



EUROPEAN COMMISSION
EUROSTAT

Directorate C – Macro-economic statistics
C.4 – Price statistics. Purchasing power parities. Housing statistics

December 2022

HICP Compliance Monitoring Report

Italy

1. Introduction

In June 2022, Eurostat reviewed the compilation of the harmonised index of consumer prices (HICP) for Italy. The review was done against the existing legal framework, established HICP recommendations and other guidelines and good practices in the field of consumer price indices (CPI).

The current report is based on:

- The draft 2022 inventory containing details of data sources, definitions and methods used in the HICP for Italy.
- The discussions at the compliance monitoring meeting with ISTAT, which was held in Rome on 21 June 2022.
- The information note on the previous compliance monitoring exercise published in [September 2014](#) and the corresponding follow-up report published in [August 2018](#).

For all main methodological topics related to the HICP, this report briefly summarises the Italian compilation practices, followed by Eurostat's appraisal of compliance and, if applicable, recommendations for improvement. The report concludes with Eurostat's overall assessment of compliance of the HICP for Italy.

2. Coverage and classification

The target universe of the Italian HICP follows the household final monetary consumption expenditure (HFMCE) concept as it is defined in Article 2(20) of Regulation (EU) 2016/792 (framework regulation) and in the Annex of Regulation (EU) 2020/1148 (implementing regulation).

In line with this concept, the HICP reflects consumption expenditure by all households ⁽¹⁾, including the consumption expenditure incurred by institutional households. The domestic principle ⁽²⁾ is applied by covering expenditures made by both resident and non-resident households on the economic territory of Italy, while excluding expenditures made by resident households abroad. Only monetary expenditures are included. Social transfers in kind are excluded ⁽³⁾ except for dwelling allowances that are part of D.632.

The product categories listed in Article 5(8) of the framework regulation as well as owner occupied housing expenditures are excluded from the coverage of the Italian HICP ⁽⁴⁾.

ISTAT classifies products and calculates the HICP according to the European Classification of Individual Consumption according to Purpose (ECOICOP), which was implemented in January 2016.

In general, an ECOICOP category is included in the Italian HICP if its expenditure share lies above the one part per thousand threshold defined in Article 5(7) of the framework regulation.

Compliance

The coverage and classification in the Italian HICP are in line with the legal requirements.

3. Weights

The weights in the Italian HICP are updated annually. The primary data sources for estimating the weights are national accounts data, complemented with data from the household budget survey and from other sources. The Italian HICP is structured according to ECOICOP. The 5-digit ECOICOP subclasses are divided into Consumption Segments (6-digit) and Product Aggregates (8-digit).

The estimation procedure follows a top-down strategy. The starting point are preliminary National Accounts data for the year t-1 at the level of the 12 ECOICOP divisions. These data are then broken down into 60 consumption expenditure aggregates using shares derived from national accounts data for the year t-2. The data are adjusted by removing expenditures for out-of-scope products. Finally, these data are further broken down into approximately 400 product aggregates using shares that are derived from preliminary household budget survey results referring to the year t-1, and from other sources such as administrative data sources or industry reports.

⁽¹⁾ ISTAT also compiles and publishes analytical HICPs by household subgroups that are defined with respect to total household spending. See for example the [results for March 2022](#).

⁽²⁾ The Italian consumer price index for the whole nation (NIC) is also based on the domestic concept, while the consumer price index for blue and white-collar workers (FOI) is based on the resident concept.

⁽³⁾ Contrary to the HICP, the NIC and FOI do include some social transfers in kind.

⁽⁴⁾ Contrary to the HICP, the NIC and FOI include Games of Chance.

This procedure is in line with Eurostat's guidance on the compilation of weights in case of large changes in consumption expenditures ⁽⁵⁾ and was applied to obtain the HICP weights for 2021 and 2022. For earlier weights, the estimation procedure was similar, but the national accounts and household budgets data referred to the year t-2 only.

The expenditure data at the level of the Product Aggregates are broken down into 20 Regions. This disaggregation is based on regional national accounts data available according to 24 product levels. Each region is stratified by those provinces in which price collection is conducted using population weights. The Product Aggregate by province may be represented by only one, or by several 'products'. In the latter case, weights are assigned to the products selected to represent the Product Aggregate in that province.

Price-updating takes place at the level of the product aggregates. Expenditure shares are price-updated from the average of year t-1 to December of the year t-1.

Compliance

The compilation of weights in the Italian HICP is in line with the legal requirements.

4. Sampling and representativity

The local price collection is conducted in 80 towns (19 regional chief towns, 60 provincial chief towns and 1 additional municipality) covering all 20 Italian regions. In addition, prices are also collected in 12 additional municipalities for a subset of products. In each town, outlets are selected in a judgmental way, taken into account the distribution of outlets across the town's territory, the popularity of the outlets, and the proportions between the different outlet types. The sample of outlets is reviewed and updated every year. Finally, price collectors select specific product-offers in these outlets that fall within the item specifications using the most sold criterion.

While the traditional price collection is restricted to the main towns of the country, the geographical coverage is broader for products whose prices are obtained through central price collection.

For scanner data, around 4 000 outlets have been selected using probability sampling. The universe of outlets has been stratified by province and retail channel. Within each stratum, outlets are selected based on the turnover of each outlet. The sample of outlets is kept relatively stable over time, replacing only those outlets that have dropped out. Within each selected outlet and detailed product category (called 'ECR market') ⁽⁶⁾, a matched sample of specific GTINs is selected each month after applying various filters, including a low-sales filter that excludes GTINs with low turnover.

⁽⁵⁾ Available in the [HICP dedicated section](#) on Eurostat's website.

⁽⁶⁾ These product categories are based on the classification used by the data provider.

Apart from scanner data and the market research data covering technological products, the Italian HICP is generally not based on an explicit stratification by outlet or outlet-type. The centralized data collection extensively relies on online prices collected from Italian websites while the local data collection is essentially conducted in the outlets located in the towns. The HBS contains limited information on the amounts spent by households for online and offline purchases.

The price index for private rents is based on an exhaustive administrative data source from the tax office. In line with the local price collection, the index is currently restricted to the capital city in each province.

For gas and electricity, insurance, and telecom services, representative profiles are specified based on data from the respective regulatory authorities, companies, professional associations or market research reports. ISTAT is planning to use data on car insurance contracts collected by the supervisory authority of the insurance sector. The use of this data source would further improve the coverage of the price index for insurance connected with transport.

For cars, the sample is stratified by type of fuel, market segment, brand and age (for second-hand cars only). The most important strata are selected through a top-down cut-off procedure and specific car models are selected within each of the selected strata.

Each year, the sample of products is reviewed. Products with a significant or increasing share are added to the basket while obsolete products are removed from the basket.

Compliance

The sampling in the Italian HICP is in line with the legal requirements.

Recommendations

ISTAT should continue to improve the representativity of the outlet sample by distinguishing in a more systematic way between the different outlet types and retail channels (online/offline).

ISTAT should expand the regional coverage of the rents price index beyond the provincial capital cities unless it is found that the current coverage is representative for the entire country.

5. Price collection

ISTAT uses several different data sources and collection models to obtain the prices needed for the compilation of the Italian HICP. Local surveys, conducted by Municipal Offices of Statistics (MOS) across 80 Italian municipalities, account for 51.8% (in terms of expenditure weight) of the basket. Prices are collected centrally by ISTAT for 22.1% of the basket, while prices from scanner data account for 13% of the basket. Administrative sources are used to collect data for tobacco, fuel, and rents prices. Prices for passenger transport by train, electricity, town gas and

food delivery are obtained through web scraping. For certain products, such as household appliances and electronics, ISTAT also obtains data from private providers.

Prices collection is typically carried out during the first fifteen working days of the month. Prices for most seasonal products are collected twice a month, although the timing of the collection varies among products. Prices for daily newspapers are collected between the ninth and fifteenth of the month to calculate an average weekly price, while magazines prices are also collected twice a month. Price data on hotel stays are collected three times a month.

In March 2022, the frequency of price collection for fuels was increased from two to three times a month, now taking place on the 1st, 11th and 21st of each month.

For most products or services whose prices are subject to some form of regulation (e.g. among others, water supply, taxi fares, diagnostic tests) prices are collected once a month, on the fifteenth day of the reference month.

Currently, the only item in the ECOICOP not subject to monthly price collection is rents. Data on rents are received from the Italian Tax Office on a quarterly basis, typically 35 to 40 days after the reference quarter. According to ISTAT, the Tax Office has put in place the necessary infrastructure to begin monthly data transmissions, starting in the third quarter of 2022. It is expected that data will be transmitted in the middle of the month and will cover all new rental contracts registered within the previous month.

Prices for package holidays, both domestic and international, are collected directly by ISTAT, and they are included in the Italian HICP for the month in which the service commences. The prices collected are list prices provided by the sampled tour operators, which ISTAT considers a good proxy for transaction prices. ISTAT plans to implement web scraping for the sites of major tour operators and to request access to transaction data from the association of tour operators.

Prices collected for airfares are inclusive of airport taxes and agency fees. The routes chosen for price collection are based on air transport statistics from the Italian Civil Aviation Authority and tourism statistics produced by ISTAT. Depending on the route, prices are collected once or twice a month. Prices are included in the HICP for the month in which the flight takes place, even if the ticket was purchased and the price quote collected several months in advance. Currently, price collection is done manually; ISTAT is evaluating the possibility to automate price collection through the use of an API.

In the collection conducted by municipal offices, sales and discounts are incorporated in the HICP if they have a minimum duration of one week. Information on the duration of sales is available ahead of time. Inducements in the form of extra quantity of a product are usually not taken into account in the HICP.

The HICP for products and services in the health sector takes into account prices paid by households net of reimbursements. Similarly, within the social protection sector, prices used in

the HICP calculation are net of reimbursements. Prices for some items that are part of ECOICOP 12.4 are dependent on household income ⁽⁷⁾. ISTAT reflects changes in income in the HICP through regular updates of the household income structure in the calculation of the average prices.

Insurance prices are collected as gross premiums, the amount paid by the insured for a specific policy, and are inclusive of taxes. Price collection is carried out by municipal offices once per month by surveying local insurance companies, except for insurance connected with the dwelling for which premiums are collected centrally. The premiums are collected for a set of representative profiles that specify the characteristics of the policy.

ISTAT also calculates a flash estimate based on partial price data. The data collected for the flash estimate comes from price collection in 80 of the surveyed municipalities. Current practice is that prices are carried forward for the municipalities for which data are not available for the FE. For certain products, data from central price collection carried out by ISTAT, scanner data and information from private market research providers are also used. The collection period for scanner data, mostly concerning grocery products, covers the first two weeks of the reference month and occasionally only the first week of the reference month. Market research data on prices for personal electronic equipment and electric household appliances covers one week of the reference month. The limited temporal coverage of price collection for the flash estimate contributes larger differences between the flash estimate results and the final HICP.

Compliance

According to Article 6 of the Implementing Regulation, discounts should be reflected in the HICP independently of the length of the discount and inducements should be treated in accordance with the provisions on replacements and quality adjustment. ISTAT should ensure that discounts and inducements are taken into account in the HICP as foreseen in the legal framework.

Recommendations

ISTAT should continue to investigate alternative data sources that also reflect the prices of last minute and advance bookings for package holidays, rather than using only list prices.

ISTAT should further improve the timeliness and frequency of the price collection for rents.

ISTAT should improve the calculation of the HICP flash estimate by including prices that cover a larger part of the reference month as well as improving the imputation methods used for the prices that are not available in time for the flash estimate.

⁽⁷⁾ Household income is measured by the ISEE (Indicator of Equivalent Economic Situation).

6. Replacement and quality adjustment

In general, the prices for temporarily missing products are estimated by applying the monthly rate of change of the prices of available product-offers in the same province to the previously observed price. The same principle is applied to scanner data, whereby the prices of missing GTINs are estimated based on the average monthly price change of available GTINs in the same outlet and ECR market. For certain products with less price variability over time, missing prices are estimated by carrying forward the previously observed prices. The imputation is conducted for at most two months. For vacant rented dwellings, missing prices are estimated for longer periods. Special procedures also apply to seasonal products (see section 7).

If the product-offer is not available anymore, the price collector selects a replacement product-offer, taking into account the most sold criterion. If an outlet closes, it is replaced by another outlet in the same area and of the same type. Based on the feedback of the price collector, a decision is made if the old and new product-offer are comparable or not. If the two product-offers are considered to be comparable, their prices are directly compared.

One strategy applied by ISTAT for dealing with non-comparable replacements is overlap pricing. In order to apply this procedure, price-collectors are asked to collect a price of the new product-offer in the period prior to its introduction. This procedure assumes that the quality difference between the old and new product-offer is measured by the price difference in the overlap month (i.e. the month prior to the introduction of the new product-offer).

If a price for the new product-offer in the overlap month is not available, it must be estimated. There are two approaches for estimating this price that are applied by ISTAT equally often. One approach consists in estimating the previous month price by taking into account the average price change of product-offers available in the two comparison periods. This procedure is similar to bridged overlap. Another approach consists in estimating the previous month price by carrying backward the price of the new product-offer in the current month. This procedure is equivalent to the link-to-show-no-price-change method which assumes that the quality change between the old and new product-offer is estimated as the whole price change between these two products-offers. According to Article 11(2) of the implementing regulation, such an adjustment is only permissible if it can be justified as an appropriate estimate of the quality difference.

ISTAT identifies relaunches in scanner data using a probabilistic record linkage method. This procedure makes it possible to link together outgoing and incoming GTINs and to directly compare the prices of these GTINs, after adjusting for possible changes in the package size.

The data provided by the market research company for various technological products is stratified by type of shop (online or traditional), by brand, and by other product characteristics. Within each stratum, the most sold models are selected each month. It is assumed that within each stratum, the models are of the same quality and therefore the prices of the most sold models in the current month are directly compared to the prices of the most sold models in

the previous month (bestseller approach). A more pronounced volatility in the indices for these products may indicate that this assumption is only valid to some extent. Better source data would help ISTAT to improve the quality adjustment method for these products.

For market rents, an average rent per square meter is calculated by homogeneous stratum defined in terms of location, and type and length of contract.

For second-hand cars, price indices are calculated for strata defined by fuel, market segment, brand and age. Within a stratum, the impact of a new model is captured by estimating a price for this model in the previous month so that a monthly price change can be obtained. This estimated price is equal to the average price of the most similar models available in the previous month. ISTAT is closely monitoring the impact of these imputations.

Compliance

In order to be in line with Article 11 (2) of the Implementing Regulation, ISTAT should review the application of the overlap pricing method. If the assumptions underlying this method are not met, ISTAT should apply another quality adjustment method.

Recommendations

ISTAT should investigate if the current stratification and best-seller approach applied to technological products adequately measures pure price changes and improve the sampling and quality adjustment methods for these products.

7. Treatment of seasonal products

In the Italian HICP, seasonal products are included in in 01.1.6 Fresh fruits, 0.1.1.7 Fresh vegetables, 03.1 Clothing and 03.2 Footwear. ISTAT applies a seasonal imputation method, whereby out-of-season prices are estimated using the counter-seasonal estimation method. This means that estimated prices during the out-of-season periods are equal to the prices of the previous month, adjusted by the average change in prices of all other seasonal products that are in-season. These estimations are applied at the level of a product or product aggregate. For fruits and vegetables, this estimation procedure is applied during the entire out-of-season period. For clothing and footwear, the price in the first out-of-season period is equal to the last observed full (not discounted) price. For the rest of the out-of-season period, the prices are adjusted using the average price change of in-season seasonal products.

There are no explicitly identified seasonal products in scanner data. Any missing prices of GTIN's are estimated for at most 2 months. As a consequence, GTIN's that are only available during parts of the year may not be linked together between two in-season periods.

Compliance

The treatment of seasonal products in the Italian HICP is in line with the legal requirements.

Recommendations

ISTAT should investigate the treatment of seasonal products in scanner data and adjust the calculation methods as needed.

8. Index calculation

In each province, product indices are obtained as a geometric mean of price ratios defined as the price observed in the current month compared with the price observed in the December month of the previous year. The provincial index for a product aggregate is obtained as a weighted arithmetic mean or as an unweighted geometric mean of these product indices.

A different calculation procedure is applied for scanner data. Monthly chained Jevons indices (geometric mean of price ratios) are calculated by outlet and by ECR market. These indices are first aggregated over outlets of a province and then over ECR markets in order to obtain a product aggregate index for that province.

In the case of market rents, the provincial product aggregates are calculated from an underlying stratification. The price index for each stratum is obtained by comparing the unweighted geometric mean in the current month with the unweighted geometric mean in the December month for the rent contracts that fall within the specification of the stratum. The rent contracts are not matched between the two comparison periods. As a result, new contracts can be taken up in the calculations in the first period in which they appear. Stratification approaches are also adopted for several products for which prices collected at the central level, such as second-hand cars or consumer electronics.

The provincial product aggregate indices are then further combined to obtain product aggregate indices for the regional level (using population weights), and then for the national level (using national accounts derived expenditure shares). The product aggregate indices at the national level are then combined to obtain the higher-level indices using a Laspeyres-type aggregation. The series are chain-linked via December at the different levels of aggregation in order to obtain index series expressed in the index reference period 2015=100.

Compliance

The index calculation in the Italian HICP is in line with the legal requirements.

9. HICP at constant tax rates (HICP-CT) and administered prices

ISTAT updates the list of ECOICOP subclasses considered to be partially or fully administered on an annual basis.

The Italian HICP-CT covers value-added taxes and excise duties on fuels, gas, electricity, heating oil, and tobacco. For the majority of products whose retail price includes a value-added tax

alone, the HICP-CT is calculated by removing the effect of the tax from the HICP index for the respective product aggregate index. For the remaining ECOICOP subclasses in the basket, the HICP-CT is calculated by replacing the observed price with a price based on the tax rate in December of the previous year.

Compliance

ISTAT compiles and transmits regularly the HICP-CT and provides information on administered prices in line with the legal requirements.

10. Follow-up from the previous compliance report

The findings of the previous compliance monitoring exercise were published in [September 2014](#). In line with the recommendation made in that report, Italy now calculates the HICP for rents using administrative data that covers new rental contracts for every type of property, not only apartments. Although a large share of the centrally collected prices are obtained on the internet, these are considered to be representative of the prices actually faced by households when not purchased online. Work is still ongoing to improve the price collection for package holidays. ISTAT continues its efforts to ensure that e-commerce transactions are appropriately reflected in the sample.

11. Overall assessment

On the basis of the information listed in section 1, Eurostat assesses that the HICP for Italy is in line with most legal requirements. Eurostat assesses the HICP for Italy to be comparable to that of the other EU Member States. Furthermore, if ISTAT follows up on the requirement given in sections 5 and 6 and on the recommendations given in sections 4, 5, 6 and 7, the comparability of the Italian HICP will improve further.