Consumer price indices

Methodological note

The **Consumer Price Index for the whole nation** (**NIC)** is based on the entire present population's consumption.

The **Harmonised index of Consumer Prices (HICP)**, calculated according to the EU regulations in force, is used for the comparison of inflation between Member States and as a key indicator for the monetary policy of the European Central Bank.

Consumer price indices are calculated using a chained Laspeyres formula, in which the basket of products and the weighting system are updated annually. Monthly indices for the current year are calculated with reference to December of the previous year (calculation base) and subsequently chained over the period chosen as a reference base in order to be able to measure price trends over a period of time longer than a year[1].

Reference base year for NIC and HICP

The NIC indices, calculated both at the national and territorial basis, are expressed with 2010=100 as a reference base year[2].
The HICP, on the other hand, are calculated and published with 2005=100 as a reference base, as established by the Regulation (EC) no 1708/2005 of the 20th October 2005.

Classification for consumer expenditure, basket of goods

The classification of consumer spending adopted for the consumer price indices is the international COICOP (*Classification of Individual Consumption by Purpose*) classification, the hierarchical structure of which makes provision for three levels of disaggregation: *Divisions*, *Groups* and *Classes.* Starting from data referred to January 2011, the indices are calculated according a more detailed classification scheme which takes into account, with some adjustments, the proposed revision of the COICOP classification currently being discussed in Europe for disaggregation levels lower than *Classes*. The classification scheme, which is adopted for the three consumer price indices published by ISTAT, is distinguished by two additional lower levels of disaggregation, *Product Sub-Classes* and *Consumption segments*. Consumption segments are represented by a sample of products or groups of elementary items, called *Representative items*. In 2012, there are 597 representative items for NIC and 602 representative items for the HICP.

Price collection and calculation method for seasonal product price indices

Starting from January 2011 a new method has been adopted for collecting and calculating prices of seasonal products, in accordance with Regulation (EC) no 330/2009 of 22nd April 2009, which sets out minimum standards for dealing with seasonal products in the HICP. This methodological innovation, also introduced for the NIC[3], has been applied to the product groups and classes *Fruit*, *Vegetables*, *Clothing* and *Footwear*. The European Regulation defines as a *seasonal product* one which, during certain periods of the year (of at least one month), it may not be possible to purchase, or is purchased in modest or insignificant volumes

[1] Istat calculates an other index named Consumer Price Index for blue- and white-collar worker households (FOI) based on consumption of households whose reference person is an employee.
[2] The FOI indices are expressed with 2010=100 as a reference base year, too.
[3] This methodological innovation has been also introduced for the FOI indices.

by consumers. It also establishes that in a given month seasonal products are considered *in season* or *out of season*. On the basis of this standard, as made in the year 2011, Istat has defined a monthly calendar for the whole 2012, which establishes in a given month when each specific product belonging to the abovementioned product groups or classes must be considered *in season* or *out of season*. The adoption of a seasonality calendar entails that the local consumer price survey is carried out only in months in which the product in question is defined as *in season*, while prices of *out of season* products will be estimated on the basis of a method that is consistent with standards contained in the aforementioned European regulation.

Survey geographical basis and rate of coverage

In 2012 the geographical basis of the survey is made up of 84 municipalities (20 regional capitals and 64 provincial capitals). Overall, the coverage of the index, measured in terms of resident population in the provinces with capitals participating in the survey, is 86.3%.

In the consumer price survey in 2012 there are around 42,000 outlets (including small retail businesses, large-scale retailers and local markets) where the price of at least one product is monitored, as well as around 8,300 dwellings for observing rents.

Monthly more than 591,000 prices are collected. The price survey is carried out in the period from the 1st to the 21st of the month.

Weighting structure

In the table 1 the weighting structure for the year 2012 of NIC and HICP is reported.

TABLE 1. WEIGHTS USED FOR CALCULATING CONSUMER PRICE INDICES
2012, percentage values

Division	*Weights*	
	NIC	HICP
Food and non-alcoholic beverages	15.9786	16.9486
Alcoholic beverages, tobacco	3.1521	3.3369
Clothing and footwear	8.6363	9.6914
Housing, water, electricity, gas and other fuels	10.4366	11.0511
Furnishings, household equipment and routine household maintenance	7.9370	8.4242
Health	7.7286	3.6966
Transport	15.1985	16.1108
Communication	2.4796	2.6418
Recreation and culture	7.8762	6.3243
Education	1.1411	1.2063
Restaurants and hotels	10.8361	11.4575
Miscellaneous goods and services	8.5993	9.1105
All items	100.0000	100.0000

Harmonized index of consumer prices at constant tax rates

Starting from data referred to March 2012, the Harmonized Index of Consumer Prices at constant tax rates **(HICP-CT)** is released[4].

The HICP-CT measures the change of prices at constant tax rates. It follows the same computation principles as the HICP, but is based on prices 'at constant tax rates'.

[4] Back series starting from January 2002 are published on I.Stat, the warehouse of statistics produced by Istat, inside the theme Prices (http://dati.istat.it).

Prices at constant tax rates are estimated cancelling out the effects due to changes in taxes in the current month compared to the tax rates system in force in December of previous year (calculation period base).

The taxes considered in the HICP-CT are those directly linked to final consumption. They are mainly VAT, excise duties and other taxes on some specific items (such as cars and insurance). Subsidies and taxes paid on intermediate stages (e.g. production, transportation) are non taken into account. In principle, in the HICP-CT computing, all taxes should be included and kept constant; however, due to practical consideration, taxes which generate very small tax revenues may not be taken into account. In detail, according to recommendations reported in the Eurostat HICP-CT Manual, taxes which cover less than 2% of the total tax revenue can be excluded. On the whole, included taxes must cover a minimum of 90% total tax revenue.

In the computation of the Italian HICP-CT, taxes kept constant are the following: VAT, excise duties on tobacco and energy items (fuels, heating oil, gas, electricity, etc.), the main local surcharge on electricity and gas, tax for the public liability insurance and contribution to the National Health Service for transport means insurance. On the basis of National Accounts data taxes which cover less than 1% of the total tax revenue are excluded and, on the whole, taxes included cover more than 97% of total revenues carried out with taxes on final consumption.

The HICP-CT covers the same goods and services as those covered by the HICP. The same weight structure is applied as for the HICP (Table 1). As HICP, it has expressed 2005=100 as a reference base year.

The HICP-CT provides a measure of the **theoretical impact** of changes of indirect taxes on the overall HICP inflation. It has to be emphasised that it do not provide an exact measure of this impact, rather an indication for the upper limit of its. In effect, the difference between HICP and HICP-CT growth rates points to the theoretical impact of tax changes on overall HICP inflation, assuming an instantaneous and full pass-through of tax rate changes on the price paid by the consumer.

It has to be pointed out that, during the year, the Italian HICP-CT **may be revised** following introduction of methodological changes required by indirect taxation system changes. Data become final in the next year to the reference one.

Indices rates of change calculation

Hereafter formulae for the calculation of monthly, annual and annual average rates of change for consumer price indices are described[5]. The HICP formulae apply to HICP-CT. The first expression concerns calculation of rates of change between indices in the same reference base period:

- Monthly rate of change (**NIC, HICP**)

The monthly rate of change is the current month's index in respect to the previous month's index (with one decimal place), for example:

$$MOR\left(I_{Jan,2010}; I_{Feb,2010}\right) = Round\left(\frac{I_{Feb,2010}}{I_{Jan,2010}} \times 100 - 100; \quad .1\right)$$

[5] The expressions and the rounding rules described for NIC are also carried out for FOI.

• Annual rate of change (**NIC**, **HICP**)

The annual rate of change is the current month's index in respect to the same month's index a year previously (with one decimal place), for example:

$$ANR\left(I_{Feb,2009};I_{Feb,2010}\right)=Round\left(\frac{I_{Feb,2010}}{I_{Feb,2009}}\times 100-100;\quad .1\right)$$

•Annual average rate of change (**NIC**)

The annual average rate of change is the current annual average index in respect to a previous annual average index (with one decimal place), for example:

$$AVR\left(I_{2009};I_{2010}\right)=Round\left(\frac{I_{2010}}{I_{2009}}\times 100-100;\quad .1\right)$$

•Annual average rate of change (**HICP**)

For the HICP, in a different way compared to NIC, the annual average rate of change is obtained directly from the monthly indices and therefore it is based on the unrounded annual average indices. This method, applied in compliance with Eurostat, guarantees international comparability of data. For example:

$$AVR\left(I_{2009};I_{2010}\right)=Round\left(\frac{\sum\left(I_{Jan,2010}+I_{Feb,2010}+\ldots+I_{Dec,2010}\right)}{\sum\left(I_{Jan,2009}+I_{Feb,2009}+\ldots+I_{Dec,2009}\right)}\times 100-100;\quad .1\right)$$

The following expression describes the calculation of monthly rate of change between indices expressed in different reference base year; it can be also used for the calculation of the annual rate of change and the annual average rate of change:

• Monthly rate of change - **Indices expressed in different reference base year**

$$MOR\left(I_{m,j}^{X_1};I_{n,h}^{X_t}\right)=$$

$$=Round\left(\frac{I_{n,h}^{X_t}}{I_{m,j}^{X_1}}\times C\left(X_t;X_{t-1}\right)\times C\left(X_{t-1};X_{t-2}\right)\times\ldots\times C\left(X_2;X_1\right)\times 100-100;\quad .1\right)$$

where $I_{m,j}^{X_1}$ is the index, with one decimal place, of the month *m* year *j*, expressed in the more remote reference base X_1, $I_{n,h}^{X_t}$ is the index, with one decimal place, of the month *n* year *h*, expressed in the more recent reference base X_t, and $C(X_i; X_{i-1})$ with $i=2,\ldots,t$ are the splicing coefficients between contiguous reference bases. These coefficients are equal to the annual average index of the year corresponding to the new reference base expressed in the previous base, divided by 100. They are as many as base changes have been carried out during the considered period.