



## NOTE TO DATASHOPS AND DATASHOP SUPPORT

**Subject: Harmonized Index of Consumer Prices (<sup>1</sup>)**

**You may have received the following question:**

Why is the Eur-11 index for January 1999 102.8? When I calculate it, I get 102.9.

**The answer is:**

The HICP are calculated as a chain index starting from the base-year 1996.

The indices in 1999 are calculated as a weighted sum of the increases/decreases of the indices since December 1998, multiplied with the December 1998 value. December 1998 is the base-period for the 1999 indices. For the Eur-11 all-items index, for example, it is expressed mathematically as<sup>2</sup>

$$I_{Eur11}^{00}(Jan99) = \left( \sum_{c \in Country} \frac{I_c^{00}(Jan99)}{I_c^{00}(Dec98)} \cdot w_c(1999) \right) \cdot I_{Eur11}^{00}(Dec98)$$

where

$I_{Eur11}^{00}(Jan99)$  is the all items index (00) for Eur-11 in January 1999

$I_c^{00}(Jan99)$  is the all items index (00) for one of the EMU countries, January 1999

$w_c(1999)$  is the country weight for 1999

The index for December 1998 is calculated using the same formula with December 1997 as base-period, and index for December 1997 is calculated using December 1996 as base-period. The index for December 1996 uses the average of 1996(=100) as base period<sup>3</sup>. A full calculation of the index should normally start from 1996 in order to avoid rounding effects.

A simple weighted average such as

$$I_{Eur11}^{00}(Jan99) \neq \sum_{c \in Country} I_c^{00}(Jan99) \cdot w_c^{00}$$

gives the wrong result.

Chain indices are used because the weights (both country weights and item weights) may change every year. A simple weighted average would produce a discontinuous index, while the chain index takes account of the changes in weights.

Using the right formula you get 102.8 (rounded to one decimal), using the wrong formula you get 102.9 (rounded to one decimal).

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<sup>1</sup> This document was updated August 2001 to reflect that the chaining normally should start in 1996.

<sup>2</sup> It is straight forward to extend the formula with items weights. The notation used in formula has been slightly simplified compared to most textbooks on indices.

<sup>3</sup> Indices before 1996 uses January of Y+1 as the base-period.