

Box 1.4: Changes to HICP methodology

This technical box presents changes to the HICP methodology introduced in February 2019 and explores their impact on the inflation aggregates most commonly used in Commission forecasts.

Advances in HICP special aggregates calculations

From early 2019, Eurostat implemented several modifications in the methodology used for the calculation of the harmonised indices of consumer prices (HICP). Modifications in the methodology of the calculation of HICP are carried out regularly (yearly updates of country and item weights in particular). However, the change in early 2019 is of a different nature since it affects both the way certain underlying prices are measured and introduces new ways of obtaining so-called 'special' aggregates using the HICP classification.⁽¹⁾

In particular, the recent modification to the measurement of underlying prices concerns processed and unprocessed food items where the way price data are collected has been improved with a more extensive use of supermarket scanner data and so-called 'web-scraping'.⁽²⁾ On top of this,

Eurostat has introduced a more precise allocation of goods and services items across the five main HICP sub-indices. This was done mostly for the processed and unprocessed food sub-indices and to a minor extent across the energy, non-energy industrial goods and services sub-indices. This affects the inflation rates for these aggregates and has implications for the analysis of inflation developments.

The more precise allocation of products across categories in use since January 2019 is based on the *European Classification of Individual Consumption according to Purpose* (ECOICOP), which guides the allocation of items across the different categories. The ECOICOP introduced a fifth level of disaggregation, which contains a much larger number of categories compared to the previous version of the product classification.⁽³⁾ Since detailed price series are available now at the five-digit classification, the allocation of individual price items to specific special aggregates has been improved, to be more aligned with the definition of the main aggregates and especially with the definition of underlying inflation measures. Given the level of detail required, the availability of series according to the ECOICOP varies across member states.⁽⁴⁾

⁽¹⁾ Prices of individual products consumed by households are grouped into aggregates. The most known aggregates are at a low level of disaggregation (food, energy, non-energy industrial goods and services). At a more detailed level, there are around 30 special aggregates; for details see Eurostat, *European Classification of Individual Consumption according to Purpose adapted to the needs of the Harmonised Indices of Consumer Prices (Metadata)*, RAMON (Reference And Management Of Nomenclatures), Luxembourg, 2019.

⁽²⁾ Both scanner data and web-scraping represent a response to the growing importance of *e-commerce*, which changes pricing landscape (a larger number of varieties, dynamic nature of pricing, etc.) and requires a response in terms of obtaining information on more products and prices. Web-scraping is a process that obtains prices of a specified product(s) from automatically retrieved webpages of criteria-based-chosen vendors at present time. Such a collection can be repeated often with minimal costs, but requires specialists for data processing and system maintenance. For further information see: *New Techniques and Technologies for Statistics 2019*, Brussels, March 2019 (URL: https://ec.europa.eu/eurostat/cros/NTTS2019_en).

⁽³⁾ There are around 300 categories at the fifth level of disaggregation and around 90 at the fourth level of disaggregation, which is the one used in the HICP calculation. For example, the previously used category (4th level) Shoes and other footwear including repair and hire of footwear has been splitted into Shoes and other footwear (with three sub-categories) and a separate category for related services (Repair and hire of footwear). For further details on the new classification of individual products according to the ECOICOP, see Annex I of the Framework Regulation (EU) No 2016/792. However, the ECOICOP HICP excludes some categories (seven) because of collections data problems or non-existence of a harmonised treatment (such as imputed rentals for housing or FISIM).

⁽⁴⁾ While some member states recalculated all series back to 1990s, some other provide data only after 2017 with possible extensions in future. However, that creates a methodological break in euro area series.

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Box (continued)

Table 1:

Weights of selected special aggregates before and from February 2019, Euro area

	Old weights (%)		New weights (%)		Difference (p.p.)	
	2017	2018	2017	2018	2017	2018
HICP (all-items)	1000	1000	1000	1000	0	0
Food, alcohol & Tobacco	195.9	195.7	195.9	195.7	0	0
Processed food, alcohol & tobacco	120.8	121	149.4	149.6	28.6	28.6
Unprocessed food	75.1	74.8	46.5	46.1	-28.6	-28.6
Energy	95.3	97	94.5	96.2	-0.8	-0.8
Non-energy industrial goods	263.1	263.3	264.2	264.4	1.1	1.1
Services	445.7	443.9	445.4	443.6	-0.3	-0.3
EC core (HICP excl. energy and unprocessed food)	829.6	828.2	859.0	857.6	29.4	29.4

Source: Eurostat (2019), table 1, own calculation.

Finally, there is a change in the calculation of the price index for 'package holidays' in Germany, which is an important part of the services inflation sub-index and with changes sizable enough to have a visible impact on euro area HICP (for details see Eiglsperger, 2019a).^{(5) (6)}

The methodological changes introduced represent an improvement in the ability to monitor inflation in a timely manner and with a wider coverage. However, as a result of the changes, the series of prices may become more volatile and larger/additional revisions of price indices (and thus HICP and special aggregates) may be observed. Experts are still discussing how to overcome those difficulties.

The impact of the changes on the series

It is important to notice that there is a structural break in the series, as the aforementioned changes affect published series for the euro area beginning in January 2017.⁽⁷⁾ In addition, the change in the calculation of the price index for package holidays

in Germany, which affects indices back to 2015,⁽⁸⁾ is bundled with the previously described ones.

For illustrative purposes, both series (computed according to the old and new methodologies) for headline and underlying inflation⁽⁹⁾ and both series for unprocessed and processed food are shown in Graphs 1 and 2. In most of the months, the differences between the old and the new series are relatively minor, especially for the overall HICP index (between 0.0 and +0.3 pps. in 2015, and between -0.1 and +0.1 pps. in 2016–2018 for the year-on-year inflation rate). However, this is not always the case, including for underlying inflation, where differences can be up to 0.3 pps. More precisely, the range of changes to the year-on-year rate is between 0.0 and +0.3 in 2015, and between -0.1 and +0.1 pps. over 2016–2018. In particular, there are visible differences in 2015 for both headline and underlying inflation, but not only. Moreover, there are quite visible implications for the profiles of these series. This is true in particular for certain relevant aggregates like underlying (core) inflation as computed by the European Commission (see also Table 1). This bears an impact on the quality of (core) inflation analysis, as the latter requires relatively long series.

⁽⁵⁾ For details see the official press release: Eurostat, 2019, 'Improved calculation of HICP special aggregates and German package holidays methodological change', 22st of February (with updates: 27th of February, 1st of March). Also, two boxes in Eiglsperger, M. (2019): New features in the Harmonised Index of Consumer prices: analytical groups, scanner data and web-scraping, *ECB Economic Bulletin 2*, pp. 53–55 and Eiglsperger, M. (2019): A new method for the package holiday price index in Germany and its impact on HICP inflation rates, *ECB Economic Bulletin 2* (a), pp. 56–59.

⁽⁶⁾ This has a relatively large weight in the consumer price index in Germany, the largest euro area member. In 2019, the yearly weight of this component is around 2.7% in Germany (the ten-year average equals 3.6%), but less than 1.5% (the ten-year average equals 1.6%) for the euro area as a whole

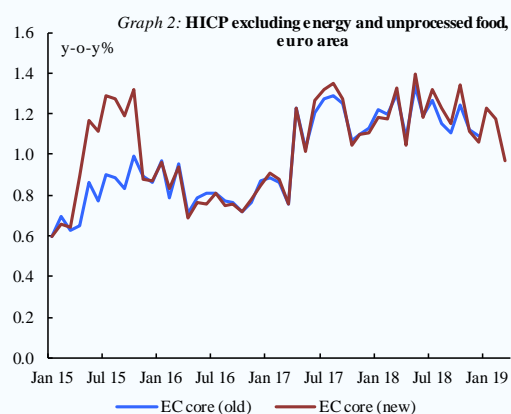
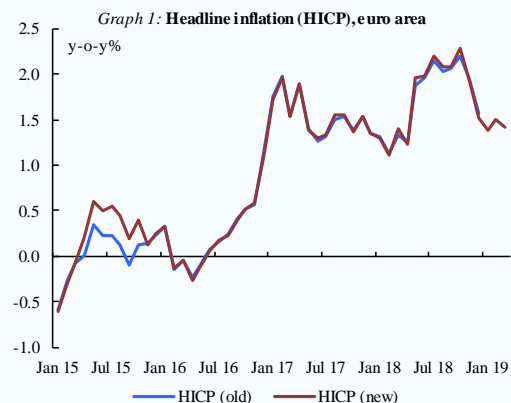
⁽⁷⁾ February 2019 release was the first one with the new series.

⁽⁸⁾ The main difference is in the use of fixed annual weights in a given year instead of changing them through the year as done previously. However, this change requires further estimation and imputations of values.

⁽⁹⁾ Underlying inflation (EC core) is computed as headline inflation (HICP) excluding energy and unprocessed food.

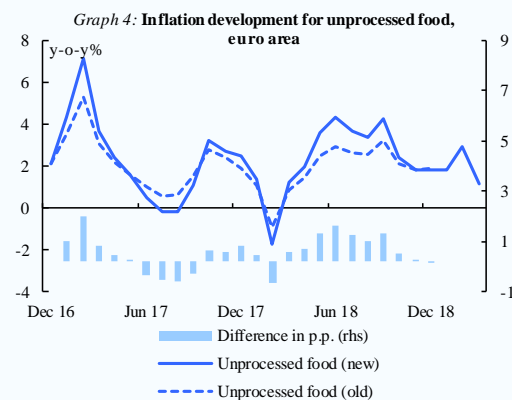
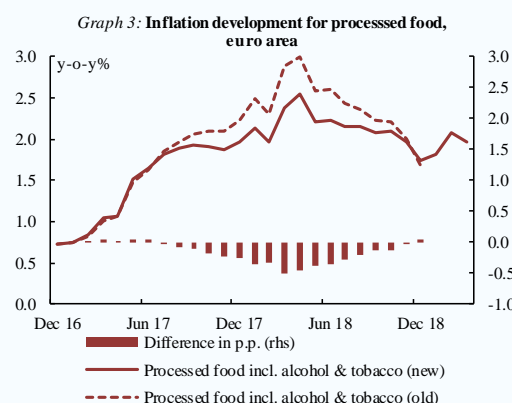
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Box (continued)



As expected, the modifications affect the processed and unprocessed food inflation aggregates. While the effect on the processed food series is between -0.5 and +0.1 pps. (no effect on food, alcohol and tobacco series), that for the unprocessed food series varies between -0.9 and 1.8 pps.

While these fluctuations do not change the overall picture in terms of underlying price pressures, these changes pose some analytical and forecasting challenges. On top of the presence of structural breaks in the series, a different pattern results from an increased seasonal variation, which appears in more pronounced seasonal peaks and troughs linked to the new computation of price indices for summer and winter holidays, or to the already mentioned seasonal effects because of more detailed information. This is compounded by the lack of relatively long time series for the changed categories.⁽¹⁰⁾



⁽¹⁰⁾ For some suggestions see Eiglsperger (2019a).