

Chapter 11

CONCEPTS, DOMAIN AND CLASSIFICATIONS

A. Introduction

The purpose of this chapter is to define and clarify the basic concepts underlying a CPI and to explain the domain or scope of the index: that is, the set of goods and services whose expenditures and prices are intended to be covered by the index. While the general purpose of a *consumer* price index is to measure changes in the prices of consumer goods and services, there are a number of concepts that need to be defined precisely before an operational definition of a CPI can be arrived at. The concept of 'consumption' is an imprecise one that can be interpreted in several different ways, each of which may lead to a different CPI. The governmental agency or statistical office responsible for the compilation of a CPI also has to decide whether the index is meant to cover all consumers, i.e., all households, or a particular group of households. The precise scope of a CPI is inevitably influenced by what is intended, or believed, to be the main use of the index, bearing in mind that the index may also be interpreted as a general price index and used for purposes other than those for which it is intended.

Consumption is an activity in which persons, acting either individually or collectively, use goods or services to satisfy their needs and wants. In economics, no attempt is made to observe and record such activities directly. Instead, consumption is measured either by the value of the goods and services used up in some period, or by the value of the goods and services that are purchased, or otherwise acquired, for purposes of consumption.

A 'consumer price index' can have two different meanings. A 'consumer' is a type of economic unit, typically a person or a household. On the other hand, a 'consumer' good or service is a certain type of product. It may be defined as *a good or service that members of households use, directly or indirectly, to satisfy their own personal needs and wants*. By definition, a consumer good or service can be used by households to obtain *utility*. Utility is simply the generic, technical term preferred by economists

for the benefit or welfare that individuals or households derive from the use of a consumer good or service.

A CPI is understood here to be a price index that measures changes in the prices of *consumer* goods and services acquired and used by *households*. More broadly based price indices can be defined whose scope extends well beyond consumer goods and services to include the prices of various kinds of assets such as land, dwellings or financial assets purchased by households. Such indices may be useful as broad measures of inflation as perceived by households, but they are not CPIs.

Many households engage in business activities and purchase various kinds of goods, services and assets for business use. As they are not used to satisfy personal needs or wants, they are not consumer goods or services and they fall outside the scope of a CPI. The physical characteristics of goods are not sufficient to determine whether or not they are consumer goods as many, such as electricity or vehicles, may be used either for personal consumption or as inputs into the businesses.

A CPI does not necessarily have to cover all households and all the goods and services they consume. For example, some of the goods and services consumed by households, such as publicly provided health or education services, may not actually have been purchased in monetary transactions. As households do not buy them and there are no prices to be observed, it may not be appropriate or useful to try to include them in a CPI. Many decisions remain to be taken about the precise scope of a CPI even though the general purpose of the index may be determined.

In general, CPIs are usually intended to cover only a subset of total household consumption expenditures as defined in National Accounts. It follows that scope or domain of a CPI is not meant to be the same as that of the price index used to deflate consumption expenditures in National Accounts, a point that can cause some confusion. The two indices serve different purposes and have to use different index number formulae. CPIs cannot be used directly to deflate National Accounts aggregates and it is misleading to cite this as one of the main uses for CPIs. On the other hand, the underlying basic expenditure and price data collected for CPI purposes are generally used as inputs into the construction of the price indices used in National Accounts. The differences in scope and methodology between

CPIs and the National Accounts price deflators are summarised in the Annex to this chapter.

B. Acquisitions and uses

A distinction may be drawn between the acquisition of consumer goods and services by households and their actual use for consumption.

B.1 Times of acquisition and use

Consumer goods may be acquired at one point of time and used at some other point of time, or even used repeatedly over an extended period of time. The time of acquisition of a good is the moment at which ownership of the good is transferred to the consumer. In a market situation, it is the moment at which the consumer incurs a liability to pay, either in cash or in kind.

The provision of a service does not involve any exchange of ownership. Instead, it typically leads to some improvement in the condition of the consumer. A service is acquired by the consumer at the same time that the producer provides it and the consumer incurs a liability to pay. However, benefits or utility may continue to be derived by the consumer of the service long after it was acquired.

In a market situation, the time of acquisition for both goods and services coincides with the time at which the liability to pay is incurred. The time at which payment, whether in cash or in kind, is made is irrelevant being determined mainly by institutional arrangements and administrative convenience.

The distinction between the *acquisition* and the *use* of a consumer good or service has led to two different concepts of a CPI being proposed.

- A CPI may be intended to measure the average change between two time periods in the prices of the consumer goods and services acquired by households.

- Alternatively, a CPI may be intended to measure the average change between two time periods in the prices of the consumer goods and services used by households to satisfy their needs and wants.

The distinction between time of acquisition and time of use is particularly important for durable goods and certain kinds of services.

B.1.1 Durable and non-durable goods

A non-durable good would be better described as a single use good. For example, food and drink are used once only to satisfy hunger or thirst. Many so-called ‘non-durable’ goods are in fact extremely durable physically. Households may hold substantial stocks of them, especially in periods of political or economic uncertainty: for example, foodstuffs such as rice and flour, butter and vegetable oils, frozen foods, wine or bottled drinks, or fuels such as heating oil, coal or firewood.

Conversely, the distinguishing feature of a consumer durable is that it is durable under use. It can be used repeatedly or continuously to satisfy consumers’ needs over a long period of time, possibly many years: for example, furniture or vehicles. For this reason, a durable is often described as providing a flow of ‘services’ to the consumer over the period it is used (see also Box 9.3 of Chapter 4).¹ Durables may not provide utility directly as they are often used to produce other goods and services from which consumers actually benefit. For example, cookers are used together with inputs of fuel or power, utensils, foodstuffs and labour to produce meals for the table. A list of the different kinds of consumer durables distinguished in COICOP is given in Section I below. Of course, some durables last much longer than others, the less durable ones being described as “semi-durables” in COICOP: for example clothing.

B.1.2 Services

Consumers may continue to benefit, and derive utility, from some services long after they were provided because they bring about substantial, long lasting or even permanent improvements in the condition of the consumers. The quality of life of persons receiving medical treatments such

¹ There is a close parallel between the definitions of consumer durables and fixed assets. Fixed assets are goods that are used repeatedly or continuously over long periods of time in processes of production: for example, buildings or other structures, machinery and equipment.

as hip replacements or cataract surgery, for example, is substantially and permanently improved. Similarly, consumers of educational services can derive lifetime benefits from them. For some purposes, it may be appropriate to classify expenditures on 'durable' services such as education and health as investments, or capital formation, on the grounds that the services are not consumed at the time they are provided but augment the stock of human capital. Another characteristic that expenditures on education and health share with durable goods is that they are often so costly that they have to be financed by borrowing or by running down other assets.

B.1.3 The values of acquisitions and uses

The distinction between acquisitions and uses applies to all goods and most services. Households hold stocks of many so-called non-durable goods so that there may be a significant lapse of time between acquisition and use. In general, however, the quantities of non-durable goods and services acquired within a given period are likely to be about the same as the quantities used up.

Such an assumption is not reasonable for durable goods and services, however. Acquisitions of durables and some services are liable to fluctuate whereas the using up of existing stocks of durables is likely to be a fairly steady process. The values of the goods and services used up in a given period cannot be directly observed and require estimates of the time profiles of the flows of services they provide over their service lives.

Partly because of the conceptual and practical difficulties involved in measuring uses, statistical offices tend to adopt the acquisitions approach in both their national accounts and CPIs. In CPIs, durable goods and services are treated in the same way as non-durable goods and services, just as expenditures on consumer durables are recorded in National Accounts in the same way as expenditures on non-durable consumer goods and services.

B.2 A CPI based on the acquisitions approach

The scope of an index based on the widely used acquisitions approach is examined in this section. Households may acquire goods and services in four main ways:

they may purchase them at their own expense;

they may receive them as remuneration in kind for work done; they may receive them as free gifts, or transfers, from other economic units; they may produce them themselves for their own consumption.

The broadest possible scope for a CPI based on the acquisitions approach would be one covering all the four categories of consumer goods and services just listed, irrespectively of who bears the cost of providing them. It would therefore include all *social transfers in kind* in the form of education, health, housing and other goods and services provided free of charge, or at nominal prices, to individual households by governments or non-profit institutions, NPIs. Total acquisitions are equivalent to the total actual individual consumption of (non-institutional) households as defined in the SNA (see section C.2.3.3.1 of Chapter 9). *Collective* services provided by governments to the community as whole, such as public administration and defence, as individual households do not acquire these services.

Social transfers in kind contribute to households' welfare or standard of living. If they are included within the scope of a CPI, they have to be priced. From the point of view of the government or NPI that finances them, social transfers are valued either by the market prices paid for them or by the costs of producing them. From the point of view of the receiving households they have zero or nominal prices. For CPI purposes, the appropriate price is that paid by the household. The price or cost incurred by the government enters into the calculation of other price indices relating to government expenditures. When households incur zero expenditures, the services provided free carry zero weight in the CPI. It makes no difference whether such services are included or excluded. However, governments and NPIs may decide to introduce charges for goods or services that were previously provided free. When this happens, the increase in price from zero to a positive amount should be captured by a CPI. The increase in the total value of basket of goods and services covered by the index can be measured even though the value of some services may have been zero in the first period.

B.2.1 Acquisitions and expenditures

Expenditures need to be distinguished from acquisitions. Economic units incur expenditures when they bear the costs of acquiring goods or services. A CPI based on expenditures is therefore narrower in scope than one based on acquisitions as it excludes all goods and services received free

as social transfers in kind. The expenditures on social transfers in kind are incurred by governments or NPIs and not by the households that receive and benefit from them.

B.2.2 Monetary expenditures

Expenditures may be monetary or non-monetary depending on the nature of the resources used to pay. A monetary expenditure occurs when a household pays in cash, by cheque or credit card, or otherwise incurs a financial liability to pay, in exchange for the acquisition of a good or service. Only monetary expenditures generate monetary prices that can be observed and recorded.

B.2.3 Non-monetary expenditures

Non-monetary expenditures occur when households bear the costs of acquiring the goods or services but do not incur a financial liability to pay: for example, when payments are made in kind, as in barter transactions. The goods and services offered as payment in barter transactions are equivalent to sales of goods and services. They constitute negative expenditures and their price changes should, in principle, carry negative weights in a CPI. However, as the two sides of a barter transaction should in principle be equal in value, the net expenditure incurred should be zero. Barter transactions in which consumer goods and services are traded between households may therefore be ignored in practice for CPI purposes.

Non-monetary expenditure also occurs when employees acquire goods and services from their employers as remuneration in kind. The employees bear the costs, but pay in labour rather than cash. Consumer goods and services received as remuneration in kind can be included in a CPI using the actual or estimated market prices payable for them.

A third important category of non-monetary expenditure occurs when goods and services are consumed by the same units that produced them. When a household produces a good or service for itself, it incurs the cost and expenditure is deemed to occur at the time of acquisition. Such expenditures include expenditures on housing services produced for their own consumption by owner occupiers. The treatment of goods and services produced for own consumption is discussed in more detail below.

The non-monetary expenditures incurred by households have to be valued. When there is an actual transaction between two different parties, such as a barter transaction or remuneration in kind, its monetary value has to be estimated. In the case of own account production, however, there is only a single unit involved and the transaction itself is imputed. The same unit takes on the roles of both producer and consumer, the transaction being deemed to take place between them. Values have to be imputed for the goods and services involved.

B.2.4 A hierarchy of consumption aggregates

Various possible consumption aggregates may be used for CPI purposes, ranging from the most comprehensive, total acquisitions, down to the narrowest, monetary expenditures, as explained in section C.2.3.3 of Chapter 9. Statistical offices have to decide which kind of aggregate is most appropriate for their particular purposes. If the main reason for compiling a CPI is the measurement of inflation, it may be appropriate to restrict the scope of the index to monetary expenditures only. The estimated or imputed prices of the goods and services involved in non-monetary expenditures are essentially hypothetical prices that do not generate any demand for money. The harmonised indices of consumer price, or HICPs, used to measure inflation within the European Union have opted for an index confined to monetary expenditures.

B.2.5 Non-consumption expenditures and other payments outside the scope of CPIs

Expenditures made by households on items that are not consumer goods and services are outside the scope of a CPI: for example, expenditures on assets, such as land or bonds, shares or other financial assets. There may be a demand for a price index that covers all kinds of expenditures made by households, but of such an index would obviously be more comprehensive than a consumer price index.

Some other kinds of payments are out of scope because they are not any kind of expenditures. They consist of unilateral payments, or transfers, for which no counterparts are received in exchange: for example, payments of direct taxes on income or wealth, social security contributions, or fines. As there are no counterparts, there also no prices.

B.3 A CPI based on uses approach

On the uses approach, a CPI is defined as an index that measures the average change between two time periods in the prices of the consumer goods and services actually used by households in those periods. As already noted, it may be reasonable to assume that for non-durable goods and services, the values of uses and acquisitions within the same period are the same, at least on aggregate. Such an assumption is not justified for durable goods that provide flows of services over a number of years

A CPI based on the uses approach requires that the index should measure period to period changes in the *prices of the services* provided by the durables. The value of the flow of services from an asset may be estimated by its 'user cost' consisting of the sum of the depreciation plus the capital, or interest, cost of the asset. The depreciation should be calculated with reference to the price of a new durable of the same type and not on the basis of the price originally paid, or the 'historic cost'. The change in the price of the depreciation component of user cost is therefore likely to be the same as the change in the price of a new durable. In principle, the consumption of durable services, mainly certain kinds of educational and medical services, might also be estimated on the basis of user costs. These kinds of services may well be subject to depreciation. Some educational services may subject to obsolescence, for example.

The value of the services provided by a durable is linked to the rental receivable for hiring it out on the market. However, market rentals have to cover not only the values of the service flows but additional costs such as administration and management, repairs and maintenance and overheads. For example, the amount payable to use a washing machine in a 'laundrette' has to cover the costs of the room space in which the machine is housed, electricity, repairs and maintenance, the wages of supervisory staff and so on, as well as the services provided by the machine itself. Similarly, the rentals payable for car hire may significantly exceed the cost of the service flow provided by the car on its own. In both cases, the customer is buying a bundle of services that include more than just the use of the durable good.

Estimating the values and the prices of the flows of services provided by durables is difficult. They cannot simply be equated with the market rentals for the same kinds of assets for the reasons just given. Because of

these practical measurement difficulties, CPIs have up to now been based mainly on the acquisitions approach.

B.3.1 The scope of a uses index

The same decisions need to be taken with regard to the scope of a CPI whether it is based on the uses or the acquisitions approach. All the coverage issues discussed with reference to acquisitions apply equally to uses. For example, it is necessary to decide whether or not to restrict the goods or services used up to those purchased in monetary expenditures or to include goods and services produced on own account or obtained through barter or as remuneration in kind.

C. Cost of living indices

The properties and behaviour of cost of living indices, or COLIs, are explained in some detail in chapter 5. A summary explanation is also given in section D of chapter 10. In practice, the scope of a COLI is defined by the sets of the consumer expenditures that enter into the numerator and denominator of the index. Because COLIs measure the change in the cost of maintaining a given standard of living or level of utility, they lend themselves to a uses rather than an acquisitions approach as utility is derived not by acquiring a consumer good or service but by using it to satisfy personal needs and wants.

The concept of the cost of living is generally understood to mean to mean the cost of the goods and services consumed by households that are needed to attain, or maintain, a given standard of living or welfare. The cost could refer to the costs incurred by the households themselves or it could also include the costs of social transfers in kind so that the same issues arise with regard to the coverage of the expenditures as were discussed above.

Welfare may be interpreted to mean not only economic welfare, that is welfare that is linked to economic activities such as production, consumption and working, but *total welfare* that also depends on non-economic factors such as civil liberties, the risk of being attacked either by criminals or from abroad, diseases, the climate and the state of the environment. It may not possible to draw a clear distinction between economic and non-economic factors, but it is clear that total welfare is only partly dependent on the amount of goods and services consumed.

C.1 Conditional and unconditional cost of living indices

The distinction between conditional and unconditional COLIs is examined in chapter 5. However, it is necessary to introduce the distinction here as it is highly relevant to the general issue of the domain of a CPI.

It is possible to define a cost of living index as the change in the cost to a household of maintaining a given level of total welfare, such an index being described as an *unconditional cost of living index*. The prices of consumer goods and services are only one set of factors, or variables, that affect the total welfare, or overall standard of living, of a household. Moreover changes in consumer prices are only some of the events that determine the change in an unconditional COLI. In some cases, other events may completely dominate the movements in such an index.

A stock example is that of an unusually severe winter (or hot summer) which may require households to consume greater quantities of fuels in order to maintain the level of comfort enjoyed previously. The cost of the *increased quantities* of fuel consumed drives up the unconditional cost of living. There are countless other events that can impact on the unconditional cost of living: for example, natural disasters such as earthquakes, hurricanes or floods; man made disasters such as Chernobyl; acts of terrorism or war; the ending of the cold war; plagues or epidemics; and so on

When such events occur, households have to adjust their level of consumption to compensate for their positive or negative effects on welfare if they are to maintain exactly the same level welfare or standard of living (although in some cases it might not even be possible to maintain welfare unchanged by making compensatory adjustments in the quantities of goods and services consumed). While there might possibly be some economic or policy interest in estimating the amounts of such incremental consumption, it is clear that they provide no information about the price changes experienced by households. On the contrary, including them in the cost of living index can only obscure the effects on the cost of living of changes in prices.

An unconditional cost of living index is patently not a price index when its movements may be partly or wholly dependent on the cost of the incremental consumption necessitated by events totally unconnected with

prices. The issue is as much about semantics as concepts. Given that a price index is supposed to be an index that measures price changes, an unconditional COLI can scarcely be presented to users as a price index.

It is therefore generally accepted that in order for a cost of living index to serve as a consumer price index its domain or scope must be restricted to exclude the effects of events other than price changes. A *conditional* cost of living index may be defined as the ratio of the minimum expenditures needed to maintain a given level of utility or welfare resulting from changes in the prices of consumer goods and services faced by households, *assuming* that all the other external factors affecting welfare remain constant. It is the definition of a COLI that has already been used extensively in this Manual. It allows the quantities consumed to vary in response to changes in relative prices, but all other factors are held constant, in particular tastes or preferences. A COLI is not just conditional on the level of utility associated with the basket of goods and services consumed in the base period but is also conditional on the preferences in the base period which are in turn influenced by the circumstances prevailing in the base period. For example, households' marginal rates of substitution between fuels and other products are conditional on the weather. Changes in weather change these substitution rates and the demand for fuel, even though this does not imply any change in the underlying preference map as a whole. The increased consumption of fuel due to bad weather does not enter into the COLI, although any increases in fuel prices resulting from the increased demand would, of course, enter into the index.

A conditional COLI should not be viewed as second best to an unconditional COLI for CPI purposes. An unconditional COLI is a more comprehensive *cost of living* index than a conditional COLI, but it is not a more comprehensive *price* index than a conditional index. An unconditional index does not include more price information than a conditional index and it does not give more insight into the impact of price changes on households' welfare. On the contrary, the impact of the price changes is diluted and obscured as more variables impacting on welfare are included within the scope of the index.

Not only COLIs but also fixed basket indices, such as Laspeyres and Paasche, are conditional in the sense that they are conditional on the choice of the base period basket, a fact that has generated much of the large literature on index number theory. There is a strong generic similarity

between fixed basket indices and conditional COLIs. A fixed basket measures the change in the cost of the base period basket of goods and services whereas a conditional COLI measures the change in the cost of maintaining the level of utility associated with the base period basket of goods and services, other things being equal.

D Payments, financing and credit

Another possible definition of a CPI is based on payments:

- A CPI may be defined as index that measures the average change between two time periods in the prices of the consumer goods and services that are actually paid for by households in the two periods.

Conceptually, the time at which an expenditure is incurred is the time at which the purchaser incurs a liability to pay: that is, when the ownership of the good changes hands or the service is provided. The time of payment is the time at which the liability is extinguished. The two may be simultaneous when payment is made in cash, but the use of cheques, credit cards and other forms of credit facilities means that it is increasingly common for the payment to take place some time after the expenditure occurs. As CPIs use expenditures as weights, the prices should be recorded at the times at which the expenditures actually take place. This is consistent with an acquisitions approach.

D.1 Financial transactions and borrowing

Some individual expenditures may be very large: for example, the purchase an expensive durable good, expensive medical treatment or an expensive holiday. If the household does not have sufficient cash, or does not wish to pay the full amount immediately in cash, there are various options open.

- The purchaser may borrow from a bank, money lender or other financial institution.
- The purchaser may use a credit card.

- The seller may extend credit to the purchaser, or the seller may arrange for a third party, some kind of financial institution, to extend credit to the purchaser.

D.2 The creation of a financial asset / liability

When a consumer borrows to purchase a good or service there are two quite distinct transactions involved: the purchase of the good or service, and the borrowing of the requisite funds. The latter is a purely financial transaction between a creditor and a debtor in which a new financial asset / liability is created. This financial transaction is outside the scope of a CPI.

In general, when a household borrows from financial institutions, including money lenders, the borrowed funds may be used for a variety of purposes including the purchase of a dwelling or financial assets, such as bonds or shares. Similarly, the credit extended to the holder of a credit card can be used for a variety of purposes. In itself, the creation of a financial asset and liability by new borrowing cannot impact on a CPI. There is no good or service purchased, no expenditure and no price. The treatment of the subsequent interest payments is a completely different matter that is considered below.

Hire purchase and mortgage loans must be treated consistently with other loans. The fact that certain loans are conditional on the borrower using the funds for a particular purpose does not affect the treatment of the loan itself. Moreover, conditional loans are by no means confined to the purchase of durable goods on 'hire purchase'. Conditional personal loans may be made for other purposes, such as large education or health expenditures. In each case, the contracting of the loan is a separate transaction from the expenditure on the good or service and must be distinguished from the latter. The two transactions may involve different parties and may take place at quite different times.

D.3 Hire purchase

In the case of a durable good bought on hire purchase, it is necessary to distinguish the *de facto*, or economic, ownership of the good from the legal ownership. The time of acquisition is the time the hire purchase contract is signed and the purchaser takes possession of the durable. From then onwards, it is the purchaser who uses it and derives the benefit from its

use. The purchasing household becomes the *de facto* owner at the time the good is acquired, even though legal ownership may not pass to the household until the loan is fully repaid.

By convention, therefore, the purchasing household is treated as buying the good at the time possession is taken and paying the full amount in cash at that point. At the same time, the purchaser borrows, either from the seller or some financial institution specified by the seller, a sum sufficient to cover the purchase price and the subsequent interest payments. The difference between the cash price and the sum total of all the payments to be made is equal to the total interest payable. The relevant price for CPI purposes is the cash price whether or not the purchase is facilitated by some form of borrowing².

D.4 Interest payments

The treatment of interest payments on the various kinds of debt that households may have incurred is difficult both conceptually and in practice. Nominal interest is a complex composite payment covering at least four elements whose mix may vary considerably.

1. The first component is the pure interest charge: i.e., the interest that would be charged if there were perfect capital markets and perfect information.
2. Another component is a risk element that depends on the credit worthiness of the individual borrower. It can be regarded as a built in insurance charge under uncertainty against the risk of the debtor defaulting.
3. When there is inflation, the real value of a loan fixed in monetary terms (that is, its purchasing power over real goods and services) declines with the rate of inflation. However, creditors are able to offset the real holding, or capital, losses they expect to incur by charging appropriately high rates of nominal interest. For this reason, nominal interest rates vary

² The treatment of hire purchase is the same as that of 'financial leasing' whereby fixed assets such as aircraft used for purposes of production are purchased by a financial institution and leased to the producer for most or all of the service life of the asset. This is essentially a method of financing the acquisition of an asset by means of a loan and needs to be distinguished from operational leasing such as hiring out cars for short periods of time. The treatment of hire purchase and financial leasing outlined here is followed in both business and economic accounting.

directly with the rate of general inflation, a universally familiar phenomenon under inflationary conditions. The second component of nominal interest is therefore a payment from the debtor to the creditor to compensate for the latter's real holding loss. Payments of compensation are essentially compulsory capital transfers designed to offset creditor's real capital losses. When there is very high inflation such payments account for almost all of the interest charged.

4. A fourth component is a service charge payable to enterprises that make a business of lending money.

The treatment of the first component, pure interest, is somewhat controversial but may account for only a small part of the nominal interest charged. The treatment of the second component, insurance against the risk of default, is also somewhat controversial.

The third component, the payment of compensation for the creditor's real holding loss, is clearly outside the scope of a CPI. It is essentially a capital transaction. It may account for most of nominal interest under inflationary conditions.

The fourth component, known as the implicit service charge, clearly falls within the scope of a CPI. It constitutes the purchase of a service from financial institutions whose business it is to make funds available to borrowers. It is included in COICOP. The service charge is not confined to loans made by "financial intermediaries", institutions that borrow funds in order to lend them to others. Financial institutions who lend out of their own resources provide the same kind of services to borrowers as financial intermediaries. The rates of interest they charge generally include implicit service charges. Because some capital markets tend to be very imperfect and most households may not have access to proper capital markets, many lenders are effectively monopolists who charge very high prices for the services they provide: for example, village money lenders in many countries.

It is very difficult to disentangle the various components of interest. It may be practically impossible to make realistic and reliable estimates of the implicit service charges embodied in most interest payments. Moreover, for CPI purposes it is necessary to estimate not only the values of the services charges but changes in the prices of the services over time. In any case, the

whole of the nominal interest should not be included in a CPI, especially in inflationary circumstances.

E. Household production

E.1 Business activities

Households can engage in various kinds of productive activities that may be either aimed at the market or intended to produce goods or services for own consumption. Households may engage in business or commercial activities such as farming, retail trading, construction, the provision of professional or financial services, and so on. Goods and services that are used up in the process of producing other goods and services for sale on the market constitute *intermediate* consumption. They are not part of the *final* consumption of households. The prices of intermediate goods and services purchased by households are not to be included in CPIs. In practice, it is often difficult to draw a clear distinction between intermediate and final consumption as the same goods may be used for either purpose.

E.2 Consumption of own produce

Households do not in fact consume directly all of the goods and services they acquire for purposes of consumption. Instead, they use them as inputs into the production of other goods or services which are then used to satisfy their needs and wants. There are numerous examples. For example, basic foodstuffs such as flour, cooking oils, raw meat and vegetables may be processed into bread, cakes or meals with the assistance of other inputs including fuels, the services provided by consumer durables, such as fridges and cookers, and the labour services of members of the household. Inputs of materials, equipment and labour are used to clean, maintain and repair dwellings. Inputs of seeds, fertilisers, insecticides, equipment and labour are used to produce vegetables or flowers. And so on.

Some of the production activities taking place within households activities, like gardening or cooking, may or may not provide satisfaction in themselves. Others may be regarded as chores that reduce utility. In any case, the goods or services used as inputs into these productive activities do not provide utility in themselves. Again, there are numerous examples: raw foodstuffs that are unsuitable for eating without being cooked; cleaning

materials; fuels such as coal, gas, electricity or petrol; fertilisers; the services of refrigerators and freezers; and so on.

Utility is derived from consuming the outputs from household production undertaken for own consumption. It is necessary therefore to decide whether a CPI should try to measure the changes in the prices of the outputs, rather than the inputs. In principle, it seems desirable to measure the output prices, but there are serious objections to this procedure.

On a conceptual level, it is difficult to decide what are the real final outputs from many of the more nebulous household production activities. It is particularly difficult to specify exactly what are the outputs from important service activities carried out within households, such as child care or care of the sick or elderly. Even if they could be satisfactorily identified conceptually they would have to be measured and priced. There are no prices to be observed as there are no sales transactions. Prices would have to be imputed for them and such prices would be not only hypothetical but inevitably very speculative. Their use in CPIs is not a realistic possibility in general and almost certainly would not be acceptable to most users who are primarily interested in the market prices paid by households.

The practical alternative is to treat the goods and services acquired by households on the market for use as inputs into the various kinds of household production activities *as if* they were themselves final consumer goods and services. They provide utility *indirectly* assuming that they are used exclusively to produce goods and services that are directly consumed by households. This is the practical solution that is generally adopted not only in CPIs but also in national accounts where household expenditures on such items are classified as final consumption. Although this seems a simple and conceptually acceptable solution to an otherwise intractable problem, exceptions may be made for one or two kinds of household production that are particularly important and whose outputs can readily be identified.

E.2.1 Subsistence agriculture

In the case of the national accounts, an attempt is made to record the value of the agricultural output produced for own consumption. In some countries, subsistence agriculture may account for a large part of the production and consumption of agricultural produce. The national accounts

require such outputs to be valued at their market prices. It is not proposed to follow this procedure for CPI purposes.

A CPI may record either the actual input prices or the imputed output prices, but not both. If the imputed output prices for subsistence agriculture are included in a CPI, the prices of the purchased inputs should be excluded. This could remove from the index most of the market transactions made by such households. Expenditures on inputs may constitute the principal contact that the households have with the market and through which they experience the effects of inflation. It is therefore proposed to record the actual prices of the inputs and not the imputed prices of the outputs in CPIs.

E.2.2 Housing services produced for own consumption

The treatment of owner occupied housing is difficult and somewhat controversial. It is explained in some detail in chapter 18. Conceptually, the production of housing services for own consumption by owner occupiers is no different from other types of own account production taking place within households. The distinctive feature of the production of housing services for own consumption, as compared with other kinds of household production, is that it requires the use of an extremely large fixed asset in the form of the dwelling itself. In economics, and also national accounting, a dwelling is recognised to be a fixed asset so that the purchase of a dwelling is classified as gross fixed capital formation and not as the acquisition of a consumer good. Fixed assets are used for purposes of production, not consumption. The dwelling is not consumed directly. The dwelling provides a stream of capital services that are consumed as inputs into the production of housing services. This production requires other inputs, such as repairs, maintenance and insurance. Households consume the housing services produced as outputs from this production.

It is important to note that there are two quite distinct service flows involved.

- One consists of the flow of *capital services* provided by the dwelling which are consumed as *inputs* into the production of housing services.
- The other consists of the flow of *housing services* produced as *outputs* which are consumed by members of the household.

The two flows are not the same. The value of the output flow will be greater than that of the input flow. The capital services are defined and measured in exactly the same way as the capital services provided by other kinds of fixed assets, such as equipment or structures other than dwellings. As explained in detail in chapter 18, the value of the capital services is equal to the user cost and consists primarily of two elements, depreciation and the interest, or capital, costs. Capital costs incurred whether or not the dwelling is purchased by borrowing on a mortgage. When the dwelling is purchased out of own funds, the interest costs represent the opportunity cost of the capital tied up in the dwelling: that is, the foregone interest that could have been earned by investing elsewhere.

There are two main options for the own account production and consumption of housing services in CPIs. One is to price the output of housing services consumed. The other is to price the inputs, including the inputs of capital services. If housing services are to be treated consistently with other forms of production for own consumption within households, the input approach must be adopted. However, the production and consumption of housing services by owner occupiers may be considered to be so important as to merit special treatment.

If it is decided to price the outputs, the prices may be estimated using the market rents payable on rented accommodation of the same type. This is described as the rental equivalence approach. One practical problem is that there may be no accommodation of the same type that is rented on the market. For example, there may be no rental market for rural dwellings in developing countries where most of the housing may actually be constructed by the households themselves. Another problem is to ensure that the market rents do not include other services, such as heating, that are additional to the housing services proper. Another problem is that market rents, like the rentals charged when durables are leased, have to cover the operating expenses of the renting agencies as well as the costs of the housing services themselves and also provide some profit to the owners. Finally, rented accommodation is inherently different from owner occupied housing in that it may provide the tenants with more flexibility and mobility. The transaction costs involved in moving house may be much less for tenants.

In principle, if the output, or rental equivalence, approach is adopted then the prices of the inputs into the production of housing services for own

consumption, such as expenditures on repairs, maintenance and insurance should not be included as well. Otherwise, there would be double counting.

The alternative is to price the inputs into the production of housing services for own consumption in the same way that other forms of production for own consumption within households are treated. In addition to intermediate expenditures such as expenditures on repairs, maintenance and insurance, the costs of the capital services must be estimated and their prices included in the CPI. The technicalities of estimating the values of the flow of capital services are dealt with in chapter 18. As in the case of other types of production for own consumption within households, it is not appropriate to include the estimated costs of the labour services provided by the owners themselves.

Whether the input or the output approach is adopted, it is difficult to estimate the relevant prices. The practical difficulties experienced may sometimes be so great as to lead compilers and users to query the reliability of the results. There is also some reluctance to use imputed prices in CPIs, whether the prices refer to the inputs or the outputs. It has therefore been suggested that the attempt to measure the prices of housing service flows should be abandoned. Instead, it has been proposed to include the prices of the dwellings themselves in the CPI. In most cases these are observable market prices, although many dwellings, especially in rural areas in developing countries, are also built by their owners, in which cases their prices still have to be estimated on the basis of their costs of production.

Including the prices of dwellings in CPIs involves a significant change in the domain or scope of the index. From an economic viewpoint, it is clear that the acquisition of a dwelling is capital formation and not consumption. While the same argument applies to durables, there is a substantial difference of degree between a household durable and a dwelling as reflected by the considerable differences in their prices and their service lives. For this reason, it is generally considered, in both national accounts and CPIs, not acceptable to treat a dwelling as a consumption good even if a household durable is. In principle, therefore, extending the scope of a CPI based on the acquisitions approach to include dwellings implies a significant extension to the scope of the index from household consumption to households' final expenditures -- i.e., their final consumption expenditures plus their gross fixed capital formation.

The advantage of this solution is that it does not require estimates of either the input or output service flows, but conceptually it deviates significantly from the concept of a CPI as traditionally understood. In the case of the consumer durables and dwellings, the options are *either* to record the acquisitions of the assets in the CPIs at their market prices *or* to record the estimated prices the service flows, but not both. Just as no service flows from durables are included in CPIs at present because their acquisitions are included, similarly if the prices of dwellings are included in CPIs the service flows would have to be excluded. As explained in chapter 18, the acquisitions approach may give insufficient weight to durables and dwellings over the long run because it does not take account of the capital costs incurred by the owners of the assets.

F. The coverage of households and outlets

The group of households included in the scope of a CPI is often referred to as the ‘reference households’, or the ‘reference population’.

F.1 Definition of household

For CPI purposes, households may be defined in the same way as in population censuses. The following definition is recommended for use in the 2000 round of population censuses, (UNSD, 1998).

“A household is classified as

either (a) a one person household defined as an arrangement in which one person makes provision for his or her food or other essentials for living without combining with any other person to form part of a multi-person household

or (b) a multi-person household, defined as a group of two or more persons living together who make common provision for food or other essentials for living. The persons in the group may pool their incomes and have a common budget to a greater or less extent; they may be related or unrelated persons or a combination of persons both related and unrelated.”

This definition is essentially the same as that used in household budget surveys and in the SNA. However, the scope of a CPI is usually confined to private households and excludes institutional households e.g.,

groups of persons living together indefinitely in religious institutions, residential hospitals, prisons, or retirement homes. The following are not treated as institutional households - convalescent homes, schools and colleges, the military, etc. and their members are treated as belonging to their private households. The HICP coverage of households, however, is consistent with the SNA 93 definition and thus includes institutional households.

F.2 Types of household

In almost all countries, the CPI scope is designed to include as many private households as possible, and not confined to those belonging to a specific socio-economic group. The HICP regulations require that coverage should be of households independent of their income level.

However, in some countries extremely wealthy households are excluded for various reasons. Their expenditures may be considered to be very atypical while their expenditure data, as collected in HBSs, may be unreliable. The response rates for wealthy households in HBSs are usually quite low. In addition, it may be too costly to collect prices for some of the consumer goods and services purchased exclusively by the wealthy. Some countries may decide to exclude other kinds of households. For example, the UK CPI excludes not only the top 4% of households by income but also households mainly dependent on state pensions, with the net result that roughly 15% of households, and 15% of expenditure, is excluded. Japan and Korea exclude households mainly engaged in agriculture, forestry and fishing, and all one-person households. Such exclusions affect the expenditure weights to the extent that the patterns of expenditures of the excluded groups differ from those of the rest of the population.

In addition to the headline CPI, which has the widest coverage possible, many countries publish a range of subsidiary indices relating to sub-sectors of the population. For example, the Czech Republic compiles separate indices for:

- all households
- all employees
- employees with children
- low income employees

- employees, incomplete families
- pensioners
- low income pensioners
- households in Prague
- households in communities >5,000.

In India, CPI compilation originated from a need to maintain the purchasing power of workers' incomes, and so four different CPIs are compiled at the national level for reference household headed by the following kinds of workers:

- agricultural labourers
- industrial workers
- rural labourers
- urban non-manual employees.

F.3 Geographical coverage

F.3.1 Urban and rural

Geographical coverage may refer either to the geographical coverage of expenditures or the coverage of price collection. Ideally these two should coincide whether the CPI is intended to be a national or a regional index. In most countries, prices are collected in urban areas only since their movements are considered to be representative of the price movements in rural areas. In these cases national weights are applied and the resulting index can be considered a national CPI. If price movements in urban and rural areas are felt to be sufficiently different, however, but price collection is restricted to urban areas due to resource constraints, then urban weights should be applied and the resulting index must be considered as purely an urban and not a national CPI. For example, the following countries cover urban households only (expenditure weights and prices): Australia, USA, Turkey, Mexico, Korea. Most other developed countries tend to use weights covering urban and rural households, although in nearly every case price collection takes place in urban areas only. Of course, the borderline between urban and rural is inevitably arbitrary and may vary from country to country. For example, in France urban price collection is interpreted to include villages with as few as 2,000 residents.

Decisions about geographical coverage in terms of urban versus rural coverage will depend on population distribution and the extent to which expenditure patterns and the movements of prices tend to differ between urban and rural areas.

F.3.2. Foreign purchases of residents and domestic purchases of non-residents

Problems arise when households make expenditures outside the boundaries of the area or country in which they are resident. Decisions about the treatment of such expenditures depend on the main use of a CPI. For inflation analysis, it is the price change within a country which is of interest. An index of inflation is needed that covers all so-called ‘domestic’ consumption expenditures that take place within the geographic boundaries of the country, whether made by residents or non-residents. HICPs are defined in this way as indices of domestic inflation. Thus, they exclude consumption expenditures made by residents when they are outside the country (they belong to the inflation indices of the countries where the purchases are made), and they include expenditures within the country made by residents of other countries. In practice, expenditures by visitors from abroad may be difficult to estimate since HBSs do not cover non-resident households, although estimates might be possible for some commodities using retail sales data or special surveys of visitors. These issues become more important when there is significant cross-border shopping as well as tourism

When CPIs are used for escalating the incomes of residents, it may be appropriate to adopt the so-called ‘national’ concept of expenditure which covers all the expenditures of residents, whether inside or outside the country, including remote purchase from non-resident outlets, e.g. by internet, telephone, mail, etc. HBSs can cover all these types of expenditure, although it may be difficult to identify the country from which remote (internet, mail, etc.) purchases are being made. The prices paid for airline tickets and package holidays bought within the domestic territory should also be covered. It can be difficult, however, to obtain price data for the goods and services purchased by residents when abroad, although in some cases sub-indices of the partner countries’ CPIs might be used.

F.3.3. Regional indices

When compiling regional indices, the concept of residence applies to the region in which a household is resident. It is then possible to draw a distinction between the expenditures within a region and the expenditures of the residents of that region analogous to distinction between the ‘domestic’ and ‘national’ concepts of expenditure at a national level. The same issues arise for regional indices as were discussed in the previous section for national indices. The principles applying to cross-border shopping between regions are the same as for international cross-border shopping, but data availability is generally different. If the scope of the regional index is defined to include the purchases by regional residents when in other regions (‘abroad’), then, although price data for the other regions should be readily available, it is unlikely that expenditure data will be available with the necessary split between expenditure within, and expenditure outside, the region of residence.

Care must be taken to treat cross-border shopping in the same way in all regions. Otherwise double-counting, or omission, of expenditures may occur when regional data are aggregated. Where regional indices are aggregated to give a national index, the weights should be based on regional expenditure data rather than on population data alone.

Many countries try to satisfy the differing needs of their many CPI users by deriving a family of indices with differing coverage, headed by a single wide-ranging official (headline) CPI which is relevant to the country as a whole. In some large countries, regional indices are more widely used than the national CPI, particularly where the indices are used for escalating incomes. Thus, in addition to the headline CPI, which has the widest coverage possible, subsidiary indices are published which may relate to:

- Sub-sectors of the population;
- Geographical regions;
- Specific commodity groups - sub-indices of the overall (official all-items) CPI should be published at as detailed level as possible, since many users are interested in the price change of specific commodity groups.

In effect, many statistical offices are moving towards a situation in which a database of prices and weights is maintained from which a variety of subsidiary indices are derived.

F.4 Outlet coverage

The coverage of outlets is dictated by the purchasing behaviour of the reference households. As already stated, the prices relevant to CPIs are the prices paid by households and could, in theory, be collected directly from households. But, since this is impracticable, the prices collected are the prices on offer in retail shops or other outlets. Thus, all the outlets from which the reference population makes purchases are in scope, and should be included in the sampling frame from which the outlets are selected.

Examples of outlets are:

- Retail shops – from very small permanent stalls, to multi-national chainstores
- Market stalls and street vendors
- Establishments providing household services: electricians, plumbers, window cleaners, etc.
- Leisure and entertainment providers
- Health and education services providers
- Mail/telephone order agencies
- Internet
- Public utilities
- Government agencies and departments

The principles governing the selection of a sample of outlets from which to collect prices are discussed in some detail in Chapter 14.

G. Price variation

Price variation occurs when exactly the same good or service is sold at different prices at the same moment of time. Different outlets may sell exactly the same product at different prices, or the same product may be sold from a single outlet to different categories of purchasers at different prices.

Economic theory states that price variation cannot occur when markets are 'perfect' in an economic sense because identical goods must sell at the same price. If there were more than one price at the same point of time, all the purchases would be made at the lowest price and none would occur at the higher prices. This implies that if the market is perfect and products that are apparently the same are sold to different purchasers at different prices, the goods or services cannot, in fact, be identical but must be qualitatively different in some way. The price differences must reflect quality differences, however subtle, such as differences in the amounts of services accompanying goods sold or different terms and conditions of sale (see Chapter 14 for a detailed explanation of the various kinds of factors that may influence quality). When the price differences are entirely attributable to quality differences they are said to be apparent, not real. They are not real, i.e., pure, price differences because, in effect, the prices refer to different goods. In such cases, any shift in the pattern of quantities sold at different prices would not affect a price index. Instead, it would cause a change in the average quality, and hence volume, of the goods or services sold.

If statistical offices do not have sufficient information about the characteristics of goods and services that appear to be the same but sell at different prices, they have to make a decision as to whether to assume the observed price differences are real or only apparent. The default procedure most commonly adopted in these circumstances is to assume that the price differences are apparent. This assumption is typically made both for CPI and national accounts purposes.

However, markets are not perfect in reality. One reason for the co-existence of different prices may be that the sellers may be monopolists who practise price discrimination by deliberately charging different prices to different categories of purchasers. Another reason may simply be that consumers are not well informed and some may buy at higher prices out of ignorance. Also, markets may be temporarily out of equilibrium as a result of shocks or the appearance of new products. Both CPIs and national accounts must therefore recognise that pure price differences do occur.

G.1 Price discrimination

Economic theory shows that if sellers are able to practise price discrimination they will do so, because it increases profits. It may not be

feasible to practise price discrimination for goods that can easily be retraded. Purchasers discriminated against would not buy directly but try to persuade those who can purchase at the lowest prices to buy on their behalf. However, services cannot be retraded as no exchange of ownership takes place.

Price discrimination appears to be extremely common, almost the norm, for many kinds of services including health, education and transportation. For example, senior citizens may be charged less than others for exactly the same kinds of health or transportation services. Universities may charge foreign students higher fees than domestic students. As it is also very easy to vary the qualities of the services provided to different consumers, it can be very difficult to determine to what extent observed price differences are due to quality differences or pure price discrimination. Sellers may even attach trivial or spurious differences in terms or conditions of sale to the services sold to different categories of purchasers in order to disguise the fact that they are practising price discrimination.

When price discrimination does occur, it is necessary to deal with situations in which sellers vary the average price at which they sell their products by obliging some purchasers to switch from lower to higher prices, or *vice versa*. Suppose, for example, that a service supplier discriminates between age groups by charging senior citizens aged 60 or over price p_2 and others price p_1 , where $p_1 > p_2$. Suppose, further, that the supplier then decides to redefine senior citizens as those aged 70 or over while otherwise keeping prices unchanged. In this case, although neither p_1 nor p_2 changes, the price paid by individuals aged 60 to 70 changes and the average price paid by all households increases.

This example illustrates an important point of principle because, although neither of the stated prices, p_1 and p_2 , at which the services are on offer changes, the prices paid by certain households do change if they are obliged to switch from p_2 to p_1 . From the perspective of the households, price changes have occurred and a CPI should, in principle, recognise and record such changes. As prices are collected from sellers and not from households such price changes are unlikely to be recorded, however, unless the sellers are requested to provide their complete price schedules

G.2 Price variation between outlets

The existence of price differences between outlets raises similar issues to price discrimination. Pure price differences are almost bound to occur when there are market imperfections, especially when households lack information. When new outlets open selling at lower prices than existing ones, there may be a time lag during which exactly the same item sells at different prices in different outlets because of consumer inertia or ignorance. In other cases, however, the price differences may be only apparent because they reflect quality differences of some kind, such as the differing amounts of services associated with the goods sold, or differing terms or conditions of sale.

Households may choose to switch their purchases from one outlet to another or be obliged to switch because the universe of outlets is continually changing, some outlets closing down while new outlets open up. When households switch, it is necessary to decide whether the price differences between the outlets are pure or only apparent. When the price differences are deemed to be pure, a switch in the pattern of purchases between outlets changes the average prices paid by households. Such price changes ought to be captured by CPIs. When the price differences are not pure because they reflect quality differences, a switch in the pattern of purchasers changes the volume of sales and not the CPI. Conceptually, there is a close parallel with price discrimination.

The prices collected for CPI purposes are mostly the prices at which goods and services are on offer in outlets and not the prices paid by households in actual transactions. In these circumstances, the effects of switches in the pattern of purchases between outlets on the average prices paid by households will remain unobserved in practice. When the price differences between outlets are only apparent because they reflect quality differences, the failure to detect such switches does not introduce any bias into the CPI. Buying at a lower price implies buying a lower quality product and lowers the relevant volume index. It does not affect the price index. However, when there are pure price differences, the failure to detect switches will tend to introduce an upward bias in the index, assuming households tend to switch to outlets selling at lower prices. This potential bias is described as *outlet substitution bias*.

G.3 Outlet rotation

A further complication is that, in practice, prices are collected from only a sample of outlets and the samples may change, either because outlets open and close or because there is a deliberate rotation of the sample periodically. When the prices in the outlets newly included in the sample are different from those in the previous outlets, it is again necessary to decide whether the price differences are apparent or pure. If they are assumed to be apparent, the difference between the price recorded previously in an old outlet and the new price in the new outlet is not treated as a price change for CPI purposes, the difference being treated as attributable to quality difference. As explained in more detail in chapter 14, if this assumption is correct, the price changes recorded in the new outlets can simply be linked to those previously recorded in the old outlets without introducing any bias into the index. The switch from the old to the new outlets does not have any impact on the CPI.

If the price differences between the old and the new outlets are deemed to be real, however-- that is, there is pure price variation -- the simple linking just described can lead to bias. When households change the outlets in which they purchase they also change the prices they actually pay for the same product. These price changes should be captured by the CPI. As explained in more detail in Chapter 14, it seems that, in practice, most statistical offices tend to assume that the price differences are apparent and not real and simply link the new series of price observations to the old. Given that it is unrealistic to assume that markets are always perfect and that pure price variation never occurs, this procedure, although widely used, may lead to an upward bias, which has been described as *outlet rotation bias*. One possible strategy that has been suggested is to assume that half of any observed price difference between old and new outlets is real and half apparent, on the grounds that, although inevitably somewhat arbitrary, it is likely to be closer to the truth than assuming that the difference is either all real or all apparent (see McCracken, Tobin *et al.* 1999).

H. The treatment of some specific payments

The range of transactions covered by a CPI is constrained by the fact that a consumer price index, by definition, measures changes in the prices of consumer goods and services acquired (or alternatively used) by households. Certain flows or payments cannot be included on the grounds that they are not acquisitions of, or expenditures on, consumer goods and services: for

example, payments of income taxes. The implementation of this principle is not always straightforward, however, as the distinction between an expenditure on a good or service and other payments may not always be clear cut in practice. A number of conceptually difficult cases, including some borderline cases of a possibly controversial nature, are examined in this section.

H.1 Transfers

The definition of a transfer is a transaction in which one unit provides a good, service or asset to another without receiving any good, service or asset in return, i.e. expenditures for which there is no *quid pro quo*. Transfers are unrequited. As no good or service of any kind is acquired by the household when it makes a transfer, the transfer must be outside the scope of a CPI. The problem is determine whether or not certain kinds of transactions are in fact transfers, a problem common to both CPIs and national accounts.

All payment of taxes which are directly related to income or wealth (ownership of assets) are out of scope of a CPI since they are unrequited compulsory transfers to government, with which no identifiable transfer of consumer goods or services can be associated. Thus, property taxes on dwellings (commonly levied as local authority taxes or rates) are out of scope, unless they can be directly related to the provision of a specific good or service to households.

H.1.1 Licences

Households have to pay to obtain various kinds of licences and it is often not clear whether they are simply taxes under another name or whether the government agency providing the licence provides some kind of service in exchange, for example by exercising some supervisory, regulatory or control function. In the latter case, they could be regarded as purchases of services. Under the aegis of the IMF and other international agencies, experts on taxation have debated certain cases at great length and decided that some of them are so borderline that it is necessary to settle them by agreeing on conventions based on practices followed in the government taxation statistics in the majority of countries. It is appropriate, and

convenient, to make use of these conventions for CPI, and also national accounts, purposes³.

Payments by households for licences to own or use certain goods or facilities have been classified by the taxation experts as consumption expenditures, not transfers, and are thus included within the scope of a CPI. For example, licence fees for radios, TVs, driving, firearms, etc. and fees for passports are included. On the other hand, licences for owning/using vehicles, boats and aircraft, and hunting, shooting and fishing are conventionally classified as direct taxes and are therefore outside the scope of CPIs. Many countries, however, do include taxes for private vehicle use as they regard them as taxes on consumption for CPI purposes. The circumstances under which licences are issued and the conditions attaching to them may vary from country so that statistical offices may wish to deviate from the classification in some instances, but in general it seems appropriate to respect internationally agreed conventions made by the relevant experts.

H.1.2 Subscriptions and gifts

Payments of subscriptions or donations to charitable organisations for which no easily identifiable services are received in return are transfers to a non-profit institution serving households, and thus out of scope. In general, gifts of all kinds are, by their nature, transfers and thus not in scope. On the other hand, payments of subscriptions to clubs and societies, including charities, which provide their members with some kind of service (e.g., regular meetings, magazines, etc.) can be regarded as final consumption and in scope for a CPI.

H.1.3 Tips and gratuities

Non-compulsory tips or gratuities for services rendered are outside the scope of a CPI, as they have the nature of a gift and are therefore considered as transfers. However, there may be cases where, although not compulsory, it can be very difficult to obtain a good or service without some form of additional payment, in which case this payment should be included in the expenditure on, and the price of, the good or service in question.

³ These conventions are listed in the IMF's *Government Finance Statistics* and have also been adopted in the SNA 1993.

H.2 Insurance

The treatment of insurance is examined in chapter 18. This section is concerned only with some general principles. There are two main types of insurance, life and non-life. In both cases the premiums have two components. One is a payment for the insurance itself, often described as the net premium, while the other is a payment to the insurance enterprise for arranging the insurance. The latter is essentially the purchase of a service; i.e., a fee charged for the service of calculating the risks and determining the premiums, administering the collection and investment of premiums, and the payment of claims.

When households take out insurance, the part of the premium that constitutes the payment for a service is part of households' consumption expenditures and therefore falls within the scope of a CPI. The remainder does not. In the case of non-life insurance, the remainder is essentially a transfer to the insurer that goes into a pool covering the collective risks of policy holders as a whole. In the case of life insurance, the remainder is also outside the scope of a CPI but for a different reason. It constitutes the acquisition of a financial asset, not a transfer.

The principles governing the treatment of insurance are fairly clear but their implementation can be difficult in practice because the service charge is an integral part of the gross premium and is not separately identified. These practical problems are discussed in some detail in Chapter 19 and will not be pursued further here. When insurance is arranged through a broker or agent separate from the insurance enterprise, the fees charged by the brokers or agents for their services are included within the scope of the CPI in addition to the implicit service charges made by the insurers.

By including only the service component of household expenditure in a CPI, the possibility of double-counting of expenditure is avoided. HBSs cover all expenditure of households, including expenditure financed from claims received from non-life insurers. Double-counting of expenditure would occur at the national level if both the full non-life premium payments, and the expenditure financed from claims, were included.

The services associated with following types of non-life insurance should be included in a CPI:

- Insurance in respect of hazards such as fire, theft, water damage, etc.
- Health insurance, e.g. private sickness and accident insurance
- Transport, e.g. personal transport, and travel and luggage insurance
- Other insurance such as civil liability insurance, e.g. third party motor cover.

H.3 Gambling

The amounts paid for lottery tickets or placed in bets also consist of two elements that are usually not separately identified – the payment of a service charge (part of consumption expenditures) and a current transfer that enters the pool from which the winnings are paid. The fees paid either explicitly or implicitly for the recreational services provided by the organisers of the gambling are within the scope of a CPI. The procedures used to estimate the service fees are similar to those for insurance, i.e. the service is calculated at the aggregate level as the difference between payables (stakes) and receivables (winnings).

H.4 Payments of interest

Interest provides another example of a composite payment whose components must be treated differently for CPI purposes. As explained in section D.4 above, the treatment of interest is particularly difficult in practice because a payment of interest may cover four different elements that may not be easy to disentangle.

H.5 Transactions in financial assets

Financial assets are not goods or services and are therefore outside the scope of CPIs. The creation, or extinction, of a financial asset/liability is a purely financial transaction that is not any kind of expenditure. The purchase of an existing financial asset is a form of financial investment. Some financial assets, notably securities in the form of bills, bond and shares are tradable and have market prices. They have their own separate price indices, such as stock market price indices.

Pension contributions and the premiums paid for life insurance policies, excluding the service charges, lead to the creation of new financial

assets. They are essentially forms of investment made out of saving. They are thus excluded from CPIs

On the other hand, the explicit or implicit fees paid by households for the services rendered by financial auxiliaries such as brokers, banks, insurers (life and non-life), pension fund managers, financial advisers, accountants, etc. are within the scope of a CPI. Of course, when households purchase such services in connection with their business activities they are outside the scope of a CPI

H.5.1. Purchases and sales of foreign currency

Foreign currency is a financial asset. Purchases and sales of foreign currency are therefore outside the scope of CPIs and changes in exchange rates, in themselves, do not enter into CPIs. However, the service charges made by foreign exchange dealers are included within the scope of CPIs when households acquire foreign currency for personal, and not business, use. These charges include not only explicit commission charges but also the margins between the buying or selling rates offered by the dealers and the average of the two rates.

I. The treatment of some specific household expenditures

Some of the expenditures on goods and services made by households may not be on consumer goods and services and therefore do not qualify for inclusion in CPI. In particular, when households engage in business activities, their business expenditures, whether on intermediate goods or services or on the acquisition of fixed assets, fall outside the scope of a CPI.

I.1 The fees of agents and brokers

When a house is purchased for own use by an owner-occupier, it can be argued that the transfer costs associated with purchase (and sale) should be treated as consumption expenditures in the same way as the brokers' fees incurred when financial assets are bought or sold. The fees paid to an agent to buy or sell houses are included in many national CPIs, provided that the house is to be occupied by the owner and not rented to a third party. The treatment of owner-occupied housing services is discussed fully in Chapter 18.

I.2 Undesirable or illegal goods and services

All the goods and services that households willingly buy on the market in order to satisfy their personal needs or wants constitute consumers' expenditures and therefore fall within the scope of a CPI, irrespective of whether their production, distribution or consumption is illegal or carried out in the underground economy or on the black market. Particular kinds of goods or services must not be excluded because they are considered to be undesirable, harmful or objectionable. Such exclusions could be quite arbitrary and undermine the objectivity and credibility of the CPI.

- First, it should be noted that some goods and services might be deemed to be undesirable at some times and desirable at others, or *vice versa*. People's attitudes change as they acquire more information, especially as a result of scientific advances. Similarly, some goods or services may be deemed to be undesirable in some countries but not in others at the same point of time. The concept of an undesirable good is inherently subjective and somewhat arbitrary and volatile.
- Second, if it is accepted that some goods and services may be excluded on the grounds that are undesirable, the index is thereby exposed to actual or attempted manipulation by pressure groups.
- Third, attempts to exclude certain goods or services by pressure groups may be based on a misunderstanding of the implications of so doing. For example, if the CPI is mainly used for escalating incomes, it may be felt that some goods or services ought to be excluded because households ought not to be consuming them and should not be compensated for increases in their prices. However, excluding them does not imply reducing the index. *A priori*, excluding some good or services is just as likely to increase the CPI as reduce it, depending on whether the price increase for the item in question is below or above the average for other goods and services.

While goods and services that households willingly choose to consume should not, in principle, be excluded from a CPI because they are acquired in the underground economy or even illegally, it may be impossible to obtain the requisite data on the expenditures or the prices, especially on illegal goods and services. They may have to be excluded in practice.

I.3 Luxury goods and services

When a CPI is used as index of general inflation, it ought to include all households regardless of their socio-economic group and also all consumer goods and services regardless of how expensive they are. Similarly, the scope of an index used for purposes of escalating incomes should include all the goods and services purchased by the reference households, irrespective of whether any of these goods and services are considered to be luxuries or otherwise unnecessary or undesirable.

Of course, if the reference households are confined to a select group of households, the index will effectively exclude all those items that are purchased exclusively by households that are not in the group. For example, excluding the wealthiest 5 per cent of households will, in practice, exclude many luxury items from the scope of the index. As already noted, such households may be excluded for various reasons, including the unreliability of their expenditure data and the fact that collecting prices for some items purchased exclusively by a tiny minority of households may not be cost effective. However, once the group of reference households has been decided and defined, judgements should not be made about whether to exclude certain of their expenditures that are considered to be non-essential or on luxuries.

I.4 Second-hand goods

Markets for used or second-hand goods exist for most durable goods. Household expenditures include expenditures on second-hand goods and are therefore within the scope of a CPI. However, households' sales of durables constitute negative expenditures so that the weights for second hand goods are based on households net expenditures: i.e., total expenditures less sales. The total expenditure on a particular type of second-hand good is a function of the rate at which it is bought and sold, i.e., a higher turnover rate (number of transactions) gives a higher total expenditure. A higher turnover does not, however, increase the rate at which any individual good can be used for purposes of consumption or the flow of services that may be obtained from the good.

Households may buy second-hand goods through any of the following routes:

- **Directly from another household** – the selling household will record the proceeds of the sale as receipts. Net expenditures = expenditure *less* receipts = zero, i.e., no weight is attached to purchases and sales from one household to another.
- **From another household via a dealer** – in principle, households' expenditures on the services of the dealers is given by the values of their margins (the difference between their buying and selling prices). These intermediation services should be included in CPIs. They should be treated in the same way as the fees charged by agents such as financial auxiliaries. The margins may be extremely difficult to estimate in practice. Care should be taken to include trade-ins either as purchases by the dealers or receipts of households.
- **Directly from another sector, i.e., from an enterprise or from abroad** – the weight would be household purchases of the second-hand goods from other sectors *less* sales to other sectors.
- **From an enterprise or from abroad via a dealer** - the appropriate weight is given by household purchases from dealers *less* any household sales to dealers *plus* the aggregate of dealers' margins on the cars that they buy from and resell to households. In this second component, trade-ins should count as part of sales by households (in the case of cars, the weight given to new cars should not include any deduction for the value of trade-ins).

I.5 Imputed expenditures on goods and services

As explained in earlier sections, many of the goods and services acquired and used by households for purposes of their own final consumption are not purchased in monetary transactions but are acquired through barter or as remuneration in kind or are produced by themselves. It is possible to estimate what households would have paid if they had purchased them in monetary transactions or, alternatively, what it cost to produce them. These values can be treated as non-monetary expenditures. They are often described as imputed expenditures.

The desirability of including imputed expenditures within the scope of a CPI depends to some extent on the main purpose of the index. If the CPI is intended to be a measure of consumer inflation, it can be argued that only monetary expenditures should be included. Inflation is a monetary phenomenon measured by changes in monetary prices recorded in monetary

transactions. Even when the main use of a CPI is for indexation purposes, it can be argued that it should only reflect changes in the monetary prices actually paid by the reference population. Consistent with the objective of monitoring inflation in the European Union, the aim of the harmonised index of consumer prices, or HICP, compiled by Eurostat is to measure inflation faced by consumers. The concept of “household final monetary consumption expenditure” (HFMCE) used in the HICP defines both the goods and services to be covered, and the price concept to be used, i.e., prices net of reimbursements, subsidies and discounts. HFMCE refers only to monetary transactions and includes neither consumption of own production (e.g., agricultural goods, owner-occupied housing services) nor consumption of goods and services received as income in kind.

When the CPI is intended to be a cost of living index, some imputed expenditures would normally be included within the scope of CPI on the grounds that the goods and services acquired in non-monetary transactions obviously affect welfare and standard of living of households. As already noted, households’ imputed expenditures on housing services produced for own consumption by owner-occupiers are commonly included, but not imputed expenditures on goods such as those agricultural goods produced for own consumption.

J. Price coverage

A CPI should reflect the experience of the consumers to whom it relates, and should therefore record what consumers actually pay for the goods and services which are included in the scope of the index. The expenditures and prices recorded should be those paid by consumers, including any taxes on the products, and taking account of all discounts, subsidies and most rebates, even if discriminatory or conditional. It may be virtually impossible, however, to take account of all discounts and rebates in practice. Sensible practical compromises are needed, for which recommendations and examples are given in Chapter 13.

When households pay the full market prices for products and are then subsequently reimbursed by governments or social security schemes some of the amounts paid, CPIs should record the market prices *less* the amounts reimbursed. This kind of arrangement is common for educational and medical expenditures.

J.1 Taxes and subsidies

All taxes on products such as sales taxes, excise taxes and VAT are part of the purchasers' prices paid by consumers that should be used for CPI purposes. Similarly, subsidies should be taken into account, being treated as negative taxes on products.

For some analytical and policy purposes, it may be useful to estimate a CPI that measures price movements excluding the effects of changes in taxes and subsidies. For monetary policy-makers, the price increases due to changes in indirect taxes or subsidies are not part of an underlying inflationary process but are due to their own manipulation of these economic levers. Similarly, when a CPI is used for escalation purposes, any increase in a CPI due to increases in indirect taxes leads to an increase in wages and benefits linked to the CPI, despite the fact that the aim of the tax increase might have been to reduce consumers' purchasing power. Alternatively, an increase in subsidies might be intended to stimulate consumption, but the resulting lower prices could be offset by a smaller increase in indexed wages and benefits.

J.1.2 Net price indices

Net price indices may be compiled in which taxes on consumer goods or services are deducted from the purchasers' prices and subsidies added back on. However, such indices do not necessarily show how prices would have moved if there were no taxes or changes in taxes. It is notoriously difficult to estimate the true incidence of taxes on products: that is, the extent to which taxes or subsidies, or changes therein, are passed on to consumers. It is also difficult to take account of the secondary effects of changes in taxes. In order to estimate the secondary effects, input-output analysis can be used to work out the cumulative impact of taxes and subsidies through all the various stages of production. For example, some of the taxes on vehicle fuel will enter the price of transport services which in turn will enter the prices of transported goods, some of which will enter the prices of the consumer goods for which they are inputs and some of which will enter the prices paid for consumer goods by retailers and hence the prices which they charge to consumers. To track all these impacts would demand a much more detailed and up to date input-output table than is available in most countries. A more practicable alternative is therefore simply to confine the taxes and subsidies for which correction is made to

those levied at the final stage of sale at retail, that is primarily to VAT, sales and excise taxes. Estimating prices less only these taxes, or corrected for changes in only these taxes, is more feasible. In the case of a percentage sales tax or VAT the calculation is simple, but in the case of excise taxes, it is necessary to ascertain the percentage markup by the retailer, since the excise tax will also be marked up by this percentage.

J.2 Discounts, rebates, loyalty schemes, and ‘free’ product

CPIs should take into account the effects of rebates, loyalty schemes, and money-off vouchers. Given that a CPI is meant to cover all the reference households, whether in the country as a whole or in a particular region, discounts should be included even if they are available only to certain households, or consumers satisfying certain payment criteria.

It may be difficult to record discriminatory or conditional discounts for practical reasons. When only one selected group of households can enjoy a certain discount on a specific product, the original stratum for that product is split into two new strata, each experiencing different price changes and each requiring a weight. So, unless base period expenditures for all possible strata are known, it is not possible to record discriminatory discounts correctly. Similarly, with conditional discounts, e.g. discounts on utility bills for prompt payment, it can be difficult to record the effect of the introduction of such offers unless data are available on the proportion of customers taking advantage of the offer. These kinds of practical problems also arise when there is price discrimination and the sellers change the criteria that define the groups to whom different prices are charged thereby obliging some households to pay more or less than before without changing the prices themselves. These cases are discussed further in Chapter 13.

Although it is desirable to record all price changes, it is also important to ensure that the qualities of the goods or services for which prices are collected do not change in the process. So, while discounted prices may be collected during general sales seasons, care should be taken to ensure that the quality of the products being priced has not deteriorated.

The borderline between discounts and rebates can be hazy and is perhaps best drawn according to timing. In other words, a discount takes effect at the time of purchase, whereas a rebate takes effect some time later. Under this classification, money-off vouchers are discounts, and as with the

conditional discounts mentioned above, can only be taken into account in a CPI if they relate to a single product and if the take-up rate is known at the time of CPI compilation. Since this is highly unlikely, the effect of money-off vouchers is usually excluded from a CPI. It should be noted that the discount is recorded only when the voucher is used, not when the voucher is first made available to the consumer.

Rebates may be made in respect of a single product, e.g. air miles, or may be more general, e.g. supermarket loyalty schemes where a \$10 voucher is awarded for every \$200 spent. As with discounts discussed above, such rebates can only be recorded as price falls if they relate to single products and can be weighted according to take-up.

Bonus products provided 'free' to the consumer, either by larger pack sizes or offers such as 'two packs for the price of one', should be treated as price reductions, although they may be ignored in practice when the offers are only temporary and quickly reversed. When permanent changes to pack sizes occur, quality adjustments should be made (see Chapter 14).

Given the practical difficulties in correctly recording all these types of price falls, it is usual to reflect discounts and rebates only if unconditional, whereas loyalty schemes, money-off coupons, and other incentives are ignored. Discounts during seasonal sales may be recorded provided that the quality of the goods does not change.

K. Classification

K.1. The role of classification

The classification system upon which any CPI is built provides the structure essential for many stages of CPI compilation. Most obviously, it provides the weighting and aggregation structure, but it also provides the scheme for stratification of products in the sampling frame, at least, down to a certain level of detail, and it dictates the range of sub-indices available for publication. There are several factors which must be taken into account when a CPI classification system is being developed.

- First and foremost, the classification must reflect economic reality. For example, new goods and services must be accommodated, and should be anticipated as far as possible so that the higher level structure is designed to minimise any need for later restructuring. Restructuring is particularly

undesirable in the case of CPIs because many users require long time series, and restructuring of the classification will produce breaks in the series.

- Secondly, the needs of users should be given a high priority, so that if, for example, some users are particularly interested in price change in food products, then the classification should provide sufficient detail in this area as long as the weighting data can support the level of detail.
- Thirdly, it is a requirement of any classification that its categories are unambiguously mutually exclusive, and at the same time provide complete coverage of all areas considered to be in scope. In practice this means that it should be straightforward task to assign any particular expenditure, or price, to a single category of the classification system.

The availability and nature of the data themselves will also affect the design of a classification system. The availability of weighting data and price data will dictate the lowest level of detail that might be possible. Obviously it is not possible to produce a separate product index for a product for which, either weighting data or price data are not available. At the most detailed level variance in price movements will suggest where separate categories are needed. In other words, a stratification scheme should minimise the within stratum variance whilst at the same time maximising the between stratum variance. The classification should reflect this requirement.

K.2. Criteria for classifying consumption expenditure

Although a classification may be conceived according to economic theory or user requirements, using a top-down approach, in practice, the statistical compiler collects data about individual products and then aggregates them according to the classification scheme (a bottom up application). For example, the units of classification for COICOP⁴ are expenditures for the acquisition of consumer goods and services, not expenditures on purposes as such. Divisions 01 to 12 of COICOP convert these basic statistics into a purpose classification by grouping together the

⁴ Classification of Individual Consumption According to Purpose – United Nations Statistical Division, 1999.

various goods and services which are deemed to fulfil particular purposes, such as nourishing the body, protecting it against inclement weather, preventing and curing illness, acquiring knowledge, travelling from one place to another, etc.

So, classifications of expenditure data are, in practice, schemes for aggregating expenditures on products according to certain theoretical or user-defined criteria, such as:

A. Product type. Products may be aggregated by:

- Physical properties of goods and the nature of services, e.g. biscuits are divided into those with and without a chocolate coat. This criterion can be meaningfully implemented down to the most detailed level, and is the basis of the CPC⁵;
- Economic activity from which the product originated. The SIC⁶ is the international standard classification;
- Production process from which the product originated;
- Retail outlet type from which the product was purchased;
- Geographical origin of the product.

B. Purpose to which the products are put, e.g. to provide food, shelter, transport, etc. COICOP is the international standard.

C. The economic environment, where products could be aggregated according to criteria such as:

- Substitutability of products;
- Complementarity of products;
- Application of sales taxes, consumer subsidies, excise taxes, customs duties, etc.;
- Imports from different countries (and in some cases, a classification of exportable products may be of interest).

K.3. Classification by product type

⁵ Central Product Classification 1.0 – United Nations Statistical Division, 1997.

⁶ International Standard Industrial Classification of All Economic Activities, Revision 3 – United Nations Statistical Division, 1989.

Where indices of price change for specific products groups are required, a product-based classification would be appropriate. Product classifications may combine several of the criteria listed above, such as, for example, the CPA⁷ in the European Union which is linked to the CPC at the detailed level and the ISIC at the aggregate level.

Inevitably, statisticians will encounter products for which no detailed class or sub-class exists, for example, entirely new products, or mixed products which are bundles of existing products. This is a problem frequently encountered with technological goods, telecommunications goods and services, and food items in the form of “ready-meals”. Initially, the expenditure on these products may be recorded in an “other” or n.e.c. (not elsewhere classified) class, but once expenditure on these products becomes significant, a separate class should be created.

K.4. Classification by purpose

For a CPI compiler aiming to produce a measure in the change in the cost of satisfying particular needs, a purpose-based classification is appropriate. The COICOP breakdown at the highest level is by purpose such that the 12 divisions of COICOP are categories of purpose, and below this level the groups and classes are product types. In other words, products are allocated to purpose headings. The allocation of products is complicated by the existence of multi-purpose products (single products that can be used for a variety of purposes), such as electricity, and mixed-purpose (bundled) products, such as package holidays comprising transport, accommodation, meals, etc.

K.4.1. Multi-purpose goods and services

The majority of goods and services can be unambiguously assigned to a single purpose, but some goods and services could plausibly be assigned to more than one purpose. Examples include motor fuel which may be used to power vehicles classified as transport as well as vehicles classified as recreational, and snowmobiles and bicycles which may be bought for transport or for recreation.

⁷ Classification of Products by Activity in the European Economic Community – Eurostat, 1993.

In drawing up COICOP, the general rule followed has been to assign multi-purpose goods and services to the division that represents the predominant purpose. Hence, motor fuel is shown under Transport. Where the predominant purpose varies between countries, multi-purpose items have been assigned to the division that represents the main purpose in the countries where the item concerned is particularly important. As a result, snowmobiles and bicycles are both assigned to Transport because this is their usual function in the regions where most of these devices are purchased - that is, North America and the Nordic countries in the case of snowmobiles, and Africa, South East Asia, China and the low-countries of Northern Europe in the case of bicycles.

Examples of other multi-purpose items in COICOP include: food consumed outside the home which is shown under Hotels and restaurants not Food and non-alcoholic beverages; camper vans which are shown under Recreation and culture not Transport; and basket-ball shoes and other sports footwear suitable for everyday or leisure wear which are shown under Clothing and footwear not Recreation and culture.

National statisticians are encouraged to reclassify multi-purpose items if they consider that an alternative purpose is more appropriate in their country. Such reclassifications should be footnoted.

K.4.2. Mixed purpose goods and services

Single outlays may sometimes comprise a bundle of goods and services which serve two or more different purposes. For example, the purchase of an all-inclusive package tour will include payments for transport, accommodation and catering services, while the purchase of educational services may include payments for health care, transport, accommodation, board, educational materials, etc.

Outlays covering two or more purposes are dealt with on a case-by-case basis with the aim of obtaining a purpose breakdown that is as precise as possible and consistent with practical considerations of data availability. Hence, purchases for package holidays are shown under Package holidays with no attempt to isolate separate purposes such as transport, accommodation and catering. Payments for educational services, on the other hand, should as far as possible be allocated to Education, Health, Transport, Hotels and restaurants, and Recreation and culture.

Two other examples of mixed purpose items are: the purchase of in-patient hospital services which include payments for medical treatment, accommodation and catering; and the purchase of transport services which include meals and accommodation in the ticket price. In both cases, there is no attempt to isolate separate purposes. Purchases of in-patient hospital services are shown under Hospital services and purchases of transport services with accommodation and catering are shown under Transport services.

K.5 Classifications for CPIs

In practice most countries use a hybrid classification system for their CPI in the sense that the breakdown of expenditure at the highest level is by purpose, with product breakdowns at the lower levels. In some countries the higher level purpose classification was developed some time ago, for CPIs that were originally devised as measures of the changing cost of a basket of goods and services that were, at the time, considered necessary for survival or maintaining some “basic” standard of living. Thus, the classifications were based on consumer needs, where “need” may have had a somewhat subjective interpretation depending on political requirements.

The recommended practice today is still to use a purpose classification at the highest level, with product breakdowns below, but to use the recently developed international standard classifications as far as possible, with adaptations to national requirements where necessary. In other words, divisions 1 to 12 of COICOP, with CPC product classes and sub-classes mapped onto them to provide the next two levels of detail⁸.

K.6 Publication level

As mentioned above, any restructuring of the classification of published indices will be a major inconvenience to users and should thus be avoided so far as possible by careful planning and development of the classification scheme in the first place. There is a trade-off between providing users with as much detail as they would like in terms of product indices and weights, and preserving some freedom to restructure the lower levels (unpublished) without apparently affecting the published series.

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Item samples below the level at which weights are published can be revised between major weight revisions. This is most simply implemented where the modified Laspeyres formula (see Chapter 14) is used, but can be done with the standard Laspeyres formula using a double price collection in one month to create an overlap link. The US CPI takes advantage of the use of the modified Laspeyres to continuously revise lower level samples on a rotational basis. New and replacement items and varieties can also be introduced in this way, as long as they can be included within an existing published weight. A major new product, such as a personal computer, could only be introduced at the time of a major weight revision, whereas it might be possible to introduce mobile phones at any time if the lowest level weight published in the telecommunications category is for telephone services.

K.7. COICOP

K.7.1. COICOP structure

The international standard classification of individual consumption expenditures is the Classification of Individual Consumption by Purpose (COICOP). COICOP is a functional classification that is also used in SNA93 and covers the individual consumption expenditures incurred by three institutional sectors, i.e. households, non-profit institutions serving households (NPISHs), and general government. Individual consumption expenditures are those which benefit individual persons or households.

COICOP has 14 divisions:

- Divisions 01 to 12 covering the final consumption expenditure of households;
- Division 13 covering the final consumption expenditure of NPISHs;
- Division 14 covering the individual consumption expenditure of general government.

The classification has three levels of detail:

Division or two-digit level,	e.g.	01.	Food and non-alcoholic beverages
Group or three-digit level,		01.1	Food
Class or four-digit level,		01.1.1	Bread and cereals

The 12 divisions covering households consist of 47 groups and 117 classes and are listed in Annex..... Below the level of class, national statisticians should create additional detail by further subdividing the classes according to their national needs. Of course, there are clear advantages, in terms of comparability between countries, and between the different uses of COICOP (CPIs, household expenditure statistics, national accounts aggregates), if the basic, higher level structure of COICOP is maintained.

There are some COICOP classes which may, or may not, be included in most CPIs, or for which expenditure data cannot be collected directly from households. For example, COICOP has a class for the imputed rentals of owner-occupiers, which may be out of scope for some CPIs. COICOP also has a class for financial intermediation services indirectly measured, which may be out of scope for some CPIs because of practical measurement difficulties. In any case the expenditures on these services cannot be collected in HBSs. Similarly, COICOP has a group for expenditure on insurance service charges, which may be in scope for CPIs, but cannot be measured using household surveys.

K.7.2 Type of product

COICOP classes are divided into “services” (S), “non-durables” (ND), “semi-durables” (SD) and “durables” (D). This supplementary classification provides for other analytic applications. For example, it is sometimes useful to estimate the stock of “capital goods” held by households; goods in COICOP classes that are identified as “durables” provide the basic elements for such estimates.

As explained in section B above, the distinction between non-durable goods and durable goods is based on whether the goods can be used only once or whether they can be used repeatedly or continuously over a period of considerably more than one year. Moreover, durables, such as motor cars, refrigerators, washing machines and televisions, have a relatively high purchasers’ value. Semi-durable goods differ from durable goods in that their expected lifetime of use, though more than one year, is often significantly shorter and that their purchasers’ value is substantially less. Because of the importance attached to durables, the categories of goods defined as durables in COICOP are listed below.

- Furniture, furnishings, carpets and other floor coverings

- Major household appliances
- Tools and equipment for house and garden
- Therapeutic appliances and equipment
- Vehicles
- Telephone and fax equipment
- Audio-visual, photographic and information processing equipment (except recording media)
- Major durables for recreation
- Electrical appliances for personal care
- Jewellery, clocks and watches

The following goods are listed as semi-durables:

- Clothing and footwear
- Household textiles
- Small electric household appliances
- Glassware, tableware and household utensils
- Spare parts for vehicles
- Recording media
- Games, toys, hobbies, equipment for sport, camping, etc.

Some COICOP classes contain both goods and services because it is difficult for practical reasons to break them down into goods and services. Such classes are usually assigned an (S) as the service component is considered to be predominant. Similarly there are classes which contain either both non-durable and semi-durable goods or both semi-durable and durable goods. Again, such classes are assigned a (ND), (SD) or (D) according to which type of good is considered to be the most important.

Annex

CPIs AND NATIONAL ACCOUNTS PRICE DEFLATORS

The purpose of this Annex is to explain why and how CPIs differ from the price indices used to deflate household consumption expenditures in National Accounts. The differences between the two kinds of price index are often misunderstood and can cause unnecessary confusion.

Coverage of households

The sets of households covered by CPIs and the National Accounts are not intended to be the same, CPIs typically covering a smaller set of households. Household consumption expenditures in National Accounts cover the expenditures made by all households, including institutional households, resident in the country or region, whether those expenditures are made inside or outside the country or region of residence. CPIs tend to cover the expenditures and prices paid by households within the geographical boundaries of a country or region whether the households are residents or visitors. More importantly, most CPIs are purposely defined to cover only selected groups of non-residential households. For example, CPIs may exclude very wealthy households or be confined to households in urban areas or headed by wage earners: see section E above.

Coverage of consumption expenditures

The sets of expenditures covered by CPIs and the National Accounts are not intended to be the same, CPIs typically covering a smaller set of expenditures. Most CPIs do not cover most of the imputed non-monetary consumption expenditures included in National Accounts, either on principle or in practice because of lack of data. Many CPIs include the imputed rents on owner-occupied housing but CPIs are not designed to cover the imputed expenditures and prices of agricultural products or other goods produced for own consumption that are included in the National Accounts. See section D above.

Timing

Most CPIs measure price changes between two points of time or very short intervals of time such as a week. The price indices in National Accounts are intended to deflate expenditures aggregated over long periods of time, mainly a year. The ways in which monthly or quarterly CPIs are averaged to obtain annual CPI indices are unlikely to be conceptually consistent with the annual price indices in the National Accounts.

Index number formulae

The index number formulae used by CPIs and the National Accounts are not intended to be the same. In practice, most CPIs tend to use a Laspeyres index. The National Accounts of most countries prefer to use the Laspeyres formula for the volume index so that the required price deflators are Paasche type indices. When fixed base indices are used in both cases, the difference between the Laspeyres and Paasche formulae can, in itself, lead to a significant gap between the indices over the longer term. There is tendency for both CPIs and National accounts to adopt chain rather than fixed base indices which will tend to reduce, but not eliminate, the discrepancy between the indices resulting from the use of different formulae. In some countries, National Accounts are starting to use Fisher indices for both their price and volume indices, as recommended in the 1993 SNA. The use of Fisher indices is not practicable for CPIs at the time they are first released, although they can be revised retrospectively using the Fisher formula.

Conclusions

It is clear that, in general, CPIs and the price deflators for National Accounts can differ for a variety of reasons such as major differences in the coverage of households and expenditures, differences in timing and differences in the underlying index number formulae. Moreover, it is also clear that these differences are intentional, deliberate and justified. There is no good reason for trying to eliminate them. There is no justification, therefore, for saying that the deflation of National Accounts aggregates is one of the principal uses for CPIs if this is understood to mean that the CPI should be compiled in such a way that it is conceptually appropriate to use it directly as it stands to deflate Household Consumption Expenditures as recorded in National Accounts.

On the other hand, it is also clear that the basic price and expenditure data collected for CPI purposes are one of the main sources of data for compiling National Accounts. They are used extensively for this purpose. The price indices for the elementary aggregates estimated for CPI purposes can be aggregated to arrive at price deflators for national accounts purposes, but they need to be aggregated in different ways using different weights and formulae from those for CPI purposes. It is therefore correct to say that one of the main uses for the price and expenditure data collected for CPI purposes is to use them to estimate price deflators for national accounts purposes, but this is quite different from saying that one of the main uses of the CPI itself is to deflate National Accounts.

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