

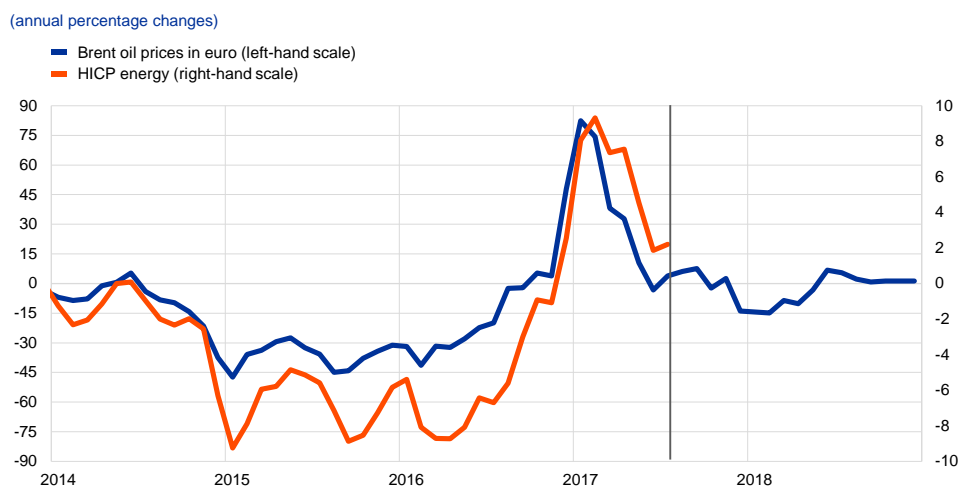
## The role of base effects in the projected path of HICP inflation

**Base effects will exert a strong impact on the projected path for headline HICP inflation in the coming quarters.** The September 2017 ECB staff macroeconomic projections for the euro area foresee a V-shaped path for headline inflation developments in the coming quarters, with a trough of 0.9% in the first quarter of 2018.<sup>32</sup> This profile essentially reflects the impact of base effects on the annual rates of change in energy and unprocessed food prices, which are the most volatile components of HICP inflation.

**The pronounced swing in the annual rate of change in oil prices will be mirrored in energy inflation one year ahead assuming the current path of futures oil prices.** Oil prices increased from early 2016 to February 2017 but then declined up to June 2017. These developments implied large increases in the annual rate of change of oil prices, followed by large declines, with both movements also reflected in HICP energy inflation developments (see Chart A). Looking ahead and assuming that oil prices follow the smooth and moderately upward-sloped path suggested by oil futures prices, this implies that annual rates of change in oil prices and energy inflation will mainly mirror the past swing in oil prices. The pattern of the annual growth rate of oil (and thereby energy) prices will thus be driven by base effects, i.e. “atypical” month-on-month changes in the index 12 months earlier.

### Chart A

#### Oil prices and energy prices



Source: Bloomberg and ECB calculations.

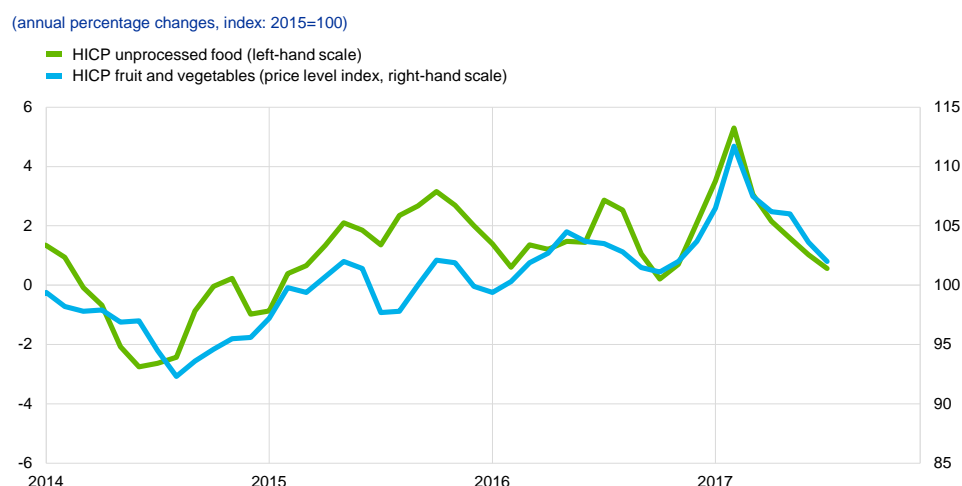
Note: The vertical line separates annual rates of change of oil prices calculated on spot prices from those calculated on futures prices of 14 August 2017, the cut-off date for the assumptions of the “September 2017 ECB staff macroeconomic projections for the euro area”.

**Unprocessed food inflation also recorded a strong temporary increase in the first few months of 2017.** This increase reflected a weather-related upward impact

<sup>32</sup> See the article entitled “September 2017 ECB staff macroeconomic projections for the euro area”, published on the ECB’s website on 7 September 2017.

at the turn of the year on the prices of fruit and vegetables, which represent about 40% of the unprocessed food component (see Chart B). As a consequence of the strong changes in these prices, the profile of unprocessed food inflation will also be affected by negative base effects, in particular in February 2018.

**Chart B**  
Unprocessed food inflation



Sources: Eurostat and ECB calculations.

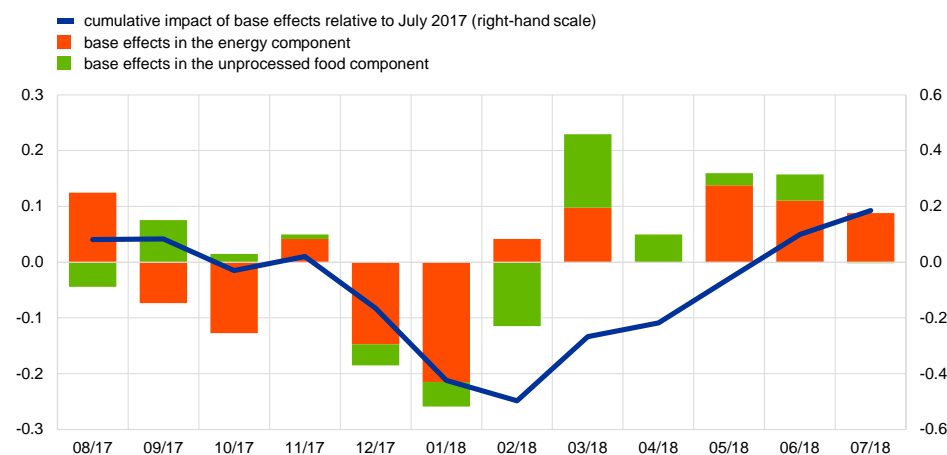
**The combined impact of base effects from the energy and unprocessed food HICP components will lower headline inflation in the first quarter of 2018 but raise it in the following quarter.** The quantification of base effects is subject to a degree of uncertainty, as there is no single way to compute the impact of an atypical month-on-month change. In past analyses reported in the ECB's Bulletin, this impact has been computed by subtracting the actual month-on-month change from the typical movement (i.e. an estimated seasonal effect and a "trend", quantified as the average month-on-month change since the mid-1990s).<sup>33</sup> Chart C shows the estimated contribution of base effects from the energy and unprocessed food components to the change in the annual HICP inflation rate from one month to the next, which will occur over the rest of 2017 and in the first half of 2018. It is estimated that base effects in the energy component will be mostly negative up to January 2018 and positive thereafter, while for the unprocessed food component they will be negative from December 2017 to February 2018 and positive from March 2018. The cumulative impact of such base effects on overall HICP inflation is always shown relative to a specific reference month. For example, relative to the annual headline inflation rate in July 2017, the cumulative negative impact of these base effects on headline HICP inflation in February 2018 will amount to half a percentage point. However, as base effects will be positive in the following months, the cumulative impact on headline HICP inflation will change sign and amount to about plus 0.2 percentage points by July 2018 (see Chart C).

<sup>33</sup> See, for instance, the box entitled "Base effects from the volatile components of the HICP and their impact on HICP inflation in 2014", *Monthly Bulletin*, ECB, February 2014.

### Chart C

#### Contribution of energy and unprocessed food base effects to developments in HICP inflation

(percentage point contributions)



Source: ECB calculations.

**Although the future profile of HICP annual inflation will be affected by base effects, it could also be strongly influenced by unexpected price developments.** When assessing the impact of base effects on likely outcomes of energy, unprocessed food and headline HICP inflation in the period ahead, it must also be borne in mind that future annual rates of inflation will, of course, also depend on actual month-on-month changes in energy and unprocessed food prices in the intervening period.