



information notice

Consumer Price Index

How to calculate a percentage change

The formula used to calculate the percentage change between any two periods is as follows:

$$\text{Percentage Change} = \left(\frac{\text{Index}_{CP} - \text{Index}_{PP}}{\text{Index}_{PP}} \right) \times 100$$

where Index_{CP} is the index for the current period and Index_{PP} is the index for the previous period *in the same base reference period*.

Note: the percentage changes are published rounded to 1 decimal place.

Example 1: In May 2012, the 12 months percentage change between May 2012 and May 2011 (*Base: December 2011 = 100*) was calculated as follows:

$$\begin{aligned} \text{Percentage Change} &= \left(\frac{101.4 - 99.6}{99.6} \right) \times 100 \\ &= +1.8\% \end{aligned}$$

Example 2: In May 2012, the 1 month percentage change between May 2012 and April 2012 (*Base: December 2011 = 100*) was calculated as follows:

$$\begin{aligned} \text{Percentage Change} &= \left(\frac{101.4 - 101.4}{101.4} \right) \times 100 \\ &= 0\% \text{ (i.e. no change)} \end{aligned}$$

Table 1: Consumer Price Index (CPI) (All Items) from January 2011 to December 2012 (Base: December 2011=100)

Year	Month	CPI (All Items) (Base: December 2011 = 100)
2011	January	97.4
2011	February	98.3
2011	March	99.2
2011	April	99.5
2011	May	99.6
2011	June	99.5
2011	July	99.5
2011	August	99.7
2011	September	100.0
2011	October	100.3
2011	November	100.3
2011	December	100.0
2011	Annual Average	99.4
2012	January	99.5
2012	February	100.4
2012	March	101.4
2012	April	101.4
2012	May	101.4
2012	June	101.2
2012	July	101.1
2012	August	101.7
2012	September	101.6
2012	October	101.5
2012	November	101.1
2012	December	101.2
2012	Annual Average	101.1

Note: The Annual Average CPI for any given year is a simple arithmetic average of the indices over the 12 months of the year and rounded to one decimal place.

What is the difference between the annual percentage change and the annual average percentage change?

In December 2012 (i) the annual percentage change (i.e. annual rate of inflation) for December 2012 and (ii) the annual average percentage change (i.e. annual average rate of inflation) for 2012 were published in the Consumer Price Index release.

(i) **the annual percentage change (i.e. annual rate of inflation) for December 2012** was calculated as follows:

$$\text{Percentage Change} = \left(\frac{\text{Index}_{CP} - \text{Index}_{PP}}{\text{Index}_{PP}} \right) \times 100$$

where Index_{CP} is the index for the current period (December 2012) and Index_{PP} is the index for the previous period (December 2011) *in the same base reference period*.

$$\begin{aligned} \text{Percentage Change} &= \left(\frac{101.2 - 100.0}{100.0} \right) \times 100 \\ &= +1.2\% \end{aligned}$$

i.e. annual rate of inflation = +1.2%

(ii) **the annual average percentage change (i.e. annual average rate of inflation) for 2012** was calculated in two steps as follows:

Step 1: The annual average CPI for the current and previous years was calculated using the following formula:

$$\text{Annual Average CPI} = \left(\frac{\sum_{t=1}^{12} \text{CPI}_t}{12} \right)$$

where CPI_t is the CPI (All Items) from $t=1$ to 12 (i.e. January to December) and \sum represents summation of the monthly CPI (All Items).

i.e. the annual average CPI for 2011 is

$$\text{Annual Average CPI} = \left(\frac{97.4 + 98.3 + \dots + 100.0}{12} \right) = 99.4$$

i.e. the annual average CPI for 2012 is

$$\text{Annual Average CPI} = \left(\frac{99.5 + 100.4 + \dots + 101.2}{12} \right) = 101.1$$

Step 2: The annual average percentage change (i.e. annual average rate of inflation) for 2012 was calculated using the following formula:

$$\text{Percentage Change} = \left(\frac{\text{Index}_{CP} - \text{Index}_{PP}}{\text{Index}_{PP}} \right) \times 100$$

where Index_{CP} is the index for the current period (i.e. annual average CPI for 2012) and Index_{PP} is the index for the previous period (i.e. annual average CPI for 2011) *in the same base reference period* (i.e. Base: December 2011=100).

$$\begin{aligned} \text{Percentage Change} &= \left(\frac{101.1 - 99.4}{99.4} \right) \times 100 \\ &= +1.7\% \end{aligned}$$

i.e. annual average rate of inflation = +1.7%

The Central Statistics Office (CSO) neither encourages nor discourages the use of price adjustment measures in contractual agreements. The decision to employ an indexation mechanism, as well as the choice of the most suitable index, is up to the individual or party.

The CSO cannot provide assistance in relation to legal questions. The CSO can only provide basic assistance on statistical questions. However, this assistance is provided without acceptance of any responsibility by the CSO.

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March 2013