

## USES OF CONSUMER PRICE INDICES

**2.1** The consumer price index (CPI) is treated as a key indicator of economic performance in most countries. The purpose of this chapter is to explain why CPIs are compiled and what they are used for.

### A range of possible consumer price indices

**2.2** As noted in Chapter 1, compilers have to take into account the needs of users in deciding on the group of households and range of consumption goods and services covered by a CPI. As the prices of different goods and services do not all change at the same rate, or even all move in the same direction, changing the coverage of the index will change the value of the index. Thus, there can be no unique CPI and a range of possible CPIs could be defined.

**2.3** While there may be interest in a CPI which is as broadly defined as possible, covering all the goods and services consumed by all households, there are many other options for defining CPIs covering particular sets of goods and services, which may be more useful for particular analytic or policy purposes. There is no necessity to have only a single CPI. When only a single CPI is compiled and published, there is a risk that it may be used for purposes for which it is not appropriate. More than one CPI could be published in order to meet different analytic or policy needs. It is important to recognize, however, that the publication of more than one CPI can be confusing to users who view consumer inflation as a pervasive phenomenon affecting all households equally. The coexistence of alternative measures could undermine their credibility for many users.

**2.4** This chapter is intended not only to describe the most important uses for CPIs, but also to indicate how the coverage of a CPI can be affected by the use for which it is intended. The question of what is the most appropriate coverage of a CPI must be addressed before considering what is the most appropriate methodology to be used. Whether or not the CPI is intended to be a cost of living index (COLI), it is still necessary to determine exactly what kinds of good and services and what types of households are meant to be covered. This can only be decided on the basis of the main uses of the index.

### Indexation

**2.5** Indexation is a procedure whereby the monetary values of certain payments, or stocks, are increased or decreased in proportion to the change in the value of

some price index. Indexation is most commonly applied to monetary flows such as wages, rents, interest or taxes, but it may also be applied to the capital values of certain monetary assets and liabilities. Under conditions of high inflation, the use of indexation may become widespread throughout the economy.

**2.6** The objective of indexation of money incomes may be either to maintain the purchasing power of those incomes in respect of certain kinds of goods and services, or to preserve the standard of living or welfare of the recipients of the incomes. These two objectives are not quite the same, especially over the longer term. Maintaining purchasing power may be interpreted as changing money income in proportion to the change in the monetary value of a fixed basket of goods and services purchased out of that income. As explained further below and in detail in Chapter 3, maintaining the purchasing power of income over a fixed set of goods and services does not imply that the standard of living of the recipients of the income is necessarily unchanged.

**2.7** When the indexation applies to monetary assets or liabilities, it may be designed to preserve the real value of the asset or liability relative to other assets or relative to the values of specified flows of goods and services.

### Indexation of wages

**2.8** As noted in Chapters 1 and 15, the indexation of wages seems to have been the main objective behind the original compilation of CPIs as the practice goes back over two centuries, although there has always been general interest in measuring inflation. If the indexation of wages is the main justification for a CPI, it has direct implications for the coverage of the index. First, it suggests that the index should be confined to expenditures made by households whose principal source of income is wages. Second, it may suggest excluding expenditures on certain types of goods and services which are considered to be luxurious or frivolous. If so, value judgements or political judgements may enter into the selection of goods and services covered. This point is elaborated further below.

### Indexation of social security benefits

**2.9** It has become common practice in many countries to index-link the rates at which social security benefits are payable. There are many kinds of benefits, such as retirement pensions, unemployment benefits, sickness benefits, child allowances, and so on. As in the case of wages, when index-linking to benefits of this kind is the main reason for compiling the CPI, it may suggest

restricting the coverage of the index to certain types of households and goods and services. Many kinds of goods and services may then be excluded by political decision on the grounds that they are unnecessary or inappropriate. This type of thinking may lead to pressure to exclude expenditures on items such as holidays, gambling, tobacco or alcoholic drink.

**2.10** An alternative procedure is to compile separate CPIs for different categories of households. For example, an index may be compiled covering the basket of goods and services purchased by households whose principal source of income is a social security pension. When this is done, it may be superfluous to decide to exclude certain types of luxury or inappropriate expenditures, as the actual expenditures on such items may be negligible anyway.

**2.11** As already noted, publishing more than one CPI may be confusing if inflation is viewed as affecting everyone in the same way. Such confusion can be avoided by suitable publicity; it is not difficult to explain the fact that price changes are not the same for different categories of expenditures. In practice, some countries do publish more than one index.

**2.12** The main reason why it may not be justifiable to publish more than one index is that the movements in the different indices may be virtually the same, especially in the short term. In such cases, the costs of compiling and publishing separate indices may not be worthwhile. In practice, it may need much bigger differences in patterns of expenditure than actually exist between different groups of households to yield significantly different CPIs.

**2.13** Finally, it should be noted that the deliberate exclusion of certain types of goods and services by political decision on the grounds that the households towards whom the index is targeted ought not to be purchasing such goods, or ought not to be compensated for increases in the prices of such goods, cannot be recommended because it exposes the index to political manipulation. For example, suppose it is decided that certain products such as tobacco or alcoholic drink should be excluded from a CPI. There is then a possibility that when taxes on products have to be increased, these products may be deliberately selected in the knowledge that the resulting price increases do not increase the CPI. Such practices are not unknown.

### The type of index used for indexation

**2.14** When income flows such as wages or social security benefits are index-linked, it is necessary to consider the implications of choosing between a cost of living index and a price index that measures the changes in the cost of purchasing a fixed basket of goods and services, a type of index described here as a Lowe index. The widely used Laspeyres and Paasche indices are examples of Lowe indices. The Laspeyres index uses a typical basket purchased in the earlier of the two periods compared, while the Paasche uses a basket typical of the later period. This “fixed basket” method has a long history, as explained in Chapter 15. In contrast, a cost of living index (COLI) compares the cost of two baskets

that may not be exactly the same but which bring the same satisfaction or utility to the consumer.

**2.15** Indexation using a Laspeyres price index will tend to over-compensate the income recipients for changes in their cost of living. Increasing incomes in proportion to the change in the cost of purchasing a basket purchased in the past ensures that the income recipients have the opportunity to continue purchasing that same basket if they wish to do so. They would then be at least as well off as before. However, by adjusting their pattern of expenditures to take account of changes in the *relative* prices of the goods and services they buy, they will be able to improve their standard of living or welfare because they can substitute goods that have become relatively cheaper for ones that have become relatively dearer. In addition, they may be able to start to purchase completely new kinds of goods which provide new kinds of benefits that were not available in the earlier period. Such new goods tend to lower a cost of living index when they first appear even though no price can actually be observed to fall, as there was no previous price.

### Indexation of interest, rents and other contractual payments

**2.16** It is common for payments of both rents and interest to be index-linked. Governments may issue bonds with an interest rate specifically linked to the CPI. The interest payable in any given period may be equal to a fixed real rate of interest plus the percentage increase in the CPI. Payments of housing rents may also be linked to the CPI or possibly to some other index, such as an index of house prices.

**2.17** Creditors receiving interest payments do not consist only of households, of course. In any case, the purpose of index-linking interest is not to maintain the standard of living of the creditors but rather to maintain their real wealth by compensating them for the real holding, or capital, losses on their loans incurred as a result of general inflation. A CPI may not be the ideal index for this purpose but may be used by default in the absence of any other convenient index, a point discussed further below.

**2.18** Many other forms of contractual payments may be linked to the CPI. For example, legal obligations to pay alimony or for the support of children may be linked to the CPI. Payments of insurance premiums may be linked either to the index as a whole or to a sub-index relating to some specific types of expenditures, such as the costs of repairs.

### Taxation

**2.19** Movements in a CPI may be used to affect the amounts payable in taxation in several ways. For example, liability for income tax may be affected by linking personal allowances that are deductible from taxable income to changes in the CPI. Under a system of progressive taxation, the various thresholds at which higher rates of personal income tax become operative may be changed in proportion to changes in the CPI. Liability for capital gains tax may be reduced by basing it on real

rather than nominal capital gains through reducing the percentage increase in the value of the asset by the percentage change in the CPI over the same period, for taxation purposes. In general, there are various ways in which some form of indexation may be introduced into tax legislation.

## Real consumption and real income

**2.20** Price indices can be used to deflate expenditures at current prices or money incomes in order to derive measures of real consumption and real income. Real measures involve volume comparisons over time (or space). There are two different approaches to such comparisons which are analogous to the distinction between a Lowe, or basket, index and a cost of living index.

**2.21** The first defines the change in real consumption as the change in the total value of the goods and services actually consumed measured at the fixed prices of some chosen period. This is equivalent to deflating the change in the current value of the goods and services consumed by an appropriately weighted Lowe price index. The change in real income can be measured by deflating the change in total money income by the same price index.

**2.22** The alternative approach defines the change in real consumption as the change in welfare derived from the goods and services actually consumed. This may be estimated by deflating the change in the current value of consumption by using a COLI. Real income may be similarly obtained by deflating money income by the same COLI.

**2.23** The two approaches cannot lead to the same results if the pure price index and the COLI diverge. The choice between the two approaches to the measurement of real consumption and real income will not be pursued further here, as the issues involved are essentially the same as those already considered above in the parallel discussion of the choice between a Lowe, or basket, price index and a cost of living index.

## Consistency between price indices and expenditure series

**2.24** The data collected on prices and the data collected on household expenditures must be mutually consistent when measuring real consumption. This requires that both sets of data should cover the same set of goods and services and use the same concepts and classifications. Problems may arise in practice because the price indices and the expenditure series are often compiled independently of each other by different departments of a statistical agency or even by different agencies.

**2.25** The coverage of a CPI need not be the same as that of total household consumption expenditures in the national accounts. The CPI may be targeted at selected households and expenditures for reasons given above. However, the difference in coverage between the CPI and the national accounts expenditures must be precisely identified so that it is possible to account for the differences between them. The price index used to deflate the expenditures ought to cover the additional goods and services not covered by the CPI. This may not be

easy to achieve in practice because the relevant price data may not be easily available if the price collection procedures are geared to the CPI. Moreover, even if all the basic price data are available, the price index needed for deflation purposes is likely to be of a different type or formula from the CPI itself.

**2.26** In principle, the deflation of national accounts estimates will normally require the compilation of appropriately defined price indices that differ from the CPI but may draw on the same price database. They may differ from the CPI not only in the range of the price and expenditure data they cover and the weighting and index number formula employed, but also in the frequency with which they are compiled and the length of the time periods they cover. The movements of the resulting indices will tend to differ somewhat from the CPI precisely because they measure different things. Although designed to be used to deflate expenditure data, they also provide useful additional information about movements in consumer prices. This information complements and supplements that provided by the CPI. The CPI itself is not designed to serve as a deflator. Its coverage and methodology should be designed to meet the needs of the CPI as described in other sections of this chapter.

**2.27** When other types of consumer price indices are needed in addition to the CPI, this should be recognized at the data collection stage as it may be more efficient and cost effective to use a single collection process to meet the needs of more than one kind of price index. This may imply collecting rather more price data than are needed for the CPI itself if the coverage of the CPI has been deliberately restricted in some way.

## Purchasing power parities

**2.28** Many countries throughout the world, including all the member countries of the European Union (EU), participate in regular international programmes enabling purchasing power parities (PPPs) to be calculated for household consumption expenditures. The calculation of PPPs requires the prices of individual consumer goods and services to be compared directly between different countries. In effect, PPP programmes involve the compilation of international consumer price indices. Real expenditures and real incomes can then be compared between countries in much the same way as between different time periods in the same country.

**2.29** It is not proposed to examine PPP methodology here but simply to note that PPPs create yet another demand for basic price data. When such data are being collected, therefore, it is important to recognize that they can be used for PPPs as well as CPIs. PPPs are essentially international deflators which are analogous to the inter-temporal deflators needed for the national accounts of a single country. Thus, while the processing and aggregation of the basic data for CPI purposes should be determined by the needs of the CPI itself, it is appropriate to take account of the requirements of these other kinds of price indices at the data collection stage. There may be important economies of scale to be realized by using a single collection process to meet the needs of several different types of indices.



**2.30** Thus, operationally as well as conceptually, the CPI needs to be placed in the context of a wider set of interrelated price indices. The compilation of CPIs pre-dates the compilation of national accounts by many years in some countries, so the CPI may have originated as a free-standing index. The CPI can, however, no longer be treated as an isolated index whose compilation and methodology can proceed quite independently of other interrelated statistics.

## Use of the consumer price index for accounting under inflation

**2.31** When there is inflation, both business and national accounts have to introduce adjustments which are not needed when the price level is stable. This is a complex subject which cannot be pursued in any depth here. Two methods of accounting are commonly used, and they are summarized below. Both require price indices for their implementation.

### Current purchasing power accounts

**2.32** Current purchasing power accounts are accounts in which the monetary values of the flows in earlier time periods are scaled up in proportion to the increase in some general index of inflation between the earlier period and the current period. In principle, the index used should be a general price index covering other flows in addition to household consumption expenditures, but in practice the CPI is often used by default in the absence of a suitable general index.

### Current cost accounting

**2.33** Current cost accounting is a method of accounting for the use of assets in which the cost of using the assets in production is calculated at the current prices of those assets as distinct from the prices at which the assets were purchased or otherwise acquired in the past (historic costs). The current cost of using an asset takes account not only of changes in the general price level but also of changes in the relative price of that type of asset since it was acquired. In principle, the price indices that are used to adjust the original prices paid for the assets should be specific price indices relating to that particular type of asset, and such indices are calculated and used in this way in some countries. However, when there are no such indices available there remains the possibility of using the CPI, or some sub-index of the CPI, by default, and CPIs have been used for this purpose.

## Consumer price indices and general inflation

**2.34** As already noted, measures of the general rate of inflation in the economy as a whole are needed for various purposes:

- Controlling inflation is usually one of the main objectives of government economic policy, although responsibility for controlling inflation may be delegated to the central bank. A measure of general infla-

tion is needed in order to set targets and also to judge the degree of success achieved by the government or central bank in meeting anti-inflationary targets.

- As noted above, a measure of general inflation is also needed for both business and national accounting purposes, particularly for current purchasing power accounting.
- The concept of a relative price change is important in economics. It is convenient therefore to be able to measure the actual changes in the prices of individual goods or services relative to some measure of general inflation. There is also a need to be able to measure real holding (or capital) gains and losses on assets, including monetary assets and liabilities.

**2.35** Suitable measures of general inflation are considered in Chapter 14, in which it is shown that a hierarchy of price indices exists that includes the CPI. Clearly, a CPI is not a measure of general inflation, as it only measures changes in the prices of consumer goods and services purchased by households. A CPI does not cover capital goods, such as houses, or the goods and services consumed by enterprises or the government. Any attempt to analyse inflationary pressures in the economy must also take account of other price movements, such as changes in the prices of imports and exports, the prices of industrial inputs and outputs, and also asset prices.

## Consumer price indices and inflation targets

**2.36** Despite the obvious limitations of a CPI as a measure of general inflation, it is commonly used by governments and central banks to set inflation targets. Similarly, it is interpreted by the press and the public as the ultimate measure of inflation. Although governments and central banks are obviously well aware of the fact that the CPI is not a measure of general inflation, a number of factors help to explain the popularity of the CPI, and these are discussed below.

**2.37** It may be noted, however, that even though the CPI does not measure general inflation its movements may be expected to be highly correlated with those of a more general measure, if only because consumption expenditures account for a large proportion of total final expenditures. In particular, the CPI should provide a reliable indicator of whether inflation is accelerating or decelerating and also of any turning points in the rate of inflation. This information is highly valuable even if the CPI may be systematically understating or overstating the general rate of inflation.

## Consumer price indices and international comparisons of inflation

**2.38** CPIs are also commonly used to make international comparisons of inflation rates. An important example of their use for this purpose is provided by the EU. In order to judge the extent to which rates of inflation in the different member countries were converging in the mid-1990s prior to the formation of the European Monetary Union, the member countries

decided in the Maastricht Treaty that CPIs should be used. Although CPIs measure consumer inflation rather than general inflation, their use to evaluate the extent of convergence of inflation may be justified on similar grounds to those just mentioned. Presumably, the convergence in CPIs will be highly correlated with that in general inflation, so the use of a specific rather than a general measure of inflation may lead to the same conclusions about the extent of convergence and which countries diverge the most from the average.

## Popularity of consumer price indices as economic statistics

**2.39** CPIs seem to have acquired a unique status among economic statistics in most countries. There are several factors which help to explain this:

- First, all households have their own personal experience of the phenomenon the CPI is supposed to be measuring. The general public are very conscious of changes in the prices of consumer goods and services, and the direct impact those changes have on their living standards. Interest in CPIs is not confined to the press and politicians.
- Changes in the CPI tend to receive a lot of publicity. Their publication can make headline news. The CPI is a high-profile statistic.
- The CPI is published frequently, usually each month, so that the rate of consumer inflation can be closely monitored. The CPI is also a timely statistic that is released very soon after the end of the period to which it refers.
- The CPI is a statistic with a long history, as noted in Chapters 1 and 15. People have been familiar with it for a long time.
- Although price changes for certain kinds of consumer goods are difficult to measure because of quality changes, price changes for other kinds of goods and services such as capital goods and government services, especially public services, tend to be even more difficult to measure. The CPI may be a relatively reliable price index compared with the price indices for some other flows.
- The CPI is widely respected. Its accuracy and reliability are seldom seriously questioned.
- Most countries have deliberately adopted a policy of not revising the index once it has been published. This makes it more attractive for many purposes, especially those with financial consequences such as indexation. The lack of revisions may perhaps create a somewhat spurious impression of certainty, but it also seems to enhance the credibility and acceptability of the index.

**2.40** The widespread use of the CPI for more purposes than it is designed for can be explained by the various factors listed above, together with the fact that no satisfactory alternative or more comprehensive measures of inflation are available monthly in most countries. For example, the CPI may be used as a proxy for a more general measure of inflation in business accounting, even though it may be clear that, conceptually, the CPI is not the ideal index for the purpose. Similarly, the fact that the CPI is not subject to revision, together with its frequency and timeliness, may explain its popularity for indexation purposes in business or legal contracts in contexts where it also may not be very appropriate conceptually. These practices may be defended on the grounds that the alternative to using the CPI may be to make no adjustment for inflation. Although the CPI may not be the ideal measure, it is much better to use it than to make no adjustment whatsoever.

**2.41** Although the CPI is often used as a proxy for a general measure of inflation, this does not justify extending its coverage to include elements that go beyond household consumption. If broader indices of inflation are needed, they should be developed in addition to the CPI, leaving the CPI itself intact. Some countries are in fact developing additional and more comprehensive measures of inflation within the kind of conceptual framework outlined in Chapter 14 below.

## The need for independence and integrity of consumer price indices

**2.42** Because of the widespread use of CPIs for all kinds of indexation, movements in the CPI can have major financial ramifications throughout the economy. The implications for the government alone can be considerable, given that the CPI can affect interest payments and taxation receipts as well as the government's wage and social security outlays.

**2.43** When financial interests are involved, there is always a risk that both political and non-political pressure groups may try to exert an influence on the methodology used to compile the CPI. The CPI, in common with other official statistics, must be protected from such pressures and be seen to be protected. Partly for this reason, many countries establish an advisory committee to ensure that the CPI is not subject to outside influence. The advisory committee may include representatives of a cross-section of interested parties as well as independent experts able to offer professional advice. Information about the methodology used to calculate CPIs should be publicly available.

