



METHODOLOGICAL EXPLANATION

CONSUMER PRICE INDICES AND AVERAGE RETAIL PRICES

This methodological explanation relates to the data releases:

- Consumer Price Indices, Slovenia, monthly (First Release)
- Consumer Price Indices, detailed data, Slovenia, monthly (Electronic Release)
- Harmonised Index of Consumer Prices at Constant Tax Rates, Slovenia, semi-annually (First Release)
- Base interest rate, Slovenia, monthly (First Release)

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Prepared by Tina Vratnar

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1 PURPOSE

The purpose of publishing the data on consumer price indices is to present monthly trends in the prices of goods and services.

The purpose of publishing the data on average retail prices of goods and services is to present the absolute level of the prices of selected goods and services most commonly bought by the resident population.

The main published statistics are:

- consumer price indices - inflation measure (CPI) by ECOICOP classification,
- harmonized indices of consumer prices (HICP) by ECOICOP classification,
- harmonized index of consumer prices at constant tax rates (HICP-CT) by ECOICOP classification,
- average retail prices of goods and services,
- base interest rate.

2 LEGAL BASIS

- [Annual Programme of Statistical Surveys \(LPSR\)](#) (only in Slovene)
- [National Statistics Act \(OJ RS, No. 45/95 and 9/01\)](#)
- [Regulation \(EC\) 2016/792 of the European Parliament and of the Council of 11 May 2016 on harmonised indices of consumer prices and the house price index, and repealing Council Regulation \(EC\) No 2494/95](#)
(CELEX: 32016R0792)

Data on the HICP (according to Regulation (EC) 2016/792) are internationally comparable and contribute to European statistics.

3 UNIT DESCRIBED BY THE PUBLISHED DATA

Units described by the published data are representative products (goods and services) or elementary aggregates (EA). Selected goods and services represent the most important share in the total consumption of an average consumer. Their price movement also best reflects the price movement for similar goods or services. These goods and services represent the so-called "basket" of goods, which contains representative products that are according to their characteristics and descriptions divided into four groups: food products, non-food products, catering services and other services.

4 SELECTION OF OBSERVATION UNIT

Units selected for the survey base on the threshold that determines which representative products will be included in the survey in an individual year. The basket comprises goods and services whose share in the total consumption of the households

exceeds 0.1% and whose prices best reflect changes in the prices of similar products and the general price change.

A collection point is a business entity where goods and services are sold to potential customers. It can be a store, a market place, a crafts workshop, a service organisation, a retailer's website, etc. Business entities where the prices are collected are selected due to their market share and turnover by activities.

In each town on average five prices per non-food product or service are collected, which is about 11,000 prices per month.

For products from divisions 01 (Food and non-alcoholic beverages) and 02 (Alcoholic beverages and tobacco) by ECOICOP classification we use prices from supermarket scanner data. Monthly around 70,000 prices are used for the price index calculation.

In the table below we show the number of elementary aggregates included into survey yearly.

Table 1: Number of elementary aggregates by year

Year	2011	2012	2013	2014	2015	2016	2017	2018	2019
No. of elementary aggregates	669	663	667	684	706	711	717	725	744

5 SOURCES AND METHODS OF DATA COLLECTION

In 2018 we have introduced a new methodology for computing inflation, where the price movements of food, beverages and tobacco are shown through the Consumer Price Index (CPI) and the Harmonised Index of Consumer Prices (HICP) exclusively from the scanner data (retailer's transaction data). In other ECOICOP groups (from division 03 to 12) we collect prices in the field (traditional price collection) and for some non-food products we also use the supermarket scanner data (imitating the traditional collection). For the latter methodology for computing indices remained the same and the system of representatives remained unchanged.

More on changes in computing inflation in 2018 you can find [here](#).

5.1 Traditional price collection

Prices of the representative non-food goods and services (divisions from 03 to 12 by ECOICOP classification) are collected by price collectors in Koper, Ljubljana, Maribor and Novo mesto. Some prices are also collected in other places in Slovenia, mostly by phone and via the Internet and from other databases of individual sellers of goods and services. The total number of collection points is around 1,270.

For organising the time for collecting prices in individual months, products are classified into the following groups:

- non-food products (between 1st and 15th of the month),
- services (between 1st and 25th of the month),
- fuels (between 1st and 25th of the month).

Price collectors report the prices of products for the current month not later than by the 26th of the current month.

5.2 Data from retailers' databases (scanner data)

The source of prices for food, beverages and tobacco from divisions 01 and 02 by ECOICOP are databases of biggest retailers on Slovene market, that cover 75% of the market share of sales for food and non-alcoholic beverages and almost 70% of the market share of sales for alcoholic beverages and tobacco. SURS is receiving data from the biggest retailers weekly. Data of the first two whole weeks (ranging from Monday to Sunday) is used for index computation.

6 DEFINITIONS

Consumer Price Index (CPI) measures changes in retail prices of goods and services from the point of view of expenditure intended by the domestic population for final consumption at home and abroad (national concept). Due to large methodological similarities, the CPI in Slovenia practically does not differ from the HICP.

At the monthly level we publish moving base indices (current month/same month of previous year, current month/previous month, current month/December of previous year, average of months/average of the same months of previous year, last 12 months/previous 12 months) and the fixed base index (current month/2015 average).

Harmonized Index of Consumer Prices (HICP) measures changes in retail prices of goods and services from the point of view of the expenditure intended by consumers (domestic and foreign) for final consumption in the territory of Slovenia (domestic concept). It is the comparable index of consumer prices produced by each EU Member State and used for international comparison of consumer price inflation.

At the monthly level we publish the same moving base indices and the fixed base index as for the CPI, i.e. at growth rates.

Harmonised Index of Consumer Prices at Constant Tax Rates (HICP-CT) is the index with constant tax rates from the base period to the observed period. It measures changes in consumer prices without the effect of changes in tax rates and excise duties on products in the observed period. If tax rates change, the impact of changes reflects in the difference between the HICP and the HICP-CT. Considering that tax rates are introduced at the same time and in full, the implicit contribution of tax rates to inflation is seen.

In semi-annual releases we publish the moving base index (current month/previous month) in growth rates for the first half from January to June and for the second half from July to December.

COICOP/HICP (*Classification of Individual Consumption by Purpose / Harmonised Index of Consumer Prices*) is a classification of products by purpose classified into 12 main groups (divisions) adapted to the needs of the harmonised index of consumer prices.

ECOICOP (*European Classification of Individual Consumption According to Purpose*) is a classification of products by purpose classified into 12 main divisions

and associated groups, classes and sub-classes. It is used in data from January 2017 on (Regulation (EU) 2016/792 of the European Parliament and of the Council).

Retail price is the final selling price which customers pay to purchase a product or a service. It includes the prescribed tax as well as all other duties.

Data from retailers' databases (scanner data) is generated and collected by retailers through point-of-sales terminals in shops. It contains a GTIN, product description, turnover and quantity information in a known period.

GTIN code is a *Global Trade Item Number*.

List of goods and services ("basket") is a detailed list of elementary aggregates, together with their descriptions and units of measure, for which prices are collected.

Interest rate is the price of money. It describes how many percent of the principal borrowed for one year is the interest. It is usually fixed for a period of one year.

Base interest rate is the annual interest rate to maintain the value of financial liabilities and obligations in domestic currency and ensures the preservation of the real value of financial liabilities.

Current month is the month to which the data relate.

Weights are shares of consumption of individual goods or services in the total consumption and are intended for measuring the impact of the change in the price of individual goods or services in the total change of the index.

Weight reference (base) period is the period, usually the selected year, to which the estimated values of consumption, used for calculating weights, refer.

Price reference (base) period is the period, the prices of which are in the index calculation compared to the prices of the current period. In our case the price base period is December of the previous year (since 1994).

Index reference (base) period is the period, usually the selected year, in which the index base is set to 100.

Non-durable goods are products with very short durability, usually up to one year (e.g. food, beverages).

Semi-durable goods are products with durability of about one year. They must not be very valuable (e.g. clothing and footwear).

Durable goods are products with long durability. At the same time they can be quite valuable (e.g. furniture, means of transport).

Seasonal products are goods and services that are available for purchase in some period of the year but are not available for purchase, or are purchased in small or negligible volumes, for certain periods in a typical annual cyclical pattern.

Fuels and energy is one of the special groups which is composed of items for heating and lightning (045 Electricity, gas and other fuels) and motor fuels (0722 Fuels and lubricants).

7 EXPLANATIONS

7.1 CLASSIFICATIONS

Between 1997 and 2016 we were using the Classification of Individual Consumption by Purpose (COICOP/HICP) for classifying products and calculating consumer price indices. In 2000 the classification was harmonised with the final version of COICOP, which was adopted in 1999.

Since January 2017 we have been using the European Classification of Individual Consumption by Purpose (ECOICOP) for classifying products and calculating consumer price indices.

According to the mentioned classification ECOICOP for the purpose of calculating and publishing indices we classify products into 5 levels:

- **Total**
- **Division** (e.g. **01** Food and non-alcoholic beverages),
- **Group** (e.g. **01.1** Food),
- **Class** (e.g. **01.1.1** Bread and cereals) and
- **Sub-class** (e.g. **01.1.1.1** Rice).

Since January 2017 consumer price indices are published to the level of the sub-class (5-digit level), except in cases when the weight is less than 0.1% (flagged with ‘...’ as not available). The time series is calculated from 2000 onwards. Due to some differences in the classification of products into groups according to COICOP and ECOICOP, for the period 2000 to 2016 minor differences in the calculated indices for groups and classes may occur.

Since 2000 we have also been calculating indices for the following special groups:

- goods,
- non-durable goods,
- semi-durable goods,
- durable goods,
- services,
- fuel and energy (electricity, gas and other fuels and fuels and lubricants for personal transport equipment),
- total without alcoholic beverages and tobacco,
- seasonal products, and
- total without seasonal products.

Since 2001 also for these special groups:

- food, beverages and tobacco (food and non-alcoholic beverages, and alcoholic beverages and tobacco),
- total without food, beverages and tobacco (total without food and non-alcoholic beverages, and alcoholic beverages and tobacco) and
- total without fuels and energy (total without electricity, gas and other fuels and fuels and lubricants for personal transport equipment).

In 2009 we added another three special groups:

- total without food and energy (total without food and non-alcoholic beverages, electricity, gas and other fuels, and fuels and lubricants for personal transport equipment),
- actual rentals for housing and services for maintenance and repair of the dwelling, and
- services without actual rentals for housing and services for maintenance and repair of the dwelling.

7.2 DATA PROCESSING

For data processing we use weighting and methods of statistical data editing.

WEIGHTING

With weighting adjustment we want to achieve representatives of the sample, so that the weighted data give us as good population estimates as possible in a given period.

Weighting for the CPI is based on the data from the Household Budget Survey (HBS). These data are supplemented and verified with other statistical and non-statistical sources. Weights are changed every year. Weights for 2019 are based on average allocated assets from the HBS for 2015 recalculated to prices of December 2018.

Weighting for the HICP is based on the data from national accounts on the structure of household final consumption expenditure. These data are also supplemented and verified with other statistical and non-statistical sources. Weights for 2019 are based on the data for 2017 recalculated to prices of December 2018, which is also the price reference period.

Elementary aggregates from ECOICOP divisions 01 and 02 are from 2018 weighted according to retailers' turnover in a previous year.

STATISTICAL DATA EDITING

Data are statistically edited with the combination of systematic corrections and imputation procedures. For the imputation the logical imputation methods are used.

For more, see the general methodological explanations [Statistical data editing](#).

7.3 OTHER EXPLANATIONS

INDICES

The CPI is used for indexation of wages and other social transfers to the growth in prices in Slovenia. Since 1998, it has been the official inflation rate in Slovenia. Previously, this function was performed by the retail price index.

The HICP is used to compare inflation rates across the EU. It is also used as the official rate of the European Central Bank (ECB) to ensure price stability in the Economic and Monetary Union (EMU). Slovenia has been calculating it since 2001.

Traditionally collected data

After all prices are collected in a particular month, we calculate average prices and indices.

The average price for each individual non-food product or service in the locality is calculated from prices collected in all places of observation in that locality with geometric mean.

$$G_i = \sqrt[n]{x_1 * x_2 * \dots * x_n} \quad \text{geometric mean}$$

where:

G_i ... average price for individual EA in the locality,

i ... locality,

x ... the price for individual good or service in the locality,

n ... number of prices for individual good or service in the locality.

The average national price of each non-food product or service is calculated with weighted arithmetic mean from previously calculated average prices in the locality.

$$\bar{p}_t = \frac{1}{\sum_{i=1}^n w_i} * \sum_{i=1}^n G_i w_i$$

where:

\bar{p}_t ... average national price for individual EA in a month,

n ... number of localities,

w_i ...weight for individual locality,

G_i ... average price for individual EA in the locality.

From average national prices in each current and base month (December of the previous year) we calculate *individual index* for each elementary aggregate.

$$T_{t/d} = \frac{\bar{p}_t}{\bar{p}_d} * 100$$

where:

$T_{t/d}$... individual index for each EA,

t ... month,

d ... base month (December of the previous year),

\bar{p}_t ... average national price in the month,

\bar{p}_d ... average national price in the base month (December of the previous year).

Data from retailers' databases (scanner data)

An average unit value price for an item at a GTIN code per individual retailer is calculated by dividing the turnover per item by quantities sold per item.

From unit value prices at a GTIN code, that compose an EA, we calculate a geometric mean of price relatives per individual retailer. Monthly price of an item is compared to the price of that same item in a previous month at a GTIN code. We use the unweighted Jevons formula:

$$I_{EA}^{(m-1)t,mt} = \frac{(\prod_{k=1}^K p_k^{mt})^{\frac{1}{K}}}{(\prod_{k=1}^K p_k^{(m-1)t})^{\frac{1}{K}}} = \left(\prod_{k=1}^K \frac{p_k^{mt}}{p_k^{(m-1)t}} \right)^{\frac{1}{K}} = \sqrt[K]{\frac{p_A^m}{p_A^{m-1}} * \frac{p_B^m}{p_B^{m-1}} * \frac{p_C^m}{p_C^{m-1}} * \frac{p_D^m}{p_D^{m-1}}}$$

where:

$I_{EA}^{(m-1)t,mt}$... individual index for EA per individual retailer,

p_k^{mt} ... price for a k-product in a current month of the year t,

$p_k^{(m-1)t}$... price for a k-product in a previous month of the year t,

k ... individual items of EA (A, B, C, ..., k),

K ... number of items of EA.

For every EA per retailer we calculate a chain-linked index as follows:

$$I_{m/m_0}^{EA} = I_{m,m-1}^{EA} * I_{m-1,m-2}^{EA} * \dots * I_{m_0}^{EA}$$

where:

I_{m/m_0}^{EA} ... monthly chain-linked index for an EA per retailer,

m ... month,

m_0 ... index reference period (December of the previous year).

From the monthly chain-linked EA indices per individual retailer we calculate an *individual index* per elementary aggregate with weighted arithmetic mean. Weights of retailers represent the market share (turnover) of individual retailer per individual EA.

$$T_{t/d} = I_A * w_A + I_B * w_B + I_C * w_C + I_D * w_D + I_E * w_E + I_F * w_F$$

where:

$T_{t/d}$... individual index for each EA,

w ... weight of a retailer,

A, B, \dots, F ... retailers.

Aggregation of indices

From individual indices we calculate with weighted arithmetic mean aggregate indices, i.e. indices of groups (by ECOICOP) and the total price index, according to the following formula:

$$I_{t/d} = \frac{\sum_{i=1}^n \frac{p_{ti}}{p_{di}} * w_{di}}{\sum_{i=1}^n w_{di}}$$

where:

$I_{t/d}$... index of groups or the total index,

t ... month,

d ... base month (December of the previous year),

$T_{t/d}$... individual index for each EA,

w_{di} ... weight for an individual product,

n ... number of EA.

Each aggregate index (December of the previous year = 100) calculated in this way and all other indices derived from this index and calculated with weights of the weight base period and with the same coverage of products are *Laspeyres' indices* of fixed type.

Indices calculated on the basis of weights from various periods and with different coverage of products are *chain indices*.

To provide longer time series indices are calculated to an index reference period (base year). In previous years indices have been first linked through the index reference period 2000 = 100, then through the index reference period 2005 = 100. Since 2016 indices have been linked through a new index reference period year 2015 (average 2015 = 100).

All indices are now derived and calculated through average 2015 in the following ways:

Monthly index shows price changes in the current month compared to the previous month:

$$I_{avg\ 17/jul\ 17} = \frac{I_{avg\ 17/\emptyset\ 15}}{I_{jul\ 17/\emptyset\ 15}} * 100$$

Index in the current year shows price changes in the current month compared to December of the previous year:

$$I_{avg\ 17/dec\ 16} = \frac{I_{avg\ 17/\emptyset\ 15}}{I_{dec\ 16/\emptyset\ 15}} * 100$$

Annual index shows price changes in the current month compared to the same month of the previous year:

$$I_{avg\ 17/avg\ 16} = \frac{I_{avg\ 17/\emptyset\ 15}}{I_{avg\ 16/\emptyset\ 15}} * 100$$

Annual average index shows price changes in the current year compared to the same period of the previous year:

$$I_{(jan...avg\ 17)/(jan...avg\ 16)} = \frac{I_{(jan\ 17+feb\ 17+\dots+avg\ 17)/\emptyset\ 15}}{I_{(jan\ 16+feb\ 16+\dots+avg\ 16)/\emptyset\ 15}} * 100$$

Average index in the current year shows price changes in the current year compared to December of the previous year:

$$I_{(jan...avg\ 17)/dec\ 16} = \frac{I_{jan\ 17/dec\ 16} + I_{feb\ 17/dec\ 16} + \dots + I_{avg\ 17/dec\ 16}}{8}$$

12 month average index shows price changes in the last 12 months compared to the average of the previous 12 months:

$$I_{(avg\ 17...sept\ 16/avg\ 16...sept\ 15)} = \frac{I_{(avg\ 17+jul\ 17+\dots+sept\ 16)/12}}{I_{(avg\ 16+jul\ 16+\dots+sept\ 15)/12}} * 100$$

BASE INTEREST RATE

The **monthly base interest rate** for a certain month is calculated as the arithmetic average of the last twelve monthly rates of growth of consumer prices, to one decimal place.

$$TOM_m = \frac{1}{12} * \sum_{t=1}^{12} S_{t/t-1}$$

where:

TOM_m ... the monthly base interest rate,

$S_{t/t-1}$... monthly growth rate ($S_{t/t-1} = I_{t/t-1} - 100$),

$I_{t/t-1}$... monthly total consumer price index.

February's monthly base interest rate equals to January's.

The annual base interest rate for a certain month is calculated from the monthly base interest rate to two decimal places in a similar way taking into account the actual number of days.

$$TOM_l = \left(\left(\frac{TOM_m}{100} + 1 \right)^{\frac{\text{no. of days in a year}}{\text{no. of days in a month}}} - 1 \right) * 100$$

where:

TOM_l ... the annual base interest rate,

TOM_m ... the monthly base interest rate.

SEASONAL PRODUCTS

Seasonal products include fresh fruits, fresh vegetables, women garments, footwear, heaters and air conditioners, equipment for sport, recreational and sporting services – participation and package holidays.

8 PUBLISHING

Data are published:

Monthly:

- SI-STAT Database: Economy - Prices - [Consumer Price Indices](#): consumer price indices are published by ECOICOP classification,
- First Release (Prices and Inflation, Consumer Prices – Inflation): »Consumer price indices, Slovenia, monthly«,
- First Release (Prices and Inflation, Consumer Prices – Inflation): »Base interest rate, Slovenia, monthly«,
- Electronic Release (Prices and Inflation, Consumer Prices – Inflation): »Consumer price indices, detailed data, Slovenia, monthly«,
- Eurostat.

Semi-annually:

- First Release (Prices and Inflation, Consumer Prices – Inflation): »Harmonised Index of Consumer Prices at Constant Tax Rates, Slovenia, semi-annually«.

Annually:

- SI-STAT Database: Economy - Prices - [Consumer Price Indices](#): consumer price indices and annual growth rates of prices by main groups are published,
- SI-STAT Database: Economy - Prices - [Average Retail Prices of Goods and Services](#): average retail prices of goods and services and purchasing power and time needed to purchase goods are published,
- Statøbook.

9 REVISION OF THE DATA

9.1 PUBLISHING OF PRELIMINARY AND FINAL DATA

Only final data are published.

9.2 BREAKS IN TIME SERIES

There are no breaks in time series, so all points in time are comparable.

Comparability of average retail prices of products or services with the same description in time (during the year and particularly over a longer period) is not complete due to the revision of the list of data collection points, the revision of the sample of goods and services (list of products the prices of which are collected) and the changing quality of goods and services over time. For this reason, comparability of average prices in time is also limited. For certain products (e.g. clothing, cars, technical products, etc.), in the case of major changes in their quality prices are corrected.

Methodological explanation on revision of statistical data is available on <http://www.stat.si/dokument/5299/RevisionOfStatisticalDataMEgeneral.pdf>.

10 OTHER METHODOLOGICAL MATERIALS

- Standard quality report for the survey
 - Consumer Price Indices and Harmonised Consumer Price Indices (CPI, HICP), theme: Prices and Inflation, sub-theme: Consumer Prices – Inflation
<http://www.stat.si/StatWeb/en/Methods/QuestionnairesMethodologicalExplanationsQualityReports>
- Annual quality report for the survey
 - Consumer Price Indices and Harmonised Consumer Price Indices (CPI, HICP), theme: Prices and Inflation, sub-theme: Consumer Prices – Inflation
<http://www.stat.si/StatWeb/en/Methods/QuestionnairesMethodologicalExplanationsQualityReports>
- Metadata and National HICP Practices: Reference Metadata
<http://ec.europa.eu/eurostat/web/hicp/methodology/metadata-and-national-practices>