

October 2018

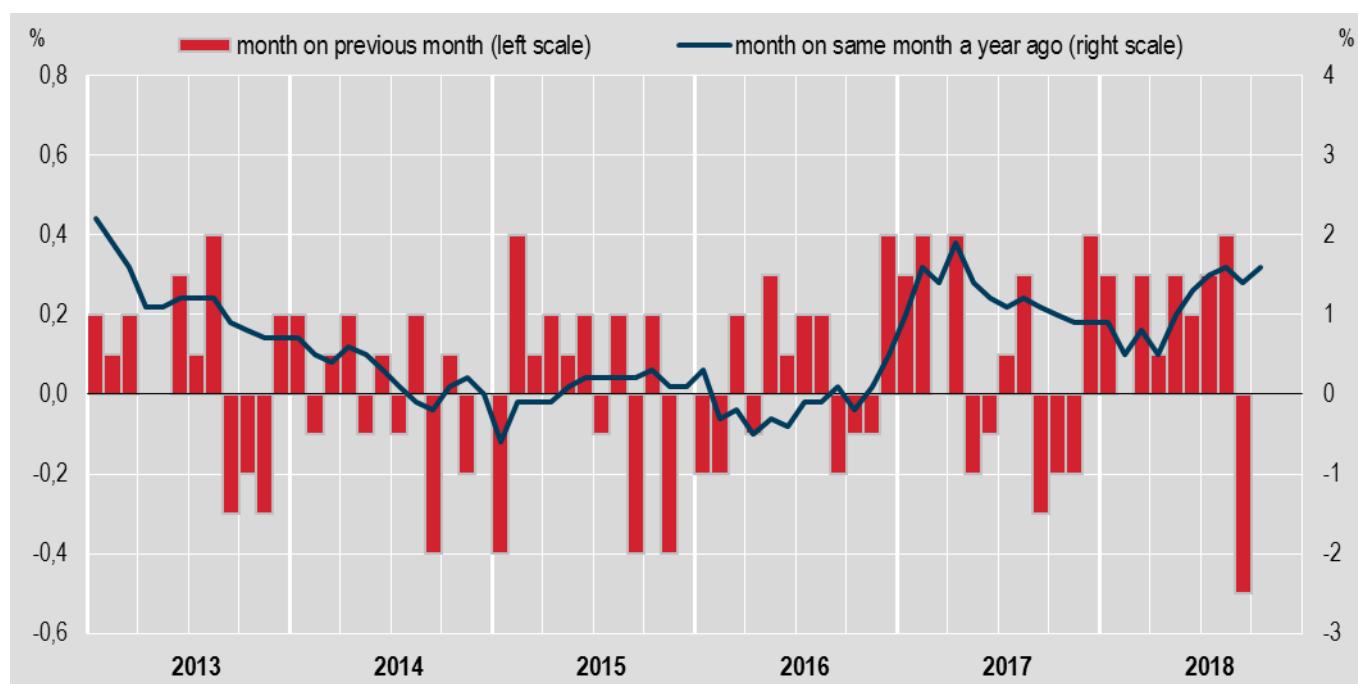
## CONSUMER PRICES

Final data

- In October 2018 the Italian consumer price index for the whole nation (NIC) was stable on monthly basis and increased by 1.6% with respect to October 2017 (up from +1.4% in September 2018), confirming the flash estimate.
- The acceleration of inflation was mainly due to prices of Regulated energy products (from +5.6% in September to +10.7%) and of Services – miscellaneous (from +0.5% to +2.3% due to the end of the wide decrease on annual basis of prices of Education that started in October 2017 with the sharp reduction of those of the University education), only partially offset by prices of Unprocessed food and of Services related to transport that slowed their growth respectively from +2.4% to +0.8% and from +2.5% to +1.8%.
- Inflation excluding energy and unprocessed food (core inflation) was +0.7% (as in the previous month) and inflation excluding energy was +0.8% (down from +0.9% in September).
- The zero variation on monthly basis of All items index was due to prices of Regulated energy products (+5.8%) and to a lesser extent to prices of Non-regulated energy products (+1.4%), whose increase was offset by the decrease of prices of Services related to transport (-2.1%) and of Services related to recreation, including repair and personal care (-0,7%), mainly due to seasonal factors.
- The annual rate of change of prices of Goods was +1.8% (up from +1.7% in September) and that one of prices of Services was +1.3% (up from +1.0%). As a consequence, the inflationary gap between Services and Goods was still negative and equal to -0.5 percentage points (from -0.7 in the previous month).
- Prices of Grocery and unprocessed food decreased by 0.1% on monthly basis and increased by 0.7% on annual basis (from +1.5% in the previous month).
- In October 2018, the rate of change of Italian harmonized index of consumer prices (HICP) increased by 0.2% with respect to the previous month and by 1.7% with respect to October 2017 (the annual rate of change observed in September was +1.5%), confirming the flash estimate.

### CHART 1. ITALIAN CONSUMER PRICE INDEX FOR THE WHOLE NATION (NIC)

January 2013 - October 2018, month on previous month and month on same month a year ago percent changes (index, 2015=100)



**TABLE 1. ITALIAN CONSUMER PRICE INDICES**

October 2018, month on previous month and month on same month a year ago percent changes (index, 2015=100)

|   | INDICES | Month on previous month | Month on same month a year ago |
|---|---------|-------------------------|--------------------------------|
|   |         | Oct-18<br>Sep-18        | Oct-18<br>Oct-17               |
| Italian consumer price index for the whole nation (NIC) | 102.6   | 0.0                     | +1.6                           |
| Italian harmonized index of consumer prices (HICP)      | 103.7   | +0.2                    | +1.7                           |

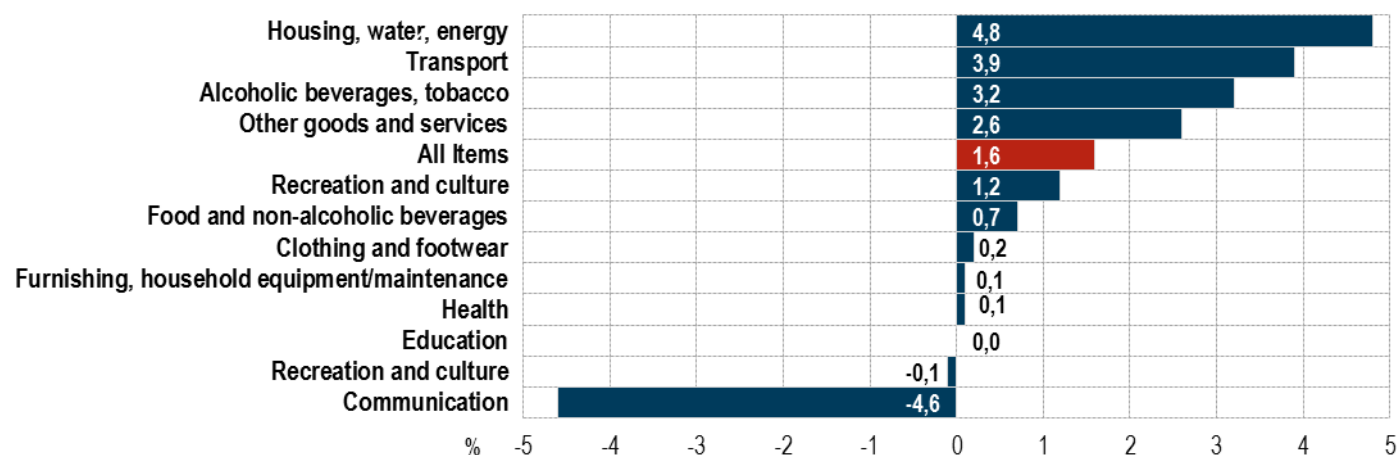
**TABLE 2. ITALIAN CONSUMER PRICE INDEX FOR THE WHOLE NATION (NIC) BY ECOICOP DIVISION**

October 2018, weights, indices, month on previous month and month on same month a year ago percent changes (index, 2015=100)

| DIVISIONS  | Weights          | Indices      | Month on previous month          |                  | Month on same month a year ago |                  |
|--|------------------|--------------|----------------------------------|------------------|--------------------------------|------------------|
|  |                  |              | Oct-18<br>Sep-18                 | Oct-17<br>Sep-17 | Oct-18<br>Oct-17               | Sep-18<br>Sep-17 |
|  |                  |              | Food and non-alcoholic beverages | 165,103          | 102.9                          | 0.0              |
| Alcoholic beverages, tobacco                                       | 30,965           | 105.6        | -0.2                             | 0.0              | +3.2                           | +3.4             |
| Clothing and footwear  | 72,048           | 101.1        | -0.1                             | 0.0              | +0.2                           | +0.3             |
| Housing, water, electricity, gas and other fuels                   | 107,989          | 105.2        | +2.4                             | +0.4             | +4.8                           | +2.7             |
| Furnishings, household equipment and routine household maintenance | 71,390           | 100.4        | -0.1                             | 0.0              | +0.1                           | +0.2             |
| Health   | 84,906           | 100.6        | 0.0                              | +0.1             | +0.1                           | +0.2             |
| Transport  | 146,713          | 105.6        | -0.7                             | -0.5             | +3.9                           | +4.1             |
| Communication  | 25,318           | 92.6         | -1.4                             | -0.2             | -4.6                           | -3.5             |
| Recreation and culture   | 77,042           | 100.4        | -0.4                             | -0.1             | -0.1                           | +0.2             |
| Education  | 9,793            | 83.8         | -0.7                             | -16.6            | 0.0                            | -16.0            |
| Restaurants and hotels   | 117,391          | 104.4        | -0.9                             | -0.8             | +1.2                           | +1.3             |
| Miscellaneous goods and services                                   | 91,342           | 103.8        | +0.2                             | 0.0              | +2.6                           | +2.4             |
| <b>ALL ITEMS</b>   | <b>1,000,000</b> | <b>102.6</b> | <b>0.0</b>                       | <b>-0.2</b>      | <b>+1.6</b>                    | <b>+1.4</b>      |

**CHART 2. ITALIAN NATIONAL CONSUMER PRICE INDEX (NIC) BY COICOP DIVISION**

October 2018, month on same month a year ago percent changes (index, 2015=100)



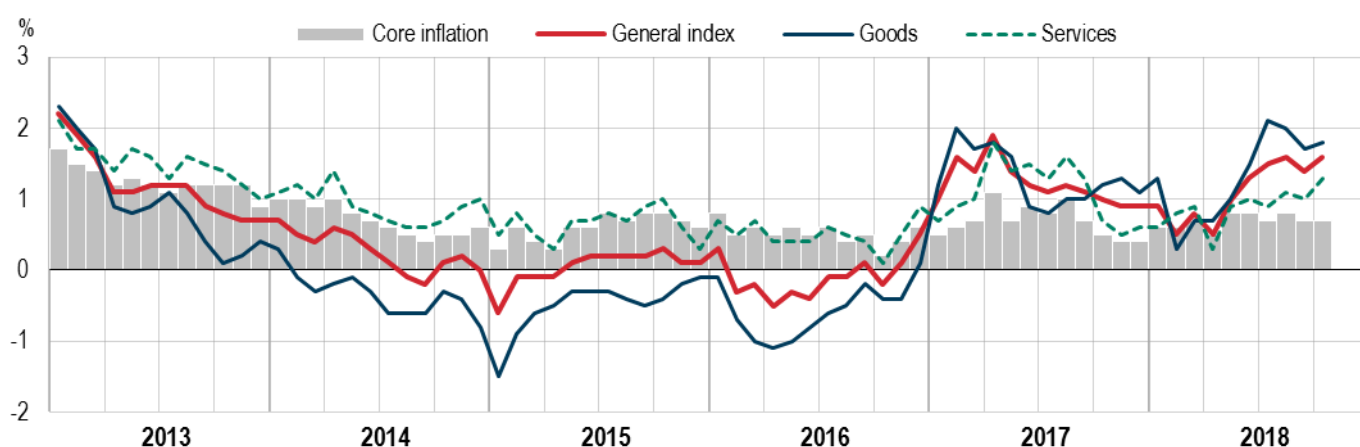
**TABLE 3. ITALIAN CONSUMER PRICE INDEX FOR THE WHOLE NATION (NIC), BY TYPE OF PRODUCTS**

October 2018, weights, indices, month on previous month and month on same month a year ago percent changes (index, 2015=100)

| SPECIAL AGGREGATES   | Weights          | Indices      | Month on previous month |             | Month on same month a year ago |             |
|--|------------------|--------------|-------------------------|-------------|--------------------------------|-------------|
|  |                  |              | Oct-18                  | Oct-17      | Oct-18                         | Sep-18      |
|  |                  |              | Sep-18                  | Sep-17      | Oct-17                         | Sep-17      |
| Food including alcohol:  | 175,233          | 103.0        | 0.0                     | +0.7        | +1.0                           | +1.7        |
| Processed food including alcohol                                   | 105,414          | 101.8        | -0.1                    | +0.1        | +1.0                           | +1.2        |
| Unprocessed food   | 69,819           | 104.6        | +0.1                    | +1.7        | +0.8                           | +2.4        |
| Energy:  | 88,748           | 109.0        | +3.5                    | +1.1        | +10.1                          | +7.6        |
| Regulated energy products  | 43,394           | 108.9        | +5.8                    | +1.0        | +10.7                          | +5.6        |
| Non-regulated energy products                                      | 45,354           | 109.5        | +1.4                    | +1.2        | +9.5                           | +9.3        |
| Tobacco  | 20,835           | 106.4        | 0.0                     | 0.0         | +2.9                           | +2.9        |
| Non energy industrial goods:                                       | 255,011          | 100.0        | -0.1                    | +0.1        | -0.5                           | -0.3        |
| Durable goods  | 88,207           | 99.0         | -0.4                    | 0.0         | -1.4                           | -1.0        |
| Non-durable goods  | 64,568           | 99.5         | -0.2                    | 0.0         | -0.5                           | -0.3        |
| Semi-durable goods   | 102,236          | 101.1        | +0.1                    | 0.0         | +0.4                           | +0.3        |
| <b>Goods</b>   | <b>539,827</b>   | <b>102.6</b> | <b>+0.5</b>             | <b>+0.4</b> | <b>+1.8</b>                    | <b>+1.7</b> |
| Services related to housing  | 74,769           | 101.9        | +0.1                    | 0.0         | +0.5                           | +0.4        |
| Services related to communication                                  | 19,222           | 97.3         | -0.5                    | +0.2        | -1.2                           | -0.5        |
| Services related to recreation, including repair and personal care | 178,091          | 103.4        | -0.7                    | -0.5        | +1.0                           | +1.2        |
| Services related to transport                                      | 77,036           | 104.7        | -2.1                    | -1.5        | +1.8                           | +2.5        |
| Services - miscellaneous   | 111,055          | 101.8        | +0.1                    | -1.7        | +2.3                           | +0.5        |
| <b>Services</b>  | <b>460,173</b>   | <b>102.7</b> | <b>-0.6</b>             | <b>-0.9</b> | <b>+1.3</b>                    | <b>+1.0</b> |
| <b>ALL ITEMS</b>   | <b>1,000,000</b> | <b>102.6</b> | <b>0.0</b>              | <b>-0.2</b> | <b>+1.6</b>                    | <b>+1.4</b> |
| All items excluding energy and unprocessed food (Core inflation)   | 841,433          | 101.8        | -0.4                    | -0.4        | +0.7                           | +0.7        |
| All items excluding energy, food, alcohol and tobacco              | 715,184          | 101.7        | -0.5                    | -0.6        | +0.7                           | +0.6        |
| All items excluding energy   | 911,252          | 102.0        | -0.4                    | -0.3        | +0.8                           | +0.9        |
| Grocery and unprocessed food                                       | 197,832          | 102.4        | -0.1                    | +0.7        | +0.7                           | +1.5        |

**CHART 3. ITALIAN NATIONAL CONSUMER PRICE INDEX (NIC) BY TYPE OF PRODUCTS**

January 2013 - October 2018, month on same month a year ago percent changes (index, 2015=100)



**TABLE 4. ITALIAN HARMONIZED CONSUMER PRICE INDEX (HICP), BY ECOICOP DIVISION**

October 2018, weights, indices, month on previous month and month on same month a year ago percent changes (index, 2015=100)

| DIVISIONS  | Weights          | Indices      | Month on previous month |            | Month on same month a year ago |             |
|--|------------------|--------------|-------------------------|------------|--------------------------------|-------------|
|  |                  |              | Oct-18                  | Oct-17     | Oct-18                         | Sep-18      |
|  |                  |              | Sep-18                  | Sep-17     | Oct-17                         | Sep-17      |
| Food and non-alcoholic beverages                                   | 175,418          | 102.9        | -0.1                    | +0.9       | +0.6                           | +1.6        |
| Alcoholic beverages, tobacco                                       | 32,861           | 105.5        | -0.2                    | 0.0        | +3.1                           | +3.3        |
| Clothing and footwear  | 83,493           | 110.5        | +2.1                    | +1.5       | +0.1                           | -0.6        |
| Housing, water, electricity, gas and other fuels                   | 114,604          | 105.3        | +2.4                    | +0.4       | +4.9                           | +2.8        |
| Furnishings, household equipment and routine household maintenance | 75,998           | 100.5        | +0.1                    | +0.2       | +0.1                           | +0.2        |
| Health   | 42,429           | 102.5        | +0.1                    | 0.0        | +0.6                           | +0.5        |
| Transport  | 155,569          | 105.6        | -0.7                    | -0.5       | +3.9                           | +4.1        |
| Communication  | 26,871           | 92.7         | -1.4                    | -0.1       | -4.6                           | -3.4        |
| Recreation and culture   | 60,523           | 100.6        | -0.5                    | 0.0        | -0.1                           | +0.4        |
| Education  | 10,397           | 83.8         | -0.7                    | -16.5      | 0.0                            | -15.9       |
| Restaurants and hotels   | 124,574          | 104.5        | -0.8                    | -0.8       | +1.2                           | +1.2        |
| Miscellaneous goods and services                                   | 97,263           | 104.2        | +0.3                    | +0.2       | +2.5                           | +2.4        |
| <b>ALL ITEMS</b>   | <b>1,000,000</b> | <b>103.7</b> | <b>+0.2</b>             | <b>0.0</b> | <b>+1.7</b>                    | <b>+1.5</b> |
| All items at constant tax rates                                    | 1,000,000        | 103.6        | +0.3                    | 0.0        | +1.7                           | +1.4        |

**TABLE 5. ITALIAN HARMONIZED CONSUMER PRICE INDEX (HICP), BY SPECIAL AGGREGATES**

October 2018, weights, indices, month on previous month and month on same month a year ago percent changes (index, 2015=100)

| SPECIAL AGGREGATES   | Weights          | Indices      | Month on previous month |             | Month on same month a year ago |             |
|--|------------------|--------------|-------------------------|-------------|--------------------------------|-------------|
|  |                  |              | Oct-18                  | Oct-17      | Oct-18                         | Sep-18      |
|  |                  |              | Sep-18                  | Sep-17      | Oct-17                         | Sep-17      |
| Food, alcohol and tobacco:   | 208,279          | 103.3        | -0.1                    | +0.7        | +1.0                           | +1.8        |
| Processed food (including alcohol and tobacco)                         | 116,022          | 102.5        | -0.1                    | +0.1        | +1.3                           | +1.5        |
| Unprocessed food   | 92,257           | 104.4        | 0.0                     | +1.4        | +0.8                           | +2.2        |
| Energy:  | 94,199           | 109.1        | +3.5                    | +1.1        | +10.1                          | +7.6        |
| Electricity, gas, solid fuels and heat energy                          | 50,139           | 108.1        | +5.3                    | +1.0        | +9.9                           | +5.4        |
| Liquid fuels and fuels and lubricants for personal transport equipment | 44,060           | 110.5        | +1.5                    | +1.4        | +10.3                          | +10.2       |
| Non-energy industrial goods:   | 264,658          | 104.1        | +0.8                    | +0.6        | +0.1                           | -0.1        |
| Durable goods  | 84,892           | 100.6        | -0.1                    | +0.2        | -0.4                           | -0.1        |
| Non-durable goods  | 63,692           | 101.8        | -0.1                    | +0.2        | +0.2                           | +0.5        |
| Semi-durable goods   | 116,074          | 108.1        | +1.9                    | +1.3        | +0.3                           | -0.3        |
| <b>Goods</b>   | <b>567,136</b>   | <b>104.6</b> | <b>+0.9</b>             | <b>+0.8</b> | <b>+2.0</b>                    | <b>+2.0</b> |
| Services related to housing  | 79,396           | 101.8        | 0.0                     | 0.0         | +0.4                           | +0.4        |
| Services related to communication                                      | 26,871           | 92.7         | -1.4                    | -0.1        | -4.6                           | -3.4        |
| Services related to recreation, including repairs and personal care    | 167,065          | 103.8        | -0.9                    | -0.6        | +1.1                           | +1.4        |
| Services related to transport  | 81,600           | 104.7        | -2.1                    | -1.5        | +1.8                           | +2.5        |
| Services - miscellaneous   | 77,932           | 101.6        | +0.2                    | -2.7        | +3.1                           | +0.2        |
| <b>Services</b>  | <b>432,864</b>   | <b>102.5</b> | <b>-0.7</b>             | <b>-1.1</b> | <b>+1.2</b>                    | <b>+0.8</b> |
| <b>ALL ITEMS</b>   | <b>1,000,000</b> | <b>103.7</b> | <b>+0.2</b>             | <b>0.0</b>  | <b>+1.7</b>                    | <b>+1.5</b> |
| All items excluding energy and unprocessed food (Core inflation)       | 813,544          | 103.0        | -0.2                    | -0.4        | +0.9                           | +0.7        |
| All items excluding energy, food, alcohol and tobacco                  | 697,522          | 103.0        | -0.2                    | -0.4        | +0.7                           | +0.5        |
| All items excluding energy   | 905,801          | 103.1        | -0.2                    | -0.1        | +0.8                           | +0.9        |

**TABLE 6. REVISIONS OF CONSUMER PRICE INDICES**

October 2018 indices, month on previous month and month on same month a year ago percent changes (index, 2015=100)

|   | FLASH ESTIMATES |                         |                         | FINAL DATA      |                         |                         |
|---|-----------------|-------------------------|-------------------------|-----------------|-------------------------|-------------------------|
|   | indices         | rates of change%        |                         | indices         | rates of change %       |                         |
|   | October<br>2018 | <u>Oct-18</u><br>Sep-18 | <u>Oct-18</u><br>Oct-17 | October<br>2018 | <u>Oct-18</u><br>Sep-18 | <u>Oct-18</u><br>Oct-17 |
| Italian consumer price index for the whole nation (NIC) | 102.6           | 0.0                     | +1.6                    | 102.6           | 0.0                     | +1.6                    |
| Italian harmonized index of consumer prices (HICP)      | 103.7           | +0.2                    | +1.7                    | 103.7           | +0.2                    | 1.7                     |

**COICOP:** classification of individual consumption by purpose.

**Core inflation:** it is calculated by excluding unprocessed food and energy.

**Durable goods:** they include cars, furnitures and appliances.

**ECOICOP:** European classification of individual consumption by purpose, which provides a level of detail (the sub-classes) greater than the COICOP.

**Food:** in addition to products such as bread, meat, cheese, it includes non-alcoholic and alcoholic beverages. The *Processed food* destined for final consumption are defined as the result of a process of industrial transformation (such as fruit juices, sausages, frozen products). *Unprocessed food* (such as fresh meat, fresh fish, fruit and fresh vegetables) are said to be unprocessed.

**Grocery and unprocessed food:** it includes, in addition to food, the goods for cleaning and ordinary maintenance of the house and personal hygiene and beauty products.

**HICP:** harmonized index of consumer prices for the countries of the European Union.

**HICP-SA:** Harmonized indices of consumer prices for special aggregates. They are indicators constructed according to a classification scheme alternative to the ECOICOP-HICP and different from that used for the NIC indices by product type. The classification scheme and calculation method are common to those used by Eurostat.

**HICP-CT** harmonized index of consumer prices with constant taxation for the countries of the European Union.

**Non energy industrial goods:** they include consumer goods excluding food, energy and tobacco products.

**Non-durable goods:** they include housecleaning detergents, personal care products and medicines.

**Regulated energy products:** they include the tariffs for electricity and gas for domestic use.

**Regulated products:** they include regulated energy products and other regulated products.

**Semi-durable goods:** they include clothing, footwear, books.

**Non-regulated energy products:** they include fuels for motor vehicles, lubricants and non regulated fuels for domestic use.

**NIC:** italian consumer prices index for the whole nation.

**Services related to housing:** they include services for repair, cleaning and maintenance of the house, refuse collection, rents, maintenance charges in multi-occupied buildings, water supply and sewerage collection.

**Services related to communication:** they include telephone services and postal services.

**Services related to recreational, including repair and personal care:** they include holiday packages, accommodation services, restaurants, bars and the like, canteens, repair of audiovisual, photographic and IT equipment, clothing services, services for personal hygiene, recreational and cultural services and games of chance.

**Services related to transport:** include air, sea, rail and road transports, maintenance and repair of personal transport equipment, insurance connected with transport.

**Services - miscellaneous:** they include education, medical services, social protection, financial services; Legal services and accountancy; funeral services, insurance connected with health.

**Short-term percentage change:** change compared to the previous period.

**Trend percentage change:** change compared to the same period of the previous year.

## Introduction and regulatory framework

The consumer price indices measure the variations over time of the prices of a collection of products (basket) that represents all the goods and services intended for the final household consumption, obtainable on the market through monetary transactions (free transactions, own-consumptions, rents, etc. are excluded).

The system of consumer price indices consists of two different indicators<sup>1</sup>:

- ▶ **the Consumer Price Index for the whole nation (NIC)** is used as a measure of headline inflation;
- ▶ **the Harmonized 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. In compliance with the European legislation, and consistently with the standards provided by the regulations, the HICP index is also processed in the “constant taxation” version (HICP-CT).

The HICP index is calculated and issued on the reference base of 2015=100 ([Regulation \(EU\) 2016/792 of the European Parliament and of the Council](#)). The same reference year is also used for the NIC index.

The survey of consumer prices indices is governed by different laws and regulations that define the actors involved (Italian National Institute of Statistics - Istat and Municipalities) and their relative functions:

- the Regio Decreto Legge n. 222/1927, that gives Istat the task, of promoting the formation of price indices in all municipalities with more than 100,000 inhabitants and in others municipalities chosen among the provincial capitals or those with more than 50,000 inhabitants that have adequate statistics offices;
- [D.lgs n. 322/1989](#), that governs the survey, processing, analysis and dissemination activities, and archiving statistical data performed by public authorities and bodies of statistical information, for the purpose of creating the single direction, organizational consistency and the streamlining of flows at a central and local level;
- the [Regulation \(EU\) 2016/792](#), concerning the harmonized index of Consumer Prices and the House Price index (HPI).

## Survey coverage and organization

Data contributing to the calculation of monthly consumer price indices are collected using different sources: the *local survey*, carried out by municipal statistics offices, under Istat supervision and coordination; the *central survey* carried out directly by Istat or through different data providers; the *scanner data*; the *administrative sources*.

In 2018, the weight of the products exclusively collected by the local survey is equal to 60.7% (data referred to NIC index) despite of those products which are collected by central survey, whose weight is 23.9%. In addition, for grocery products excluding fresh food (which account for 11.5% of the basket in terms of weight), prices are collected through both scanner data - with regard to the distribution channel of hypermarkets and supermarkets (for 55.4%) - and local survey - with regard to other types of points of sale (for the remaining 44.6%).

Finally, an administrative source is used: the database of fuel prices of Ministry of Economic Development whose weight is equal to 3.9%.

In 2018 the geographical basis of the survey is made up of 79 municipalities which contribute to the indices calculation of all the product aggregates included in the basket - and of other 17 municipalities<sup>2</sup> participating in the survey for a subset of products which includes local tariffs (water supply, solid waste, sewerage collection, gas for domestic use, urban transport, taxi, car transfer ownership, canteens in schools, public day nursery, etc.) and some local services (sport events, cinemas, theatre shows, secondary school education, canteens in universities, etc.). In particular, since December 2017 Campobasso, the regional chief town of Molise, has extended the survey to the whole basket, allowing returning to coverage all Italian regions.

In the 96 municipalities (79 for the full basket and 17 for a subset of products) taking part in the 2018 survey, prices are collected in more than 42,400 statistical units (including outlets, enterprises and institutions) while rents are collected for about 8,000 dwellings. 461,000 quotes are sent on a monthly basis to Istat by Municipal Offices of Statistics (UCS in Italian) each month (493,000 in 2017).

<sup>1</sup> A third indicator, the “household of workers and employees consumer price index” (FOI), which refers to the consumption of the whole households headed by an employed worker, is also calculated (as a satellite index of NIC) and released by Istat on monthly basis;

<sup>2</sup> Asti, Chieti, Fermo, Foggia, Frosinone, Isernia, L'Aquila, Matera, Monza, Prato, Ragusa, Salerno, Savona, Termoli, Vasto, Verbania and Vibo Valentia.

As a result of the annual update of the survey, 18.2% of the current price quotes collected by UCS are new (4.8% in 2017): of these, 0.3% are price quotes of new products, while the remaining 17.9% refer to the product already in 2017 basket. The highest percentage of new quotes is due to the introduction of scanner data which has led to relevant changes in the organization of price data collection in the field, focusing the attention on the retail trade channels different from hypermarkets and supermarkets.

In particular, concerning grocery products (excluding fresh food), from January 2018 the price collection carried out by the UCS is limited to traditional shops (stores that sell consumer products on an area of less than 100 m<sup>2</sup>), discounts, department stores and "minimarkets" (facilities with a retail area of 100 and 400 m<sup>2</sup>). As for fresh and/or variable weight products (fruit, vegetables, fish products, bread and fresh pastry products, meat, cheese, cold cuts) the price collection in supermarkets and hypermarkets, as well as in the other typologies of outlets, will still be on charge of the UCS.

In 2018 prices/quotes collected each month directly by Istat are more than 153,000, of which 152,700 via web, also using web scraping techniques, or collecting data from different providers and about 400 quotes directly provided by insurance companies which refer to protection against most risks connected to property, such as fire, theft and other damages and are used for the Housing insurance services price index compilation.

Regarding scanner data<sup>3</sup>, a cut off sample of barcodes (GTINs) has been selected within each outlet/aggregate of products (covering 40% of turnover but selecting no more than the first 30 GTINs in terms of turnover). The products selected in December are kept fixed during the following year. About 1,370,000 price quotes are collected each week to estimate inflation. For each GTIN, prices are calculated taking into account turnover and quantities (weekly price=weekly turnover/weekly quantities).

Concerning fuels, the use of the MiSE database (firstly introduced in 2017) has improved the territorial coverage of the index which at present includes all 107 Italian provinces (approximately 63,000 price quotes are used every month for the inflation estimate).

## Calculation of indices

### Weighting structure

Not all goods and services included in the basket have the same importance in households' budget. Consequently, for the compilation of the consumer price index, weights are used that reflect the expenditure shares of different products on final consumption expenditure.

Specifically, for HICP the weighting coefficients are determined on the basis of the household final consumption expenditure as derived from National Accounts (for 2018 data refers to year 2016). Additional information, used to define weights at the lower levels of the classification of consumption expenditures, derives from the Household Budget Survey, from other Istat surveys and from external sources<sup>4</sup>, such as Ac Nielsen and GfK Italia S.r.l.

To properly calculate the weighting coefficients, the expenditure shares are price-updated to the computation base period of indices (December 2017) using the price changes measured between the year 2016 and December 2017. Table 1 shows the 2018 weighting structures by expenditure division of NIC and HICP.

<sup>3</sup> The use of scanner data for the estimation of inflation concerns 79 indices of aggregate of products belonging to 5 ECOICOP Divisions (01, 02, 05, 09, 12).

<sup>4</sup> It should be noted that, due to the unavailability of sufficiently robust estimates of provincial consumption, in the first stage of indices aggregation the consumer price indices, chief towns of provinces contribute to the calculation of regional indices taking into account the relative importance of the province in the region in terms of population. For the calculation of this set of weights, which are based on provincial population data, in 2018, data coming from demographic balance - resident population of 2016, December, 31, have been used.



**TABLE 1. WEIGHTS USED TO CALCULATE CONSUMER PRICE INDICES BY EXPENDITURE DIVISION.**

Year 2018, percentage values

| EXPENDITURE DIVISIONS                     | NIC             | HICP            |
|---|-----------------|-----------------|
| Food products and non-alcoholic beverages | 16.5103         | 17.5418         |
| Alcoholic beverages and tobaccos          | 3.0965          | 3.2861          |
| Clothing and footwear                     | 7.2048          | 8.3493          |
| Housing, water, electricity and fuels     | 10.7989         | 11.4604         |
| Furniture, home items and services        | 7.139           | 7.5998          |
| Health services and costs                 | 8.4906          | 4.2429          |
| Transportation                            | 14.6713         | 15.5569         |
| Communications                            | 2.5318          | 2.6871          |
| Entertainment, shows and culture          | 7.7042          | 6.0523          |
| Education                                 | 0.9793          | 1.0397          |
| Hospitality and restaurant services       | 11.7391         | 12.4574         |
| Other goods and services                  | 9.1342          | 9.7263          |
| <b>General index</b>                      | <b>100.0000</b> | <b>100.0000</b> |

### Aggregation of national and territorial indices

The consumer price indices are calculated through subsequent aggregations of the indices of product aggregates compiled at provincial level.

In detail, the *national All-items index* is compiled as follows:

- ▶ the provincial indices of product aggregates are aggregated to build the corresponding regional indices. The weighting coefficients used are mainly based on the weight of each provincial capital in terms of resident population;
- ▶ the regional indices of product aggregate are aggregated to build the corresponding national indices. The weighting coefficients used are based on the weight of each region in terms of household consumption;
- ▶ the All-items index is obtained as the weighted average of the national indices of product aggregates. The weighting coefficients used are based on expenditure shares of each product aggregate.

The *All-items index at provincial, regional and macro-regional level*:

- ▶ the All-items indices *by regions and macro-regions* are obtained as the weighted average of the regional indices of product aggregates. The weighting coefficients used are based on the weight of each component in terms of household consumption, defined at regional and macro-regional level.
- ▶ The All-items indices *by provinces* are compiled as the weighted average of provincial indices of product aggregates. The weighting coefficients used are based on the weight of each aggregate of product in terms of household consumption, defined at a regional level.

### Classification of consumer prices indices

Classification of consumption so far used for HICP and NIC is the international classification ECOICOP (European Classification of Individual Consumption by Purpose), whose hierarchical structure has 4 levels of disaggregation: Divisions, Groups, Classes and Subclasses of product.

The classification ECOICOP was adopted in 2016, in compliance with the new European framework regulation on harmonized indices of consumer prices and the house price index, (2016/792).

For the calculation of Italian consumer price indices, subclasses of product are further broken down in Consumption segments and Product aggregates.

Consumption segments are the most disaggregated level for which NIC indices referring to the entire national territory are disseminated. Concerning HICP indices, the level of detail of the dissemination is that of the classes of product (the dissemination of HICP subclass indices is expected to start in 2018). At local level (geographical area, region, province), NIC indices are published up to the product groups.

HICP indices by special aggregates (**HICP-SA**) are released too. HICP-SA indices are calculated using the same classification scheme and method adopted by Eurostat (therefore different from the method used for the calculation of NIC indices by types of product), in order to guarantee comparability among the Italian HICPs and the HICP of the other EU countries and the HICPs for the EU and the euro area produced by Eurostat<sup>5</sup>.

### Survey and calculation of prices indices of seasonal products

From January 2011, the prices of *Fruit, Vegetables, Clothing* and *Footwear* are collected and processed in accordance with [Regulation \(EC\) no 330/2009 of 22 april 2009](#), which sets out minimum standards for dealing with seasonal products in the HICP<sup>6</sup>. The same method is also used for the NIC<sup>7</sup>.

In particular, the European Regulation defines as *seasonal product* that one consumers may not purchase in certain periods of the year (at least one month), or they may purchase in modest or insignificant volumes. It also establishes that in a given month seasonal products are considered *in season* or *out of season*.

On the basis of this standard, Istat defines a monthly calendar for the whole year, which establishes, in a given month, when each specific product belonging to the above mentioned 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 when 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.

### Flash estimates of HICP: accuracy and computation methodology

Flash estimate of Italian HICP (and NIC) are usually published on the last working day of the reference month according to the Eurostat release calendar of HICP flash estimate for euro area. Final data are generally published around 13 days later.

The aim of the inflation flash estimates is to provide a timely information on inflation, predicting as accurately as possible the final HICP (and NIC) annual rate of change released about two weeks later. The analysis of their revisions represents an important tool to evaluate the correct balancing between the two quality dimensions, timeliness and accuracy.

In line with the Eurostat Statistics Explained on Inflation – methodology of the euro area flash estimate, this section analyses the accuracy of the Italian HICP flash estimates and describes the methodology used in their computation.

### Accuracy of flash estimates

<sup>5</sup> HICP-SA indices have been released starting from data referred to February 2013.

The description of product classes which are included in the special aggregates is available on Eurostat web site at the following link: [http://ec.europa.eu/eurostat/ramon/nomenclatures/index.cfm?TargetUrl=LST\\_NOM\\_DTL&StrNom=COICOP\\_5&StrLanguageCode=EN&IntPckey=&StrLayoutCode=HIERARCHIC](http://ec.europa.eu/eurostat/ramon/nomenclatures/index.cfm?TargetUrl=LST_NOM_DTL&StrNom=COICOP_5&StrLanguageCode=EN&IntPckey=&StrLayoutCode=HIERARCHIC).

The HICP-SA calculation method is described in the HICP Compendium which is downloadable at the following link: <http://ec.europa.eu/eurostat/documents/3859598/5926625/KS-RA-13-017-EN.PDF/59eb2c1c-da1f-472c-b191-3d0c76521f9b?version=1.0>.

Back series starting from January 2001 are published on [I.Stat](#), the warehouse of Istat statistics, inside the theme "Prices".

<sup>6</sup> It has been adopted starting from data referred to January 2011.

<sup>7</sup> It is used for FOI indices, too.

Table 2 compares the final HICP annual rates of change and the flash estimates for the same reference month. Over the last thirteen months, the maximum difference between the final HICP – all items and the flash estimate – all items annual rates of change was -0.2 both in February and March 2018. Over the same period, with reference to the main special aggregates, the widest differences between final HICP annual rates of change and the flash estimates concerned Processed food (including alcohol, tobacco) (-1.1 in March 2018) and consequently Food, including alcohol and tobacco (-0.7 in March 2018), Energy (+0.7 in January 2018) and Non energy industrial goods (-0.7 in February 2018). The highest frequency of revisions is observed for Food, including alcohol and tobacco and Processed food (11 months out of 13, due to the use in the flash estimate of scanner data referred to the prices of grocery products from the modern retail trade distribution of one/two weeks compared to the three weeks included in the final index) and Non energy industrial goods (9 months out of 13, mainly due to the seasonal sales dynamics of Clothing and footwear); for both the partial information available has a higher impact on the flash estimate and therefore it turns out to be less accurate.

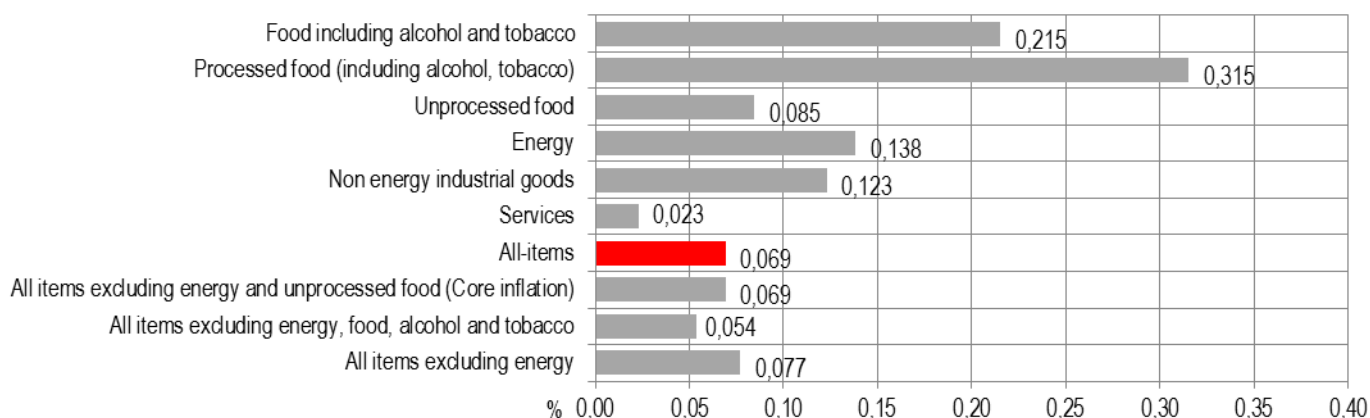
**TABLE 2. FLASH ESTIMATES AND HICP ANNUAL RATES FOR THE ALL-ITEMS AND MAIN SPECIAL AGGREGATES**  
October 2017 – October 2018, percentage values (base 2015=100)

| Special aggregates   |       | Oct-17 | Nov-17 | Dec-17 | Jan-18 | Feb-18 | Mar-18 | Apr-18 | May-18 | Jun-18 | Jul-18 | Aug-18 | Sep-18 | Oct-18 |
|--|-------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| Food including alcohol and tobacco:                              | Flash | 1.9    | 1.6    | 1.7    | 1.3    | -0.5   | 1.5    | 2.0    | 2.3    | 3.0    | 2.6    | 2.6    | 2.2    | 1.3    |
|  | HICP  | 1.9    | 1.7    | 1.6    | 1.3    | -0.6   | 0.8    | 1.8    | 2.2    | 2.6    | 2.5    | 2.3    | 1.8    | 1.0    |
| Processed food (including alcohol, tobacco)                      | Flash | 0.7    | 0.8    | 1.1    | 1.8    | 1.3    | 2.6    | 2.7    | 2.3    | 2.6    | 2.2    | 2.3    | 2.1    | 1.7    |
|  | HICP  | 0.7    | 0.9    | 1.1    | 1.7    | 1.1    | 1.5    | 2.3    | 2.0    | 2.1    | 2.1    | 2.0    | 1.5    | 1.3    |
| Unprocessed food   | Flash | 3.3    | 2.8    | 2.4    | 0.6    | -2.4   | 0.1    | 1.2    | 2.3    | 3.3    | 3.2    | 2.7    | 2.3    | 0.9    |
|  | HICP  | 3.3    | 2.8    | 2.3    | 0.8    | -2.4   | -0.2   | 1.1    | 2.2    | 3.2    | 3.2    | 2.7    | 2.2    | 0.8    |
| Energy   | Flash | 3.7    | 4.4    | 4.2    | 3.8    | 3.6    | 3.0    | 0.9    | 2.0    | 4.2    | 7.9    | 7.6    | 7.6    | 9.5    |
|  | HICP  | 4.0    | 4.4    | 4.2    | 4.5    | 3.6    | 3.0    | 0.8    | 2.0    | 4.2    | 8.0    | 7.6    | 7.6    | 10.1   |
| Non energy industrial goods                                      | Flash | 0.3    | 0.3    | 0.3    | 1.0    | 1.1    | 0.4    | 0.3    | 0.1    | 0.2    | 1.4    | 0.1    | 0.1    | 0.1    |
|  | HICP  | 0.2    | 0.4    | 0.4    | 0.9    | 0.4    | 0.4    | 0.3    | 0.2    | 0.3    | 1.3    | 0.1    | -0.1   | 0.1    |
| Services   | Flash | 0.7    | 0.5    | 0.5    | 0.5    | 0.6    | 0.8    | 0.2    | 0.9    | 1.0    | 0.8    | 1.0    | 0.8    | 1.2    |
|  | HICP  | 0.6    | 0.5    | 0.5    | 0.5    | 0.6    | 0.8    | 0.2    | 0.8    | 0.9    | 0.8    | 1.0    | 0.8    | 1.2    |
| <b>All-items</b>   | Flash | 1.1    | 1.1    | 1.0    | 1.1    | 0.7    | 1.1    | 0.6    | 1.1    | 1.5    | 1.9    | 1.7    | 1.6    | 1.7    |
|  | HICP  | 1.1    | 1.1    | 1.0    | 1.2    | 0.5    | 0.9    | 0.6    | 1.0    | 1.4    | 1.9    | 1.6    | 1.5    | 1.7    |
| All items excluding energy and unprocessed food (Core inflation) | Flash | 0.6    | 0.4    | 0.5    | 0.8    | 0.8    | 0.9    | 0.5    | 0.9    | 0.9    | 1.2    | 0.9    | 0.7    | 0.9    |
|  | HICP  | 0.5    | 0.5    | 0.5    | 0.8    | 0.6    | 0.8    | 0.5    | 0.8    | 0.8    | 1.1    | 0.8    | 0.7    | 0.9    |
| All items excluding energy, food, alcohol and tobacco            | Flash | 0.5    | 0.4    | 0.4    | 0.7    | 0.7    | 0.7    | 0.2    | 0.7    | 0.7    | 1.0    | 0.6    | 0.6    | 0.8    |
|  | HICP  | 0.5    | 0.4    | 0.5    | 0.7    | 0.5    | 0.7    | 0.2    | 0.6    | 0.7    | 0.9    | 0.6    | 0.5    | 0.7    |
| All items excluding energy                                       | Flash | 0.8    | 0.7    | 0.6    | 0.8    | 0.5    | 0.9    | 0.6    | 1.0    | 1.2    | 1.3    | 1.1    | 1.0    | 0.9    |
|  | HICP  | 0.8    | 0.7    | 0.7    | 0.8    | 0.3    | 0.7    | 0.6    | 0.9    | 1.1    | 1.3    | 1.0    | 0.9    | 0.8    |

The Mean Absolute Deviation (MAD) provides another way to measure accuracy. It is calculated as the average of the differences in absolute value between the final HICP annual rates of change and the flash estimates over the last thirteen months. Figure 1 shows the MAD for the all-item index and the main special aggregates. Over the last thirteen months Processed food (including alcohol, tobacco) (0.315 percentage points), Food including alcohol and tobacco (0.215 percentage points) and Energy (0.138 percentage points) recorded the highest MADs.

**FIGURE 1. MEAN ABSOLUTE DEVIATION BETWEEN FLASH ESTIMATES AND HICP ANNUAL RATES.**

October 2017 - October 2018, percentage points



### Impact on the Italian Harmonized Price Consumer Index (HICP) of the use of scanner data of grocery products

Starting from January 2018 Istat introduces scanner data of grocery products (excluding fresh food) in the production process of estimation of inflation.

In order to assess the impact of the use of the new data source on the annual rates of change of the HICP, a simulation is carried out monthly by calculating the consumer price indices of year 2017 using scanner data coming from hyper and supermarkets of the main retail trade chains.

The impact is calculated as the difference between the annual rates of change of the indices currently calculated and released and the results of the simulation.

The impact estimate will be updated on a monthly basis throughout 2018 with the release of HICP final data (Table 3)<sup>8</sup>.

**TABLE 3. ESTIMATE OF THE IMPACT OF THE INTRODUCTION OF THE SCANNERS DATE IN THE ESTIMATE ON THE ANNUAL RATES OF CHANGE OF HICP**

January 2018 - October 2018, weights and estimate of impact (base 2015=100)

| Level          | Aggregates   | Weights          | Impact estimate <sup>(a)</sup> |             |            |             |             |             |            |            |             |             |
|----------------|--|------------------|--------------------------------|-------------|------------|-------------|-------------|-------------|------------|------------|-------------|-------------|
|                |  |                  | Jan-18                         | Feb-18      | Mar-18     | Apr-18      | May-18      | Jun-18      | Jul-18     | Aug-18     | Sep-18      | Oct-18      |
| Division       | Food and non-alcoholic beverages                                   | 175,418          | 0.0                            | -0.1        | +0.3       | +0.1        | 0.0         | +0.1        | +0.2       | +0.5       | +0.1        | +0.1        |
| Division       | Alcoholic beverages, tobacco                                       | 32,861           | +0.2                           | +0.3        | +0.4       | +0.1        | +0.3        | +0.3        | +0.5       | +0.4       | +0.4        | +0.3        |
| Division       | Furnishings, household equipment and routine household maintenance | 75,998           | -0.1                           | +0.1        | 0.0        | 0.0         | 0.0         | 0.0         | -0.1       | +0.1       | -0.2        | -0.1        |
| Division       | Recreation and culture   | 60,523           | +0.1                           | 0.0         | 0.0        | +0.1        | +0.1        | 0.0         | +0.1       | 0.0        | 0.0         | +0.1        |
| Division       | Miscellaneous goods and services                                   | 97,263           | +0.1                           | 0.0         | +0.1       | +0.1        | -0.1        | 0.0         | +0.1       | +0.1       | +0.1        | -0.1        |
| <b>General</b> | <b>All-items</b>   | <b>1,000,000</b> | <b>+0.1</b>                    | <b>-0.1</b> | <b>0.0</b> | <b>+0.1</b> | <b>-0.1</b> | <b>+0.1</b> | <b>0.0</b> | <b>0.0</b> | <b>+0.1</b> | <b>+0.1</b> |

<sup>(a)</sup> Difference between the annual rate of change of the published monthly index (new method) and the annual rate of change of the index calculated using the previous method.

<sup>8</sup> The tables concerning the impact of scanner data on the estimate of inflation for the HICP indices for groups, classes and sub-classes are available on the Istat website in the area dedicated to the press release in the Attachment section (Impact Estimate).

## Dissemination: timing and database

Consumer prices indices dissemination by Istat occurs in two successive dates according to a different release method of the data: flash estimate and definitive estimate.

The dissemination of flash estimate of the NIC indices (general, by expenditure division, by product type and by purchase frequency) and the (general) HICP index occurs at the end of the reference month, while that one of the definitive data of the indices, NIC and HICP, occurs no later than the middle of the month following the reference month. The publication times are established by a [calendar](#) agreed upon with Eurostat, in the month of December of each year, for the next year, and according to the dissemination standards (SDDS – Special Data Dissemination Standard) defined by the International Monetary Fund.

The indices, for both flash and definitive estimates, are issued through the “Consumer prices index” press release on the Istat website at <https://www.istat.it/en/archivio/consumer+prices>.

The series of the updated indices are published, in conjunction with the issue of the press release, on the [Istat data warehouse](#) within the theme Prices - Consumer prices. Together with the monthly indices, the short-term and trend percentage variations, the average annual indices, the average annual variations and the annually calculated weights are issued.

Information on the consumer price indices is available in on the [EconomicTrends.Stat database](#), that collects and organizes the short-term statistics produced by Istat, and offers itself as a study tool for policy makers, social workers, scholars and citizens.

Information on the historic series of all indices, beginning from 1861 to 2015, is available on the Istat website at [Time Series](#).

Summary data and studies on consumer prices and on the basket of goods and services are in addition contained in some editorial publications issued by Istat annually, such as the Statistical Yearbook, the Annual Report and publication Noi Italia.

In compliance with European Regulation No. 792/2016, the data of the survey on consumer prices is transmitted to Eurostat twice per month. The main indicators, archived in the Eurostat database, are accessible at <http://ec.europa.eu/eurostat/data/database> (Theme “*Economy and finance*”, topic “*Prices*”).