



information

notice

Consumer Price Index - *Tutorial*

What is the CPI?

The Consumer Price Index or CPI measures the overall change in the prices of goods and services that people typically buy over time. It does this by collecting approximately 53,000 prices every month and comparing these to the corresponding prices from the previous month.

As everyone has differing tastes and spending habits, the CPI measures prices for a huge assortment of items. Not only does the CPI measure price changes for goods but also for services e.g. hairdressing, taxi fares, insurance etc. This collection of items is normally referred to as the ***basket of goods and services***.

The basket does not apply to any particular person or family but represents an average household in Ireland. The goods and services that are included in the basket are determined from the ***Household Budget Survey (HBS)***, which is conducted every five years. Up to December 2012, the relative importance or ***weights*** (the greater the importance, the greater the weight) of these goods and services was also decided from information collected in the HBS. From January 2013, the CPI sub-index weights are updated on an annual basis using National Accounts 'Household Final Monetary Consumption Expenditure' (HFMCE) data.

The expenditure of foreign tourists on holiday in Ireland and the expenditure of institutional households are also included in the index since January 2002 and January 2013 respectively.

How is the CPI used?

Have you ever wondered why your money does not seem to buy as much as it used to? Over time your money loses purchasing power. It does so because of inflation. Put simply inflation is the rate at which your money loses its ability to buy things. ***The CPI is the official measure of inflation in Ireland.***

You can use the CPI to measure the decline in the value of money. For example, you might wish to check whether wages have kept pace with prices.

All-Items CPI

Base: December 2006 = 100

Table 1:

Dec	2006	100.0
Jan	2007	99.9
Feb	2007	100.7
Mar	2007	101.4
Apr	2007	102.2
May	2007	102.6
Jun	2007	102.8
Jul	2007	103.1
Aug	2007	103.6
Sep	2007	103.9
Oct	2007	104.0
Nov	2007	104.6
Dec	2007	104.7
Jan	2008	104.2
Feb	2008	105.5
Mar	2008	106.5

Table 1 shows that prices increased by 5.0% between March 2007 and March 2008. In other words the annual rate of inflation to March 2008 was 5.0%.

What does this really mean? It means that between March 2007 and March 2008, money fell in value by 5.0%. If I had €1 in March 2007, I would need €1.05 in March 2008 to have the same purchasing power. In other words, I would need 5c extra to be able to buy the same basket of goods and services that I bought in March 2007. Alternately, you could look at it in reverse and say I only needed 95.2c in March 2007 to buy what I need a €1 for in March 2008.

Example 1:

For every euro I had in July 2007, I would need 1 euro and 3.3c in March 2008 to purchase the same basket of goods and services. So, if I had €10 in July 2007, I would need €10.33 in March 2008. Use this formula to work it out:

Formula 1:

$$\left[\frac{\text{Latest Index Number}}{\text{Earlier Index Number}} \right] \times \text{Sum of money} = \text{Updated sum of money}$$

then

$$\left[\frac{\text{Mar 08 Index Number}}{\text{Jul 07 Index Number}} \right] \times \text{€10} = \left[\frac{106.5}{103.1} \right] \times \text{€10} = \text{€10.33}$$

Example 2:

If I had €50 in October 2007, I would have only needed €48.03 in January 2007 to purchase the same basket of goods and services. The additional €1.97, needed to purchase the same basket of goods and services in October, reflects the increase of 4.1% in the average level of prices between January and October.

Example 3:

Suppose I had €197 to spend in December 2007. If I had waited until January 2008, I could have bought the same basket of goods and services for €196.06.

Remember -

- The CPI measures the change in the price of a *basket* of goods and services
- CPI measures *inflation*
- Inflation is the rate at which your money loses its ability to buy things

How to calculate changes in the CPI

A price index tells us the percentage **change in prices** over time. It does not tell us anything about actual price level.

If we compare index numbers for two different products, we can say that the price of one product is rising or falling, faster or slower, than the other. We cannot tell from the index numbers which product is more expensive.

Example 4:

Compare two products: Bread and a Motor car.

Index numbers are given for bread and a motor car. Both index series begin at 100 in December 2006, the **base reference period**. We may say both sets of index numbers are *Base December 2006 = 100*.

Table 2:

Index numbers for Bread & a Motor car			
Base: December 2006 = 100			
Period		Bread	Motor Car
Dec	2006	100.0	100.0
Jan	2007	100.0	100.3
Feb	2007	99.7	100.3
Mar	2007	102.7	100.4
Apr	2007	104.4	100.4
May	2007	105.0	100.4
Jun	2007	106.2	100.6
Jul	2007	106.2	100.6
Aug	2007	106.3	100.6
Sep	2007	106.1	100.6
Oct	2007	113.7	100.6
Nov	2007	115.6	100.7
Dec	2007	119.7	100.7

To calculate the change in the price of bread between January 2007 and December 2007, apply this formula:

Formula 2:

$$\left[\frac{\text{Latest Index Number}}{\text{Earlier Index Number}} \times 100 \right] - 100$$

Then for bread

$$\left[\frac{\text{Dec 2007 Index Number}}{\text{Jan 2007 Index Number}} \times 100 \right] - 100 = \left[\frac{119.7}{100.0} \times 100 \right] - 100 = 19.7\%$$

By repeating this exercise for a motor car, we can see that car prices increased by 0.4%. This means that the price of bread increased by more (in percentage terms) than the price of a motor car between January and December 2007.

Example 5:

For example, in January 2007, the average price of a loaf of bread is 97c and the average cost of a motor car is €20,000. The motor car is much more expensive than a loaf of bread.

In July 2007, the average cost of a motor car rose to €20,060 and a loaf of bread costs €1.03. For which product did the average price change the most? We can work this out using this formula:

Formula 3:

$$\left[\frac{\text{Latest Price}}{\text{Earlier Price}} \times 100 \right] - 100$$

Then for motor cars

$$\left[\frac{\text{Price in Jul 2007}}{\text{Price in Jan 2007}} \times 100 \right] - 100 = \left[\frac{20,060}{20,000} \times 100 \right] - 100 = 0.3\%$$

and for bread

$$\left[\frac{\text{Price in Jul 2007}}{\text{Price in Jan 2007}} \times 100 \right] - 100 = \left[\frac{1.03}{0.97} \times 100 \right] - 100 = 6.2\%$$

This has been represented by index numbers in *Table 2*. The index number for bread in July 2007 is 106.2. The index number for motor cars in July 2007 is 100.6. If you use these index numbers with **formula 2**, you will get the same percentage changes.

If bread cost on average €1.45 in January 2007 and the price increased to €1.54 in July 2007, the percentage change would still be 6.2%. Using the index numbers, we still get the same answer. So, an index only tells us about the change in price. It does not tell us anything about the actual or absolute price level.

Remember -

- A price index gives information on changes in prices
- A price index does not give any information on actual price levels
- A cheap item can rise or fall in price faster or slower than an expensive item

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