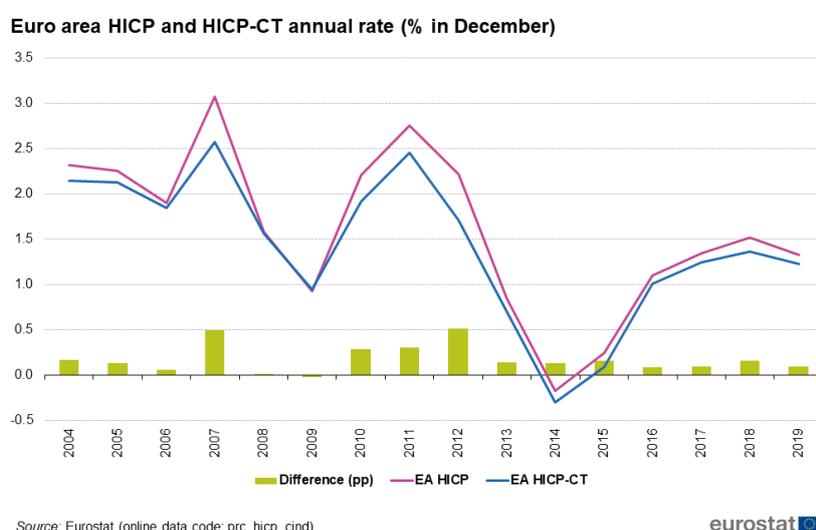


Data extracted in January 2020  
Planned article update: February 2021



### Euro area HICP and HICP-CT annual rate (% in December) Source: Eurostat (prc\_hicp\_cind)

The Harmonised Index of Consumer Prices at constant tax rates (HICP-CT) is a variant of the [HICP](#) that measures inflation without the impact of changes in [taxes on products](#), such as [value added tax \(VAT\)](#), excise duties, etc. It thus aims to assess the contribution to inflation of changes in taxes on products. This article analyses HICP-CT data for the [European Union \(EU\)](#) and outlines the methodology underlying these statistics.

### General overview

Figure 1 shows euro area HICP and HICP-CT December annual rates (% change of the index value in December of the observation year  $y$  compared to December of the previous year  $y-1$ ) from 2004 to 2019. Since HICP-CT is calculated by keeping the tax rates from the previous year's December constant, in the event of a tax change, the difference between HICP and HICP-CT rates indicates its effect on prices, assuming that the full tax change is passed on to the consumer instantaneously. Consequently, if HICP rates are higher than HICP-CT rates it would mean that, overall, taxes on products have increased. Conversely, HICP rates that are lower than HICP-CT rates would imply, on average, a decrease in taxes on products (see "Limitations" under section Data sources and availability).

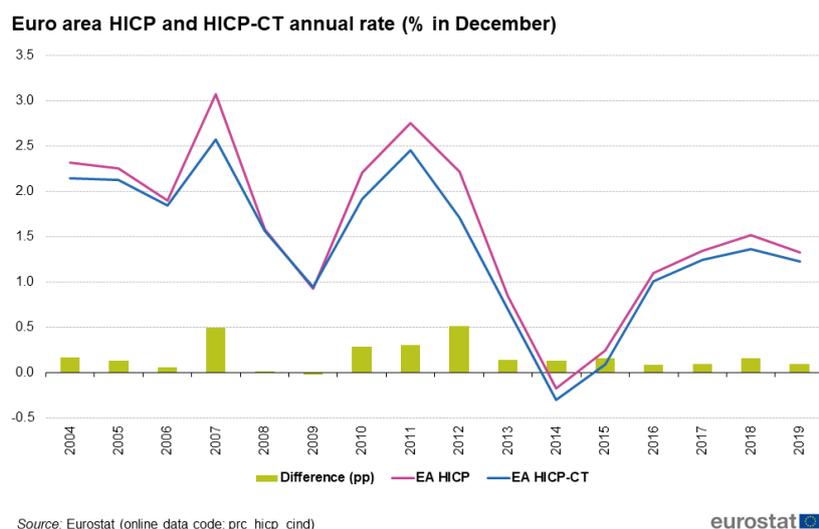


Figure 1: Euro area HICP and HICP-CT annual rate (% in December) Source: Eurostat (prc\_hicp\_cind)

## Trends in the euro area

### Headline HICP and HICP-CT

When looking at the period for which HICP-CT data are available (December 2002 onwards) at euro area level, the [annual rate](#) of change in the HICP has been on average 0.2 [percentage points](#) (pp) higher than the HICP-CT annual rate. That indicates an increase of [taxes on products](#) over time. However, there were sub-periods with clearly discernible patterns: there was not much difference between HICP and HICP-CT annual rates until 2009 (with the exception of 2007, mainly due by an increase of the standard [VAT](#) rate of Germany from 16 % to 19 %). During 2010-2012, the annual rate of change of the HICP-CT was significantly lower than the general index, and the difference has narrowed since 2013.

### Trends at Member State level

During the period 2009-2019, all Member States recorded an average increase of taxes on products (see Table 1). The exception was Germany, whose HICP and HICP-CT rates have been similar during the last 10 years. Additionally, the rates of HICP and HICP-CT for Belgium, Denmark, Lithuania, Austria, Romania, Slovakia and Sweden have exhibited a difference of only 0.1 pp. By contrast, Greece had the largest difference between HICP and HICP-CT rates at 0.7 pp on average. Looking at individual years, the differences in terms of HICP annual rates being higher than HICP-CT rates were greatest in Romania at 5.7 pp in 2010 and Greece at 4.3 pp, also in 2010. Conversely, the only occasions where HICP-CT was higher than HICP by more than 1 pp were recorded in Romania, at 3.0 and 1.9 pp in 2015 and 2016.

HICP and HICP-CT annual rates (2010-2019)

	Average HICP annual rate (%) (1)	Average HICP-CT annual rate (%) (2)	Difference between HICP and HICP-CT annual rate in December (percentage points)												
			average (1)-(2)												
				2010	2011	2012	2013	2014	2015	2016	2017	2018	2019		
European Union	1.5	1.3	0.2	0.7	0.5	0.5	0.2	0.2	0.1	0.0	0.1	0.1	0.1	0.1	
Euro area	1.3	1.1	0.2	0.3	0.3	0.5	0.1	0.1	0.2	0.1	0.1	0.2	0.1	0.1	
Belgium	1.8	1.7	0.1	-0.3	0.1	0.2	0.2	-0.3	0.5	0.6	0.2	0.1	0.1	0.1	
Bulgaria	1.2	1.1	0.2	1.1	-0.1	0.0	0.0	0.0	0.0	0.3	0.2	0.2	0.0	0.0	
Czechia	1.8	1.4	0.4	1.2	0.1	1.3	0.9	0.1	0.2	0.0	0.0	0.1	0.0	0.0	
Denmark	1.1	1.0	0.1	0.7	0.3	0.4	-0.2	0.2	-0.1	0.0	-0.3	0.0	0.0	0.0	
Germany	1.4	1.4	0.0	-0.1	0.0	0.1	-0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	
Estonia	2.6	2.3	0.4	0.6	0.2	0.3	0.2	0.2	0.3	0.7	0.9	0.5	-0.2	-0.2	
Ireland	0.5	0.3	0.2	-0.4	-0.3	0.9	0.8	0.1	0.2	0.2	0.1	0.1	0.1	0.6	
Greece	0.6	0.0	0.7	4.3	1.4	0.7	-0.9	-0.4	1.9	0.7	0.6	0.1	-1.4	-1.4	
Spain	1.2	0.9	0.3	1.2	0.0	2.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.1	
France	1.3	1.1	0.2	0.0	0.0	0.2	0.1	0.5	0.2	0.2	0.2	0.6	0.1	0.1	
Croatia	1.2	1.0	0.2	0.2	-0.1	1.1	0.6	0.5	0.4	0.1	0.0	0.2	-0.8	-0.8	
Italy	1.2	1.0	0.2	0.1	0.9	0.3	0.3	0.1	0.0	0.0	0.1	0.0	0.1	0.1	
Cyprus	0.6	0.2	0.4	0.5	0.2	1.1	0.7	1.1	0.0	0.0	0.0	0.0	-0.2	-0.2	
Latvia	1.7	1.4	0.3	-0.1	1.8	-0.6	0.1	0.1	0.2	0.6	0.1	0.5	0.1	0.1	
Lithuania	2.0	1.9	0.1	0.0	0.0	0.2	-0.1	0.1	0.1	0.2	0.9	0.0	0.0	0.0	
Luxembourg	1.7	1.5	0.3	0.3	0.0	0.5	0.2	0.2	1.1	0.1	0.1	0.1	0.1	0.1	
Hungary	2.5	2.3	0.2	0.4	0.8	1.8	0.3	0.0	0.1	-0.1	-0.6	-0.4	0.2	0.2	
Malta	1.6	1.3	0.2	0.1	0.2	0.0	0.3	0.1	0.3	0.3	0.3	0.3	0.3	0.3	
Netherlands	1.6	1.2	0.4	0.1	0.3	1.1	0.6	0.2	0.3	0.1	0.0	0.5	1.2	1.2	
Austria	2.0	1.9	0.1	0.0	0.5	0.0	0.0	0.1	0.0	0.2	0.0	0.0	0.0	0.0	
Poland	1.5	1.4	0.2	0.2	0.8	0.2	0.3	0.4	0.0	0.0	0.0	0.0	0.0	0.0	
Portugal	1.2	0.8	0.4	0.8	1.4	1.5	0.0	0.1	0.2	-0.4	0.1	0.0	0.0	0.0	
Romania	2.7	2.6	0.1	5.7	0.2	0.1	-0.1	0.7	-3.0	-1.9	-0.6	-0.1	0.3	0.3	
Slovenia	1.3	1.1	0.3	0.3	-0.1	1.0	1.1	0.6	-0.2	0.0	0.2	-0.2	0.1	0.1	
Slovakia	1.6	1.5	0.1	-0.1	0.8	0.1	0.0	0.0	0.0	-0.4	0.1	0.0	0.1	0.1	
Finland	1.5	1.1	0.4	0.3	0.4	0.9	0.7	0.5	0.3	0.2	0.0	0.4	0.2	0.2	
Sweden	1.2	1.2	0.1	0.0	0.0	-0.4	0.1	0.0	0.2	0.1	0.3	0.1	0.1	0.1	
United Kingdom	2.1	1.7	0.4	1.8	1.6	0.2	0.1	-0.1	0.0	0.1	0.2	0.1	0.1	0.1	
Norway	1.9	1.9	0.0	0.0	0.0	2.0	-2.2	-1.5	-3.4	-2.4	-1.5	-2.2	-2.2	-2.2	

(-) data not available  
 Source: Eurostat (online data code: prc\_hicp\_cind)

eurostat

Table 1: HICP and HICP-CT annual rates (2010-2019) Source: Eurostat (prc\_hicp\_cind)

## Data sources and availability

Starting from December 2002, HICP-CT all-items and special aggregates are available for most Member States. From December 2012 on, detailed HICP-CT data by COICOP categories are available for all Member States, the United Kingdom and Norway in the Eurostat database .

## Methodology

The HICP-CT is defined as an HICP index where tax rates are kept constant in the observation period compared to the reference period, i.e. through time. Hence, in the event of a tax rate change, the difference between the current HICP-CT and HICP theoretically would indicate the effect of the tax rate change on price changes. The tax rate may be a certain percentage of the price, or an absolute tax amount levied on a physical unit.

The HICP-CT is a Laspeyres -type price index which reflects the average change of g item prices  $p_{i,t}$  from the price reference period  $t_0$  (previous year's December) to month  $t_n$  . The expenditure shares are denoted as  $w_i$  . HICP-CT uses HICP expenditure shares. All product-related taxes, which may be merged in vectors  $\tau_{i,t}$  , are part of the prices observed (and refer to the same periods as the prices). The notation  $LCTP$  (Laspeyres-type Constant Tax Price index)

$$LCTP_{t_0,t_n} = \sum_{i=1}^g \frac{p_{i,t_n}(\tau_{i,t_0})}{p_{i,t_0}(\tau_{i,t_0})} \cdot w_i$$

indicates that prices in  $t_0$  and  $t_n$  refer to tax rates from the same period  $t_0$  . Whereas the prices  $p_{i,t_0}(\tau_{i,t_0})$  are observable in the base period  $t_0$  , the prices  $p_{i,t_n}(\tau_{i,t_0})$  are not directly observable. They have to be calculated using the reporting period's purchaser prices  $p_{i,t}$  , the product-related tax rates  $\tau_{i,t_n}$  as well as the tax rates of the base period  $\tau_{i,t_0}$  . For more details on the methodology applied, please refer to HICP-CT manual .

As explained previously, the HICP-CT is useful for analysis only if it is compared with the HICP, e.g. where tax rate changes occur in the observation period, the effect of these changes on prices will be seen by comparing

the HICP-CT with the HICP.

## Tax coverage

The taxes falling within the scope of the HICP-CT are taxes on products relating to final monetary consumption expenditure and taxes directly linked to the level of final consumption (see Table 2). The [European System of Accounts \(ESA\) 2010](#) classifies taxes on products in economic terms.

European System of Accounts (ESA) 2010 classification D21, D29 and coverage of the HICP-CT

Taxes on products	Definition	Relevance for HICP-CT
D.211	Value added type tax	In scope
D.212	Taxes and duties on imports excluding VAT	Out-of-scope
D.2121	Import duties	Out-of-scope
D.2122	Taxes on imports, excluding VAT and import duties	Out-of-scope
D.2122 (1)	Levies on imported agricultural products	Out-of-scope
D.2122 (2)	Monetary compensatory amounts levied on imports	Out-of-scope
D.2122 (3)	Excise duties and special taxes on certain imported products	In scope
D.2122 (4)	General sales taxes	Out-of-scope
D.2122 (5)	Taxes on specific services	In scope
D.2122 (6)	Profits of public enterprises exercising a monopoly over the imports of some goods or services	Out-of-scope
D.214	Taxes on products, except VAT and import taxes	Out-of-scope
D.214a	Excise duties and consumption taxes	In scope
D.214b	Stamp taxes	Out-of-scope
D.214c	Taxes on financial and capital transactions	Out-of-scope
D.214d	Car registration taxes	In scope
D.214e	Taxes on entertainment	In scope
D.214f	Taxes on lotteries, gambling and betting	Out-of-scope
D.214g	Taxes on insurance premiums	In scope
D.214h	Other taxes on specific services	In scope
D.214i	General sales or turnover taxes	Out-of-scope
D.214j	Profits of fiscal monopolies	Out-of-scope
D.214k	Export duties and monetary compensatory amounts collected on exports	Out-of-scope

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**Table 2: European System of Accounts (ESA) 2010 classification D21, D29 and coverage of the HICP-CT Source: Eurostat**

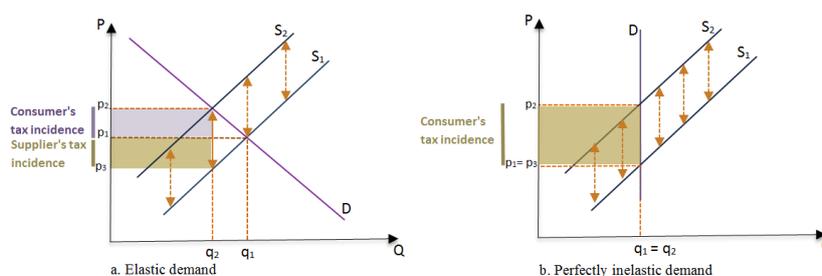
However, some taxes in the scope of the HICP-CT are small in terms of tax revenue and hence a tax rate change would be unlikely to influence the HICP. Therefore only relevant taxes are kept constant for calculating the HICP-CT (for more information, see [HICP-CT reference methodology](#) ). **Limitations**

The HICP-CT assumes that changes in tax rates are passed on to the consumer instantaneously and fully. Since most of the time that is not the case, the HICP-CT tends to provide an indication of the upper limit of the impact of tax changes on inflation. In real life, taxes are not always passed on to consumers at the same time as they are introduced. Retailers can adjust the prices of their products to reflect tax changes later on or they can anticipate the rate change and adjust their prices before the new tax rate is applied. It is also possible that retailers will change their prices less than expected or even keep prices constant. Thus the HICP-CT might overestimate a price increase, e.g. if stock is sold at the 'old' price.

The price elasticity<sup>1</sup> of supply and demand determines to some extent how taxes will influence prices. The less price-elastic the demand, the bigger the share of tax that consumers have to pay. In the case of more price-elastic demand, the retailers have to bear a bigger part of the tax burden (see Figure 3a).

Hence, the assumption that changes in tax rates are passed on to the consumer fully is true only in the case of perfectly inelastic demand, while in other cases the burden of the tax rate change is shared between consumer and retailer (see Figure 3b).

<sup>1</sup>Responsiveness of the quantity demanded of a product to a price variation.



**Figure 3: Incidence of tax changes in consumers and suppliers** Source: Eurostat

Here:

- $D$  – demand,
- $S1$  – supply function before tax change,
- $S2$  – supply function after tax change,
- $q1$  – quantity purchased before tax change,
- $q2$  – quantity purchased after tax change
- $p1$  – price before tax change,
- $p2$  – price after tax change,
- $p3$  – price recorded by HICP-CT.

As depicted in Figure 3, whenever a tax rate changes, the supply curve shifts upwards (or downwards, depending on whether the change is positive or negative) by the distance equal to the difference between the new and old tax rates ( $\tau2 - \tau1$ ), assuming that changes in tax rates are passed on instantaneously and fully. There is then a new equilibrium point with a price  $p2$  and a quantity  $q2$ . Only in the case of perfectly inelastic demand is the consumer's tax incidence equal to the tax rate change, i.e.,  $p1$  equals  $p3$ . In other cases, although the HICP-CT records the price  $p3$ , the actual price with constant taxes would be  $p1$  (ceteris paribus: assuming there are no other changes). Since cases of perfectly inelastic demand are rare in real life, generally the HICP-CT just gives an indication of an upper limit of the changing tax rate's influence on inflation.

In case the change of taxes creates second round effects, that effect is not captured by the HICP-CT. Additionally, changes to indirect tax policy that affect the base of the tax and not the rate are not covered by HICP-CT.

Therefore, the HICP-CT is an important tool for analysing the causes of inflation, but it cannot be used as an accurate assessment of the impact of tax policy changes on consumer prices.

## Other articles

- [HICP methodology](#)
- [Inflation in the euro area](#)
- [Tax revenue statistics](#)

## Database

- [Harmonised Indices of Consumer Prices at constant tax rates \(HICP-CT\)](#), see:

HICP at constant tax rates (prc\_hicp\_ct)

HICP at constant taxes — monthly data (index) (prc\_hicp\_cind)

HICP at constant taxes — monthly data (annual rate of change) (prc\_hicp\_cann)

HICP at constant taxes — monthly data (monthly rate of change) (prc\_hicp\_cmon)

## Dedicated section

- [HICP at constant tax rates](#)
- [Harmonised Indices of Consumer Prices \(HICP\)](#) , see:

Harmonised indices of consumer prices (HICP (prc\_hicp)

## Methodology

- [Reference methodology](#)