Chapter 2 Concepts, Uses, and Classifications of Consumer Price Indices

A. Concepts and scope of CPI

Households may acquire goods and services for purposes of consumption in four main ways: (i) they may purchase them in monetary transactions; (ii) they may produce them themselves for their own consumption; (iii) they may receive them as payments in kind through barter transactions, particularly as remuneration in kind for work done; and (iv) they may receive them as free gifts, or transfers, from other economic units, including social transfers in kind provided by government.

The broadest concept of consumption for CPI purposes would be a price index embracing all four categories of consumption goods and services listed above. This set of consumption goods and services may be described as *total acquisitions*. Total acquisitions are equivalent to the total actual individual consumption of households as defined in the *System of National Accounts (SNA).*

While the purpose of this chapter is not to provide a detailed overview of SNA definitions and concepts, it should be noted that the SNA serves as the conceptual basis, or framework, for the CPI. Definitions for expenditure, households, and other concepts, are derived from the SNA.

Acquisitions and expenditure

Expenditure are made by the economic units who pay for the goods and services: in other words, they bear the costs. However, many of the goods and services consumed by households are financed and paid for by government units or non-profit institutions. They are mostly services such as education, health, housing and transport. Individual goods and services provided free of charge, or at prices that are not economically significant, to individual households by governments or non-profit institutions are described as social transfers in kind (social transfers in kind do not include collective services provided by governments to the community as whole, such as public administration and defense).

The expenditure on social transfers in kind are incurred by the governments or non-profit institutions that pay for them and not by the households that consume them. It could be decided that the CPI should be confined to consumption expenditure incurred by households, in which case free social transfers in kind would be excluded from the scope of the index. Even if they were to be included, they can be ignored in practice when they are provided free, on the grounds that households incur zero expenditure on them. Of course, their prices are not zero from the perspective of the units that finance the social transfers, but the relevant prices for a CPI are those payable by the households.

Social transfers cannot be ignored, however, when governments and non-profit institutions decide to introduce charges for them, a practice that has become increasingly common in many countries. For example, if the CPI is intended to measure the change in the total value of a basket of consumption goods and services that includes social transfers, increases in their prices from zero to some positive amount increase the cost of the basket and should be captured by a CPI.

Acquisitions and uses

It has been customary in the literature on CPIs to draw a distinction between acquisitions of consumption goods and services by households and their subsequent use to satisfy their households' needs. Consumption goods are typically acquired at one point of time and used at some other point of time, often much later, or they may be used repeatedly, or even continuously, over an extended period of time. The times of acquisition and use nevertheless coincide for many services, although there are other kinds of services that provide lasting benefits and are not used up at the time they are provided.

Acquisition of a good refers to the moment at which ownership of a good transfers to the consumer. In a market situation, it is the moment at which the consumer incurs a liability to pay, either in cash, credit, or in kind. Acquisition of a service cannot be determined as easily because 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. Consumers acquire service at the same time that the producer provides it and the consumer accepts a liability to pay. In a market situation, therefore, the time of acquisition for both goods and services refers to the time at which the liability to pay is incurred. The distinction between time of acquisition and time of use is particularly important for durable goods and certain kinds of services.

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. Heating oil, coal or firewood can be burnt once only, but they are nevertheless extremely durable physically and can be stored indefinitely. Households may hold substantial stocks of so-called non-durables, such as many foodstuffs and fuel, especially in periods of political or economic uncertainty.

Conversely, the distinguishing feature of consumer durables, such as furniture, household equipment or vehicles, is that they are durable under use. They can be used repeatedly or continuously to satisfy consumers' needs over a long period of time, possibly many years. For this reason, a durable is often described as providing a flow of "services"' to the consumer over the period it is used. Some durables last much longer than others, the less durable ones being described as "semi-durables" in COICOP, for example clothing. Dwellings are not classified as consumer durables in COICOP. They are treated as fixed assets and not consumption goods and therefore fall outside the scope of COICOP. However, the housing services produced and consumed by owner-occupiers are included in COICOP and classified in the same way as the housing services consumed by tenants.

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 as hip replacements or cataract surgery, for example, is substantially and permanently improved. Similarly, consumers of educational services can benefit from them over their entire lifetimes.

For some analytical purposes, it may be appropriate to treat certain kinds of services, such as education and health, as the service equivalents of durable goods. Expenditure on such services can be viewed as investments that augment the stock of human capital. Another characteristic that education and health services share with durable goods is that they are

often so expensive that their purchase has to be financed by borrowing or by running down other assets.

Monetary and non-monetary expenditure

A distinction may also be drawn between monetary and non-monetary expenditure depending on the nature of the resources used to pay for the goods and services. A monetary expenditure occurs when a household pays in cash, by check or credit card, or otherwise incurs a financial liability to pay, in exchange for the acquisition of a good or service. Non-monetary expenditure occurs when households do not incur a financial liability but bear the costs of acquiring the goods or services in some other way.

Households may incur non-monetary expenditure when household members receive goods and services from their employers as remuneration in kind. The employees pay for the goods and services with their own labor rather than cash. Consumption goods and services received as remuneration in kind can, in principle, be included in a CPI using the estimated prices that would be payable for them on the market.

Another important category of non-monetary expenditure occurs when households consume goods and services that they have produced themselves. The households incur the costs, while the expenditure are deemed to occur when the goods and services are consumed. Own account expenditure of this kind include expenditure on housing services produced for their own consumption by owner-occupiers. The treatment of goods and services produced for own consumption raises important conceptual issues that are discussed in more detail further.

The narrowest concept of consumption that could be used for CPI purposes is one based on monetary expenditure only. Such an aggregate would exclude many of the goods and services actually acquired and used by households for purposes of consumption. Only monetary expenditures generate the monetary prices needed for CPI purposes. The prices of the goods and services acquired through non-monetary expenditure can only be imputed on the basis of the prices observed in monetary transactions. Imputed prices do not generate more price information. Instead, they affect the weighting attached to monetary prices by increasing the weight of those monetary prices which are used to value non-monetary expenditure.

If the main reason for compiling a CPI is the measurement of inflation, it may be decided to restrict the scope of the index to monetary expenditure only, especially since non-monetary expenditure do not generate any demand for money. The Harmonized Indices of Consumer Prices (HICPs), used to measure inflation within the European Union, are confined to household final monetary consumption expenditure (see Annex … of the Manual).

Domestic and national concept of expenditure

The concept of residence is important for determining macroeconomic statistics flows. Residence is not based on nationality or legal criteria, but on the unit's center of economic interests. The *SNA* defines the economic territory as the geographic territory administrated by a government within which persons, goods, services and capital move freely. The economic territory also includes the territorial enclaves in the rest of the world (embassies, consulates, military bases, scientific stations, etc). As a general rule, institutional units are considered resident in a certain economic territory if they are engaged in activities and transactions on a

significant scale for one year or more. A household is considered resident when its members maintain a dwelling as a principle residence.

Depending on the residence principle, there are two other concepts of expenditure – domestic and national concept. The national concept defines household consumption as expenditure made by resident households, whether it takes place on the economic territory or elsewhere. This means that the expenditure of resident households at home should be adjusted with adding the expenditure of resident households aboard (imports) and deducting the expenditure of non-resident households (tourists) in the home territory (exports).

The domestic concept is not based on the residence of households rather it is based on the territory where the consumption occurs. It defines household domestic consumption expenditure as consumption expenditure made by all households on the economic territory of a country. It will include the expenditure of non-residents on the home territory and it will exclude the expenditure of residents abroad.

Decisions about the choice of the concept used 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 "domestic" consumption expenditure that take place within the geographical boundaries of the country, whether made by residents or non-residents.

When CPIs are used for escalating the incomes of residents, it may be appropriate to adopt the "national" concept of expenditure which covers all the expenditure of residents, whether inside or outside the country. Household budget surveys can cover all these types of expenditure. 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.

CPI Scope

Households

The group of households included in the scope of a CPI are referred to as the "reference households", or the "reference population." In this context, scope refers to the households intended to be represented in the CPI; whereas, coverage refers to the actual households represented by the index. According to the SNA, households are made up of private households and institutional households. *Private households* are defined as groups of persons who share the same living accommodation, who pool some or all of their resources and consume select goods and services collectively. Members of the same household do not necessarily have to belong to the same family, as long as there is some sharing of resources and consumption. *Institutional households* consists of persons living permanently, or for very long period of time, in institutions other than private households. These include religious institutions, hospitals, the military, prisons or retirement homes. Persons who enter such institutions only for short periods of time should be treated as members of the individual households to which they normally belong.

Following the SNA definition of household final consumption expenditure both private and institutional households are considered in scope of the CPI, and hence in principle should be covered. The HICP coverage of households includes institutional households, consistent with

the SNA definition. Nevertheless, in many countries the consumption expenditure of institutional households may be of negligible importance, or it may be problematic to collect suitable expenditure data from institutional households. For these reasons, it may be decided to exclude the consumption expenditure of institutional households from the actual coverage of the CPI. It may also be the case that the compensation of private households is one of the main purposes of the CPI, which may also justify disregarding the consumption expenditures of institutional households.

In almost all countries, the CPI scope includes as many private households as possible, and is not confined to those belonging to a specific socioeconomic group. In some countries, however, extremely wealthy households are excluded for various reasons. Their expenditure may be considered to be very atypical, while their expenditure data, as collected in household budget surveys, may be unreliable. The response rates for wealthy households in household budget surveys 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. Such exclusions affect the expenditure weights to the extent that the patterns of expenditure of the excluded groups differ from those of the rest of the population.

In addition to a single wide-ranging official (headline) CPI relevant to the country as a whole, many countries publish a range of alternative indices relating to sub-sectors of the population (i.e. low-income households, retirees, etc).

Geographical coverage refers either to the geographical coverage of expenditure or the coverage of price collection. Ideally these two should coincide, whether the CPI intends 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 differ significantly – although price collection is restricted to urban areas because of resource constraints – then urban weights should be applied and the resulting index must be considered as purely an urban and not a national CPI. Most 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 depends on the population distribution and the extent to which expenditure patterns and the movements of prices tend to differ between urban and rural areas.

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 expenditure within a region and the expenditure of the residents of that region, analogous to the distinction between the “domestic” and “national” concepts of expenditure at the 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 expenditure 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.

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, alternative indices are published which may relate to: (i) sub-sectors of the population; (ii) geographical regions; and (iii) specific commodity groups. Sub-indices of the overall (official all-items) CPI should be published at as detailed a 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 alternative indices are derived.

Outlet coverage

The coverage of outlets is dictated by the purchasing behaviour of the reference households. As already stated, in principle, the prices relevant to CPIs are the prices paid by households. In practice, however it is necessary to rely mainly on the prices at which products are offered for sale in retail shops or other outlets (including on-line outlets). All the outlets from which the reference population makes purchases are in the scope of the CPI, and should be included in the sampling frame from which the outlets are selected.

Examples of outlets are: (i) retail shops (from very small permanent stalls to multinational chain stores); (ii) market stalls and street vendors; (iii) online and web-based retail outlets; (iv) establishments providing household services (electricians, plumbers, window cleaners, and so on); (v) leisure and entertainment providers; (vi) health and education services providers; (vii) communication providers; (viii) public utilities; and (ix) government agencies and departments.

Over time, more and more households in many countries are making purchases on the web. Given the growing importance of online and web-based retailers, there is significant need for NSO's to carefully review and augment outlet sample frames to include online retailers. Collecting prices from online retailers raises a number of different issues that are addressed in more detail in Chapter 11.

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 periodic rotation of the sample. 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 genuine. 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 .., 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 genuine, however, the simple linking just described can lead to bias. When households change the price they pay for a product by changing outlets, the price changes should be captured by the CPI. As explained in more detail in Chapter…, it seems that most statistical offices tend to assume that the price differences are not genuine and simply link the new price series on to the old. This procedure, although widely used, assumes that markets are always perfect and that pure price variation never occurs. This unrealistic and questionable assumption may lead to upward bias. Such bias is described as *outlet rotation bias.* Another possible strategy that has been suggested is to assume that half of any observed price difference between old and new outlets is genuine and half is a result of quality difference, on the grounds that, although inevitably somewhat arbitrary, it is likely to be closer to the truth than assuming that the difference is either entirely genuine or entirely attributable to quality differences. Outlet replacement and the treatment of treatment of price differences between the old and new outlets are discussed in Chapter XXX. Methods for selecting a sample of outlets from which to collect prices are discussed in detail in Chapters XXX.

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 included in the scope of the index. The expenditure and prices recorded should be purchaser's prices. Purchaser's prices refer to those prices paid by consumers to acquire ownership of goods or services and include any taxes and service charges 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 ….

When households pay the full market prices for products and are then subsequently reimbursed by governments or social security schemes for 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 expenditure.

Price variation occurs when exactly the same good or service sells 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.

If markets were "perfect" in an economic sense, identical products would all sell at the same price. If more than one price was quoted, all purchases would be made at the lowest price. This suggests that products sold at different prices cannot be identical but must be qualitatively different in some way. When the price differences are, in fact, attributable to quality differences, the price differences are only apparent, not genuine. In such cases, a change in the average price resulting from a shift in the pattern of quantities sold at different prices would reflect a change in the average quality of the products sold. This would affect the volume and not the price index.

If statistical offices do not have enough information about the characteristics of goods and services selling at different prices, they have to decide whether to assume the observed price differences are genuine 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 seldom perfect. One reason for the co-existence of different prices for identical products may be that the sellers are able to practise price discrimination. Another reason may simply be that consumers lack information and may buy at higher prices out of ignorance. Another reason may be that outlets provide different levels of service which would be reflected in the prices paid by consumers. Finally, markets may be temporarily out of equilibrium as a result of shocks or the appearance of new products. It must be recognized, therefore, that genuine price differences do occur for a number of different reasons.

Economic theory shows that price discrimination tends to increase profits. It may not be feasible to practise price discrimination for goods because they can be re-traded. Purchasers discriminated against would not buy directly but would try to persuade those who could purchase at the lowest prices to buy on their behalf. Services, however, cannot be re-traded, 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 transport. 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 easy to vary the qualities of the services provided to different consumers, it can be difficult to determine to what extent observed price differences are a result of 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 price discrimination.

Price discrimination can cause problems with regard to price indices. Suppose, for example, that a service supplier discriminates by age by charging senior citizens, aged 60 years or more, price p_2 and everyone else price p_1, where $p_1 > p_2$. Suppose, further, that the supplier then decides to redefine senior citizens as those aged 70 years or more 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 years changes and the average price paid by all households increases.

This example illustrates a point of principle. 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, record a change. When prices are collected from sellers and not from households such price changes can be missed.

The existence of different prices in different outlets raises similar issues. Pure price differences are almost bound to occur when there are market imperfections, if only because households are not perfectly informed. 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 ignorance or inertia.

Households may choose to switch their purchases from one outlet to another or even be obliged to switch because the universe of outlets is continually changing, some outlets closing down while new outlets open up. When households switch, the effect on the CPI depends on whether the price differences are pure or apparent. When the price differences are genuine, a switch between outlets changes the average prices paid by households. Such price changes ought to be captured by CPIs. On the other hand, if the price differences reflected quality differences, a switch would change the average quality of the products purchased, and hence affect volume, not price.

Most of the prices collected for CPI purposes are offer prices. Offer prices may not in all cases correspond to the actual transactions prices paid by households. In these circumstances, the effects of switches in the pattern of households' purchases between outlets may remain unobserved in practice. When the price differences reflect quality differences, the failure to detect such switches does not introduce any bias into the CPI. Buying at a lower price means buying a lower quality product, which does not affect the price index. However, when the price differences are genuine, the failure to detect switches will tend to introduce an upward bias in the index, assuming households tend to switch towards outlets selling at lower prices. This potential bias is described as *outlet substitution bias*.

Expenditure and other payments generally outside the scope of consumer price indices

Given that, conceptually, most CPIs are designed to measures changes in the prices of consumption goods and services, it follows that purchases of items that are not goods and services fall outside the intended scope of a CPI: for example, purchases of bonds, shares or other financial assets. Similarly, payments that are not even purchases because nothing is received in exchange fall outside the index: for example, payments of income taxes or social security contributions.

The implementation of these principles is not always straightforward, 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 below.

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., transactions in which there is no counterpart. 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 to determine whether or not certain kinds of transactions are in fact transfers, a problem common to both CPIs and national accounts.

Social security contributions and taxes on income and wealth. As households do not receive any specific, individual good or service in return for the payment of social security contributions, they are treated as transfers that are outside the scope of CPIs. Similarly, all payments of taxes based on income or wealth (the ownership of assets) are outside the scope of a CPI since they are unrequited compulsory transfers to government. Property taxes on dwellings (commonly levied as local authority taxes or rates) are outside the scope. It may be noted, however, that unrequited compulsory transfers could be incorporated within an unconditional COLI or within a more broadly defined conditional COLI that allows for changes in some other factors besides changes in the prices of consumption goods and services.

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.

Payments by households for licences to own or use certain goods or facilities are, by convention, classified as consumption expenditure, not transfers, and are thus included within the scope of a CPI. For example, licence fees for radios, televisions, driving, firearms, and so on, as well as fees for passports are included. On the other hand, licences for owning or using vehicles, boats and aircraft, and for 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. As the actual circumstances under which licences are issued, and the conditions attaching to them, can vary significantly from country to country, statistical offices may wish to deviate from the proposed conventions in some instance. In general, however, it seems appropriate to make use of conventions internationally agreed by the relevant experts.

Gifts and subscriptions. Gifts are transfers, by definition, and thus outside the scope of a CPI. Payments of subscriptions or donations to charitable organizations for which no easily identifiable services are received in return are also transfers. 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 expenditure and included in a CPI.

Tips and gratuities. Non-compulsory tips or gratuities are gifts that are outside the scope of a CPI. There may be cases, however, 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. For example, in some cases were restaurants include a compulsory service charge on a restaurant bill, this would be included in a CPI.

Insurance. 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 an implicit service charge payable to the insurance enterprise for arranging the insurance: i.e., a fee charged for calculating the risks, determining the premiums, administering the collection and investment of premiums, and the payment of claims.

The implicit service charge is not directly observable. It is an integral part of the gross premium that is not separately identified in practice. As a payment for a service it falls within the scope of a CPI, but it is difficult to estimate.

In the case of non-life insurance, the net premium is essentially a transfer that goes into a pool covering the collective risks of policy holders as a whole. As a transfer, it falls outside the scope of a CPI. In the case of life insurance, the net premium is essentially a form of financial investment. It constitutes the purchase of a financial asset, which is also outside the scope of a CPI.

Finally, it may be noted that 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, over and above the implicit service charges made by the insurers.

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 an implicit service charge (part of consumption expenditure) and a current transfer that enters the pool out of which the winnings are paid. Only the implicit or explicit service charges payable to the organizers of the gambling fall within the scope of a CPI. The service charges are usually calculated at an aggregate level as the difference between payables (stakes) and receivables (winnings).

Transaction in financial assets. Financial assets are not consumption goods or services. The creation of financial assets/liabilities, or their extinction, e.g., by lending, borrowing and repayments, are financial transactions that are quite different from expenditure on goods and services and take place independently of them. The purchase of a financial asset is obviously not expenditure on consumption, being 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. Many of the financial assets owned by households are acquired indirectly through the medium of pension schemes and life insurance. Excluding the service charges, pension contributions by households are similar to payments for life insurance premiums. They are essentially forms of investment made out of saving, and are thus excluded from CPIs. In contrast, 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. Payments of such fees are simply purchases of services.

Foreign currency is a financial asset. Purchases and sales of foreign currency are therefore outside the scope of CPIs. Changes in the prices payable, or receivable, for foreign currencies resulting from changes in exchange rates are not included in CPIs. In contrast, the service charges made by foreign-exchange dealers are included within the scope of CPIs when households acquire foreign currency for personal 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.

A financial transaction does not change wealth and there is no consumption involved. A financial transaction merely rearranges the individual's asset portfolio by exchanging one type of asset for another. For example, when a loan is made, the lender exchanges cash for a financial claim over the debtor. Similarly, the borrower acquires cash counterbalanced by the creation of an equal financial liability. Such transactions are irrelevant for CPI purposes.

In general, when a household borrows from financial institutions, including moneylenders, the borrowed funds may be used for a variety of purposes including the purchase of assets such as dwellings or financial assets (for example, bonds or shares), as well as the purchase of expensive goods and services. 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 has no impact on a CPI. There is no good or service acquired, no expenditure and no price.

Hire purchase (see below) 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 expenditure on education or health. 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.

Although the provision of finance is a separate transaction from the purchase of a good or service for which it is used, it may affect the price paid. Each case needs to be carefully considered. For example, suppose the seller agrees to defer payment for one year. The seller appears to make an interest free loan for a year, but this is not the economic reality. The seller makes a loan, but it is not interest free. Nor is the amount lent equal to the "full" price. Implicitly, the purchaser issues a short term bill to the seller to be redeemed one year later and uses the cash received from the seller to pay for the good. However, the present value of a bill at the time it is issued is its redemption value discounted by one year's interest. The amount payable by the purchaser at the time the purchase of the good actually takes place is the present discounted price of the bill and not the full redemption price to be paid one year later. It is this discounted price that should be recorded for CPI purposes. The difference between the discounted price and the redemption price is, of course, the interest that the purchaser implicitly pays on the bill over the course of the year. This way of recording corresponds to the way in which bills and bonds are actually valued on financial markets and also to the way in which they(?) are recorded in both business and economic accounts. Deferring payments in the manner just described is equivalent to a price reduction and should be recognized as such in CPIs. The implicit interest payment is not part of the price. Instead, it reduces the price. This example shows that in certain circumstances the market rate of interest can affect the price payable but it depends on the exact circumstances of the credit arrangement agreed between the seller and the purchaser. Each individual case needs to be carefully considered on its merits.

This case needs to be clearly distinguished from hire purchase, considered in the next section, when the purchaser actually pays the full price and borrows an amount equal to the full price while contracting to make explicit interest payments in addition to repaying the amount borrowed.

Hire purchase. Under a hire purchase agreement, a buyer leases a good over a period of time and does not acquire ownership until the full amount of the contract is paid. 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 payable at the time the purchase takes place whether or not the purchase is facilitated by some form of borrowing. 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.

Interest payments. The treatment of interest payments on the various kinds of debt that households may have incurred raises both conceptual and practical difficulties. Nominal interest is a composite payment covering four main elements whose mix may vary considerably. 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. The second component is a risk premium 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. The third component is a service charge incurred when households borrow from financial institutions that make a business of lending money. Finally, 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 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 directly with the expected rate of general inflation, a universally familiar phenomenon under inflationary conditions. In these circumstances, the main component of nominal interest may therefore be the built-in payment of compensation from the debtor to the creditor to offset the latter's real holding loss. When there is very high inflation it may account for almost all of the nominal interest charged.

The treatment of the first component, pure interest, is somewhat controversial but this component 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 fourth 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 third component constitutes the purchase of a service from financial institutions whose business it is to make funds available to borrowers. It is known as the *implicit service charge* and clearly falls within the scope of a CPI. 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 that lend out of their own resources provide the same kind of services to borrowers as financial intermediaries. When sellers lend out of their own funds, they are treated as implicitly setting up their own financial institution that operates separately from their principal activity. The rates of interest of financial institutions also 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 moneylenders in many countries.

It is clear that interest payments should not be treated as if they were just pure interest or even pure interest plus a risk premium. 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 service charges but changes in the prices of the services over time. Given the complexity of interest flows and the fact that the different flows need to be treated differently, there seems to be little justification for including payments of nominal interest in a CPI, especially in inflationary conditions.

Household production. 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.

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 labor services of members of the household. Inputs of materials, equipment and labor are used to clean, maintain and repair dwellings. Inputs of seeds, fertilizers, insecticides, equipment and labor are used to produce vegetables or flowers; and so on.

Some of the production activities taking place within households' activities, for example gardening or cooking, may perhaps provide satisfaction in themselves. Others, such as cleaning, 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 of such inputs: raw foodstuffs that are unsuitable for eating without being cooked; cleaning materials; fuels such as coal, gas, electricity or petrol; fertilizers; 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 expenditure 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.

Subsistence agriculture. In 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. For an index used for monetary policy purposes or as a general macroeconomic measure of inflation, it is not appropriate 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. Expenditure on inputs may constitute the principal contact that the households have with the market and through which they experience the effects of inflation. It therefore seems preferable to record the actual prices of the inputs and not the imputed prices of the outputs in CPIs.

Housing services produced for own consumption. The treatment of owner-occupied housing is difficult and somewhat controversial. There is no general consensus on what constitutes best practice. This is discussed in several chapters of this manual, especially in Chapters ….. 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 regarded as a fixed asset so that the purchase of a dwelling is classified as gross fixed capital formation and not as the acquisition of a durable 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 …, 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 are 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 should be adopted. The production and consumption of housing services by owner-occupiers may, however, 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 electricity or 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 from one house to another may be much less for tenants than for owners.

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 expenditure 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 expenditure such as expenditure 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 …. 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 labor services provided by the owners themselves.

Whether the input or the output approach is adopted, it can be challenging 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 may be preferred 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. Ultimately, it may be useful for CPI compilers to rely on owner occupied dwelling services in the national accounts.

Including the prices of dwellings in CPIs involves a significant change in the scope of the index. A dwelling is clearly an asset and its acquisition 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. In principle, therefore, extending the scope of a CPI to include dwellings implies extending the scope of the index to include household 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 both 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 of 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 .., 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.

Treatment of some specific household expenditure

Some of the expenditure made by households may not be on goods and services for household consumption and would therefore fall outside the scope of a CPI. One major category consists of the business expenditure made by households.

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 expenditure 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.

Undesirable or illegal goods and services. All the goods and services that households willingly purchase in order to satisfy their personal needs or wants constitute consumers' expenditure 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 they 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 used for escalating incomes, it may be felt that households ought not be compensated for increases in the prices of certain undesirable products. However, excluding them does not imply lowering the index. *A priori*, excluding some item 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. For example, if it is decided to exclude smoking from a CPI and the price increase for smoking products is below average, excluding smoking actually increases the income of smokers (just as it does for non-smokers).

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 expenditure or the prices, especially on illegal goods and services. They may well be excluded in practice.

Luxury goods and services. When a CPI is used as index of general inflation, it ought to include all households regardless of their socioeconomic 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. Once the group of reference households has been decided and defined, however, judgements should not be made about whether to exclude certain of their expenditure that are considered to be non-essential or on luxuries.

Second-hand goods Markets for used or second-hand goods exist for most durable goods. Household expenditure include expenditure on second-hand goods and are therefore within the scope of a CPI. Households' sales of durables constitute negative expenditure, however, so that the weights for second-hand goods are based on households' net expenditure: i.e., total purchases 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:
(i) Directly from another household – the selling household will record the proceeds of the sale as receipts. Net expenditure, i.e., expenditure *less* receipts, are zero so no weight is attached to purchases and sales from one household to another.
(ii) From another household via a dealer – in principle, households' expenditure 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.
(iii)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.
(iv)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 products that they buy from and resell to households. 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).

In some countries, many of the durables purchased by households, especially vehicles, may be imports of second-hand goods from other countries. The prices and expenditure on these goods enter the CPI in the same way as those for newly produced goods. Similarly, in some countries there may be significant net purchases of second-hand vehicles by households from the business sector, these vehicles possibly carrying more weight in the index than new vehicles purchased by households.

Imputed expenditure 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 households themselves. It is possible to estimate what households would have paid if they had purchased these goods and services in monetary transactions or, alternatively, what it cost to produce them. In other words, values may be imputed for these non-monetary expenditure.

The extent to which it is desirable to include imputed expenditure within the scope of a CPI depends partly 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 expenditure 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 Harmonized Index of Consumer Prices (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 or 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 expenditure would normally be included within the scope of the CPI on the grounds that the goods and services acquired in non-monetary transactions affect households' living standards. As already noted, most countries include households' imputed expenditure on housing services produced by owner-occupiers but not imputed expenditure on goods such as agricultural goods produced for own consumption.

Taxes and subsidies. All taxes on products, such as sales taxes, excise taxes and value added tax (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 resulting from changes in indirect taxes or subsidies are not part of an underlying inflationary process but are attributable to their own manipulation of these economic levers. Similarly, when a CPI is used for escalation purposes, any increase in a CPI resulting from 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.

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 are added back on. Such indices do not, however, 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 account for 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 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 these taxes only, or corrected for changes in these taxes only, 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 mark-up by the retailer, since the excise tax will also be marked up by this percentage.

Discounts, rebates, loyalty schemes and "free" products. 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 to 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 expenditure 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 ….

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. 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 7).

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.

B. CPI Uses

The consumer price index (CPI) represents a key indicator of economic performance in most countries. This section will focus on why CPIs are compiled and their uses.

A range of possible consumer price indices

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

While there may be interest in a broadly defined CPI, covering all the goods and services consumed by all households, there are many other options for defining CPIs that cover specific sets of goods and services, which may be more useful for particular analytic or policy purposes. When only a single CPI is compiled and published, there is a risk that it may be used for purposes for which it is not appropriate. More than one CPI could be published in order to meet different analytic or policy needs. It is important to recognize, however, that the publication of more than one CPI can be confusing to users who view consumer inflation as a pervasive phenomenon affecting all households equally. The coexistence of alternative measures could undermine their credibility for many users.

This section intends not only to describe the most important uses for CPIs, but also to indicate how the coverage of a CPI can be affected by the use for which it is intended. The question of what is the most appropriate coverage of a CPI must be addressed before considering what is the most appropriate methodology to be used. Whether the theoretical basis of a CPI is intended to be a cost of living index (COLI), a cost of goods index (COGI), or a general purpose index, it is necessary to determine exactly what kinds of goods and services and what types of households are meant to be covered. This can only be decided on the basis of the main uses of the index. The intended uses of the index will drive decisions on the concepts and methods used.

Indexation

With indexation, the monetary values of certain payments, or stocks, are increased or decreased in proportion to the change in the value of some price index. Indexation, most commonly applied to monetary flows such as wages, pensions, social security benefits, rents, interest or taxes, may also be applied to the capital values of certain monetary assets and liabilities. Under conditions of high inflation, the use of indexation may become widespread throughout the economy.

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

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

Indexation of wages

As noted in Chapters 1, the indexation of wages seems to have been the main objective behind the original compilation of CPIs as the practice goes back over two centuries, although there has always been general interest in measuring inflation. If the indexation of wages is the main justification for a CPI, it has direct implications for the coverage of the index. First, it suggests that the index should be confined to expenditures made by households whose principal source of income is wages. Second, it may suggest that expenditure on certain types of goods and services, such as luxury items, may be excluded from the index.

Indexation of social security benefits

It has become common practice in many countries to index the rates at which social security benefits are payable. There are many kinds of benefits, such as retirement pensions, unemployment benefits, sickness benefits, child allowances, and so on. As in the case of wages, when indexing benefits of this kind is the main reason for compiling the CPI, it may suggest restricting the coverage of the index to certain types of households and goods and services. Many kinds of goods and services may then be excluded from the index based on political decisions that certain goods and services are deemed inappropriate. For example, expenditure on alcoholic beverages and tobacco.

Alternatively, separate CPIs for different categories of households could be compiled. For example, an index may be compiled covering the basket of goods and services purchased by households whose principal source of income is a social security pension.

As already noted, publishing more than one CPI may be confusing if inflation is viewed as affecting everyone in the same way. Such confusion can be avoided by providing a detailed explanation of the purpose and use of each alternative index. It is not difficult to explain the fact that price changes are not the same for different categories of expenditures. In practice, some countries do publish more than one index.

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

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

Indexation of interest, rents and other contractual payments

It is common for payments of both rents and interest to be indexed to the CPI. Governments may issue bonds with an interest rate specifically linked to the CPI. The interest payable in any given period may be equal to the fixed rate of interest plus the percentage change in the

CPI. Payments of housing rents may also be linked to the CPI or possibly to some other index, such as an index of house prices.

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

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

Taxation

Movements in a CPI may be used to affect the amounts payable in taxation in several ways. For example, liability for income tax may be affected by linking personal allowances that are deductible from taxable income to changes in the CPI. Under a system of progressive taxation, the various thresholds at which higher rates of personal income tax become effective may be changed in proportion to changes in the CPI. Liability for capital gains tax may be reduced by basing it on real, rather than nominal, capital gains by reducing the percentage increase in the value of the asset by the percentage change in the CPI over the same period. In general, there are various ways in which some form of indexation may be introduced into tax legislation.

Real consumption and real income

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

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

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

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

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

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

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

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

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

National accounts
The CPI is mainly used in the national account to derive volume measures of household consumption expenditure. Household consumption expenditure at current prices is deflated at the most detailed level using the respective CPIs. In addition, the CPI is used to derive volume measures of output of some services which are consumed directly by households – such as, healthcare and education services, cultural and recreation services, passenger transportation, personal services, etc. In the absence of other indicators, the CPI is often used to derive volume measures of other national accounts aggregates (not directly consumed by households) such as output of financial services , including FISIM.

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

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

Consumer price indices and general inflation
As already noted, measures of the general rate of inflation in the economy as a whole are needed for various purposes:

- Controlling inflation is usually one of the main objectives of government economic policy, although responsibility for controlling inflation may be delegated to the central bank. A measure of general inflation is needed in order to set targets and also to judge the degree of success achieved by the government or central bank in meeting anti-inflationary targets.
- As noted above, a measure of general inflation is also needed for both business and national accounting purposes, particularly for current purchasing power accounting.
- The concept of a relative price change is important in economics. It is convenient therefore to be able to measure the actual changes in the prices of individual goods or services relative to some measure of general inflation. There is also a need to be able to measure real holding (or capital) gains and losses on assets, including monetary assets and liabilities.

Clearly, a CPI is not a measure of general inflation, as it only measures changes in the prices of consumer goods and services purchased by households. A CPI does not cover capital goods, such as houses, or the goods and services consumed by enterprises or the government. Any attempt to analyse inflationary pressures in the economy must also take into account other price movements, such as changes in the prices of imports and exports, the prices of industrial inputs and outputs, and also asset prices.

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

information is highly valuable even if the CPI may be systematically understating or overstating the general rate of inflation.

Use of the consumer price index for monetary and economic policy purposes
The CPI is a key macroeconomic indicator and widely used for assessing the economic development of a country and for monetary policy purposes and macroeconomic planning. It is commonly used by governments and central banks to set inflation targets. As part of this some countries produces measures of "core" or "underlying" inflation, based on the CPI or selected sub-indices of the CPI. For monetary policy purposes also flash estimates of the CPI may be produced, that are released before the official CPI and hence give early warnings about the development of consumer price inflation.

Consumer price indices and international comparisons of inflation
CPIs are also commonly used to make international comparisons of inflation rates. An important example of their use for this purpose is provided by the EU. Since the mid-1990s EU member countries have compiled Harmonized Indices of Consumer Price Indices that are used to compare consumer price inflation across member countries and for monetary and economic policy purposes of the EU.

Finally, CPIs are used for purposes of international comparisons by a range of international organisations, including FAO, ILO, IMF, OECD, World Bank and others.

Popularity of consumer price indices as economic statistics
CPIs seem to have acquired a unique status among economic statistics in most countries. Changes in the CPI tend to receive significant publicity and their publication often make headline news. The CPI represents a high-profile statistic. There are several factors which help to explain this:

- First, all households experience the phenomenon the CPI intends to measure. The general public faces changes in the prices of consumer goods and services, and the direct impact those changes have on their living standards. Wages, pensions and social security benefits may be adjusted according to the development of the CPI, which also will have a direct impact on households' income. Interest in CPIs is not confined to the press and politicians.
- Countries disseminate the CPI frequently, usually each month, so that the rate of consumer inflation can be closely monitored. The CPI is also a timely statistic that is released very soon after the end of the period to which it refers.
- The CPI is a statistic with a long history, as noted in Chapters 1. People have been familiar with it over this period of time.
- Although price changes for certain kinds of consumer goods are difficult to measure because of quality changes, price changes for other kinds of goods and services, such as capital goods and government services, especially public services, tend to be even more difficult to measure. The CPI may be a relatively reliable price index compared with the price indices for some other flows.
- The CPI is widely respected. Its accuracy and reliability are seldom seriously questioned.
- Most countries have deliberately adopted a policy of not revising the index once it has been published. This makes it more attractive for many purposes, especially those with financial consequences such as indexation. The lack of revisions may perhaps

create a somewhat spurious impression of certainty, but it also seems to enhance the credibility and acceptability of the index.

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

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

The need for independence and integrity of consumer price indices

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

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

C. CPI Classifications

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 basis 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.

The international standard for classification of individual consumption expenditure is the *Classification of Individual Consumption by Purpose* (COICOP). COICOP is part of a set of classifications of expenditures according to purpose, also known as *functional* classifications, and have formed an integrated part of the System of National Accounts (SNA) since 1968. COICOP covers the individual consumption expenditure 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.

While part of the SNA, COICOP is intended for use in several other statistical areas. In addition to consumer price indices, COICOP is also used for household expenditures surveys, analysis of living standards and for compilation of purchasing power parities (PPPs).

COICOP was revised in 2018 to reflect changes in consumption patterns and the emergence of new goods and services since the previous version was introduced in 1999. The updated version, referred to as COICOP 2018, consists of 15 Divisions:

- Divisions 01 to 13 covering the final consumption expenditure of households
- Division 14 covering the final consumption expenditure of NPISHs
- Division 15 covering the individual consumption expenditure of general government

COICOP 2018 has four levels of detail organized in a hierarchical structure -- Divisions, Groups, Classes and Sub-Classes:

• Division (two-digit level)	e.g. 03	Clothing and footwear
• Group (three-digit level)	e.g. 03.1	Clothing
• Class (four-digit level)	e.g. 03.1.2	Garments
• Sub-Class (five-digit level)	e.g. 03.1.2.1	Garments for men

Divisions 01 to 13, which covers households, includes 63 Groups, 185 Classes and 337 Sub-Classes. The full COICOP 2018 structure can be found in Annex.. .

Classifying according to purpose. COICOP groups household consumption expenditure on individual goods and services according to the purpose they are deemed to fulfil, such as nourishing the body, preventing and curing illness, acquiring knowledge, travelling from one place to another, etc. The principle of classifying according to purpose means that where similar or related products exist in either physical or virtual forms (e.g. books, music, videos, games, etc.) the product should be categorized in a unique class based on the predominant purpose. For example, the purchase of electronic or virtual books (e.g., eBooks, audiobooks, etc.) should be classified in the same Class or Sub-Class as paper books because they are used for the same purpose. Similarly, software and apps may provide the household with a specific service. If the payment is actually not for the software but for an associated service, which is provided with the help of the software or the app, the expenditure should be classified under the corresponding service. As a general rule, expenditures on second-hand goods are classified together with the new goods since they are used for the same purpose. One exception is the recording of motor cars, where the sub-class level allows a separate recording of new motor cars and second-hand motor cars.

Multi-purpose goods and services. While most goods and services can be assigned to a single purpose, 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 recreational vehicles; bicycles which may be purchased for transport or recreational purposes; or sports footwear which may be used for sports or for leisure wear. In cases where goods and services can be used for different purposes they should be assigned to the Division considered to represent the primary ort predominant purpose.

Disaggregation of COICOP. The detail provided by COICOP, even at its most detailed level, may not be sufficient for the required analysis or to meet country-specific needs. In such cases, Classes or Sub-Classes can be further subdivided as needed. There are clear advantages in maintaining the basic structure of COICOP to facilitate comparison between countries, over time and between different statistical domains such as CPIs, household expenditure statistics and national accounts aggregates. It is recommended that additional detailed categories created to meet specific needs still can be aggregated into the existing COICOP Class or Sub-Class.

Type of product. COICOP classes and sub-classes are divided into services (S), non-durables (ND), semi-durables (SD), and durables (D). This supplementary classification provides for other analytical applications. For example, an estimate may be required of the stock of consumer durables held by households, in which case the goods in COICOP classes that are identified as "durables" provide the basic elements for such estimates. As explained earlier in this chapter, 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. Semi-durable goods differ from durable goods in that their expected lifetime of use, though more than one year, is often significantly shorter and their purchasers' value is substantially less.

Although a systematic separation between goods and services is applied, some classes and sub-classes contain both because it is difficult for practical reasons to break them down into goods and services. Such classes and sub-classes are usually assigned an S, as the service component is considered to be predominant. Similarly, there are classes that contain either both non-durable and semi-durable goods, or both semi-durable and durable goods. Such classes and subclasses are assigned an ND, SD or D according to which type of good is considered to be predominant.

Bundled goods and services. Single expenditure outlays (i.e., where there is no itemized price information for the individual goods or services) may sometimes comprise a bundle of goods and services that serve different purposes. Examples include telecommunication (e.g. payment of one price for multiple services that include mobile phone, internet, television, and landline telephone); package tours which include payment for transport, accommodation and catering services; education services that include payment for transport, accommodation and educational materials; in-patient hospital services that include payments for medical treatment, accommodation and catering; and transport services that include meals and accommodation in the ticket price (e.g., passenger air transport). Single outlays covering two or more purposes and not separately invoiced should be classified according to the predominant product or service of the bundle.

Key changes from COICOP 1999 to COICOP 2018

As mentioned, COICOP 2018 reflects changes in consumption patterns and the emergence of new goods and services. The main changes from COICOP 1999 and COICOP 2018 include the following:

Introduction of a new Sub-Class level

COICOP 2018 introduces an additional fifth-digit level denominated Sub-Class that was not part of the COICOP 1999. The introduction of these new Sub-Classes facilitates further

harmonization of data collection and aggregation, improving comparability of the resulting statistics. It also improves the correspondence with the Central Product Classification (CPC) to more easily reconcile with production data.

Restructuring of Division 06 Health
Division 06 is restructured to allow for a better alignment of COICOP with the International Classification for Health Accounts (ICHA) and its family of classifications.

Restructuring between Division 08 Information and communication and Division 09 Recreation, Sport and Culture and renaming of the Divisions

To better reflect household use of information and communication technology, a number of goods and services have been moved from Division 9 to Division 8. Division 08 has been renamed *Information and communication* (formerly *Communication)* and Division 09 was renamed *Recreation, Sport and Culture* (formerly *Recreation and Culture)* to better reflect the coverage of the Divisions.

To be explicit and avoid confusion one could say:

Division 08 was renamed from *Communication* to *Information and communication* and Division 09 was renamed from *Recreation and Culture* to *Recreation, Sport and Culture* to better reflect the coverage of the Divisions.

Division 12 Insurance and financial services and Division 13 Personal care, social protection and miscellaneous goods

Personal care, social protection, and miscellaneous goods were included in Division 12 of COICOP 1999; Division 12 of COICOP 1999 has been divided into two Divisions in COICOP 2018 – Division 12 *Insurance and financial services*, and Division 13 *Personal care, social protection, and miscellaneous goods*. This change creates two, more homogeneous, Divisions.

In addition to the above mentioned major changes, a number of changes were introduced at the more detailed levels for most of the Divisions.

Break in time series

Because elementary price indices and their expenditure weights will be regrouped according to COICOP 2018, the implementation of the revised classification will result in a break in the time series. To compile the 12-month rate of change, it will be necessary to recompile the index one year back using COICOP 2018. Should users require a longer time series using the new classification system, it may be necessary to recompile the CPI backwards for a longer period. COICOP 2018 includes a correspondence table between the two versions of the classification system that can be used to regroup expenditure according to COICOP 2018. A more detailed explanation of linking indexes can be found in Chapter 9.