

How should price changes be measured during lockdown?

Since the health crisis began, inflation has declined in the wake of falling petroleum product prices.

Inflation is a composite measure of price changes. It is built on the basis of a fixed structure of consumption, that observed in the previous year. However, the health crisis has completely disrupted this structure, resulting notably in a drop in the consumption of petroleum products and transport services, contributing to a decline in inflation, and an increase in the consumption of food products. If the change in prices had been measured from February to May, taking into consideration only what was consumed during this period, then it would have been 0.4 points higher. From May 2019 to May 2020, the change in the prices of products consumed during lockdown would have been 1.6%, against 0.4% for the basket consumed before lockdown.

By convention, the consumer price index in 2020 measures the change in prices for an average basket, representative of consumption observed in 2019, in other words, a very different basket from that consumed by households during lockdown.

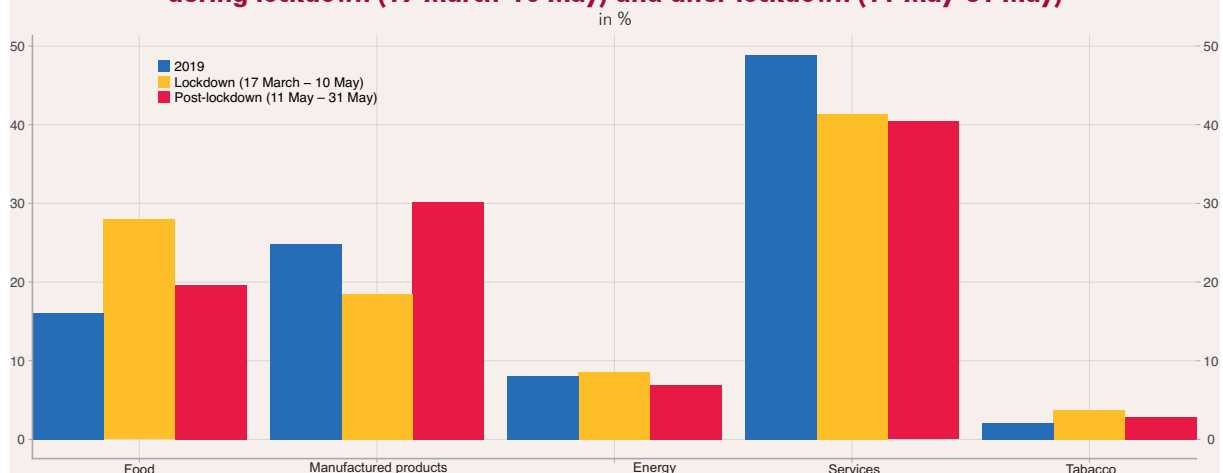
The consumer price index (CPI) is the main instrument used to measure inflation. So that only price changes are measured (and not changes in product quality or in the structure of consumption), the price of a basket of products, fixed over the course of a year, is monitored month after month. This basket is representative of household consumption as observed over the previous year (2019 for the measurement of the 2020 CPI). Price index theory debates the correct reference to take into account to determine this basket and

thus calculate price changes between years A and A-1. Should the previous period be considered (year A-1), thus using a Laspeyres index, or the current year (year A), which is a Paasche index, or an average of the two (Fisher index)?

Although in normal times the Laspeyres index is in theory likely to produce greater changes than the Paasche index,¹ this issue is usually of minor importance since the structure of household consumption changes very slowly from one year to the next: by updating the consumption basket every year and chain-linking consumer price indices, the estimate obtained for inflation always proves satisfactory, irrespective of the index selected. As a result, Laspeyres indices are generally used to calculate consumer price indices: as household consumption is usually known after the end of the

1. In general, when the price of a product declines, its consumption increases; therefore, the Laspeyres index gives less weight than the Paasche index to products whose price declines and it is consequently higher than the Paasche index. During lockdown, however, price changes and consumption did not follow this logic: in particular, the prices of fuel and transport collapsed because demand fell.

1 - Structure of consumption by major group, in 2019, during lockdown (17 March-10 May) and after lockdown (11 May-31 May)



How to read it: in 2019, food accounted for 16% of household consumption; this proportion was 28% during lockdown and 20% since the end of lockdown. Lockdown covers the period 17 March to 10 May; post-lockdown covers the period 11 May to 31 May.

Source: INSEE

month, for practical reasons of data availability, only previous consumption can be used to calculate a composite price index at the end of the month.

However, in the midst of the health crisis, the structure of household consumption has been completely disrupted as a result of the lockdown measures in place. As a result of the nowcasting exercises carried out by INSEE during this period, it has been possible to estimate this radical transformation in consumption almost in real time (*Graph 1*).

While services and manufactured products both seem to have seen their share in household consumption tumble by about 7 points during lockdown, the share of food appears to have increased by around 12 points. The share of tobacco seems to have risen slightly and the share of energy is stable (with the drop in the share of petroleum products in consumption offset by an increase in the weight of electricity and gas).

In more detail, entire sections of consumption disappeared because several points of sale were not authorised to open from the very beginning of lockdown: cinemas, theatres, festivals, dine-in restaurants, etc.

These transformations are partly temporary: the latest nowcasting exercises since the end of lockdown show a consumption structure approaching that observed in 2019, with some catch-up trends, notably a greater proportion of manufactured products than in 2019.

As a result, it is perhaps difficult to produce a consumer index with a fixed basket when the products in this basket are temporarily no longer on sale or

their weight in the basket has collapsed. INSEE has nevertheless followed international standards in this matter:² the 2019 structure of consumption was retained for calculating the consumer price index, and prices that could not be observed, due to lack of consumption, were imputed either according to price changes observed for similar consumption segments, or from the overall index, or, in rare cases, by carrying over the last price observed.

This decision to use the 2019 consumption structure, which is similar to what other countries are doing, gives us an idea of the inflationary or deflationary tensions in the economy. However, it may be far removed from what households have been experiencing, as they may have consumed little or none of certain types of product, especially those where there has been a price downturn.

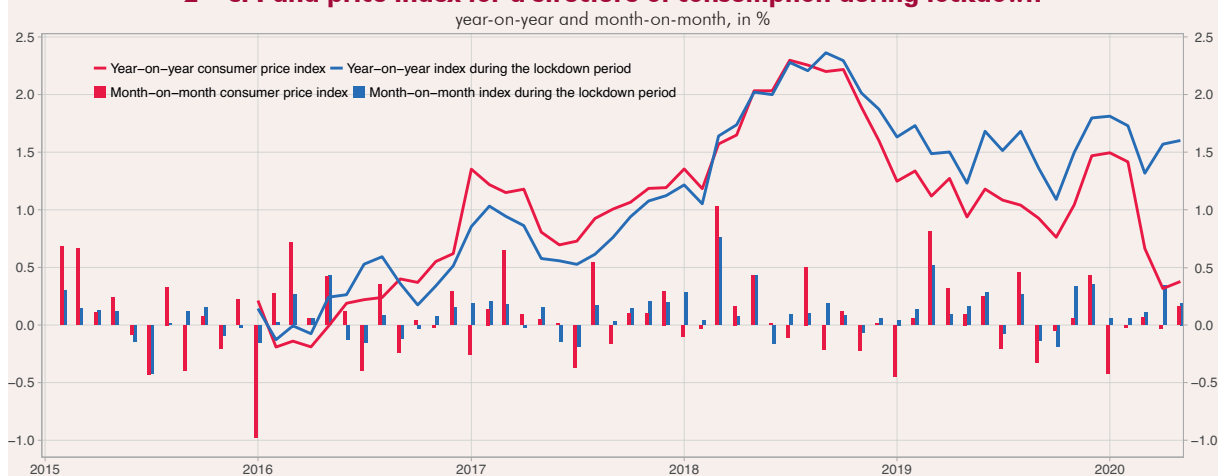
If inflation were measured based on the basket of products consumed during lockdown, price changes from February to May would have been 0.4 points higher.

Price changes measured from a consumption basket of consumers in lockdown are slightly more dynamic than the change in the CPI: from February to May, prices would seem to have increased by only 0.2% according to the CPI, but by 0.6% using the lockdown consumer basket (*Graph 2*). During the three months, the fall in the price of petroleum products, which has a lesser weighting in the lockdown consumer basket, contributed to lowering the CPI more than the index based on the lockdown basket (*Graph 3*).

The difference between the two indices is more pronounced during April: in April, food prices were particularly dynamic, however, they accounted for

2. Eurostat, guidance on the compilation of the HICP in the context of the Covid-19 crisis, April 2020: https://ec.europa.eu/eurostat/documents/10186/10693286/HICP_guidance.pdf

2 – CPI and price index for a structure of consumption during lockdown



Scope: Metropolitan France

How to read it: if the structure of consumption since 2015 was that observed during lockdown, the month-on-month price change would have been +0.2% in May 2020, as was also observed with the structure of consumption used for the CPI (2019 consumption structure for the 2020 indices, structure of year A-1 for year A). The year-on-year price change would be 1.6% in May 2020 against 0.4% observed with the CPI.

Source: INSEE

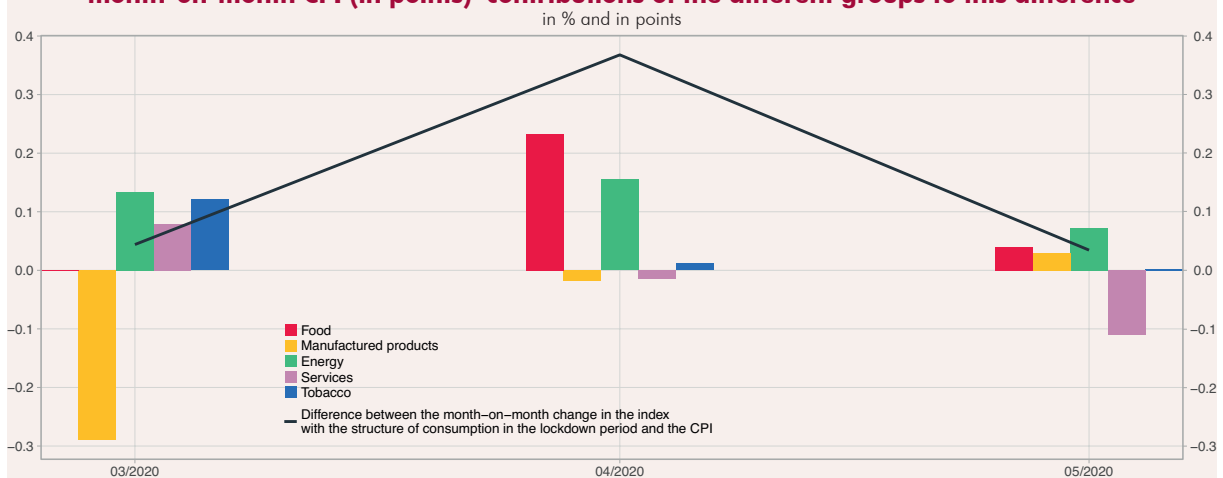
a greater proportion of the lockdown consumer basket. In May, the slowdown in these food prices and the buoyancy of the prices of services, which were consumed less during lockdown, limited the difference between the two indices. In March, the dynamism of the prices of manufactured products, especially with the end of the sales, affected the CPI more than the lockdown basket index because these products were consumed less during lockdown.

There is a limitation in the analysis of these monthly changes: the indices are not adjusted for seasonal variations and given the basket's different structure, seasonality affects monthly variations in the two indices differently (the end of the sales period, a

seasonal phenomenon, does not have the same effect on the two indices, as noted above).

In order to neutralise these seasonal effects, the year-on-year price change between the period preceding lockdown and May 2020 can be considered: in February, the year-on-year change in the CPI was 1.4% while for the lockdown basket it was 1.7%; in May, the year-on-year change in the CPI had fallen back to 0.4%, a drop of 1.0 point. At the same time, the year-on-year change in the lockdown basket index declined by only 0.1 point, to 1.6%. Taking seasonality into account therefore leads to more marked differences between the two indices (difference of 0.9 points from February to May). ■

3 – Difference between month-on-month values for the lockdown basket price index and month-on-month CPI (in points) contributions of the different groups to this difference



Scope: Metropolitan France

How to read it: in April 2020, the month-on-month value for the lockdown basket index is 0.4 points higher than for the CPI. Food accounts for 0.2 points of this difference.

Source: INSEE