Appendix D

THE CONSUMER PRICE INDEX

The Consumer Price Index

Considerable public interest has been focused on the consumer price index as an indicator of price trends in the consumer sector of the economy, and because of its extensive use in wage adjustments. To afford a better understanding of the index, this Appendix briefly describes its essential features, some of the problems connected with its computation, and its limitations and uses.

Constructing the Index

The consumer price index in roughly its present form was first published by the United States Bureau of Labor Statistics (BLS) in 1921, and covered the period extending back to 1913. The last major revision was in 1953.

The present index is designed to measure changes in the prices of goods and services commonly purchased by wage-earner and clerical-worker families living in the 3,000 towns, cities, and suburbs of the United States that had a population of 2,500 or more in 1950. In general, the only families included are those whose major sources of income are earnings of craftsmen, factory workers, laborers, clerks, and sales and service workers. This group of families comprises about 64 percent of the urban, and 40 percent of the total, population.

An over-all consumer price index is published and also various subgroup indexes. The most familiar groupings are those in which commodities and services are classified by their end use, e. g., food, apparel, housing, reading and recreation, etc. More recently, the BLS has been publishing monthly what might be termed an "economic" classification: all commodities; all commodities other than food; durable goods; nondurable goods; and services. It also publishes indexes for three major groups: (1) food, (2) commodities other than food, and (3) services. As of December 1956, each of these three categories was of roughly equal relative importance in the index—29, 37, and 34 percent, respectively.

In essence, the consumer price index measures changes in the price of a fixed "market basket" of goods and services chosen to represent the customary spending pattern of wage-earner and clerical-worker families. In the computation of the index, prices of individual items or groups of items are assigned specific weights, based on their relative importance in the average family budget for a survey year. The price changes from the base period (1947–49) for all of the items, appropriately weighted, are then combined into the consumer price index—which expresses the change in the price of the

total market basket since the base period. There are thus two major elements in constructing the index: the *prices* of the specific goods and services included and the *weights* assigned to them.

Prices

The prices used in computing the index are obtained at 46 urban sampling points, selected as representative of the entire urban portion of the country. Most of the prices are obtained at regular intervals from a sample of stores and service establishments. In each city, a selection is made of establishments most frequently patronized by wage-earner and clerical-worker families, and which represent the important types of retail outlets, such as chain and independent stores, and department and specialty stores. Samples of rental units are chosen from block listings representative of the total rental housing market.

The price data, in general, are collected in personal visits by trained BLS field agents. In order to eliminate as far as possible the effect of significant changes in the quality of products, specifications are drawn up for use by the field agents in comparing prices. These specifications provide a detailed description of the article, including quality factors associated with price, and physical characteristics essential for identifying an item from store to store and from time to time. Product descriptions and other data are checked, and, wherever possible, prices posted for goods on display are recorded. If discounts or over allowances on trade-ins are known to be common, the agents obtain from the store manager the information needed for computing a realistic net price.

Prices obtained for each city are combined by means of expenditure weights described below. Prices for all 46 cities are then combined by means of population weights to form the national index. Separate indexes are published monthly for the 5 largest cities, and quarterly for the 15 next largest of the 46 cities.

Weights

The weights currently used were derived in the main from a comprehensive family expenditure survey made in 1950–51. This survey included data for nearly 12,000 families in 91 cities of various characteristics: size, climate, population density, income level, and, in the case of small cities, distance to market. Six additional cities surveyed earlier were also used.

In the 1953 revision of the index, the development of weights involved two principal steps: (1) averaging the different spending patterns reported by individual families, and (2) adjusting the survey data for price and income changes which had occurred between 1950 and January 1953, the first month of the revised index.

During 1950 and 1951, while the major study of consumer expenditures was under way, the BLS collected and studied prices for several hundred commodities and services. The individual items were classified into "price families," i. e., groups of commodities with similar characteristics as regards

physical properties, use, and price movements. Items of major importance were chosen from each "price family" to represent price changes for all items in the group. In the computation of the index, a specific item or set of items was assigned the total expenditure weight of the group which it was chosen to represent.

Maintaining the Index

Periodically, the goods and services priced for the consumer price index are varied to take account of changes in patterns of family spending. But this is done infrequently, because spending patterns change slowly. The revision in 1953 incorporated the results of the 1950–51 expenditure survey. When a revision is made, it is done in a way that will preserve the character of the index as a measure of price change. Prices for comparable items are matched for each pair of successive months in the "linking-in" period. If, for example, the new index is to be introduced in January, both old and new indexes are computed for December. Percentage changes between November and December are based on the old index; and those between December and January are based on the new index. Thus month-to-month changes in the index continue to represent price change, not the difference between the price of one market basket and that of another.

The basic character of the index is determined by the requirement that the same market basket (in terms of quantity and quality of goods and services) be priced in the periods being compared. To achieve this comparability, the BLS has established statistical procedures for the collection of prices according to fixed specifications. But new items come onto the market and become popular, and others decline in favor or disappear. In addition, there are frequent changes in established products. Such changes cumulate and eventually produce shifts in buying habits that are so far reaching as to require revision of the fixed basket of goods. However, account is taken of many minor changes in the interval between major revisions.

When the characteristics of an item priced for the index have changed, the specifications reported call attention to the points of noncomparability and provide information for eliminating the measurable price effect of such changes. When these changes are definite improvements or recognizable additions to the old item, or the reverse, statistical adjustments can be made to reduce the prices to a comparable basis. However, when improvements in quality cannot be eliminated, the index reflects an upward bias in consumer prices; and the reverse is true when quality deterioration occurs.

The problem of adjustment for quality changes is particularly important in the pricing of appliances, household equipment, and automobiles, although variants of this problem appear in almost all components of the index, including the pricing of foods, services, and housing. When prices for exactly comparable items cannot be collected, the BLS procedures just

described are applied whenever possible. Thus, when a new automobile model or a new appliance model contains specific features which can be isolated as improvements or additions, the price comparison is adjusted to eliminate that part of the price change which can be ascribed to the change in model. Nevertheless, there are types of changes which it is not possible to take into account, even though there may be general agreement that these changes constitute improvements. For example, a change in the shape of the springs in an automobile may make for better riding, perhaps at no increase in cost; or a slight change in the composition of an automobile tire may make it safer and lengthen its life.

Other practices in pricing the fixed basket of goods may cause a downward bias in the index. For example, when items drop out of the market completely or, because of reduced sales, fail to qualify for continued inclusion as a "volume seller," they are replaced where possible by similar items of different specifications—often of a higher quality and price. The new prices are linked in without showing the price difference between the old and the new items. For consumers who would prefer to buy the original, lower-priced item, the change in market availability represents a real price increase.

For short periods of 2, 3, or 4 years, the amount of bias arising from quality changes that have not been eliminated is probably too small to affect the index very much. For periods of a decade or more, however, there is undoubtedly a significant effect upon the index values for some items, although the net effect on the total index cannot be determined.

In preparing a monthly index of prices with fixed weights, the Bureau of Labor Statistics must cope with items which are available on the market in volume only in particular seasons. Such items are represented in the market basket in accordance with their relative importance in annual consumption. Consequently, in off-season months the relative importance of such items is too great in the price comparisons. In the months when these items disappear from the market, their price movements must in effect be estimated by the price movements of other products in the same class of commodities. When such items reappear on the market, erratic jumps in the index may occur as seasonal prices are reintroduced. For year-to-year comparisons, this measurement of price changes is correct; but it may tend to exaggerate the magnitude of some month-to-month changes.

Limitations

Since the index represents changes in the prices of a fixed set of goods and services typically bought by a designated class of consumers, it does not measure changes in consumption levels or in total living costs. These are responsive to factors other than the changes in prices of the set of goods and services included in the index. Thus, a family's living costs will shift as the family grows, as its income rises or falls, as its tastes change, or for reasons

not related to price changes alone. The effects of such factors are ignored by the consumer price index.

Because the index is an average, it does not necessarily apply to any one family or to any small group of families. A careful housewife, by judicious shopping, may purchase many items at prices lower than the averages embodied in the index. A family which takes great care in budgeting its expenditures, a family faced with abnormal expenses for one reason or another, or a family in a position to make its purchases under particularly advantageous circumstances, would find that the index does not represent the movement of prices that it is called upon to pay. And, strictly speaking, the index is not an appropriate measure of prices paid by very low or very high income groups, or by single workers, elderly couples, or other groups whose living and manner of spending are different from those of wage-earner and clerical-worker families. On the other hand, when the index is applied to all city families or to the total urban population, the limitations are not considered to be serious, since the wage-earner and clerical-worker group constitutes nearly two-thirds of the population.

Although separate consumer price indexes are published for individual cities, they do not measure absolute differences in price levels. The fact that the index for city A is higher than the index for city B does not necessarily mean that prices are higher in city A; it means only that, since the base period, prices have risen more in city A. Indeed, the particular level of the consumer price index for the Nation as a whole, for an individual city, or for some specific group of consumer goods, represents only the magnitude of the change in prices since the base period, and has no meaning except with reference to that period.

Some Uses of the Index

Government has long recognized the importance of prices in the formulation of policies affecting wage rates. As early as 1780 an index, based on four commodities, was calculated by the State of Massachusetts to provide a basis for adjusting soldiers' pay. Although first published in 1921, the present index of consumer prices in the United States was developed by the Department of Labor in 1918 to serve as a guide for the adjustment of wage scales in the shipyards and other war production centers during Word War I. In World War II and during the Korean conflict, the index was the basis of a number of strategic wage decisions.

The index has been the focus of Nation-wide attention in recent years, as wage contracts have been signed calling for periodic adjustments in wages if the consumer price index should move up or down beyond specified limits—the so-called "escalator clauses." This form of wage contract spread rapidly throughout the automobile industry, and was extended to farm equipment, aircraft, and electrical manufacturing industries, and to the railroads. Most of the agreements are for a long term—2, 3, or 5 years—without reopening clauses on wages. By 1952, more than 3,500,000 workers

were employed under contracts containing escalator clauses. After some decline in the use of escalator clauses, they have recently become more widespread. It is estimated that at least 4,000,000 workers are now employed under labor-management contracts by which wages are adjusted according to changes in the consumer price index. As a rule, these clauses provide for wage adjustments of about two cents per hour for each change of one index point. At 40 hours a week for 50 weeks in the year, an increase of one point in the index raises the annual wage bill for these workers by about $160 million.

The index has an indirect impact on wage rates even where formal escalator agreements are not in effect. Pay adjustments made under escalator contracts influence wage payments elsewhere, and the index is often explicitly considered by management and labor in formulating wage policies.