

## 8. PRICES

The price indices are calculated as **sample indices**, i.e. the calculation thereof is based on prices of **selected representatives** (of goods and services) monitored in a **sample of reporting units**. The individual price indices for the representatives are aggregated into aggregate indices for groups of representatives, and then further into an aggregate index for the whole set of all the representatives. The aggregation is carried out by means of a weighted arithmetic mean of individual indices. Structural indicators of value (production, sales, turnover, purchases, household expenditure, etc.) of respective representatives or a group of representatives are used as constant weights in the calculation. These structural indicators are determined from data of the base (“zero”) reference period (e.g. year 2005, 2010 and 2015).

Price indices (monthly and quarterly ones) are calculated from prices measured in the reference period set (around the middle of a month for monthly indices, in the 2nd month of a quarter for quarterly indices). Annual indices are calculated as an arithmetic mean of the indices (in the case of agricultural producer prices as a weighted average) for individual months/quarters of the year, related to a selected price base, which is considered to be a constant base for a certain period of time.

The individual producer price indices use the national version of the Classification of Products (CZ-CPA), which is linked to the national version of the Classification of Economic Activities (CZ-NACE). The national version of the Classification of Construction Works (CZ-CC) is used for price indices of construction production. Consumer price indices are derived on the basis of the international Classification of Individual Consumption by Purpose (COICOP) – see the Overview of statistical classifications and nomenclatures in force in the introduction to the Yearbook. Export and import price indices are constructed according to the Harmonized Commodity Description and Coding System (a system for classifying goods in international trade) and calculated to comply with the breakdown of the Standard International Trade Classification, Rev. 4 (SITC, Rev. 4).

### Notes on Tables

Table 8-1 **Producer and consumer price indices**

#### **Agricultural producer price index**

Agricultural producer prices are measured monthly by means of the statistical questionnaire on agricultural producer prices at approximately 500 selected agricultural producers (cooperatives, private farms, and state organisations). Prices are adjusted to be free of VAT. The survey measures trade contractual prices (excluding own consumption) for domestic as well as foreign markets, excluding freight costs related to the transport to the purchaser.

In the course of 2012 the agricultural producer price index underwent the standard complete revision. Since January 2013 the agricultural producer price indices have been calculated according to a weight scheme derived from the average revenues in 2009, 2010, and 2011. The price base of the indices is the average for 2010.

Weights of seasonal and non-seasonal agricultural commodities differ in various months of the year and therefore the index calculation employed a two-dimensional weight scheme as a matrix. One dimension is for vertical aggregation from the level of representatives upward to the supreme level. The second dimension is for twelve months of the year. The sum of weights of the highest aggregation for each month of the year then is equal to the nominal sum of 1 000. Since January 2013 variable monthly weights have been used for the calculation of agricultural producer price indices.

#### **Agricultural input price index**

The agricultural input price index (AIPI) for goods and services is calculated in compliance with the Eurostat methodology. This method of calculation is based on a combined price index, comprising of price indices of “**Goods and services consumed in agriculture**” and “**Goods and services contributing to agricultural investments**”.

The price base applied is the average of the year 2010; the weighting scheme corresponds to the structure of agricultural costs in the same year.

#### **Forestry (roundwood) price index – only forest owners**

The roundwood price index, can be also found as the raw timber price index, has been calculated every quarter from average (contractual) prices, excluding VAT, of roundwood for domestic market (excluding own consumption and exports).

In 2011, within an extraordinary revision of forestry price indices – owners there was a weighted average for the calculation of average prices introduced for four the most important assortments of roundwood (logs, quality III A/B – spruce; logs, quality III C – spruce; logs, quality III D – spruce; timber, quality V – timber for the pulp production – spruce). Average prices of other sorts are still calculated as a simple arithmetic mean. The index is calculated of 16 coniferous sorts and 11 non-coniferous sorts.

In the course of the year 2016 there was a standard complete revision of the calculation methodology of roundwood price indices carried out. The index and price base period is 4th quarter of 2016. A new weighting scheme of the assortments of roundwood according to the respondents-reported overview of the annual revenues on the separate questionnaires for 2013, 2014, and 2015. Price indices according to the new structure are published since the 1st quarter of 2017.

### **Industrial producer price index**

Industrial producer prices are collected monthly based on the data from selected organizations (approximately 1 200 on selected representatives (approximately 4 800). Reported prices are prices agreed upon between the supplier and consumer residing in the Czech Republic (excluding VAT, excise duty, costs of transport to the customer, and this transport related costs) and invoiced for rather important business deals. The prices are measured between the 1st and 18th calendar day of the reference month.

The industrial producer price index is calculated from reported prices applying constant weights. The index measures the average price development of all industrial products manufactured and sold on the domestic market in the Czech Republic. Industrial products are products manufactured by activities classified under the CZ-NACE sections B to E.

In 2016 a standard complete revision of industrial producer price indices was carried out. From January 2017, on the basis thereof, price indices have been calculated applying weights for 2015.

Now the indices have the price base of December 2015 = 100. Price indices beginning the four-digit level of the CZ-CPA upward are chained to the new index base of the average of 2015 = 100 and to the current base of the average of 2005 = 100, which provides for continuation of the current time series of the indices. Information on the revision of the industrial price indices can be found at the CZSO website at: [www.czso.cz/csu/czso/revisions\\_producer\\_prices](http://www.czso.cz/csu/czso/revisions_producer_prices).

### **Price indices of constructions**

The price index of constructions is calculated quarterly from price indices of construction works calculated from prices collected in statistical questionnaires.

In 2011 an occasional revision of price indices of construction production was carried out. Since 2012 price indices published are to be calculated on the basis of index schemes, which are based on the average production structure of the construction production in the period 2007 to 2010. The reference period of the time series published is the year 2005 and the base price level is the average for 2005. Time series of price indices cannot be aggregated anymore by means of weights because of a chaining method applied.

In 2017 the questionnaire included 138 price representatives. The network of reporting units was established by purposive sampling of about 600 respondents of all size classes and different legal forms, plus some assembly-specialised enterprises providing air conditioning, lifts, and steel structures (CZ-NACE divisions 25, 28, 33, 41, 42, 43, and 80).

The quarterly reported prices (implemented in the second month of the given quarter on the territory of the CR) are prices agreed in between the supplier and the customer for a unit of construction works carried out by own staff of the reporting unit, working company owners, persons working on agreements on work, and collaborating self-employed persons without employees. In addition to material necessary for the work being performed, they include all other costs needed to perform the activities under survey, excluding costs of site equipment and VAT.

### **Construction cost index**

The construction cost index is calculated quarterly and falls into the group of secondary statistics, which do not have their own questionnaire-based survey. The quarterly calculation reflects the price development in direct and indirect costs of construction works. The direct costs include, first of all, prices of materials, machinery, and energies, development of which is taken from the industrial producer price statistics. The source of information on wage expenses is the survey of wages and salaries in the construction production and price statistics. The direct costs also include transport costs, development of which is monitored by the market services price statistics. The indirect costs are production and administration overhead costs. Their development is derived from the price and production indices for construction.

### **Services producer price index**

The services producer price index (SPPI) is a business-cycle indicator measuring the gross change in the trading price of a number of services produced and provided for intermediate consumption (B2B). It serves for monitoring of price movements and to measure inflation pressure on the services market. The index objective is to measure the average monthly changes in prices of selected market services dedicated mostly to the business sphere on the domestic market. The prices monitored are the contractual prices, or catalogue ones, respectively, adjusted to be free of VAT.

The aggregate services producer price index comprises of partial price indices of selected services by the Classification of Products by Activity in divisions 49, 50, 52, 53, 58, 61, 62, 63, 64, 65, 68, 69, 71, 73, 74, 77, 78, 80, 81, 82. These indices are of market services as follows: surface and pipeline transport, water transport,

storage and support services in transport, postal and courier services, publishing services, telecommunication services, programming and consultancy services, information services, financial and insurance services, real estate services, legal and accounting services, architectural and engineering services, advertising and market research services, other professional, scientific, and technical services, rental services, employment agency services, security and investigation services, services of building and landscape management, administrative services, and other support services.

Since January 2013 base price indices for market services have been calculated to the price basis of the average for 2011 = 100 (technical indices, not published) and then chained to the index basis of the average for 2005 = 100, and these indices values are then published. The weighing scheme is based on sales for 2011.

### **Export and import price indices**

These indices have been compiled for the Czech Republic since 1993. The weighting scheme now includes about 2 600 representatives for exports and 2 850 representatives for imports, which significantly contribute to the volume of the implementation of individual significant groups of external trade. The price base is average 2005 prices. In 2012 there was a standard revision of the calculation of external trade price indices carried out. Starting at price indices for the reference period of January 2013 the export and import price indices are calculated applying a new weight scheme in the external trade structure of 2010 and with the price base of the average for 2010 = 100. The newly calculated indices are chained to the present time series with the price base of the average for 2005 = 100 in order to provide for continuation of the present time series of the indices.

The prices are measured monthly at approximately 630 selected reporting units engaged in exports and at about 660 reporting unit active in imports, respectively. The export prices measured are free-at-frontier prices (free to the Czech Republic frontiers); the import prices are prices invoiced by the foreign supplier. If a price representative is traded in several countries, the reporting units give average prices as a weighted arithmetic mean of prices obtained in significant commercial transactions (weighted by the quantity of products in physical units). The prices are converted into CZK by means of the relevant monthly exchange rate of the Czech National Bank and are measured free of customs duty, VAT, and excise duty.

### **Consumer price index of goods and services**

Trends in consumer prices are measured on consumer baskets based on a set of selected kinds of goods and services paid for by the population. Consumer baskets are described in detail in the document "Inflation, inflation rate – methodology" which is available at the CZSO website at: [www.czso.cz/csu/czso/what\\_is\\_it\\_inflation\\_resp\\_inflation\\_rate](http://www.czso.cz/csu/czso/what_is_it_inflation_resp_inflation_rate).

The consumer basket includes about 700 concrete products and services (representatives) according to the national classification of the national Classification of Individual Consumption by Purpose (CZ-COICOP) based on the international Classification of Individual Consumption by Purpose. The base reference period weights for the calculation of group and aggregate indices are derived from the structure of household expenditure derived from 2014 household budget statistics.

The prices of the base period are average prices of December 2015. Since 2010 the price index base has been the year 2015.

Consumer prices are measured once a month by employees of the Czech Statistical Office in the network of reporting units of selected stores and other outlets (about 8 500) in selected districts (LAU 1) of the Czech Republic and in the Capital City of Prague.

#### **Table 8-2 Price indices for selected types of real estate**

The source of data is real estate acquisition tax returns administered by internal revenue authorities. The price index is the ratio of two average unit-purchasing prices (for multi-dwelling buildings and family houses in CZK/m<sup>2</sup>; for dwellings and building lots in CZK/m<sup>2</sup>) for two different time periods. Table shows the types of real estates, for which sufficient price information is available in the source database.

The year 2010 (whole year period) was selected as the base period for the index construction. In 2013 a revision of real estate price indices was carried out, within which a new, more realistic weighting schemes were developed for all surveyed types of real estate. The weights of building lots and residential buildings are based on relative shares of sums of assessed absolute values of real estate under given categories for the years 2009–2011 (for weights to be more robust). There is a compromise for the weights of dwellings and family houses – they are a combination of outputs from the sums of absolute assessed values and data from the Population and Housing Census on the numbers of dwellings and of family houses. Weights of dwellings and of family houses for regions are taken as relative ratios of real transaction volumes.

#### **Table 8-3 Selected industrial producer price indices**

The table presents selected groups as defined by the third level of the CZ-CPA. In some cases, divisions defined by the second level of the CZ-CPA are shown as well.

**Table 8-4 Selected price indices for market services**

Selected items of the third level of the CZ-CPA (groups) are given here, and in certain cases items in even more detailed classification (classes, categories, and sub-categories) are shown.

**Table 8-5 Prices of selected agricultural products**

The current system of statistical surveying has been in use since 1991. The prices are measured in the network of selected agricultural producers. The prices determined are mostly nominal prices of selected agricultural products related to main (specified) quality grades. Prices of vegetables and fruit refer to top quality only. The reported price is a simple arithmetic mean of prices of individual significant contracts, which were implemented around the middle of the reference month.

**Table 8-6 Roundwood prices of selected assortments (only for forest owners)**

Average prices of selected roundwood products (assortments) derived from figures reported in quarterly price surveys. Till the end of 2010 the prices were calculated as a simple arithmetic mean of prices of individual contracts implemented in the whole period of the reference quarter.

In 2011 a weighting average was introduced for logs, quality III A/B – spruce and timber, quality V – spruce. Average prices of other assortments mentioned are still calculated as a simple arithmetic average. The time series published before 2011 are not comparable in full.

**Table 8-7 Consumer prices of selected goods and services**

Consumer prices of selected price representatives are nation-wide average consumer prices related to December of a given year, which are, in nature, average values of individual varieties of the respective representative. Their arrangement in Table is based on the revised consumer basket structure that has been in force since 2017.

**Table 8-8 Consumer price indices for goods and services**

The group indices for consumer prices are broken down as defined by the level 3 of the CZ-COICOP.

**Table 8-9 Consumer price indices of goods and services for the total population of households and for households of pensioners in 2017**

The consumer price indices refer to the twelve CZ-COICOP divisions for total households and for households of pensioners.

**Table 8-10 Harmonized indices of consumer prices**

Harmonized indices of consumer prices (HICPs) were formed in the EU in response to the need to establish comparable indices of consumer prices, so that inflation trends in the EU Member States, to be used as a criterion for the accession to the European Monetary Union, could be measured.

There are certain differences between the structure of the consumer basket for the national index of consumer prices of the Czech Republic and the structure of the consumer basket for the HICP. The HICP weights include revenues from purchases executed by foreigners in the Czech Republic, but do not include the imputed rent, on the contrary to the national index of consumer prices, which does not include revenues from purchases by foreigners yet includes the imputed rent.

The HICP uses chain weights, which are altered in December every year. National accounts data (final monetary consumption of households) are the source for updates. Average of the year 2015 is used as the index price base.

Indices are given within 12 sections of the COICOP.

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Further information can be found on the website of the Czech Statistical Office at:

- [www.czso.cz/csu/czso/inflation\\_consumer\\_prices\\_ekon](http://www.czso.cz/csu/czso/inflation_consumer_prices_ekon)