

## Methodology of the conversion of the time series

### Conversion of time series of Construction work price indices and Constructions price indices

Conversion between the time series of the price indices with a constant base before and after the revision is ensured by the coefficients (conversion bridges) either to the new base with the new structure from the year 2005 or to the original base with the original structure from the year 1999. For each time series of the indices (at all levels of structural hierarchy) the coefficient is following number:

$$\text{Coefficient} = \frac{[\text{index for Q4 2005} / \text{index for Q4 2004}] (\text{indices with the base Q4 1999} = 100 \text{ on the new structure 2005})}{[\text{index for Q4 2005} / \text{index for Q4 2004}] (\text{indices with the base Q4 1999} = 100 \text{ from original structure 1999})}$$

This coefficient represents a difference between the development on the new and the original scheme between the 4<sup>th</sup> quarter of 2005 and the 4<sup>th</sup> quarter of 2006 for each index.

#### **I. Conversion of the original indices, valid till 2006, to the new index base 2005 average = 100**

- a) The **indices of original time series** with the base the 4<sup>th</sup> quarter of 1999 = 100, which refer to the period **1994 – 2006** (1994 – 1999: see publication CZSO – “*Indexy cen stavebních prací a stavebních objektů, revize 2000*”; 2000 – 2006: see publication CZSO – “*7001 - Indexy cen stavebních prací, stavebních děl a nákladů stavební výroby*”), **will be transformed to the new base 2005 average = 100**, valid since January 2007:

$$\frac{[\text{Index for the selected period with the base Q4 1999} = 100 \text{ from original time series}]}{[\text{Index for 2005 average to the base Q4 1999} = 100 \text{ from original time series}]} * \text{coefficient} * 100 \quad (1)$$

**Example of calculation** of price index of construction work in the second quarter of 2006 with the new base 2005 average = 100:

- original index for the 2<sup>nd</sup> quarter of 2006 with the base the 4<sup>th</sup> quarter of 1999 = 100: 122.3
- original index for the average of 2005 with the base the 4<sup>th</sup> quarter of 1999 = 100: 119.4
- coefficient to the appropriate time series : 1.0016

$$[\text{Index with the new base 2005 average} = 100] = \frac{122.3}{119.4} * 1.0016 * 100 = 102.6$$

Final index is therefore comparable with newly published indices since the first quarter of 2007 with the base 2005 average = 100.

- b) **Conversion to the new index base 2005 average = 100** will CZSO calculate from the time series of type (1) above. Index for any time **period within year 1994 and 2006** to the new index base 2005 average = 100 **can be calculate** from the previously published data as follows:

$$\frac{[\text{Index for the selected period with the base Q4 1999} = 100 \text{ from original time series}]}{[\text{Index for 2005 average to the base Q4 1999} = 100 \text{ from original time series}]} * 100 \quad (2)$$

It is necessary to refer to the fact, that formula (2) gives the same results as the calculation from the series of type (1) only theoretically (if the calculations are done with un-rounded figures)

**II. Conversion of the new indices, valid since the first quarter of 2007, to**

**a) original base Q4 1999 = 100 and to**

**b) original index base 2000 average = 100**

a) **Continuation** of the time series of price indices **with the original base Q4 1999 = 100** (valid till year-end 2006) will be ensured by linking of the new time series to the original time series as follows:

$$[\text{index for the period of the year 2007 (8...) with the base Q4 1999 = 100}] = \frac{[\text{index for period y. 2007 (8...) with the base 2005 average = 100 from the new time series}]}{\text{coefficient}} *$$

$$* \frac{[\text{index for Q4 2005 with the base Q4 1999 = 100 from the original time series}]}{100} \quad (3)$$

**Example of calculation** of index for the first quarter of 2007 to the base Q4 1999 = 100:

- new index for the first quarter of 2007 with the base 2005 average = 100: 105.4
- original index for the 4<sup>th</sup> quarter of 2005 with the base Q4 1999 = 100: 120.4
- coefficient to the appropriate time series: 1.0016

$$[\text{Index with the base Q4 1999 = 100}] = \frac{105.4}{1.0016} * \frac{120.4}{100} = 126.7$$

b) Similar procedure **can be used also for conversion to the base 2000 average = 100:**

$$[\text{index for appropriate period y. 2007 (8...) with the base 2000 average = 100}] = \frac{[\text{index for appropriate period y. 2007 (8...) with the base 2005 average = 100 from the new time series}]}{\text{coefficient}} *$$

$$* \frac{[\text{index for Q4 2005 with the base 2000 average = 100 from the original time series}]}{100} \quad (4)$$

Note: Using of the coefficients implicitly transforms the linking period the average of 2000 to the average of 2005. In other words, a published development of the original time series till year-end 2006, which is linked by the development of indices derived from the new calculation scheme, is retained.