At the start of 2023, "base effects" are automatically alleviating year-on-year consumer price variations

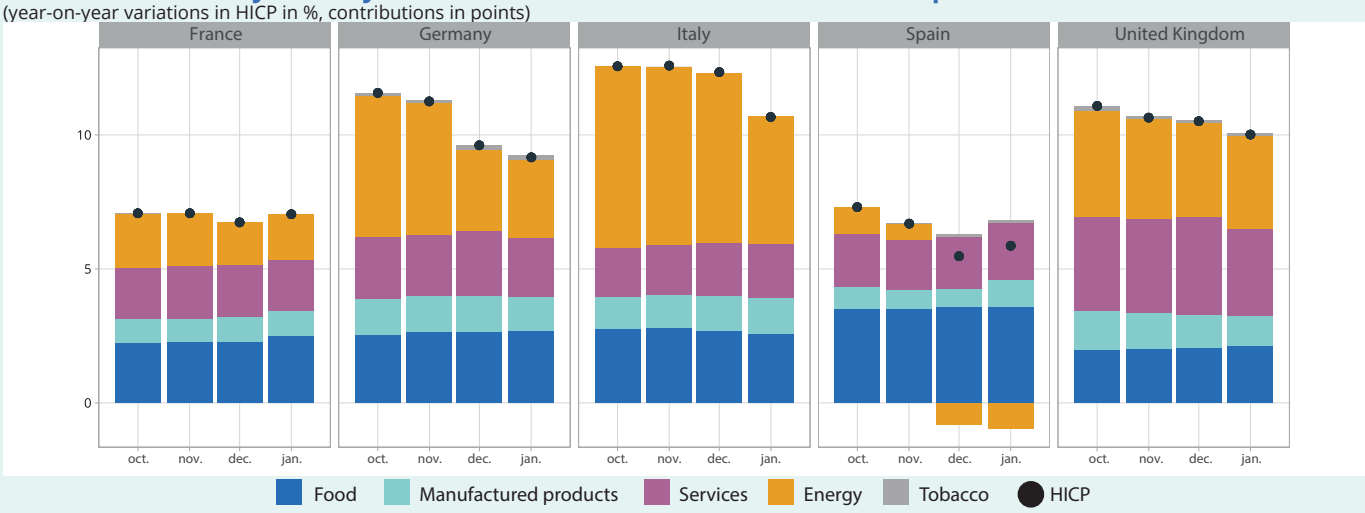
In the Eurozone, but also in the United Kingdom and the United States, the year-on-year variation in consumer prices has fallen back or stabilised in the last few months. This trend is mainly the result of a base effect, as consumer prices for the most part are continuing to increase from month to month but less rapidly than a year earlier. Given the vigorous momentum in prices in 2022, these base effects are likely to be even greater this year and have a significant downward impact on inflation in H1 2023.

Inflation is stabilising or falling in all countries, mainly as a result of more moderate energy prices

In recent months, inflation has remained on a high plateau in the United Kingdom (+10.1% year-on-year in January), it has been lower in France (+7.0% in January for the HICP), and has started to decline in Germany and Italy, after a high point in October, and in Spain it has continued to decline since mid-2022. These trends continue to be linked mainly to energy prices, with contributions from other components remaining fairly stable or up slightly (►**Figure 1**).

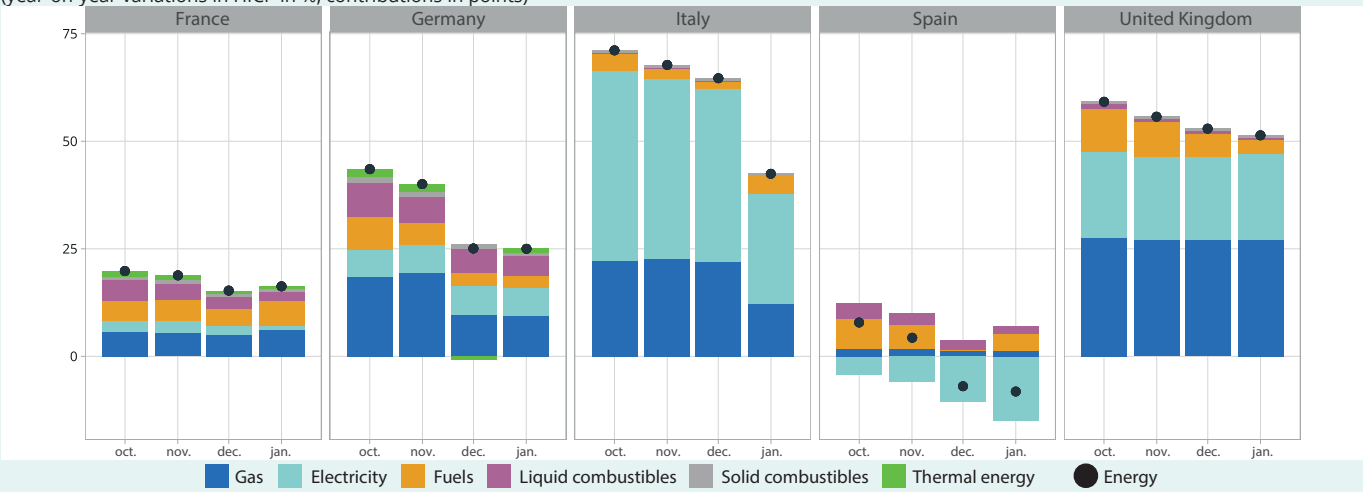
In fact, energy inflation has fallen markedly in the four main Eurozone economies and the United Kingdom in recent months, despite the rise in France in January, partly linked to the revaluation of regulated gas tariffs. The drop in the price of oil resulted in fuel prices weighing much less heavily, or even only marginally, on energy inflation in these five countries at the end of 2022 (►**Figure 2**). This effect seemed to be less pronounced in Italy and France, however, linked to the gradual abolishing of the reduction at the pump.

►1. Breakdown of year-on-year variation in the HICP in the main European economies
(year-on-year variations in HICP in %, contributions in points)



How to read it: in France, in January 2023, the harmonised index of consumer prices increased by 7.0% year-on-year, with food contributing 2.5 points.
Source: INSEE, Destatis, Istat, INE, ONS, INSEE calculations.

►2. Breakdown of year-on-year variation in the HICP for energy in the main European economies
(year-on-year variations in HICP in %, contributions in points)

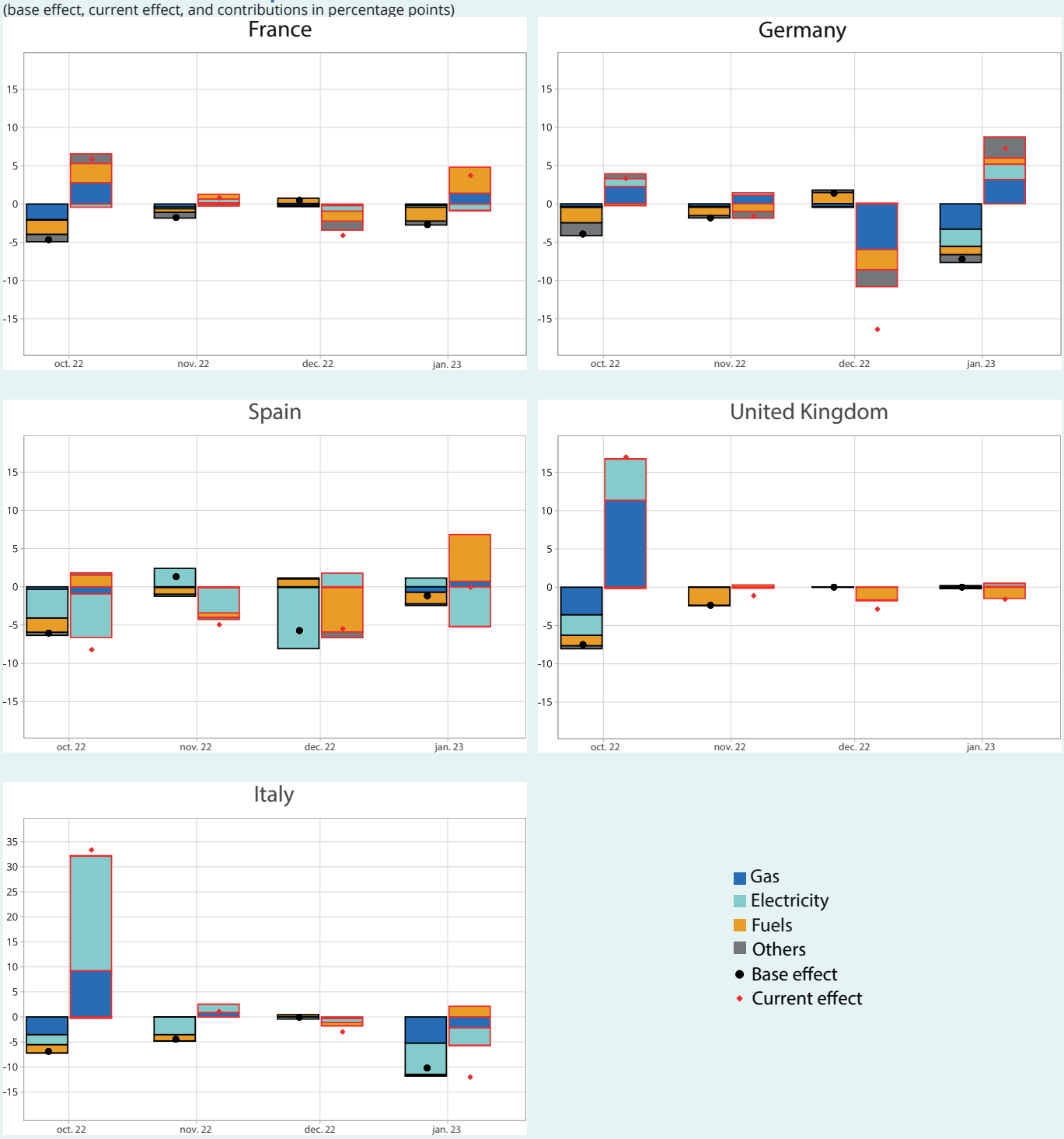


How to read it: in France, in January 2023, the HICP energy component increased by 16.3% year-on-year, with gas contributing 6.1 points.
Source: INSEE, Destatis, Istat, INE, ONS, INSEE calculations.

Specific developments in the different countries have also contributed to the drop in energy inflation in recent months. In Germany, the government paid part of the gas bills of German households in December, bringing down the contribution of the consumer price of gas to energy inflation significantly. Although this measure came to an end in January, the contribution of gas to energy inflation continued to decline: the weight of gas in the German HICP basket of goods was halved in 2023, bringing down its contribution to headline inflation by the same amount. In Spain, the consumer price of electricity fell sharply between September and November linked to the fall in the price of gas used in electricity production. Although the price of electricity rose again in

►3. Contribution to the year-on-year variation in the energy HICP of its components by base effect and current effect in European countries

(base effect, current effect, and contributions in percentage points)



Note: the calculation of the contributions of the different types of energy to the base effect and the current effect is based on an approximation that is valid only for for small variations. Given the size of some monthly price variations, this could explain why the sum of the contributions does not correspond exactly to the base effect or the current effect. However, this approximation does not negate the qualitative messages that come out of the analysis.
How to read it: the base effect linked to the change in the price of fuel contributed -1.8 points to year-on-year variation in the HICP energy component. The contribution of the current effect of the price of fuel was 3.4 points.
Source: INSEE, Destatis, Istat, INE, ONS, INSEE calculations.

December, it continued to drive energy inflation sharply downwards, due to its very strong momentum of the previous year ("base effect", see below). In Italy, the contribution of the price of electricity has also tended to ease slightly since the sharp rise recorded in October, in the wake of the continuous decline in the price of gas since the autumn. In January, the prices of regulated energy products fell, accounting for the substantial decline in energy inflation and headline inflation.

In the United Kingdom, inflation again fell slightly in January, from 10.5% to 10.1%, due to a smaller contribution from fuel prices and lower prices for transport and catering services.

In the four main Eurozone economies, harmonised inflation remained high in February, driven mainly by non-energy components. Thus it was up slightly in Germany (9.3% after 9.2%), France (7.3% after 7.0%) and Spain (6.0% after 5.9%), but fell back in Italy (9.9% after 10.7%, according to the provisional estimate). The detailed figures are not yet all available, but qualitative analyses based on national publications are possible. In all four countries, changes in food prices contributed to the increase in inflation, while fuel prices had the opposite effect. In addition, electricity prices increased in France with the revision of the regulated tariff and in Spain due to rising prices, but they fell in Italy for the second consecutive month. Lastly, services pushed up inflation in France, Germany and Italy.

Base effects contribute automatically to bring down the year-on-year variation in consumer prices, even if they often continue to rise

Apart from Spain, where the HICP energy component has been falling continuously since mid-2022, the decline in energy inflation does not mean that energy prices are falling in the different countries. For the year-on-year variation to decline, prices must increase less quickly, or decrease more strongly, than a year earlier.

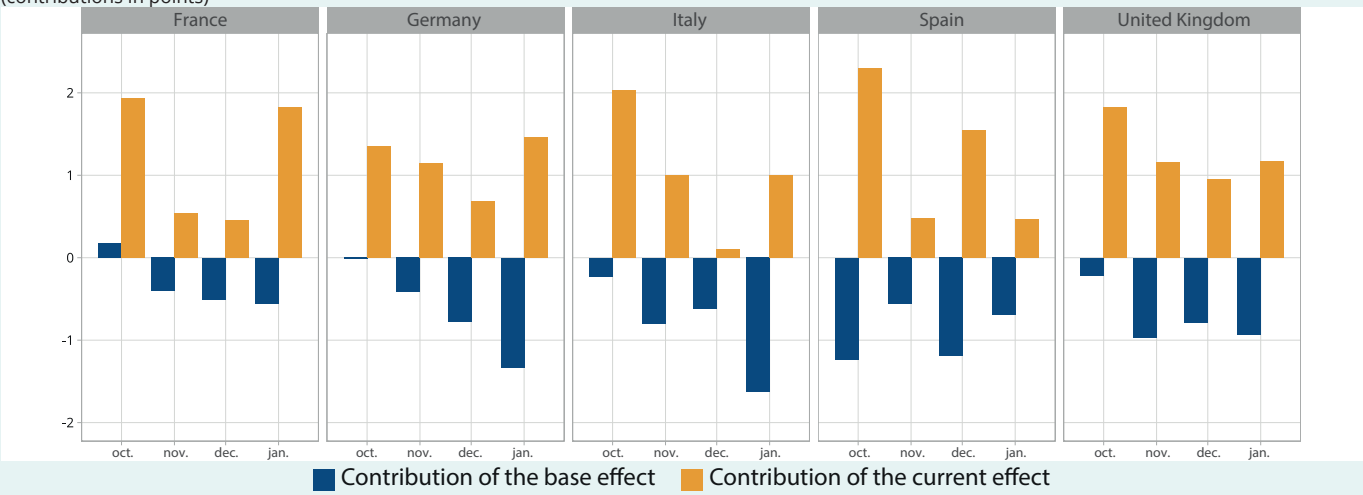
Since inflation is measured as the year-on-year rate of change in the HICP, its change from month to month depends not only on variations contemporary with prices ("current effect") but also on their variations a year earlier ("base effect", ▶ **Box 1**). A sharp rise in prices a year earlier will therefore have a downward impact on contemporary inflation (negative base effect). Thus in Spain, the price of electricity increased in December 2022 compared to November (+7%, i.e. a positive current effect), but this increase is smaller than that observed in December 2021 (+20%, i.e. a strong negative base effect). Ultimately, the year-on-year variation in electricity prices declined in December in Spain, with the negative base effect outweighing the current effect. The base effect and the current effect are not always in opposition, they may both work in the same direction: for example, electricity prices rose in October 2021 in Spain, resulting in a negative base effect on inflation in October 2022. The contribution of the current effect is also negative due to the fall in the price of electricity.

In Spain, the drop in energy inflation in recent months is therefore partly the result of base effects, especially on electricity in October and December, given its upward movement a year earlier. This was also the case in Italy in January 2023, and in Germany, due to the sharp increases in gas and electricity prices at the beginning of 2022, which automatically pulled down the year-on-year shift in energy prices in January 2023. In France and the United Kingdom, base effects appear to be slightly smaller in scale, except in October for the United Kingdom, when the strong base effect reflects the half-yearly revaluation of gas and electricity prices.

Base effects have also had an impact on food inflation in recent months, pulling it down overall in the five countries, but to varying degrees (▶ **Figure 4**). At the end of 2021, the dynamics of food prices were fairly similar in all five countries. On the one hand, in Spain and the

▶4. Base and current effects on food inflation in the main European economies

(contributions in points)



How to read it: in France, in January 2023, the base effect linked to the change in food prices contributed -0.6 points to year-on-year variation in the HICP food component. The contribution of the current effect of food prices was 1.8 points.
Source: INSEE, Destatis, Istat, INE, ONS, INSEE calculations.

United Kingdom, these prices increased sharply from the end of 2021, resulting in significantly negative base effects on food inflation at the end of 2022-beginning of 2023. In Italy and Germany, on the other hand, the rise in food prices started later then became more significant in January 2022, leading to base effects that gradually gained in strength, thus toning down the momentum of food inflation at the beginning of 2023. Lastly, in France, the momentum of food prices started out more moderately, generating base effects that were more limited in scale at the end of 2022-beginning of 2023.

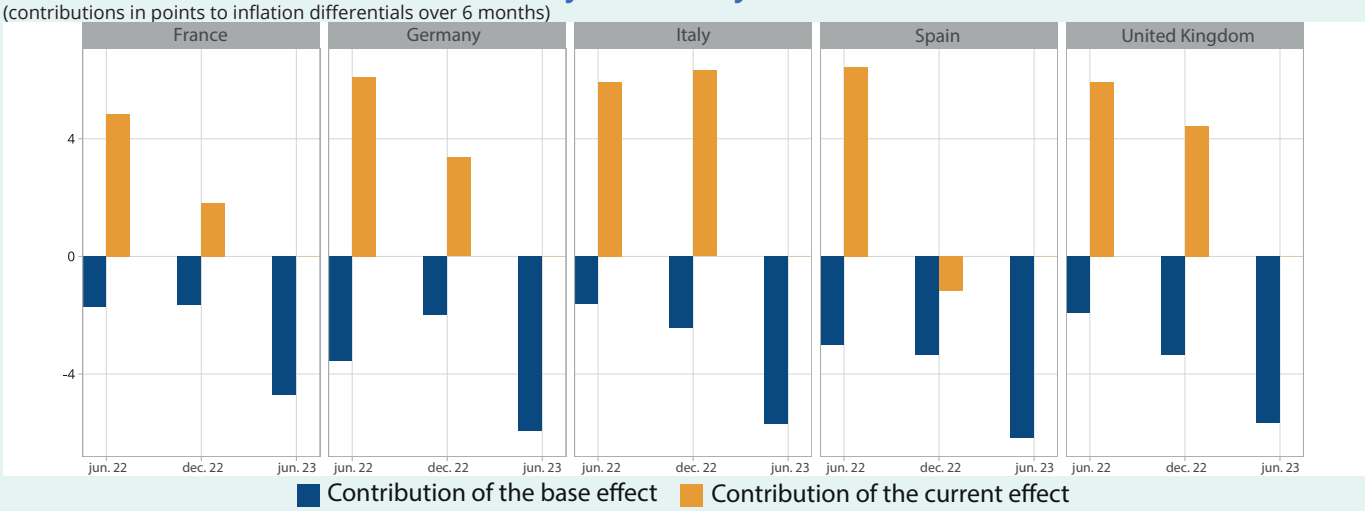
In most countries, headline inflation in H1 2023 should be automatically cushioned by base effects

At the level of headline inflation, base effects helped significantly in tempering change in inflation during 2022. This was particularly the case in H2 2022 in Spain and the United Kingdom, where prices had already started to rise substantially the previous year. However, this effect was even more visible in the United States, where the decline in inflation since summer 2022 was primarily the result of a base effect (►**Box 2**). In France, Germany, Italy and the United Kingdom, current effects were of such magnitude that inflation rose between H1 and H2 (►**Figure 5**). But in Spain, the current effects were negative in Q2 due to a significant drop in the price of energy products, which magnified the decline in inflation.

Given the sharp rise in consumer prices in 2022, base effects are expected to be even more pronounced in H1 2023 than they were in the previous half-year. This is still the case in Spain and Germany, and also in Italy and the United Kingdom, however in France, these base effects remain more moderate. ●

Jules Baleyte, Narjis Benchekara, Hugues Ravier

►5. Headline inflation should be automatically cushioned by base effects in H1 2023
(contributions in points to inflation differentials over 6 months)



How to read it: in France, base effects cumulated over 6 months contributed -1.6 points to the year-on-year variation in consumer prices between June and December 2022. The contribution of cumulated current effects was +1.8 points.
Source: INSEE, Destatis, Istat, INE, ONS, INSEE calcuations.

Box 1. Breakdown of the variation in inflation from one month to the next between the base effect and the current effect

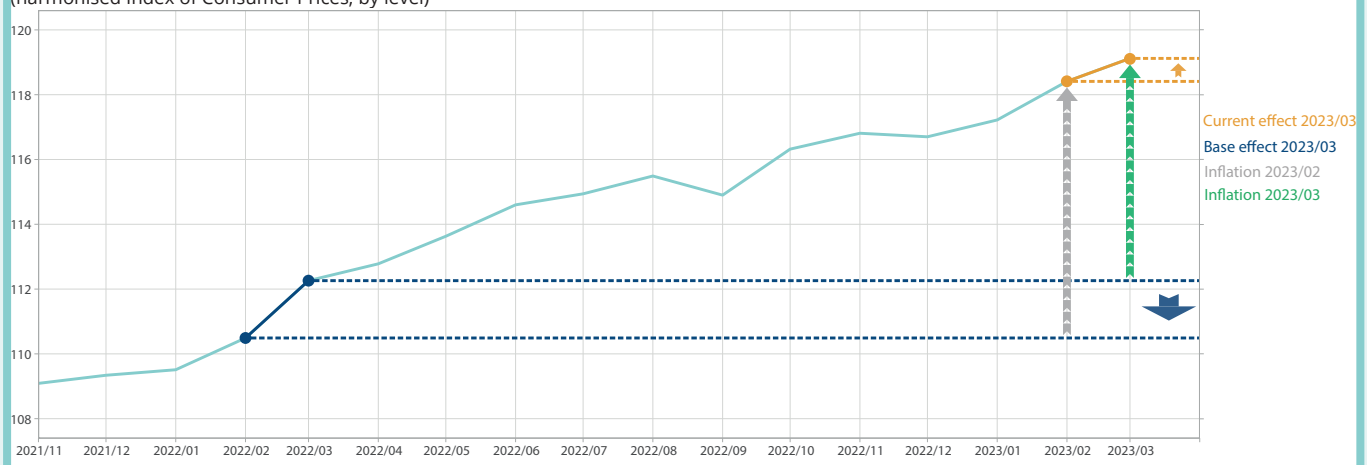
For a given month M and a given year A, inflation, defined as the year-on-year rate of change in the HICP, can be approached using the following breakdown (►**Figure 6**):

Inflation in month M of year A ≈ inflation in month M-1 of year A
+ monthly variation in the IPCH in month M of year A
- monthly variation in the IPCH in month M of year A-1

The monthly variation in the HICP in month M of year A is then called the "current effect". The opposite of the monthly variation in prices between M and M-1 of year A-1 is called the "base effect". In the change in inflation from one month to the next, the current effect corresponds to the part of this change that is due to the contemporary variation in prices, while the base effect corresponds to the part due to the price change that occurred a year earlier. These price changes 12 months earlier have an impact on the profile of the year-on-year variation in the HICP, since they determine the "starting point" for this variation.

►6. Graph of inflation (year-on-year rate of change in the HICP), the base effect and the current effect for March 2023, case of France

(harmonised Index of Consumer Prices, by level)



Note: inflation, base effect and current effect are defined as variations in the HICP between two dates. In this graph, it is rather the differences between two dates that are shown for illustration. Data for March are forecasts.
How to read it: in France, in March 2023, the harmonised index of consumer prices is expected to increase compared to February 2023. The current effect in March 2023 (yellow arrow) is therefore expected to be positive. The HICP also rose between February 2022 and March 2022, the base effect for March 2023 (blue arrow) is therefore negative. As the base effect has a greater absolute value than the current effect, inflation in March 2023 (green arrow) is likely to be less than inflation in February 2023 (green arrow).
Source: INSEE, INSEE calculations.

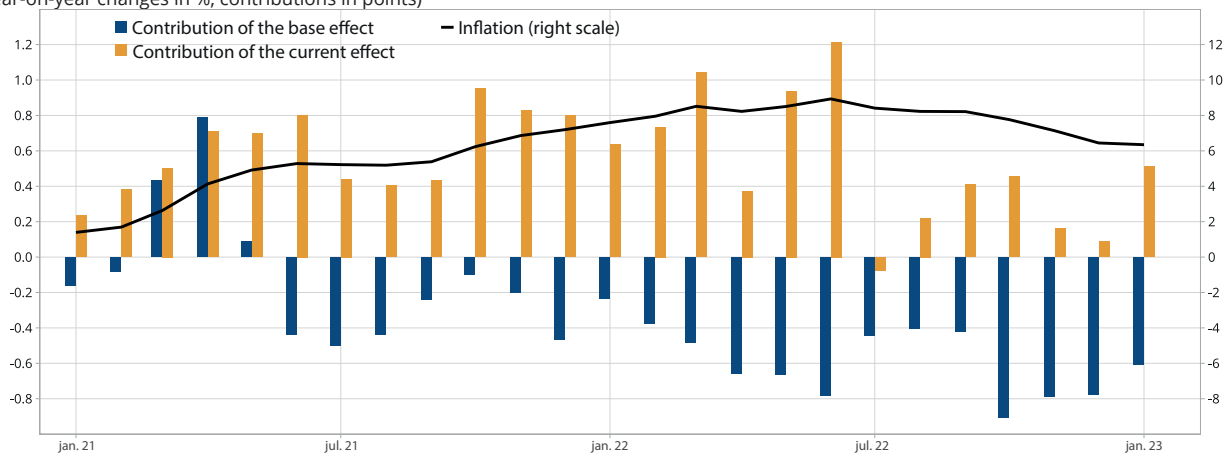
Box 2. In the United States, the decline in inflation stems from base effects

In the United States, inflation increased rapidly from 2021: the year-on-year variation in consumer prices increased from 1.4% in January 2021 to 7.5% a year later, driven by a significant rise in prices from month to month. This increase in inflation in 2021 resulted in 2022 in a significant negative contribution by base effects to the year-on-year variation in the consumer price index. In H1 2022, the continuing rise in prices month to month (positive current effect) outweighed the negative contribution of the base effect, leading inflation to continue to rise. However, this increase in inflation eased compared to 2021, even when the monthly increase in prices was greater, precisely because of the negative base effects.

From the summer of 2022, the year-on-year variation in consumer prices has fallen back, dropping from 9.1% in June to 6.4% in January 2023. This decline was due exclusively to the negative contribution of base effects; in fact, consumer prices, for their part, continued to rise month on month, but more slowly, resulting in positive current effects but which were gradually diminishing.

▶7. The decline in US inflation is the result of negative base effects

(CPI year-on-year changes in %, contributions in points)



How to read it: in January 2023, the consumer price index increased by 6.4% year-on-year, or 0.1 points less than in December 2022. The contribution of the current effect to this variation was 0.5 points, while the contribution of the base effect was -0.6 points.
Source: Bureau of Labor Statistics, INSEE calcuations.