

## **Explanatory notes on methodology**

The export and import price index has been calculated for the Czech Republic since 1993. The prices were measured by means of the national quarterly statistical questionnaire Cený ZO 1-04 until the end 1997, monthly report Cený ZO 1-12 has been used since 1998.

The index is compiled according to the Harmonized System and is converted to suit the breakdown by SITC (Standard International Trade Classification), Rev.4 main group and the breakdown by the Classification of Products by Activity, Version 2.1 (CZ-CPA 2.1). Abbreviation CZ in the term means national version of international standard. Classification CZ-CPA replaced classification of standard production SKP in 2009.

The indices are calculated using the modified Laspeyres formula.

$$I = \frac{\sum \frac{p_1}{p_0} p_0 q_0}{\sum p_0 q_0} \cdot 100$$

- $p_1$  - the price (of representative) in the reference period  
 $p_0$  - the price (of representative) in the base period – average price for the year 2015  
 $p_0 q_0$  - constant weights (relative structure) – the value of implementation of external trade in national concept 2015

Since 2018, the basic price period for the calculation of the indices has included average prices of the individual representatives in 2015.

Constant weights of index correspond to external trade structure in national concept in 2015 for 4-digit groups of the Harmonized System. The weights of individual representatives were then determined according to sold volumes of particular representatives or whole groups of representatives, given by sampled reporting units in their reports.

The sample of representatives represents all significant 2-digit-code groups of the Harmonized System and the 2-digit-code groups then include all the most important 4-digit-code groups of Harmonized System, if possible. In these groups are chosen products, that are exported or imported repeatedly, on which price trends can be observed. However, only selected chapters of Harmonized System are released.

The price representatives were chosen by businesses important for the external trade of the Czech Republic (by both production enterprises and enterprises engaged in foreign trade only) - about 610 of them engaged in exports and 630 in imports. At present, the weight pattern includes approximately 2560 exported and 2870 imported products, raw materials and supplies - price representatives, which take up a significant share in the value of rather significant groups traded in the framework of external trade (both exports and imports).

Price trends are measured on individual price representatives chosen in the framework of the 8-digit code of the Combined Nomenclature, characterized by certain technical and qualitative parameters, mark, unit of measure and possibly stable foreign market.

Reporting units quote average prices in terms of weighted arithmetic mean (weighted by the amount of products in physical units) derived from prices achieved in rather significant trade transactions either in different countries or in a stable foreign market, provided it is included in the characteristic

*of the price representative concerned, for the entire reference month. Prices invoiced by external supplier are measured for imports and FOB prices for exports.*

*The basis of implementation prices are invoiced prices of significant import and export trade transactions - they are converted into CZK by average monthly exchange rates declared by the Czech National Bank. This is carried out either by a reporting unit or the Czech Statistical Office if prices are reported in a foreign currency. The price indices reflect thus changes in foreign exchange rates, too. The stated prices are free of duty; value added tax and consumer tax.*

*During the year 2017 a standard revision of external trade price indices passed off. From January 2018, export and import price indices are calculated using new weighting scheme based upon External trade statistics data from year 2015 and national concept data while implementing new price base - year 2015 average = 100.*

*Existent time series (2005 avg. = 100) was recalculated to the new base (2015 avg. = 100). From January 2018, new indices with base year 2015 avg. = 100 are linked to this new time series thus its enabling continuation of current time series, using December 2017 as a chaining period.*

*All derived indices (corresponding period of previous year = 100, previous period = 100 and the ratio of moving average - sum of basic indices for the last 12 months related to the sum of indices for previous 12 months) are now calculated from time series of base year 2015 avg. = 100 (these calculated indices are not possible to aggregate).*

*Publishing of price indices with base year 2005 avg. = 100 was terminated in December 2017. Hitherto published indices will not be revised.*

*During the previous revision of external trade in 2012, price indices were calculated on external trade structure of 2010 and implementing new price base y. 2010 average = 100. These indices were chained to existent time series (2005 average = 100) thus enabling continuation of publishing time series up to those period.*

*Indices in SITC classification with the base '2015 average = 100' could be found on the web site of the Czech Statistical Office [http://www.czso.cz/csu/czso/izc ts](http://www.czso.cz/csu/czso/izc_ts) referring to "Export and Import Price Indices".*

## **Methodology of time series back-calculation**

Since January 2018 price indices are calculated on the new weighting pattern using base 'year 2015 average = 100'.

### **I. Conversion of the original indices valid up to December 2017 to the new base 'yr.2015 average = 100'**

The indices of original time series with the base 'yr.2005 average = 100' covering the period 1994 – December 2017 can be converted to the new base 'yr.2015 average = 100' valid since January 2018 in the following manner:

Index for a given period with the base 'yr.2015 average = 100' =

=index for a given period from the original time series to the base '2005 average = 100' \*

\* 
$$\frac{\text{average index for yr.2015 to the base '2015 average = 100'}}$$

$$\text{average index for yr.2015 to the base '2005 average = 100'}$$

Example calculation of the export price index for April 2015 to the new base 'yr.2015 average = 100':

- original index for April 2015 with the base 'yr.2005 average = 100': 103.4
- average index for yr.2015 with the base 'yr.2015 average = 100': 100.0
- average index for yr.2015 with the base 'yr.2005 average = 100': 102.1

Index with the new base 'yr.2015 average = 100' =  $103.4 * 100.0 / 102.1 = 101.3$

The resulting index is comparable with the newly published indices since January 2018 with the base 'yr.2015 average = 100'.

### **II. Conversion of the newly published indices valid since January 2018 to the original base 'yr.2005 average = 100'**

Index for a given period with the base 'yr.2005 average = 100' =

=index for a given period with the base 'yr.2015 average = 100' \*

\* 
$$\frac{\text{average index for yr.2015 with the base 'yr.2005 average = 100'}}$$

$$\text{average index for yr.2015 with the base 'yr.2015 average = 100'}$$

Example calculation of the export price index for January 2018 to the base 'yr.2005 average = 100':

- new index for January 2018 with the base 'yr.2015 average = 100': 94.8
- average index for yr.2015 with the base 'yr.2005 average = 100': 102.1
- average index for yr.2015 with the base 'yr.2015 average = 100': 100.0

Index to the original base 'yr.2005 average = 100' =  $94.8 * 102.1 / 100.0 = 96.8$

The resulting index is comparable with the indices published until December 2017 with the base 'yr.2005 average = 100'.