used for consumption, they endeavor to measure only the current value added in a used car transaction--such as the markup by the used car dealer--and the net value of used cars sold from nonconsumption sectors of the economy to the consumption sector. In contrast, the CPI treatment is essentially that of a gross concept, resulting in a weight in the CPI for this often volatile price series that is very large (equal to about three-fourths of the relative importance of new cars).

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<sup>10/</sup> Published documentation on the construction of PCE indexes is somewhat limited. A standard reference is Readings in Concepts and Methods of National Income Statistics, U.S. Department of Commerce. For a comparison with the CPI, see "Reconciliation of Quarterly Changes in Measures of Prices Paid by Consumers" Survey of Current Business (March 1978) and J.E. Triplett and S.M. Merchant, "The CPI and the PCE Deflator: An Econometric Analysis of Two Price Measures," Annals of Economic and Social Measurement (February 3, 1973).

The PCE deflator has tended to be more stable than the CPI and to rise at a less rapid rate. These differences can be seen in Table 3.

Like the CPI, the PCE indexes include the cost of imported goods. These enter directly as consumption of finished imported goods, indirectly as consumption of goods fabricated with imported inputs, and more indirectly as these affect the prices of competing domestic goods.

Like the other GNP measures, the PCE is available as a deflator and as a chain index as well as in a fixed-weight form. As shown in Table 3, the chain and deflator forms have risen less than the fixed-weight version because of the difference in market baskets. The effect of substitution can be seen most clearly by comparing the change in the PCE fixed-weight index with the change in the PCE chain index for a given year.

Like other GNP account measures, the PCE is published quarterly. A preliminary figure is reported one month after the end of the quarter and may be revised in each of the two succeeding months as more data become available. In addition, the accounts for the three preceding years are revised in July of each year. Such revisions will affect the index levels in those previous periods as well as the current index level. If a GNP component price measure is to be used for indexation, then the escalation formula should take into account the revision process, so that the current level of indexed payments remains consistent with the current price index level.

The Department of Commerce recently has begun publishing a PCE deflator on a monthly basis. At present the fixed-weight and chain index forms are not available on a monthly basis. Monthly indexes are not, however, a necessity for escalation purposes unless very recent changes must be taken into account or unless it is necessary to index over very short intervals.

#### WAGE INDEXES

As mentioned in Chapter III, the rationale for using a wage index is based on two related concerns. The first concern is that of fairness--of avoiding rates of increase in benefit programs that outstrip the rate of wage increase of the working population. It is their taxes that fund these payments, and when benefits increase

TABLE 3. COMPARISON OF PERCENT CHANGES IN ALTERNATIVE PRICE INDEXES

|                 | CPI-U | CPI X-1 | PPI<br>Finished<br>Goods | GNP<br>Deflator | GDBP<br>Deflator | PNB<br>Deflator | PCE<br>Deflator | PCE Fixed<br>Weight | PCE<br>Chain |
|-----------------|-------|---------|--------------------------|-----------------|------------------|-----------------|-----------------|---------------------|--------------|
| 1971            | 3.5   | 3.7     | 2.9                      | 4.7             | 4.0              | 3.7             | 3.9             | 3.7                 | 3.8          |
| 1972            | 3.4   | 3.3     | 3.5                      | 4.3             | 3.5              | 3.0             | 3.6             | 3.6                 | 3.7          |
| 1973            | 8.3   | 8.0     | 11.6                     | 7.0             | 7.0              | 5.3             | 7.3             | 7.8                 | 7.6          |
| 1974            | 12.2  | 11.1    | 18.7                     | 10.1            | 10.5             | 11.8            | 11.0            | 11.3                | 11.0         |
| 1975            | 7.4   | 6.8     | 7.0                      | 7.7             | 7.5              | 7.5             | 6.1             | 6.5                 | 6.4          |
| 1976            | 5.1   | 5.2     | 3.2                      | 4.7             | 4.3              | 4.9             | 4.9             | 4.9                 | 4.9          |
| 1977            | 6.7   | 6.3     | 7.1                      | 6.1             | 5.9              | 5.7             | 5.9             | 6.4                 | 6.3          |
| 1978            | 9.0   | 7.8     | 8.8                      | 8.5             | 8.7              | 8.3             | 7.8             | 8.2                 | 8.0          |
| 1979            | 12.7  | 10.6    | 12.7                     | 8.1             | 8.2              | 8.3             | 9.5             | 10.3                | 9.9          |
| 1980            | 12.5  | 10.9    | 12.3                     | 9.8             | 9.9              | 10.1            | 10.0            | 10.7                | 10.4         |
| 70-80 <u>1/</u> | 116.6 | 103.0   | 130.2                    | 97.6            | 95.3             | 93.3            | 96.5            | 102.3               | 99.8         |

NOTE: Percent changes, annual rates, fourth quarter to fourth quarter.

1/ Percent change over ten-year period, 1970:4 to 1980:4.

faster than wages this represents a redistribution of income. Second, the wage measure is more closely keyed than other measures to the ability of society to shoulder the burden of benefit payments. A relative slowdown in wage growth either because of reduced productivity growth or a shift in the cost of imports relative to the value of exports is a signal that the country's consumable economic output is growing less rapidly. Indexing to a wage measure ties changes in benefit levels to changes in the size of the economic pie. Receivers of benefits will share in the burden of economic setbacks but will also benefit from productivity growth.

A variety of wage measures could be used for indexing. These are briefly described below, and their movements are compared in Table 4.

#### Average Hourly Earnings

This is a monthly series giving the dollar average of wages and salaries of production and nonsupervisory workers in the private nonfarm economy. It does not include nonwage benefits (fringes), nor does it adjust for overtime pay. Another drawback is that shifts in the relative numbers employed in different industries or occupations can cause movements in the aggregate measure without a change in actual hourly wage rates.

#### Hourly Earnings Index

This is a monthly index covering the same universe as the average hourly earnings series but adjusted for the effects of overtime (in manufacturing only) and of relative shifts in employment among high-wage and low-wage industries. It is based on a recomputation of the average hourly earnings data using fixed weights for aggregating industries. Because of the fixed-weight format, however, if wages rise more rapidly in industries that are expanding their employment fastest, the index will tend to understate the actual rise in wage rates.

#### Compensation Per Hour

This index is published quarterly, using in part data collected for the national income accounts. It covers all workers in the civilian economy. Besides wages and salaries it includes

TABLE 4. COMPARISON OF PERCENT CHANGES IN ALTERNATIVE WAGE INDEXES

|                 | Average<br>Hourly<br>Earnings | Average<br>Hourly<br>Earnings<br>Index | Compen-<br>sation<br>Per Hour | Spendable<br>Weekly<br>Earnings | Employment<br>Cost Index |
|-----------------|-------------------------------|--|-------------------------------|---------------------------------|--------------------------|
| 1971            | 6.9                           | NA                                     | 5.7                           | 7.9                             | NA                       |
| 1972            | 7.7                           | NA                                     | 7.4                           | 8.3                             | NA                       |
| 1973            | 6.6                           | 6.4                                    | 8.1                           | 4.8                             | NA                       |
| 1974            | 8.3                           | 9.1                                    | 11.0                          | 5.7                             | NA                       |
| 1975            | 6.2                           | 7.5                                    | 7.7                           | 10.3                            | NA                       |
| 1976            | 7.7                           | 7.3                                    | 8.5                           | 5.2                             | 7.2                      |
| 1977            | 7.7                           | 7.5                                    | 7.4                           | 10.8                            | 7.1                      |
| 1978            | 9.0                           | 8.4                                    | 9.1                           | 5.3                             | 7.7                      |
| 1979            | 7.8                           | 8.1                                    | 9.7                           | 7.2                             | 8.7                      |
| 1980            | 8.8                           | 9.7                                    | 10.0                          | 6.9                             | 9.0                      |
| 70-80 <u>1/</u> | 109.6                         | NA                                     | 125.0                         | 100.8                           | NA                       |

NOTE: Percent changes, annual rates, fourth quarter to fourth quarter.

1/ Percent change over ten-year period, 1970:4 to 1980:4.



employer contributions for nonwage benefits, including social insurance and private benefit plans. It does not, however, exclude the effects of overtime, or of relative shifts in employment among occupations or industries.

#### Employment Cost Index

Currently under development, this new measure will combine some of the more desirable features of the wage measures already described. All civilian industries will be surveyed monthly. The index will cover all levels of workers, excluding only the self-employed, proprietors, unpaid family workers, and owner-managers. It will measure the entire compensation package, wages as well as fringe benefits. It will exclude the effects of overtime (in manufacturing), and of relative shifts in employment among industries and occupations. To adjust for employment shifts, a fixed weighting technique is employed as in the Hourly Earnings Index; it bears a resemblance to the techniques used for measuring consumer prices in the CPI.

Currently, this measure is available only at three-month intervals, and the data refer to the private nonfarm economy.

#### Spendable Earnings

This monthly series is based on an arithmetic average of earnings in all production and nonsupervisory jobs, including part-time, in the private nonfarm economy. It reflects changes in the length of the average workweek. The interesting feature of this measure is that estimated employee payments for Social Security and federal income taxes are subtracted from gross average weekly earnings. This is done for two categories, a single worker or a married worker with three dependents.

Indexation using this measure would tie benefit levels to the after-tax income of the working population. For example, an increase in income or payroll taxes would lower spendable earnings and reduce indexed benefits. Similarly, an attempt to stimulate the economy through a tax cut would raise spendable earnings and increase indexed benefits.

## POSSIBILITIES FOR NEW MEASURES

Alternatives to the existing statistical measures can be classified in two groups: first, modifications and improvements of existing measures, and second, development of CPIs keyed to the consumption patterns of specific demographic groups.

### Modifications and Improvements

Three of the shortcomings of the CPI discussed earlier--the homeownership problem, the out-of-date weights, and the aggregation by expenditure--could be substantially remedied. Indeed, considerable effort is under way at the Bureau of Labor Statistics to develop satisfactory solutions to at least the first two of these problems. The modifications would have a significant effect on the CPI, very likely slowing its measured rate of increase, at least if the inflationary conditions of the 1970s continue to some degree into the 1980s. The difficulties of introducing such changes are political and administrative. Users of the index will be very wary of changes that will push the measured rate of change in a predictable direction. Consensus may be difficult to achieve among the principal users, who include organized labor. Administratively, considerable advance warning would be needed so that users of the CPI could make changes in the way it is treated in legal contracts.

### Demographic-Specific CPIs

There have been repeated calls for a CPI for the elderly and retirees, and a CPI for the poor, in the belief that prices for these groups are rising faster than those for the rest of the population. If this is true, then indexation to the current CPI may not fully compensate for the rise in the cost of living. To construct additional CPIs of the quality of the existing CPI would involve an investment similar to that undertaken for the recent revision of the CPI-W and the creation of the CPI-U. In this case two considerations should be kept in mind. Only a small percentage of the variation in the cost of living among individuals can be ascribed to differences in age and income level. Furthermore, while the differences accounted for by such factors are statistically significant, their size is not stable over time. This raises the possibility that a demographic-specific CPI might be higher than the overall CPI in one period but lower in another

period. If that were to occur, enthusiasm for such special CPIs might wane. Another, more practical consideration is that the construction of one or two more CPIs might stimulate additional groups to demand other CPIs.

## CONCLUSION

The suitability of a given index measure depends on the goals of the indexed provision of a particular program. The most desirable index for retiree benefits may not be suitable for farm support programs. For many indexed programs there appears to be a need for a general consumption index. The currently used CPI appears to have been responsible for significant overindexation of federal expenditures and thus constitutes a liability in its continued use in federal programs.

Because the CPI has distorted the rate of change in consumer prices in recent years, the expenditures linked to that index are now higher than if an alternative measure had been used. It seems desirable to improve the CPI if it is to continue its role as the principal cost-of-living measure. In the event that it may take several years to implement these improvements, an alternative measure such as the PCE chain index would offer significant advantages in the interim.

In weighing alternative index choices, one of the most important considerations, in addition to conceptual suitability, is the projected cost. Which index measures will rise the fastest or slowest? The historical evidence is presented in Table 3. There may be a temptation to use these data for simple extrapolation. In some cases this may be fairly reliable. For example, a fixed-weight index will probably rise slightly faster than the same index in deflator form, and a chain index will follow a course between the two. But extrapolation may be unreliable in other cases. For example, will the official CPI continue to outstrip the X-1 experimental measure? This is extremely difficult to project. Future differences between the two indexes will be highly sensitive to two influences--mortgage rates and the ratio of rent increases to house price increases. Falling mortgage rates will tend to lower the official CPI relative to the CPI X-1. Increases in house prices that are smaller than those of rental rates will also depress the official CPI relative to the experimental measure. The difficulty in forecasting the relative behavior of the two indexes lies in the possibility that these two forces may work

in opposite directions. At present, house prices are rising faster than rents, but it is rather doubtful that this can continue indefinitely. If inflation subsides, even gradually, mortgage rates should fall. The outcome will depend on the exact magnitudes of the offsetting effects. While it is possible that the current relationship will continue for some time, this is less likely if inflation subsides and less likely in the longer run as demographic pressure on housing demand subsides.

In relation to other measures, the CPI X-1 is likely to behave very similarly to the PCE fixed-weight index because of the features they share in common. The GNP, GDBP, and PNB indexes will tend to rise less rapidly than other measures if import prices are rising faster than domestic prices, and more rapidly if the reverse occurs. Wage indexes should, over the long run, rise faster than price indexes if productivity resumes growing.

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CHAPTER VI. INDEXATION CHOICES FOR THE FOOD STAMP PROGRAM

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The Food Stamp Program is effectively indexed in three of its parameters:

- o The level of the standard allotment of food stamps is indexed to the prices of the Thrifty Food Plan;
- o The eligibility criterion for food stamps is determined by the OMB-defined poverty level, which is adjusted by year-to-year changes in the CPI; and
- o The applicant's income is adjusted--for purposes of determining eligibility and benefits--by a standard deduction that is indexed to changes in the CPI for all items excluding food, and by itemized deductions the limit on which is tied to a specialized index.

Use is made of two types of indexes: first, specialized indexes such as the Thrifty Food Plan and subindexes for adjusting the value of expenditures on particular types of consumption; and second, a general consumption index--in this case the CPI--that is used to adjust the poverty level. The issues presented by these two types of indexes differ considerably, as do the alternatives available for each type. 1/

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1/ In addition to the formal or explicitly indexed parameters, the Food Stamp Program contains some features of implicit indexation. The earnings disregard of 20 percent is one example. If incomes of beneficiaries rise, the value of the disregarded portion rises in absolute level at the same rate. A second implicitly indexed parameter is the medical deduction available to all households with members age 60 or over, or receiving SSI benefits. In fiscal year 1982, out-of-pocket medical expenses exceeding \$25 per month may be deducted from a household's income, both for eligibility and for benefit determination. Since medical expenses will increase over time because of price increases, the amount deducted will rise. But because the

## SPECIALIZED INDEXES

### Thrifty Food Plan

The index of primary interest in the Food Stamp Program is the Thrifty Food Plan, because of its use for adjusting the level of benefits. The Thrifty Food Plan is based on a nutritional study made by the National Academy of Sciences in 1975, which set out the requirements of a low-cost but nutritionally adequate diet. This model diet was then compared to a 1965-1966 survey by the U.S. Department of Agriculture of the food consumption patterns of a sample of the low-income population. From this comparison, adjustments were made to the model food basket to minimize the differences from actual consumption behavior, within certain cost limitations. The cost of the Thrifty Food Plan was then evaluated at 1975 market prices. Subsequent changes in the cost of this plan have been calculated by taking price changes for the individual items from detailed CPI data and combining them using the base-period expenditure weights from the Thrifty Food Plan.

This is a well-designed indexing procedure that has much to recommend it. It tracks the prices of the types of goods on which the benefits will be spent, and it weights the individual items in a manner reflecting the actual behavior of the target group of recipients. Its shortcomings are those of any Laspeyres or base-weighted index: since it uses a fixed market basket, it does not allow for substitution in response to relative price changes. The substitution problem may well be proportionally more important within a food index than in an overall consumption measure because of the relatively frequent and large swings in prices of beef, poultry, pork, and other protein sources as well as of fruits and vegetables. Among food shoppers substitution is widely practiced at nearly all income levels. In the case of food, however, these relative price changes are often transient and short-run, sometimes reverting to previous relative price patterns in less than a year. When large relative price changes occur within food groups, the Thrifty Food Plan is likely to exaggerate

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1/ (Continued)

\$25 threshold level is not indexed, over time beneficiaries will be able to deduct a larger proportion of medical costs. This leads to an increase in benefit levels and a relaxing of eligibility standards for those who qualify.

changes in the overall price level. In order to minimize this bias, the expenditure weights would have to be revised annually or more often--an expensive undertaking. An alternative would be to update the market basket at five- or ten-year intervals, as is currently planned, to account for new products, quality changes, and longer-term trends that modify consumption patterns.

### Standard Deduction

The size of the standard deduction used to adjust gross income in order to determine eligibility and benefits is indexed to a subindex of the CPI covering all items, less food. The use of the CPI-less-food index for this purpose evolved from changes made in 1977. Before the Food Stamp Act of 1977, low-income households were allowed to deduct a number of specific expenditures from their gross incomes for determining both eligibility and benefits. The 1977 legislation replaced these itemized deductions for expenditures with a standard deduction in order to simplify program administration. It was indexed in order to maintain the real value of the deduction as prices rose. The CPI-less-food was chosen for this purpose because the indexation of food prices was already explicitly reflected in the Thrifty Food Plan. Although the CPI-less-food is a specialized index, it is sufficiently broad that the issues attending its use are essentially the same as those that arise in the use of a general consumption index, discussed below.

### Itemized Deductions

Income can also be adjusted to offset expenses for dependent care, or excessive or inordinate expenses for shelter and utility payments. These itemized deductions are limited, and the limit is indexed. <sup>2/</sup> The index used is the shelter, fuel, and other utilities component of the CPI-U.

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<sup>2/</sup> It should be noted that although at present the cap on dependent care and excess shelter costs is indexed, the Food Stamp Act Amendments of 1980 remove dependent care from the indexed category beginning in 1982, by setting a nonindexed \$90 per month deduction for dependent care, with no ceiling on the shelter expense deduction for households with elderly persons.

Several issues arise in the use of the specialized index of shelter, fuel, and other utilities. The first is whether this is an appropriate measure for indexing dependent care. <sup>3/</sup> Dependent care expenses most likely consist of payments for baby-sitting, day care, or perhaps home nursing. Variations in the level of these costs would seem to be more closely related to the behavior of wage rates, or perhaps of the minimum wage, than to shelter costs.

Another issue is that the shelter subindex of the CPI contains the much-discussed homeownership measure as a component; this accounts for five-sixths of the relative importance of the shelter category. The current treatment of homeownership may have caused the CPI as a whole to overestimate the rise in the cost of living by several percentage points in the past few years, and the distortion in the shelter component alone would be more than three times as great. From a conceptual standpoint, it is questionable whether this is an appropriate measure. Can the target group of food stamp beneficiaries be assumed to be purchasing houses in the period in question? A USDA survey in 1978 of characteristics of food stamp recipients showed 76 percent as renters and another 8 percent as owning their homes outright. Eleven percent were making mortgage payments, but it is not known how many had purchased homes in the previous year. Thus, home purchase and financing costs refer to a very small fraction of food stamp beneficiaries.

#### GENERAL CONSUMPTION INDEXES

##### Poverty Level Eligibility Criterion

The Food Stamp Program is aimed at the low-income population and seeks to provide a more nutritious diet to those who might otherwise face some degree of malnutrition. Eligibility is based on the Office of Management and Budget's definition of the poverty level, which in turn is essentially based on the Census or Orshansky Poverty Level. Persons whose net incomes fall below the poverty level are eligible; those whose net incomes are higher are deemed not in need of food stamp benefits.

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<sup>3/</sup> The effect of an index change on benefit levels would be relatively small because only about 1 percent of caseload reports show dependent care costs at the cap amount.



Changes in the level of prices will obviously affect the meaning of the poverty level when it is defined in nominal dollars. Rising prices will lower the poverty level in real terms. It is therefore appropriate to adjust the level to rising prices. Otherwise inflation would cause a larger and larger segment of the low-income population to become ineligible.

If the indexes used are inappropriate, they will result in an eligibility criterion higher or lower than that which is desired. This will have two consequences. It will raise or lower the number of participants, and it will change the absolute level of living standards at the defined poverty level. To the extent that the CPI has exaggerated the true rise in the cost of living in recent years, it has raised the costs of the Food Stamp Program from what they otherwise would have been. The magnitude of this additional cost is not easy to measure, since it depends not only on the amount of exaggeration in the CPI but, because the index provision determines eligibility, upon the frequency distribution of incomes in the neighborhood of the defined poverty level. CBO estimates that, through its effect on the income criterion alone, a change in the CPI leading to a 1 percent upward revision in the net income criterion would increase the number of participants by 100,000 and raise the level of expenditures by \$8.4 million in 1981. <sup>4/</sup>

#### POLICY CHOICES FOR INDEXATION

The appropriate index can be chosen only after the purposes of indexation are made explicit. If the purpose of indexation is to set an absolute standard of consumption, then an index that accurately measures the change in a relevant set of prices is the appropriate measure.

Alternatively, fairness or equity considerations may be introduced. If the economy is burdened with an increase in energy costs, for example, fairness may dictate sharing that burden as widely as possible. Similarly, as productivity increases over

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<sup>4/</sup> This represents about 0.4 percent of participants and 0.1 percent of expenditures.

time, it may be desirable to share the gains--there being, in effect, a larger pie to divide up. This would mean adjusting benefits to a relative rather than an absolute standard of consumption.

#### Alternatives for Specialized Indexes

Thrifty Food Plan. Given the choice of the current Thrifty Food Plan, the present indexing method seems appropriate. It could be improved by more frequent updating, but ultimately the costs would outweigh the benefits. If in the future a CPI for the low-income population is created, then the food portion of that measure may be a suitable alternative if it is updated more frequently than the Thrifty Food Plan, and particularly if it takes into account the differences in retail outlets patronized by the low-income population. It seems likely that such a low-income CPI for food would be more suitable as an index than the current CPI-U for food. Aside from that, there is little on which one could base a prediction of future behavior of these indexes.

Standard Deduction. The CPI-less-food index used for the standard deduction has the same liabilities as the all-items CPI. These include the homeownership problem and the fixed weights, both of which have caused this measure to overestimate changes in the cost of living. The available alternatives are essentially the same as those for a general consumption measure, which are discussed in Chapter VII.

Itemized Deductions. If the Congress should desire to resume indexing the limit on the dependent care deduction, the alternatives would depend on the character of expenditures permitted under this provision. If the allowed expenditures were primarily for babysitting or child care, then the CPI measure for this item--which is based on movements of the minimum wage--could conceivably be made available as a separate series. Otherwise, a wage measure for service workers might be the most suitable alternative.

In the case of excess shelter costs, the CPI rent index would appear to be more appropriate than the CPI shelter index. It is difficult to justify the inclusion of current house prices and current mortgage rates, since changes in these prices do not affect renters or the owners of previously purchased homes.

## Alternatives for Indexing the Poverty Level

The choices for indexing the poverty level are broadly of three types:

- o a general measure of consumer prices that will correct some of the problems of the current CPI;
- o the construction of a demographically based price index that takes into account the different purchasing patterns and points of purchase of low-income households; or
- o new approaches to the indexing problem that modify its practice so that indexing provisions are not isolated from changes in real economic circumstances.

The choices within and among these categories will be affected by--as stated before--the goals of indexing eligibility requirements for the Food Stamp Program. These goals may be absolute ones that define a given cutoff level of income in terms of the ability to purchase a certain basket of goods, or relative ones that modify the cutoff level of income in line with changing economic circumstances as well as changing prices.

Currently the poverty level is indexed to a general consumption measure--the CPI. Because both the poverty level definition and a general consumption price measure are used separately or in combination in the majority of all indexed federal programs, the issues that arise are of broader relevance than just for the Food Stamp Program. Consequently, the indexation choices for a general consumption index are discussed in greater detail in a separate chapter (Chapter VII). There the major alternatives are compared and the trade-offs of advantages and disadvantages are evaluated.



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## CHAPTER VII. ALTERNATIVES TO THE CPI FOR A GENERAL CONSUMPTION INDEX

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This concluding chapter deals with the issue of choosing a general indexation measure. The major alternative measures are listed and their relative advantages discussed. In addition new approaches to the indexing problem are suggested, and budgetary consequences surveyed.

### The Present CPI

The present CPI has some advantages as a measure for indexation. These consist primarily in the fact that it is well publicized and widely recognized, and is built up from generally well-designed samples of price information. Indeed, other price measures such as the PCE indexes are based largely on detailed CPI data. It is only in recent years that the CPI's shortcomings have become a major issue because of their increased impact on the cost of federal transfer programs. While the distorting effect of the CPI as a measure of price change--discussed in Chapter V--may not continue at the same magnitude (or in the same direction) as in the recent past, it nevertheless has certain liabilities as a measure of appropriate spending levels for federal transfer programs.

### Alternatives for a General Consumption Price Index

CPI X-1. This experimental measure differs from the present CPI in employing a rental equivalence proxy for homeownership costs. Although improvements should be made to the sample used to collect rental data, even in its current form it dramatically reduces the volatility and distortion stemming from the present measure of homeownership. In other respects, the CPI X-1 retains the benefits and shortcomings of the present CPI.

PCE Chain Index. The PCE chain index differs from the present CPI in using a rental equivalency proxy for shelter costs--as

does the CPI X-1--and in its constantly updated market basket. A chain index appears more desirable than the alternatives of a fixed-weight PCE index or the PCE deflator--largely because of the tendency of the former to overestimate and of the latter to underestimate the actual rise in the cost of living.

The most common objection to the use of a PCE index is that the published numbers are subject to numerous revisions in subsequent years. This need not be an insurmountable barrier, however, since revisions occurring more than three months after the end of the period are normally small. Moreover, by calculating benefit adjustments from the index level instead of from changes in the index, these errors will not cumulate, since each year's adjustment of the index level takes into account any revision in a previous year's data.

GNP Measures. An alternative that would prevent rising import prices from serving as a basis for indexation would be to use GNP measures. Here the possibilities include the gross national product index which covers the entire domestic economy, the gross domestic business product index which covers just the private sector of the economy, and the private nonfarm index which excludes the agricultural sector. Each of these is available as a chain or fixed-weight measure in addition to its usual implicit deflator form.

Wage Measures. If equity considerations make relative standards a more important goal, the most useful recourse for indexing would be to a wage measure. <sup>1/</sup> The choice of a wage measure, however, depends, as in the case of price indexation, on the specific goal of indexation.

In order to measure changes in labor earnings, the index, as well as adjusting for hours worked, should take into account fringe benefits and also income taxes withheld. It should be broadly

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<sup>1/</sup> Social Security benefits are adjusted on the basis of a general wage index in Argentina, Austria, Bolivia, France, West Germany, The Netherlands, and Peru. See Comparative Studies Staff, "Adjustment of Old-Age Benefits in Foreign Programs" Social Security Bulletin (forthcoming).

representative of all wages. Unfortunately, no one index has all of these characteristics. 2/

The three measures that come closest have the following characteristics:

- o The Employment Cost Index includes fringe benefits as well as wages, covers the private nonfarm sector, and adjusts for overtime hours in manufacturing and for shifts in relative unemployment in low-wage and high-wage industries. Some would consider the inclusion of fringe benefits a disadvantage.
- o The Average Hourly Earnings Index is similar to the Employment Cost Index except for its exclusion of fringe benefits.
- o The Spendable Earnings series is based on weekly earnings from which subtractions are made for estimated payroll taxes and income taxes paid by the average worker. Thus it is an after-tax measure, but no adjustment is made for shifts in the composition of employment and for overtime hours.

Thus, a choice between the Average Hourly Earnings Index and the Employment Cost Index revolves primarily on the question of whether to include fringe benefits. To choose the Spendable Earnings series would be to sacrifice the adjustment for composition shifts and overtime in favor of obtaining a measure of changes in after-tax or spendable earnings. The latter would allow federal benefits to be adjusted in line with variations in take-home pay. If payroll tax increases or income tax bracket creep caused a

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2/ Some would argue that certain elements--such as fringe benefits--should not be included. This argument is based on the fact that the bulk of fringe benefits counted in measures of employee compensation are employer payments of payroll taxes for social insurance. A rise in these taxes would, through indexation to employee compensation, feed right into higher federal benefits and create a need for further increases in payroll taxes. This kind of feedback mechanism would be avoided by using an hourly earnings measure.

reduction in real spendable earnings, this would be reflected in the level of benefits.

#### New Indexes

Another alternative would be to create demographic-specific price indexes that would reflect the consumption pattern of the target population of a program such as Food Stamps. This would involve certain costs. Although budgetary patterns classified by demographic characteristics are available from the 1972-1973 Consumer Expenditure Survey, appropriate information on points of purchase and item selection does not currently exist. Thus the construction of suitable CPIs for the poor or the elderly would require additional survey data. The desirability of such a survey would depend on the cost of undertaking it, together with the extent to which a new index would differ from the current collection of price measures. Questions would also arise as to which demographic groups should have their own indexes and whether, once created, such indexes should determine benefits, even when other indexes were higher. But such an idea is, in any case, an option for the future, not one that is available now.

#### New Approaches to the Indexing Problem

Several alternatives have been set forth in the public discussion of indexing that go beyond mere substitution of another index for the CPI. These approaches attempt to deal with the problem of financing benefit increases that result from external shocks such as oil price increases as well as with the issue of fairness that arises when benefits increase faster than wages. The first approach would put a cap on increases. The cap could be applied in two ways. Increases could be limited to a certain proportion of CPI changes, say 85 percent. It would reduce the costs of indexation considerably, but it has the disadvantage of being arbitrary. Alternatively, the cap could be applied in a discretionary way as is now done with the pay of federal workers. Here, an automatic increase can be superseded by a different proposal by the President, unless disapproved by the Congress. The advantage of this is flexibility. Prices change for different reasons, and it may not be good economic policy to index benefits to all price increases at all times. The other side of this coin is uncertainty on the part of beneficiaries about the future purchasing power of their benefits.



Another approach would be the switching proposal discussed in Chapters II and III. Escalation of federal benefits according to the rate of increase in wages or prices--whichever is lower--would aim at making indexing practices more equitable. Beneficiaries would not receive greater inflation protection than wage earners. It would also address the issue of financing rising benefit levels at a time when declining real wages retard the growth in tax revenues. Choices would have to be made among the wage and price measures discussed above. One drawback to the switching proposal is that--to the extent that switching actually occurs--it will cause a progressive reduction in real benefits, since the benefit increases will never exceed price increases and will sometimes be lower. This could be circumvented by a catch-up mechanism that would restore real benefits after real wages had regained their previous level.

#### Budgetary Implications of Modifying Indexing Procedures

Indexing with the current CPI has led to a significant overadjustment of benefit levels. For example, the divergence between the growth in the CPI and the PCE chain index from 1974 to the present amounts to a difference of 13.3 percentage points. Had the PCE index been in use during that time, federal expenditures in 1981 would be lower by some \$11 billion.

Changing to another index at this time would not, however, guarantee budget savings in the long run. It would have done so in the short run only if implemented in time for the July 1981 adjustment of Social Security benefits. Much of the distortion in the CPI results from the excessive weight given to interest rates. The distortion will operate in reverse if there is a significant decline in interest rates. This suggests that it might be better not to make a change now, when the CPI may be near the peak of its distortion, but to wait for some of this distortion to be reversed. The trouble with this approach is that the timing and extent of such a change with the CPI is highly uncertain.

The switching proposal discussed earlier would not lead to savings unless wages continue to advance less rapidly than prices. A problem arises, however, when nominal wages are deflated with a CPI that exaggerates the change in living costs. This results in overdeflation, making real wage declines look bigger than they actually have been. By contrast, deflation of nominal wages by the PCE chain index shows the fall in real wages both in 1974-1975

and in 1979-1980 as less than half of that computed using the official CPI. The switching proposal would, however, serve as a sort of budgetary safety valve if the economy continued to suffer severe setbacks that prevented real growth.

Two other approaches would offer budget savings. The first would be the capping of increases, either by an arbitrary formula or through the discretionary approach that is now used with federal pay. The second would consist of steps to reduce the windfall benefits that are granted each year because of the cumulation of past measurement errors in the CPI. As mentioned above, this windfall will amount to \$11 billion in 1981. Removal of all or part of this windfall would move beneficiaries to or toward the level of benefits they would be receiving if a change to a better index--such as the CPI X-1 or the PCE chain index--had been made back in 1975. Execution of this second approach would be quite simple, requiring only a one-time adjustment in benefit increases to bring them in line with what would have been provided by a more accurate measure. This could reduce the scheduled 1981 increase in benefits from around 11.2 percent to about 3 percent, saving about \$16 billion in 1981 and 1982. Thereafter, straight indexation could be resumed, possibly with an improved index. Savings would continue to be generated in the long run, however, because subsequent upward adjustments would be made from a lower level of benefits. Many modifications of this approach are, of course, possible.

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**APPENDIXES**

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Tables A-1 and A-2 present summary information on federal programs containing explicit forms of indexation. Table A-1 presents essential information on each of the indexed entitlement programs: the type of provision being indexed, the index used, the timing of the adjustment, the enacting legislation, estimated outlays in fiscal year 1981, and an estimate of the current costs of a 1 percent change in the relevant index. Table A-2 presents the same information for nonentitlement programs containing explicit indexation provisions except that it does not include an estimate of the costs of a 1 percent change in the relevant index.

The definition of an indexed program and its classification as indexed or quasi-indexed is not straightforward in all cases. For example, Aid to Families with Dependent Children (AFDC) is a federal entitlement program that matches the funds spent by individual states. Although states have the option of indexing the benefit levels of this program, few have done so. Moreover, even for those states that have adopted indexing, state funding still is subject to an appropriation process. Consequently, AFDC obligations at the federal level (matching state funding) are thought to be virtually unaffected by formal indexation, and AFDC is not included in the list of indexed programs. On the other hand, the Federal Reserve Board Employees Retirement System is included because, although receiving nothing from the federal government directly, it is funded out of surpluses generated by Board activities that would otherwise be turned over to the federal government as revenues. Still another federal expenditure--outlays for unemployment insurance claims--increases with higher unemployment rates and also with rising wage levels, but this program is not included in the listing since the indexing is implicit rather than explicit.

A total of 26 programs is included in Table A-1, and 64 in Table A-2. In some cases, where programs fall under the same enacting law or are administered by the same agency and are indexed in a similar manner, they are grouped together for descriptive purposes.

The information contained in these tables was gathered from data compiled by the Office of Management and Budget, the Congressional Research Service, and individual government agencies.

TABLE A-1. INDEXED FEDERAL ENTITLEMENT PROGRAMS, OUTLAYS, AND COSTS OF INDEXATION, FISCAL YEAR 1981

| Name of Program  | Indexed Provision  |                             | Legal Citation   | Outlays           | Costs of Indexation <u>a/</u> |
|--|--|-----------------------------|--|-------------------|-------------------------------|
|  | Measure of Indexation  | Timing of Adjustment        |  |                   |                               |
| Federal Old Age Survivors and Disability Insurance (OASDI) (Entitlement) | Initial benefit level: Computation of total covered earnings, a portion of which will be the amount paid back to the retiree in the form of monthly Social Security benefits, employs BLS wage index (annual avg. changes) & CPIW (1st. qtr. to 1st qtr.). Benefit COL Adjustment: Benefits are indexed to 1st qtr. to 1st qtr. changes in CPIW, provided the change is greater than 3%. <u>b/</u> | Annually, effective July 1. | Social Security Act as amended: Sec. 215 (a), (b), (i), Sec. 230 | \$140.117 billion | \$1.401 billion               |
| Supplemental Security Income Benefits (Entitlement)                      | Payment Standard (benefit paid to household with no income) indexed to COL increases in Social Security Benefits (CPIW, 1st qtr. to 1st qtr.)  | Annually, effective July 1. | Social Security Act. Sec. 1617                                   | \$7.438 billion   | \$50.0 million <u>c/</u>      |

(Continued)

TABLE A-1 (Continued)

| Name of Program                                       | Indexed Provision   |   | Legal Citation  | Outlays          | Costs of Indexation <u>a/</u> |
|---|---|---|---|------------------|-------------------------------|
|   | Measure of Indexation   | Timing of Adjustment                      |   |                  |                               |
| Civil Service Retirement System (Entitlement)         | Benefits indexed to CPIW. June to December, December to June changes.   | Semiannually, effective March 1, Sept. 1. | Title V, Sec. 8340 P.L. 94-440  | \$17.326 billion | \$173.3 million               |
| Railroad Retirement Benefits (Entitlement)            | Three-tier benefit formula. First tier: Initial benefit level computed as in Social Security, using a BLS wage index (annual average changes) and CPIW (1st qtr. to 1st qtr.). Benefit COL Adjustment tied to Social Security cost-of-living adjustments (CPIW, 1st qtr. to 1st qtr.). Second tier: Benefits indexed to 32.5% of 1st qtr. to 1st qtr. change in CPIW. Third tier: un-indexed. | Annually, effective July 1.               | Railroad Act of 1974, Sec. 3(a)(1), 4(a)(1), 4(f)(4), 3(b)(2), 3(d), 3(j) | \$5.296 billion  | \$40.0 million <u>d/</u>      |
| Federal Reserve Board Employees' Retirement <u>f/</u> | Benefits indexed to CPIW. December to June, June to December changes.   | Semiannually, effective March 1, Sept. 1. | <u>e/</u>   | \$4.4 million    | \$0.044 million               |

(Continued)

TABLE A-1 (Continued)

| Name of Program                                    | Indexed Provision   |  | Legal Citation                  | Outlays          | Costs of Indexation <u>a/</u> |
|--|---|--|---------------------------------|------------------|-------------------------------|
|  | Measure of Indexation   | Timing of Adjustment   |                                 |                  |                               |
| Federal Judiciary Survivors Benefits (Entitlement) | Survivors Benefits receive a 3% increase for each 5% increase in pay granted to active judges, with a 5% threshold. | Not applicable   | Title 28, USC, Sec. 371-376     | \$1.7 million    | \$0.017 million               |
| United States Presidents Pension (Entitlement)     | Benefits indexed to increases in pay granted to heads of executive departments (executive level 1).                 | Not applicable   | Title 3, USC, Chap. 2, Sec. 102 | \$0.209 million  | \$0.002 million               |
| Veterans Pensions (Entitlement)                    | Benefits indexed to COL increases in Social Security Benefits (CPIW, 1st qtr. to 1st qtr.).                         | Annually, effective July 1.  | USC 38, Sec. 3112               | \$3.844 billion  | \$38.04 million               |
| Military Retirement Pay (Entitlement)              | Benefits indexed to CPIW. June to December, December to June changes.   | Semi-annually, effective March 1, Sept. 1 (legislation proposed for annual adjustments). | P.L. 94-440                     | \$13.781 billion | \$137.8 million               |

(Continued)



TABLE A-1 (Continued)

| Name of Program  | Indexed Provision   |  | Legal Citation  | Outlays       | Costs of Indexation <u>a/</u> |
|--|---|--|---|---------------|-------------------------------|
|  | Measure of Indexation   | Timing of Adjustment                       |   |               |                               |
| U.S. Coast Guard Retirement Pay (Entitlement)                | Benefits indexed to CPIW. June to December, December to June changes. | Semi-annually, effective March 1, Sept. 1. | 10 USC 1401(a)  | \$232 million | \$2.32 million                |
| Foreign Service Retirement and Disability Fund (Entitlement) | Benefits indexed to CPIW. June to December, December to June changes. | Semi-annually, effective March 1, Sept. 1. | Foreign Service Act of 1946 as amended. 22 USC 1061-1121          | \$174 million | \$1.74 million                |
| CIA Retirement and Disability System (Entitlement)           | Benefits indexed to CPIW. June to December, December to June changes. | Semi-annually, effective March 1, Sept. 1. | 78 Stat. 1043, P.L. 88-643, Oct. 13, 1964. 50 USC 403 as amended. | Classified    |                               |

(Continued)

TABLE A-1 (Continued)

| Name of Program   | Indexed Provision  |  | Legal Citation                                      | Outlays       | Costs of Indexation <u>a/</u> |
|---|--|--|---|---------------|-------------------------------|
|   | Measure of Indexation  | Timing of Adjustment   |   |               |                               |
| Department of Defense: Survivor Benefit Plan (SBP), Retired Serviceman's Family Protection Plan (RSFPP), Guaranteed Minimum, Inc. (GMI) (Entitlement) | Benefits for SBP, RSFPP indexed to increases in Military Retirement Pay (CPIW, June to December, December to June changes). Benefits for GMI indexed to increases in Veterans Pensions (CPIW, 1st qtr. to 1st qtr.). | SBP, RSFPP: semi-annually, effective March 1, Sept. 1. Proposed legislation: annual adjustments. GMI: annually, effective, July 1. | P.L. 95-397, P.L. 92-425, 86 Stat. 706, P.L. 94-496 | \$322 million | \$3.22 million                |
| Federal Employee Compensation Act (FECA) (Entitlement)  | Benefits indexed to December to December changes in the CPIW.  | Annual, effective March 1.   | USC 8146(a)   | \$376 million | \$3.76 million                |

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(Continued)

TABLE A-1 (Continued)

| Name of Program   | Indexed Provision  |   | Legal Citation  | Outlays         | Costs of Indexation <u>a/</u> |
|---|--|---|---|-----------------|-------------------------------|
|   | Measure of Indexation  | Timing of Adjustment  |   |                 |                               |
| H.H.S. Special Benefits for Disabled Coal Miners (Part B) (Entitlement) | Initial Benefit Level: level set at Federal Employee Compensation Act benefit levels which are indexed to December to December changes in the CPIW. Benefit COL Adjustment: benefits indexed to federal salary scales, as determined by the Federal Pay Comparability Program. | Initial pay levels set at indexed (FECA) level when payments begin. COL adjustments effective annually, beginning each fiscal year. | Federal Coal Mine Health and Safety Act of 1969, amended 1972 | \$1.057 billion | \$10.6 million                |
| D.O.L. Special Benefits for Disabled Miners (Part C) (Entitlement)      | Initial Benefit Level: Level set to Federal Employee Compensation Act benefit levels, which are indexed to December to December changes in the CPIW. Benefit COL Adjustment: benefits indexed to federal salary scales,  | Initial pay levels set at indexed (FECA) level when payments begin. COL adjustments effective annually, beginning                   | P.L. 91-173 as amended 1972                                   | \$922 million   | \$9.2 million                 |

(Continued)



TABLE A-1 (Continued)

| Name of Program   | Indexed Provision   |   | Legal Citation                | Outlays       | Costs of Indexation <u>a/</u> |
|---|---|---|-------------------------------|---------------|-------------------------------|
|   | Measure of Indexation   | Timing of Adjustment  |                               |               |                               |
| Food Program (Cash Subsidies) Child Care Food Program (Commodity Subsidies) (Entitlement) | USDA price index for Food Used in Schools and Institutions (based on BLS data).   | adjusted annually each July 1, and each Jan. 1, respectively. Others adjusted semi-annually, in July and January. |                               |               |                               |
| Guaranteed Student Loan Program (Special Allowances) (Entitlement)                        | Special allowance assured to lenders indexed to average bond equivalent rates of 91-day Treasury bills auctioned for each period. | Quarterly, effective April 1, July 1, October 1, January 1.   | Sec. 438 Higher Education Act | \$401 million | \$4.0 million                 |

a/ "Costs" of indexation are defined as the change in annual federal outlays resulting from an additional one percentage point increase over the year in the appropriate index, provided that other economic and demographic conditions are at the levels assumed for fiscal year 1981, and that all indexation threshold criteria are met.

(Continued)

TABLE A-1 (Continued)

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- b/ The wage index is calculated as the average taxable wage of all employees covered by Social Security, and is derived from BLS survey data. Changes in the index are used to inflate an individual's past covered monthly earnings up to the year in which that individual reaches age 62. If the individual remains employed past the age of 62, the average of the indexed monthly earnings, as well as of any covered monthly earnings earned after age 62, is inflated up to the time at which Social Security payments begin, using the CPIW. This results in the Average Indexed Monthly Earnings (a present-valued average of the individual's covered lifetime earnings), a percentage of which becomes the beneficiary's monthly Social Security benefit payment. Cost-of-living adjustments are made by inflating the Average Indexed Monthly Earnings by changes in the CPIW, to maintain its constant dollar value.
- c/ Although the payment standard (benefit paid to a household with no countable income) is indexed to the CPIW through the Social Security Program, the actual SSI payments to any household receiving both SSI benefits and monthly Social Security benefits in excess of \$20 will fall in real terms as a result of inflation. The erosion of real SSI benefits under these circumstances comes about as the result of a failure to index the \$20 disregard of monthly Social Security income in computing countable monthly income. Monthly SSI benefits are exactly the amount that is necessary to bring a household's countable monthly income up to specified (indexed) national standards. The computation of countable monthly income involves the summation of all countable monthly income other than Social Security payments, plus monthly Social Security payments in excess of \$20. Since the \$20 disregard is unindexed, countable monthly income increases as nominal Social Security benefits increase, even though real Social Security benefits remain the same. This causes actual SSI benefits to fall in real terms, even though the SSI payment standard remains constant in real terms. For this reason, the estimated "costs" of indexation for SSI reflect a less than one-to-one increase in benefits.
- d/ The first tier provides mandatory coverage for railroad employees, and benefits are computed under the Social Security benefit and cost-of-living adjustment formulas. The
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(Continued)

TABLE A-1 (Continued)

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second tier provides additional optional coverage, and benefits in this tier are indexed to 32.5 percent of the change in the CPIW. Under current law, tier 2 indexation will cease in 1981, but legal changes have been proposed to allow this indexation to continue. The third tier is unindexed. Therefore, a given change in the index produces a less than one-for-one change in program outlays.

e/ The Federal Reserve Board generates net revenues from its operations (gross revenues minus operating costs) for the federal government. Consequently, indexation of the Federal Reserve Board Employees Retirement System--one of its operating costs--while it does not affect federal outlays, does affect the budget through federal receipts.

f/ The Federal Reserve Board indexing policy is an administrative practice, and consequently there is no law providing for the indexation of benefits.

g/ Although the Child Nutrition Programs receive most of their funding through appropriation, a portion (\$365 million in 1981) is funded directly through U.S. Customs receipts. The outlay figure here represents the total funding.

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TABLE A-2. OTHER FEDERAL PROGRAMS CONTAINING INDEXATION PROVISIONS, AND OUTLAYS IN FISCAL YEAR 1981

| Name of Program                              | Indexed Provision  |  | Legal Citation                            | Outlays          |
|--|--|--|---|------------------|
|  | Measure of Indexation  | Timing of Adjustment   |   |                  |
| Food Stamp Program (Appropriation)           | Eligibility criterion indexed to annual average changes in the CPIU through the use of OMB poverty guidelines, and Sept. to Sept. changes in various CPIUs through indexation of income deductions. Standard allotment indexed to monthly changes in the Thrifty Food Plan through Sept. for FY81, projecting changes through Dec. for FY82. Actual benefits (standard allotment minus 30% of net income) further indexed to various CPIU subindexes through computation of net income using indexed deductions. | Eligibility criterion adjusted annually, effective July 1. Income deductions adjusted, annually, effective January 1. Annually, effective January 1. | P.L. 95-113<br>Title XIII,<br>P.L. 96-249 | \$10.954 billion |
| Food Donations Program: Elderly Feeding Pro- | Per meal federal reimbursement floor indexed to CPIW for food away   | Annually, effective October 1.   | P.L. 93-351<br>Sec. 5,42<br>USC 3045f     | \$85 million     |

(Continued)



TABLE A-2 (Continued)

| Name of Program  | Indexed Provision   |   | Legal Citation                  | Outlays       |
|--|---|---|---------------------------------|---------------|
|  | Measure of Indexation   | Timing of Adjustment  |                                 |               |
| gram (commodity cash subsidies) (Entitlement) <u>a/</u>                            | from home, Aug. to Aug. changes.  |   |                                 |               |
| Special Milk Program: Free Milk Program (Entitlement)                              | Eligibility indexed to OMB poverty guidelines which are adjusted by annual average changes in CPIU, updated through March CPIU for use in this program. Minimum subsidy to schools for each portion of milk served indexed to PPI for Fresh Processed Milk, July to July changes. <u>b/</u> | Annually, effective July 1<br><br>Annually, effective September | P.L. 95-627                     | \$163 million |
| Special Supplemental Program for Women, Infants and Children (WIC) (Appropriation) | Eligibility indexed to CPIU, through OMB poverty guidelines. OMB guidelines indexed to year to year average change in CPIU. Updated to March CPIU for this program.   | Annually, effective July 1                                      | P.L. 95-627 Sec. 3, 42 USC 1786 | \$862 million |

(Continued)

TABLE A-2 (Continued)

| Name of Program   | Indexed Provision   |  | Legal Citation   | Outlays          |
|---|---|--|--|------------------|
|   | Measure of Indexation   | Timing of Adjustment   |  |                  |
| Hospital Insurance Program (Medicare, Part A) (Entitlement)             | Federal routine hospital cost reimbursement limited to not more than 112% of annual average costs of the HCFA market basket of hospital goods and services. <u>c/</u>   | Annually, effective July 1                                     | Social Security Act, Sec. 1813 (a)(3) Sec. 1813 (b)(2) | \$27.625 billion |
| Supplemental Medical Insurance Program (Medicare, Part B) (Entitlement) | Maximum federal reimbursement for physicians' fees is indexed to annual average changes in the H.H.S. Medicare Economic Index which employs BLS average weekly hours and local hospital cost data. <u>d/</u>                      | Annually, effective July 1.                                    | Social Security Act, Sec. 1839 (c)(3)                  | \$12.650 billion |
| Federal Medicaid Program (Entitlement)                                  | Persons receiving SSI benefits are eligible for Medicaid. Eligibility of a small number of SSI beneficiaries indexed to increases in SS benefits. <u>e/</u><br>Employs both indexing practices described in Medicare parts A & B. | Annually, effective July 1.<br><br>Annually, effective July 1. | Social Security Act, Sec. 1617                         | \$16.026 billion |

(Continued)

TABLE A-2 (Continued)

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| Name of Program   | Indexed Provision  |  | Legal Citation                                       | Outlays         |
|---|--|--|--|-----------------|
|   | Measure of Indexation  | Timing of Adjustment   |  |                 |
| Grants to States for Social Services (Entitlement)  | Ceiling for allotments to states indexed to CPIW, lower of: (1) 2nd qtr. to 2nd qtr. change or (2) annual FY inflation rate. Ceiling cap of \$3.3 bil. by FY 1985. Ceiling increased by multiples of \$100,000,000 and rounded down to nearest multiple. | Annually, effective at beginning of each fiscal year   | Social Security Act, Sec. 2002(e) (2)(A), as amended | \$3.283 billion |
| Community Services Administration Community Action Operations: Local Initiative Senior Opportunities, State Economic Oppor- | Eligibility indexed to annual average changes in the CPIU through the CSA poverty guidelines. <u>f/</u>  | Not less than once per year, effective March/April, or two to three months after calculation | P.L. 92-424 Stat. 697                                | \$487.7 million |

(Continued)

TABLE A-2 (Continued)

| Name of Program   | Indexed Provision  |                                  | Legal Citation                            | Outlays        |
|---|--|----------------------------------|---|----------------|
|   | Measure of Indexation  | Timing of Adjustment             |   |                |
| tunity, Community Food and Nutrition, Energy Conservation Services, Youth Sports Programs (Appropriation) |  |                                  |   |                |
| Lower Income Housing Assistance (Section 8 Program) (Appropriation)                                       | Maximum allowable contract rents (of which government pays a portion) are adjusted by the "fair market rent," which is indexed to a combination of actual and projected month-to-month changes in the rent and utilities components of the CPIU, for national and/or selected areas. | Annually, effective in April/May | Section 8 (2 (A,B,C)) of U.S. Housing Act | \$3.07 billion |

(Continued)

TABLE A-2 (Continued)

| Name of Program  | Indexed Provision  |  | Legal Citation  | Outlays         |
|--|--|--|---|-----------------|
|  | Measure of Indexation  | Timing of Adjustment   |   |                 |
| Legal Services (Appropriation)   | Eligibility criterion based on OMB poverty guidelines, which are indexed to CPIU, annual average changes, updated to April.                  | Annually, effective June 1   | 43 USC 2996-8012                                      | \$317.0 million |
| Health Services Administration Community Health Services: Community Health Centers, Migrant Health Services, Home Health Services (Appropriations) | Fees charged and income limit for free services indexed to annual average changes in the CPIU, through the CSA Poverty Guidelines.           | Annually, effective March-April.   | Title 42 SIC 303F, 56 603E SIE 106A7                  | \$372.4 million |
| Senior Companions (Appropriation)  | Eligibility indexed to higher of 125% of CSA Poverty Guidelines (CPIU, annual average changes) or OMB Guidelines plus SSI state supplements. | Not less than once per year, effective May/June or 2 to 3 months after calculation | Sec. 421 Sub. 4 42 USC 5061(4), Sec. 211F 42 USC 5011 | \$12.8 million  |
| Foster   | Eligibility indexed to   | Not less than once   | Sec. 421  | \$48.4          |

(Continued)

TABLE A-2 (Continued)

| Name of Program   | Indexed Provision  |   | Legal Citation   | Outlays         |
|---|--|---|--|-----------------|
|   | Measure of Indexation  | Timing of Adjustment  |  |                 |
| Grandparents (Appropriation)  | higher of 125% of CSA Poverty Guidelines (CPIU, annual average changes) or OMB Guidelines plus SSI State Supplements.  | per year, effective May/June or 2 to 3 months after calculation                     | Sub. 4<br>42 USC<br>5061(4),<br>Sec. 211F<br>42 USC 5011 | million         |
| H.H.S. Low Income Energy Assistance Program (Appropriation)                           | Ceiling on eligibility income levels (states may set lower) indexed to higher of BLS Lower Living Standard, which incorporates Oct. to Oct. changes in CPIU subindexes, and 125 % of OMB Guidelines. | Annually, effective May/June.   | P.L. 96-223<br>Title 3                                   | \$1.85 billion  |
| Community Services Administration Energy Crisis Intervention Program (Appropriations) | Eligibility criterion indexed to annual average changes in CPIU, through OMB poverty guidelines.   | Not less than once per year, effective May/June or 2 to 3 months after calculation. | P.L. 92-424  | <u>g</u> /      |
| Department of Energy Weatherization Aid (Appropriation)                               | Eligibility indexed to annual average changes in the CPIU through the CSA Poverty Guidelines.  | No less than once per year, effective May/June or 2 to 3 months after cal-          | P.L. 94-385<br>P.L. 95-619                               | \$192.9 million |

(Continued)

TABLE A-2 (Continued)

| Name of Program   | Indexed Provision  |                                | Legal Citation | Outlays         |
|---|--|--------------------------------|----------------|-----------------|
|   | Measure of Indexation  | Timing of Adjustment           |                |                 |
| Basic Education Opportunity Grants (Full Grants) (Appropriations) | The amount of grant money for which a family is eligible is a function of the Family Size Offset, which is generated by the Social Security Administration (based on Census Poverty Guidelines, annual average CPIU changes) adjusted to reflect changes in CPI (U some years, W others), up to Oct. | Annually, effective January 1. | P.L. 93-318    | \$2.353 billion |
| Supplemental Education Opportunity Grants (Appropriation)         | The amount of grant money for which a family is eligible is a function of (1) the Family Size Offset, which is based on the Census Poverty Guidelines (annual average changes in CPIU) adjusted to reflect changes in the CPI (U some years, W others) up to   | Annually, effective January 1. | 45 CFR 176.13  | \$370.0 million |

(Continued)

TABLE A-2 (Continued)

| Name of Program                                      | Indexed Provision   |                               | Legal Citation | Outlays         |
|--|---|-------------------------------|----------------|-----------------|
|  | Measure of Indexation   | Timing of Adjustment          |                |                 |
|  | Oct., or (2) alternative accepted procedures. <u>h/</u>   |                               |                |                 |
| College Work Study (Appropriation)                   | The amount of grant money for which a family is eligible is a function of (1) the Family Size Offset, which is based on the Census Poverty Guidelines (annual average changes in CPIU) adjusted to reflect changes in the CPI (U some years, W others), up to Oct., or (2) alternative accepted procedures. <u>h/</u> | Annually, January 1           | 45 CFR 175.13  | \$550.0 million |
| National Direct Student Loan Program (Appropriation) | The amount of grant money for which a family is eligible is a function of (1) the Family Size Offset, which is based on the Census Poverty Guidelines (annual average changes in CPIU) adjusted to reflect changes in the CPI (U some years, W others), up to   | Annually, effective January 1 | 45 CFR 174.13  | \$201.0 million |

(Continued)



TABLE A-2 (Continued)

| Name of Program   | Indexed Provision  |                                     | Legal Citation                                 | Outlays            |
|---|--|-------------------------------------|--|--------------------|
|   | Measure of Indexation  | Timing of Adjustment                |  |                    |
|   | Oct., or (2) alternative accepted procedures. <u>h/</u>  |                                     |  |                    |
| Health Profes-<br>sion Scholarship<br>Program<br>(Appropriation)  | Monthly Stipend indexed to National Health Service Corps Scholarship Program, which is indexed to increases in federal pay scales (Federal Pay Comparability Act). Thus, indexation to BLS survey wage data is not explicit. | Annually,<br>effective<br>July 1    | 10 USC<br>212                                  | \$25.0<br>million  |
| H.H.S. National<br>Health Service<br>Corps Scholar-<br>ships, Indian<br>Health Scholar-<br>ships Stipend<br>(Appropriation) | Monthly stipend is indexed to increases in federal pay scales (Federal Pay Comparability Act). Thus, indexation to BLS survey wage data is not explicit.   | Annually,<br>effective<br>July 1    | Public Health<br>Service Act<br>Sec. 751(g)(3) | \$38.0<br>million  |
| Comprehensive Em-<br>ployment and<br>Training Pro-<br>grams (CETA):<br>Title II, Title                                      | Eligibility is indexed to higher of OMB Poverty Guidelines (annual average changes, CPIU), or 70% of the BLS lower   | Annually,<br>effective<br>April/May | CETA Act<br>Sec. 122,<br>Sub. 1,<br>Sub. 3,    | \$7.194<br>billion |

(Continued)

TABLE A-2 (Continued)

| Name of Program  | Indexed Provision  |  | Legal Citation                                      | Outlays            |
|--|--|--|---|--------------------|
|  | Measure of Indexation  | Timing of Adjustment                         |   |                    |
| IV-A, Title<br>IV-B, Title<br>IV-C, Title<br>VI, Title<br>VII<br>(Appropriation) | Living Standard (Oct. to Oct. changes, CPIU subindexes). Wage levels indexed to annual average changes in the ratio of wages in prime sponsor areas to national average wages (BLS survey data). | Annually, effective beginning of fiscal year | 1978 amendments                                     |                    |
| Vocational Re-tation Program<br>(Appropriation)                                  | Funds to states are indexed to Oct. to Oct. changes in CPIU with a limit at a changing, but not formally indexed ceiling.  | Annually, effective beginning of fiscal year | Vocational Rehab-<br>ilitation<br>Act               | \$956.0<br>million |
| Head Start<br>(Appropriation)  | Eligibility indexed to annual average changes in the CPIU through the OMB Poverty Guidelines.  | Annually, effective July 1.                  | Economic<br>Opportunity<br>Act, Sec. 525            | \$870.0<br>million |
| Follow Through<br>(Appropriation)  | Eligibility indexed to annual average changes in the CPIU through the OMB Poverty Guidelines   | Annually, effective July 1.                  | Economic<br>Opportunity<br>Act, Part B,<br>Sec. 551 | \$44.0<br>million  |

(Continued)

TABLE A-2 (Continued)

| Name of Program   | Indexed Provision   |                                | Legal Citation                             | Outlays                   |
|---|---|--------------------------------|--|---------------------------|
|   | Measure of Indexation   | Timing of Adjustment           |  |                           |
| Senior Community Service Employment and Training Program (Appropriation)  | Eligibility indexed to annual average changes in the CPIU through the OMB Poverty Guidelines  | Annually, effective July 1.    | Older Americans Act of 1974                | \$265.0 million           |
| Price Support Loans for Rice, Honey, Tobacco, Upland Cotton (Entitlement) | Price supports for rice indexed to target prices. <u>i/</u> Price supports for honey and tobacco indexed to percentage of parity. <u>j/</u> Price supports for upland cotton indexed to percentage of Northern European prices, or percentage of average U.S. cotton prices over 3 of the last 5 years. | Annually, effective October 1. | Agriculture Act of 1944, 1977, P.L. 95-279 | -\$22.0 million <u>k/</u> |
| U.S.D.A. Price Supports for Wool and Mohair (Entitlement)                 | Support prices indexed to percentage of parity. <u>j/</u>   | Annually, effective January 1  | Agriculture Act of 1977, P.L. 95-113       | \$36.2 million <u>k/</u>  |
| Dairy Price Support   | Support price of milk is indexed to a percentage  | Semiannually, effective        | 7 USC 1446C & D                            | \$925.0 million           |

(Continued)

TABLE A-2 (Continued)

| Name of Program  | Indexed Provision   |                               | Legal Citation                               | Outlays            |
|--|---|-------------------------------|--|--------------------|
|  | Measure of Indexation   | Timing of Adjustment          |  |                    |
| (Entitlement)  | of parity. <u>i/</u>  | October 1, April 1            | P.L. 96-127                                  | <u>k/</u>          |
| Target Price Programs for Wheat, Feed Grains, Cotton, and Rice (Entitlement) | Payments are made to farmers for difference between target and market price. <u>i/</u>  | Annually, effective October 1 | Food and Agricultural Act of 1977 as amended | \$0.0<br><u>k/</u> |
| U.S.D.A. Export Suspension Protection (Entitlement)                          | Loan rate, for any commodity for which suspension of export sales due to short domestic supply is in effect, is indexed to 90% of parity, as determined on the day suspension is initiated. There are no adjustment provisions once the loan rate is set. <u>j/</u> | Not applicable                | 1977 Form Act Title X, Sec. 1002A            | \$0.0<br><u>k/</u> |
| Bureau of Indian Affairs--Navajo   | Authorization indexed to qtr. to qtr. changes in  | Not applicable                | 43 USC 61500/84                              | \$495.0 million    |

(Continued)

TABLE A-2 (Continued)

| Name of Program   | Indexed Provision   |   | Legal Citation                                 | Outlays                               |
|---|---|---|--|---------------------------------------|
|   | Measure of Indexation   | Timing of Adjustment                                    |  |                                       |
| Indian Irrigation Project<br>(Appropriation)  | engineering cost indexes applicable to types of construction involved.  |   | Stat. 867                                      | (authorization)                       |
| Territorial and International Affairs Grants to the Government of the Commonwealth of the Northern Mariana Islands<br>(Appropriation) | Basic annual grant amount indexed to GNP implicit price deflator, 3rd qtr. to 3rd qtr. changes.                         | Annually, effective beginning the following fiscal year | 48 USC<br>168 V90<br>Stat. 273                 | \$24.0 million<br>(authorization)     |
| Territorial and International Affairs-Guam and Virgin Islands Construction Projects<br>(Appropriation)                                | Authorization indexed to qtr. to qtr. changes in engineering cost indexes applicable to types of construction involved. | Not applicable  | P.L. 95-348                                    | \$32.0 million<br>(obligations)       |
| Department of Interior Water and Power Resources Ser-   | Project appropriation authorization ceiling levels indexed to qtr. to qtr. changes in                                   | Not applicable  | Each authorization is indexed in separate laws | \$590.0 million<br>(Budget Authority) |

(Continued)

TABLE A-2 (Continued)

| Name of Program   | Indexed Provision  |  | Legal Citation | Outlays                      |
|---|--|--|----------------|------------------------------|
|   | Measure of Indexation  | Timing of Adjustment   |                |                              |
| vice Construction Program<br>(Appropriation)  | engineering cost indexes appropriate to projects.  |  |                |                              |
| State Department Overseas Station Allowances for Civilian Employees<br>(Appropriation)        | Allowances computed through HA (Housing Allowances), COLA (Cost-of-Living Allowances) data gathered by overseas commands and the State Dept. Index ratios between foreign and domestic prices give percentage which is applied to employee's basic pay to yield allowance. | Annually, at different times for different countries, effective 3 months after price survey completed. Adjustments for exchange rate changes made every two weeks. | 37 USC<br>405  | \$11.0 million (obligations) |
| Department of Defense Overseas Station Allowances for Uniformed Servicemen<br>(Appropriation) | Allowances computed through HA (Housing Allowances), COLA (Cost-of-Living Allowances) data gathered by overseas commands and the State Dept. Index ratios between foreign and domestic prices give percentage that   | Annually, at different times for different countries, effective 3 months after price survey completed. Adjustments for exchange rate changes made periodically.    | 37 USC<br>405  | \$486.0 million              |

(Continued)

TABLE A-2 (Continued)

| Name of Program  | Indexed Provision  |  | Legal Citation                                 | Outlays            |
|--|--|--|--|--------------------|
|  | Measure of Indexation  | Timing of Adjustment   |  |                    |
|  | is applied to employee's basic pay to yield allowance.   |  |  |                    |
| Office of Personnel and Management Living Allowance Program for Alaska, Hawaii, Puerto Rico, Virgin Islands and Guam (Appropriation) | Additional allowances are equal to employees basic pay multiplied by the ratio of living costs in the appropriate area to living costs in Washington, D.C., less basic pay. Living costs are determined in yearly surveys performed in conjunction with BLS. | Annually; cost-of living data collected in September for Alaska and Hawaii in February for Puerto Rico, and in May for Guam. Data for D.C. collected at all four periods. Adjustment becomes effective 3 months after data survey. | Sec. 59-41<br>Title<br>Susc.                   | \$120.0<br>million |
| Military Barrack & Officers Quarters Construction Authorizations (Appropriation)   | Authorizations for projects indexed to area construction cost index, with discretion.  | Not applicable   | Each authorization is indexed in separate laws | \$227.6<br>million |

(Continued)

TABLE A-2 (Continued)

| Name of Program   | Indexed Provision   |   | Legal Citation         | Outlays          |
|---|---|---|------------------------|------------------|
|   | Measure of Indexation   | Timing of Adjustment  |                        |                  |
| Federal Pay Comparability Program (General Schedule) (Appropriations) | Federal civilian GS wage levels indexed, subject to discretionary approval, to BLS wage survey data of private sector (annual average changes).             | Annually, effective beginning of fiscal year.               | 5 USC 5305-5308        | \$38.97 billion  |
| Federal Pay Comparability Program (Blue Collar) (Appropriation)       | Federal civilian blue-collar wage levels indexed subject to discretionary approval to BLS area wage survey data for like employment in the private sector . | Annually, effective at different times for different areas. | 5 USC. 53              | \$10.368 million |
| Regular Military Compensation (Appropriation)                         | Compensation levels indexed to federal civilian base salary increases which are determined under the Federal Pay Comparability Program.                     | Annually, effective beginning of fiscal year.               | 37 USC 203 P.L. 90-207 | \$33.588 billion |

(Continued)



TABLE A-2 (Continued)

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- a/ Although this is an appropriation program at the state level, federal reimbursement of the states is an entitlement. Therefore, for purposes of this paper, the program is considered an entitlement.
- b/ In schools with no other federal nutrition programs, the floor on federal reimbursement for paid milk is indexed, but this describes only a small number of cases, and has not been treated as a separate indexed program in this paper.
- c/ The value of the HCFA market basket used in the calculation of maximum routine hospital cost reimbursement rates represents forecasted levels based on historical data through the end of the most recent calendar year.
- d/ The Medicare Economic Index reflects wage data with a one-year lag.
- e/ Beneficiaries who are receiving both SSI and SS, and who lose SSI eligibility due to increasing SS benefits, cannot by law lose Medicaid eligibility--hence, for those beneficiaries, the eligibility criterion for Medicaid is indexed to Social Security benefits.
- f/ The CSA poverty guidelines are equivalent to the OMB guidelines, except that there is occasionally a shorter lag period between the collection of price data and its incorporation into the CSA poverty guidelines.
- g/ Budget authority for the Community Services Administration's Energy Crisis Intervention Program beginning in FY81 rests with the Health and Human Services Low Income Energy Assistance Program. CSA will continue to operate the program, but its funding will come through the funding of the HHS program.
- h/ The income eligibility formula described above is the Basic Grants formula. Under current law, institutions are given an option as to the formula used to determine program eligibility, provided that the chosen formula is either the Basic Grants formula or generates
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(Continued)

TABLE A-2 (Continued)

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income eligibility figures within \$50.00 of the BLS Lower Income Standard in at least 75 percent of the sample cases. Pending legislation will require a more consistent procedure, since the Basic Grants formula itself, were it at present to be subjected to the same test, would not qualify.

- i/ Target prices are adjusted annually to reflect changes in variable, machinery, and farm overhead costs for each crop. An amendment to the 1977 act allows additional adjustments to be made for wheat and corn to reflect changes in "short term costs" as determined by the USDA, those costs which producers must meet to stay in business from one year to the next. Disaster payments for these commodities are also indexed to the target price.
- j/ The present method of computing parity prices for farm commodities is defined in the Agricultural Adjustment Act of 1938, as amended by the Agricultural Acts of 1948, 1949, 1954, and 1956. The parity price for any agricultural commodity is determined by multiplying the commodity's adjusted base price by the current Index of Prices Paid by Farmers (commonly known as the parity index). A commodity's adjusted base price is determined by dividing the most recent 10-year average price received for the commodity by the most recent 10-year average of the Index of Prices Received by Farmers. The Index of Prices Received is a measure of changes in the average price level of all agricultural commodities that farmers sell.
- k/ Outlay estimates for the agricultural commodity programs are subject to a wide margin of error.
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APPENDIX B. ESTIMATED CHANGES IN INCOME FOR RECIPIENTS OF  
SELECTED BENEFIT PROGRAMS

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This appendix examines the income changes that have occurred between fiscal years 1976 and 1980 for three groups whose benefits are subject to differing degrees of indexation. The groups chosen for examination are the recipients of (1) Aid to Families With Dependent Children (AFDC); (2) Supplemental Security Income (SSI); and (3) Social Security and Railroad Retirement (SS/RR) benefits.

Indexation provisions for these groups vary considerably. For example, AFDC benefit levels are set by the states, which generally do not index them. In most states, adjustments to benefit levels are made on an irregular and ad hoc basis. There is no federal requirement for automatic indexation of any portion of AFDC benefits, and few states have enacted automatic cost-of-living increases.<sup>1</sup>

The SSI program is a partially indexed transfer program. Basic income guarantee levels are set by the federal government, and these basic SSI levels are adjusted annually for changes in the CPI. Most states, however, supplement the federal SSI guarantee for some or all of the recipients in their jurisdictions. States that pay supplements are required to pass through the federal cost-of-living adjustments, but there is no requirement that state supplementary benefit levels be similarly

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1. Only California, Hawaii, and Massachusetts have introduced explicit indexation into their benefit formulas, and these provisions have been intermittently suspended during recent periods of high inflation. See Vee Burke, "State AFDC Benefit Levels and Inflation: Law and Recent History," Congressional Research Service (February 1979; processed).

indexed. Since few states index the supplements, the total benefits are only partially indexed.<sup>2</sup>

The SS/RR program is fully indexed. Initial benefit levels are based on preretirement earnings, adjusted annually thereafter for changes in the CPI.<sup>3</sup>

In this appendix, the discussion assumes that changes in purchasing power or real income are measured by adjusting nominal income for changes in the Consumer Price Index (CPI) because this is current practice. As the text has indicated, the CPI may not be the best index to use for this purpose. If an alternative

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2. All states except Texas pay some SSI supplement, but not all recipients of federal SSI benefits within a state receive the supplement. In June 1980, 46 percent of federal SSI recipients were receiving state supplements. Over the period from 1976 to 1980, maximum supplementary benefits in 26 states kept pace with the rate of increase in the federal SSI benefit level. They increased at a rate below the rate of increase in the federal SSI benefit in 12 of the states that paid state supplements over the whole period and increased at a rate above that for the federal payments in 5 of these states. Three states plus the District of Columbia introduced state supplements during this period. Data for three states are unavailable. The cross-state average of maximum federal plus optional state-supplement SSI benefit levels rose over the five-year period 1974 to 1979 at the same rate as the indexed federal benefit. However, the average of maximum benefit levels masks considerable diversity across the states as well as among recipients within each state.
  3. All of the Social Security benefit is automatically adjusted for changes in the CPI. Tier I of the railroad retirement benefit is automatically adjusted, but Tier II is not. The data do not permit separation of RR beneficiaries from SS beneficiaries. Because railroad retirement beneficiaries are a small proportion of SS/RR recipients, there is little inaccuracy in treating SS/RR as a fully indexed program. See Handbook of Public Income Transfer Programs: 1975, Paper No. 20, Studies in Public Welfare, Subcommittee on Fiscal Policy Joint Economic Committee, U.S. Congress (December 31, 1974), pp. 42-50.

measure such as the Personal Consumption Expenditure (PCE) index were used, measured cost-of-living increases over the period from 1976 to 1980 would be smaller, resulting in larger increases or smaller decreases in real income than are obtained using the CPI.

Over the period from 1976 to 1980, the real value of maximum AFDC benefits for a family of four fell by about 19 percent, on average across states. Maximum SSI and SS/RR benefits maintained almost constant value, on average. In this appendix, changes in the total income of these target population families are examined in order to determine how these transfer program effects have been offset by changes in other family income sources. Because of limitations in the data available for this purpose, however, the income differences reported are partly the result of changes in the composition of the target populations sampled rather than solely of income changes for a fixed group of families.

This appendix consists of three sections: a summary, estimates of changes in income, and a description of the method used to estimate income changes for the target groups.

#### SUMMARY

The information presented in this appendix must be viewed as preliminary. The data used to prepare these tabulations are based on CBO projections for fiscal year 1980, and on CBO imputations of transfer income for fiscal years 1976 and 1980. Although great care has been taken in the development of these data bases, accuracy in projections is difficult, if not impossible, to ensure. The 1980 data base, in particular, must be viewed with caution. However, the following observations may be made:

- o Despite a decline in the real value of maximum benefits under the AFDC program (an unindexed program), it appears that female-headed AFDC families were able to maintain average real total income levels by a substantial increase in family earnings. Most of this increase in family earnings occurred within the AFDC filing unit. This population was one of the poorest in relative terms in 1976 and, despite its success at maintaining real purchasing power, remained one of the poorest in 1980. Only SSI-unrelated individuals were poorer among the populations examined here.

- o Despite the real income protection afforded SSI benefits, multiperson SSI families experienced a decline of 24 percent in purchasing power from 1976 to 1980, due largely to a reduction in their family earnings. By contrast, unrelated individuals receiving SSI payments experienced an increase of 10 percent in real purchasing power--due largely to a substantial increase in Social Security receipts--but despite this increase they were still the poorest of the groups examined.
  
- o Although SS/RR benefit levels kept pace with inflation--with only a small lag--from 1976 to 1980, this population experienced a 7 or 8 percent decline in purchasing power over the period. This is because their earnings and private unearned family income failed to keep pace with inflation.
  
- o Despite the decline in average real purchasing power described above for several of the target populations, none of them experienced an increase in the incidence of poverty over the period from 1976 to 1980, when food stamps are included in the income measure. When food stamps are not included in the measure of income, the SSI population (both families and unrelated individuals) experienced a small increase in poverty incidence.
  
- o The food stamp program acts as a partial offset to money income changes resulting from the combined effects of cash transfer programs and other family income sources. Gains in money income that would otherwise increase real purchasing power and reduce poverty incidence are partially neutralized by food stamp benefit reductions. On the other hand, money income changes that would otherwise be insufficient to maintain real purchasing power or to meet increased family needs are supplemented by the food stamp program. Thus, food stamp benefits are inversely related to the recipient unit's money income. This is because the bonus value of food stamps to which a recipient unit is entitled is equal to the value of the unit's food stamp guarantee less a portion of its income.

## ESTIMATES OF CHANGES IN MEAN INCOME

Few of the population groups examined here maintained their real income over the period from 1976 to 1980 (see Table B-1). For the total population of multiperson families, average money income as well as money income plus food stamps increased by nearly 29 percent over this period, while the CPI increased 35 percent. Among the transfer target populations, only female-headed AFDC families had average income gains equal to or greater than the CPI. Male-headed AFDC families (the unemployed-parent component of AFDC), SSI families, and SS/RR families lost ground in real-income terms. The figures also indicate, however, that it is earnings, rather than changes in transfer payments made to each target group, that largely account for the total income changes. Further, because average family size declined over the period from 1976 to 1980, a decline in real income did not necessarily translate into a decline in living standard.

Real income for the total population of unrelated individuals increased from 1976 to 1980, although this is more likely to have reflected a change in the composition of the population of unrelated individuals than a widespread increase in real income for particular individuals. The average value of their money incomes (and of their money incomes plus food stamps) increased by 46 percent from 1976 to 1980, exceeding the increase in the CPI over the period. Because a larger proportion of the population is choosing now to live alone, especially among the relatively affluent, the average change in income reported in Table B-1 for unrelated individuals may overstate the change experienced by particular individuals.

AFDC Families. Few states have indexed their AFDC benefit schedules, and periodic ad hoc adjustments have generally failed to keep pace with the CPI. Program data from the Department of Health and Human Services for the latter half of the 1970s show a 10 percent reduction in the real value of AFDC maximum benefit levels for a family of four, averaged across all states.<sup>4</sup> This

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4. See "Transfer Recipients and the Poor During the 1970's," by Richard Kasten and John Todd (October 1980), p. 10, giving weighted average data for 1975 and 1979.

TABLE B-1. CHANGE IN AVERAGE FAMILY INCOME COMPONENTS FOR SELECTED POPULATIONS, FISCAL YEARS 1976 AND 1980

|                                      | Multiperson Families |         |            |          | Unrelated Individuals |         |            |         |
|--------------------------------------|----------------------|---------|------------|----------|-----------------------|---------|------------|---------|
|                                      | Percent Change       |         | Percent of |          | Percent Change        |         | Percent of |         |
|                                      | 1976                 | to 1980 | 1976       | 1980     | 1976                  | to 1980 | 1976       | 1980    |
| AFDC Families:                       |                      |         |            |          |                       |         |            |         |
| Total income (including food stamps) | 18.2                 |         | \$8079     | \$9552   |                       |         |            |         |
| Food stamps                          | 8.0                  |         | 6.7        | 6.1      |                       |         |            |         |
| Money income                         | 19.0                 |         | 93.3       | 93.9     |                       |         | N/A        |         |
| Earnings                             | 21.4                 |         | 50.8       | 52.2     |                       |         |            |         |
| (Filing unit earnings)               | (52.7)               |         | (30.2)     | (39.0)   |                       |         |            |         |
| AFDC payments                        | 13.3                 |         | 28.5       | 27.3     |                       |         |            |         |
| Other                                | 21.9                 |         | 14.0       | 14.4     |                       |         |            |         |
| Female-Headed AFDC Families:         |                      |         |            |          |                       |         |            |         |
| Total income (including food stamps) | 35.3                 |         | \$6224     | \$8420   |                       |         |            |         |
| Food stamps                          | -3.6                 |         | 10.2       | 7.3      |                       |         |            |         |
| Money income                         | 39.7                 |         | 89.8       | 92.7     |                       |         | N/A        |         |
| Earnings                             | 74.6                 |         | 36.8       | 47.5     |                       |         |            |         |
| (Filing unit earnings)               | (109.2)              |         | (26.1)     | (40.4)   |                       |         |            |         |
| AFDC payments                        | 6.6                  |         | 40.6       | 32.0     |                       |         |            |         |
| Other                                | 44.5                 |         | 12.4       | 13.2     |                       |         |            |         |
| SSI Recipients:                      |                      |         |            |          |                       |         |            |         |
| Total income (including food stamps) | 2.9                  |         | \$12,218   | \$12,576 | 49.2                  |         | \$3,074    | \$4,587 |
| Food stamps                          | 38.3                 |         | 1.4        | 1.8      | 62.2                  |         | 2.4        | 2.6     |
| Money income                         | 2.4                  |         | 98.6       | 98.2     | 48.8                  |         | 97.6       | 97.4    |
| Earnings                             | -38.9                |         | 57.7       | 34.3     | -8.0                  |         | 6.5        | 4.0     |
| (Filing unit earnings)               | (-74.1)              |         | (4.0)      | (1.0)    | ----                  |         | ----       | ----    |
| SS/RR payments                       | 80.9                 |         | 15.1       | 26.6     | 61.2                  |         | 40.7       | 44.0    |
| SSI payments                         | 55.7                 |         | 12.6       | 19.1     | 21.9                  |         | 45.7       | 37.3    |
| Other                                | 42.3                 |         | 13.2       | 18.2     | 283.3                 |         | 4.7        | 12.1    |

(Continued)



TABLE B-1. (Continued)

|  | Multiperson Families |         |            |          | Unrelated Individuals |         |            |          |
|--|----------------------|---------|------------|----------|-----------------------|---------|------------|----------|
|  | Percent Change       |         | Percent of |          | Percent Change        |         | Percent of |          |
|  | 1976                 | to 1980 | 1976       | 1980     | 1976                  | to 1980 | 1976       | 1980     |
| SS/RR Recipients:  |                      |         |            |          |                       |         |            |          |
| Total income (including food stamps)   | 25.1                 |         | \$14,879   | \$18,608 | 24.2                  |         | \$6,608    | \$8,204  |
| Food stamps  | -3.4                 |         | 0.2        | 0.2      | 57.7                  |         | 0.4        | 0.5      |
| Money income   | 25.1                 |         | 99.8       | 99.8     | 24.1                  |         | 99.6       | 99.5     |
| Earnings   | 28.7                 |         | 33.8       | 34.8     | 32.8                  |         | 10.9       | 11.6     |
| (Filing unit earnings)   | (40.5)               |         | (8.1)      | (9.0)    | ----                  |         | ----       | ----     |
| SS/RR payments   | 34.6                 |         | 28.9       | 31.1     | 38.8                  |         | 40.2       | 45.0     |
| Other  | 14.4                 |         | 37.1       | 33.9     | 10.6                  |         | 48.5       | 42.9     |
| Total Population:  |                      |         |            |          |                       |         |            |          |
| Total income (including food stamps)   | 28.7                 |         | \$18,323   | \$23,584 | 46.3                  |         | \$7,289    | \$10,665 |
| Food stamps  | 13.4                 |         | 0.4        | 0.4      | 55.6                  |         | 0.4        | 0.4      |
| Money income   | 28.8                 |         | 99.6       | 99.6     | 46.3                  |         | 99.6       | 99.6     |
| Earnings   | 30.5                 |         | 80.5       | 81.5     | 66.9                  |         | 60.3       | 68.7     |
| Other  | 21.6                 |         | 19.1       | 18.0     | 14.7                  |         | 39.3       | 30.9     |
| Percent increase in the all-items urban consumer price index from 1976 to 1980 | 35.0                 |         |            |          |                       |         |            |          |

SOURCE: Special tabulations based on the March 1975 and March 1978 Current Population Surveys, aged to represent fiscal years 1976 and 1980 respectively and corrected for underreporting of income. The all-items all-urban-consumers CPI for fiscal 1976 was obtained from the Survey of Current Business by averaging the monthly figures from July 1975 through June 1976; the value obtained was 166.2. For fiscal 1980, the average of CBO 1979 projections for the months from October 1979 through September 1980 was used; that value was 224.4.

NOTE: Unless otherwise specified, all income values are for the family unit, which may include people other than program recipients. Filing unit earnings refer to those of recipients of benefits from the relevant program--AFDC, SSI, or SS/RR benefits.

result is consistent with those shown in Table B-1, which imply a 16 percent reduction in average real benefits paid to AFDC families over a nearly comparable period. Real benefits paid would decline more than real maximum benefits for two reasons: (1) the decline in average filing unit size (from 3.15 to 3.03); and (2) the increase in earnings by AFDC filing units that occurred over the period.

Both before and after food stamps were included in the income measure, female-headed AFDC families maintained their real incomes from 1976 to 1980 and gained slightly relative to the income of the total population--but only because of the substantial increases in their earnings.<sup>5</sup> The nominal value of food stamps for AFDC families declined slightly over the period; this occurred because the value of (and eligibility for) food stamps is reduced as other family income rises.

The gain in relative welfare was larger than the relative income gains, because AFDC family size fell relative to that in the total population.<sup>6</sup> The combined effects of real income increases together with family size reductions are evident in the welfare ratios presented in Table B-2. The mean welfare ratio for female-headed AFDC families rose from 1.1 in 1976 to 1.2 in 1980, when money income alone is counted. When the value of food stamps is included in the income measure, the welfare ratio for female-headed AFDC families rose from 1.2 in 1976 to 1.3 in 1980.

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5. AFDC program data show a smaller increase in earnings over a nearly comparable period, and a smaller proportion of recipient units with earnings, than the data used here. This difference occurs, at least in part, because the program data contain earnings information only for those months during the year in which the family unit was receiving AFDC, ignoring the probably larger earnings received during the remainder of the year.
  6. "Welfare" is measured by welfare ratios, which are calculated as the ratio of total family income to the poverty-line income appropriate for each given family. A value greater than one indicates that income exceeds the poverty line for that family.

TABLE B-2. RELATIVE INCOME CHANGES FOR THE AFDC POPULATION,  
FISCAL YEARS 1976 AND 1980

|  | Female-headed<br>AFDC Families |      | All AFDC<br>Families |      |
|--|--------------------------------|------|----------------------|------|
|  | 1976                           | 1980 | 1976                 | 1980 |
| Ratio for Recipient to<br>Total Population of<br>Average Income      |                                |      |                      |      |
| Excluding food stamps  | 0.54                           | 0.60 | 0.41                 | 0.38 |
| Including food stamps  | 0.59                           | 0.63 | 0.44                 | 0.41 |
| Ratio for Recipient<br>to Total Population<br>of Average Family Size |                                |      |                      |      |
|  | 1.17                           | 1.14 | 1.18                 | 1.10 |
| Average Welfare Ratio  |                                |      |                      |      |
| Excluding food stamps  | 1.09                           | 1.20 | 1.34                 | 1.27 |
| Including food stamps  | 1.22                           | 1.29 | 1.44                 | 1.35 |
| Percent with Income<br>Below the Poverty Line                        |                                |      |                      |      |
| Excluding food stamps  | 64.0                           | 51.0 | 52.0                 | 46.0 |
| Including food stamps  | 47.0                           | 44.0 | 40.0                 | 40.0 |

SOURCE: Special tabulation from CBO tapes.

NOTE: All income values are for the family unit, which may include people other than program recipients.

The incidence of poverty among AFDC families fell slightly from 1976 to 1980, although it remained high. When money income alone is considered, the incidence of poverty among these families fell from 64 percent to 51 percent. When both money income and the value of food stamps are considered, the incidence of poverty fell from 47 percent in 1976 to 44 percent in 1980.

In short, although female-headed AFDC families experienced some relative income gains over the period examined here, their relative living standard remained very low. Further, what gains these families made were due to increases in earnings that more than offset the decline in real AFDC benefit levels that occurred over the period.

Not all AFDC families fared as well as those headed by women. Earnings increases for male-headed AFDC families (which were about 18 percent of all AFDC families in 1980) were not large enough to maintain real income levels in the face of inflation and a decline in the real value of maximum AFDC benefit levels.

AFDC recipients in particular states may have fared considerably worse (or better) than these nationwide average figures indicate. Further, these findings depend heavily on the accuracy of the imputations and projections used by CBO in the preparation of the data bases.

The SSI Population. SSI families experienced a loss of 24 percent in purchasing power between 1976 and 1980 (see Table B-1). Although the SSI population of families started at a higher level of income in 1976 than the AFDC population--relative both to the general population and to the poverty line--they did not make comparable gains. The mean income of SSI families increased by less than 3 percent over the period, while the CPI rose by 35 percent.

Again, the change in real income for SSI multiperson families that occurred between 1976 and 1980 was due largely to the effects of changes in earnings. On average, SSI maximum benefit levels kept pace (with a lag) with the CPI over the years from 1976 to 1980. Average benefits paid out to recipients in multiperson families actually increased by more than the CPI. The major reason for this is the increasing number of SSI recipients classified as living in their own household and, hence, not subject to the reduction in benefit applicable to those living in others' households.<sup>7</sup>

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7. The percent of SSI recipients living in others' households (by the SSI program definition) has fallen in recent years from 9.2 percent at the end of 1977 to 8.2 at the end of 1978, 7.1 percent at the end of 1979, and 6.5 percent in early 1980. This information was obtained from the Office of Research and Statistics, Social Security Administration.

Despite this increase in SSI benefits, total income (including or excluding food stamps) increased very little--because of a large drop in earnings--so real incomes fell sharply. Although the size of SSI families declined a little from 1976 to 1980, the larger decline in real income from 1976 to 1980 caused a drop in the mean welfare ratio and a small increase in the incidence of poverty for this population (see Table B-3).

TABLE B-3. RELATIVE INCOME CHANGES FOR THE SSI POPULATION, FISCAL YEARS 1976 AND 1980

|  | Multiperson<br>SSI Families |      | Unrelated SSI<br>Individuals |      |
|--|-----------------------------|------|------------------------------|------|
|  | 1976                        | 1980 | 1976                         | 1980 |
| Ratio for Recipient<br>to Total Population<br>of Average Income      |                             |      |                              |      |
| Excluding food stamps  | 0.66                        | 0.53 | 0.41                         | 0.42 |
| Including food stamps  | 0.67                        | 0.53 | 0.42                         | 0.43 |
| Ratio for Recipient<br>to Total Population<br>of Average Family Size |                             |      |                              |      |
|  | 1.04                        | 0.98 | 1.00                         | 1.00 |
| Average Welfare Ratio  |                             |      |                              |      |
| Excluding food stamps  | 2.43                        | 1.94 | 1.11                         | 1.21 |
| Including food stamps  | 2.46                        | 1.98 | 1.14                         | 1.25 |
| Percent with Income<br>Below the Poverty Line                        |                             |      |                              |      |
| Excluding food stamps  | 18.0                        | 19.0 | 52.0                         | 54.0 |
| Including food stamps  | 14.0                        | 14.0 | 50.0                         | 50.0 |

SOURCE: Special tabulation from CBO tapes.

NOTE: All income values are for the family unit, which may include people other than program recipients.

SSI recipients who are unrelated individuals are substantially poorer than those living in families, but their relative position improved slightly over the 1976 to 1980 period. SSI families have a relatively low incidence of poverty (14 percent), whereas unrelated individuals have a high incidence (50 percent). Here, the principal sources of family income are SSI and SS/RR benefits. Average SSI payments increased by less than the CPI, but this is apparently the result of the large increase in the average value of SS/RR payments received by these individuals. (After a small exclusion, SSI benefits are cut back dollar-for-dollar with Social Security receipts.) The large increase in SS/RR receipts for the SSI population between 1976 and 1980 was itself probably the result of two factors: (1) greater eligibility among the SSI population for Social Security benefits; and (2) higher Social Security benefits for those eligible because of the more favorable earnings history of more recent retirees.

The net result of changes in SSI and SS/RR receipts for unrelated individuals in the SSI population was a gain in real income and a small gain relative to the total population of unrelated individuals (see Table B-3). Average nominal income increased by 49 percent between 1976 and 1980. The mean value of the welfare ratio for this population increased slightly--from 1.1 to 1.2--and, when food stamps are included in the income measure, the incidence of poverty remained constant. When only money income is counted, however, the incidence of poverty increased slightly, from 52 to 54 percent.

Once again, SSI recipients in particular states may have fared worse (or better) than these nationwide average figures indicate.

The SS/RR Population. In terms of the level of their income, the Social Security population is in the best position of the three target groups examined here, but their real incomes declined between 1976 and 1980. While the CPI rose 35 percent over this period, the incomes of families receiving SS/RR payments rose 25 percent; the incomes of unrelated individuals receiving SS/RR payments rose 24 percent (see Table B-1).

This decline in purchasing power was not the result of the failure of SS/RR benefit levels to increase in step with the CPI. Since SS/RR benefits are essentially fully indexed to the CPI, changes in benefits closely approximated changes in the CPI over

the period from 1976 to 1980. Small differences may have occurred for a number of reasons: (1) benefit levels are adjusted to the CPI with a lag; (2) from 1972 to 1979, new Social Security recipients were overcompensated for historical changes in the CPI because of an error in the formula initially used for indexation; and (3) earnings of those receiving SS/RR benefits may change slowly over the years, thus changing average benefit levels.

SS/RR recipients lost ground relative to the average income of the total population because of a real decline in average earnings and private unearned income sources. This decline was not offset by reductions in family size, so that the average welfare ratio fell between 1976 and 1980 both for families and for unrelated individuals in the SS/RR population (see Table B-4).

Despite the fall in the average welfare ratio, the incidence of poverty for the SS/RR population also declined between 1976 and 1980. When only money income is considered, poverty incidence fell from 5 to 3 percent for multiperson families, and from 20 to 14 percent for unrelated individuals. With food stamps included in income, poverty incidence fell from 4 to 2 percent for families, and from 19 to 12 percent for unrelated individuals.

#### ESTIMATION METHOD

Income changes for a given target population may be examined in several ways. One way is to focus only on the maximum benefits guaranteed to the target population, ignoring changes in other components of their total income. If interest were limited to this, summary findings would be easy to come by. For example, the real value of maximum AFDC benefit levels for a family of four fell by about 19 percent, on average, across states. In contrast, maximum SSI benefits maintained almost constant real value. This is because, on average across states, the maximum optional state supplement to SSI rose at approximately the same rate as the federal SSI benefit, which is fully indexed to the CPI. The same is true of SS/RR benefits, which are fully indexed to the CPI (with a short lag). On the other hand, considerable variation across states is masked by this summary information. In some states (mostly in the West), AFDC benefit schedules have kept pace with inflation. In many states, SSI state supplement schedules have not.

TABLE B-4. RELATIVE INCOME CHANGES FOR THE SS/RR POPULATION,  
FISCAL YEARS 1976 AND 1980

|  | Multiperson<br>SS/RR Families |      | Unrelated SS/RR<br>Individuals |      |
|--|-------------------------------|------|--------------------------------|------|
|  | 1976                          | 1980 | 1976                           | 1980 |
| Ratio for Recipient<br>to Total Population<br>of Average Income      |                               |      |                                |      |
| Excluding food stamps  | 0.81                          | 0.79 | 0.91                           | 0.77 |
| Including food stamps  | 0.81                          | 0.79 | 0.91                           | 0.77 |
| Ratio for Recipient<br>to Total Population<br>of Average Family Size |                               |      |                                |      |
|  | 0.70                          | 0.71 | 1.00                           | 1.00 |
| Average Welfare Ratio  |                               |      |                                |      |
| Excluding food stamps  | 4.03                          | 3.71 | 2.47                           | 2.27 |
| Including food stamps  | 4.04                          | 3.72 | 2.48                           | 2.28 |
| Percent with Income<br>Below the Poverty Line                        |                               |      |                                |      |
| Excluding food stamps  | 5.0                           | 3.0  | 20.0                           | 14.0 |
| Including food stamps  | 4.0                           | 2.0  | 19.0                           | 12.0 |

SOURCE: Special tabulation from CBO tapes.

NOTE: All income values are for the family unit, which may include people other than program recipients.



In this appendix, changes in the total income of target population families have been examined in order to determine whether transfer program effects are offset by other income sources. To accomplish this purpose, the ideal data source would be a repeat survey (1976 and 1980) of the same target population families. That kind of data is not available. Instead, the data used here are from the annual Current Population Surveys (CPS).<sup>8</sup> Because the families sampled in the CPS change from year to year, this means that the income differences observed from 1976 to 1980 are partly the result of changes in the composition of the target populations sampled, rather than solely of income changes for a fixed group of families.

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8. The March 1975 CPS was aged to represent fiscal year 1976. The March 1978 CPS was aged to represent fiscal year 1980; in addition, income imputations were made to account for under-reporting. For a description of the procedures see: Congressional Budget Office, Poverty Status of Families under Alternative Definitions of Income (June 1977); Analysis of Current Income Maintenance Programs and Budget Alternatives, Fiscal Year 1976, 1978, and 1982: Technical Documentation and Basic Output, Mathematica Policy Research (March 1977); and Pat Doyle, David Edson, Norma Pappas, and William Boulding, Creation of 1980 and 1984 Data Bases from the March 1978 Current Population Survey, Volume I, Mathematica Policy Research (February 19, 1980).

