

Article

Demand and supply factors in CPI inflation, UK: 2021 to 2022

Insights into the effects of the re-opening of economies and supply bottlenecks on Consumer Prices Index (CPI) inflation in 2021 and 2022.

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1 . Main points

- Consumer price inflation reached 40-year highs in late 2022, including the effects of the re-opening of economies in 2021 and bottlenecks forming in the global economy.
- Food and energy price inflation explains around half of the 9% increase in consumer prices in 2022, but inflationary pressures have not only been confined to food and energy prices, as core inflation increased by its highest rate of price inflation since 1992.
- Items affected by the re-opening of economies explains around a sixth of Consumer Prices Index (CPI) inflation in 2022, while items affected by supply bottlenecks explain a 10th; these goods and services have experienced higher inflation in 2022 than their historic trends.

2 . Overview

Consumer price inflation was running at 40-year highs in the UK in late 2022, primarily reflecting the effects of higher tradable goods and energy prices. One cause of this was the re-opening of economies in 2021, including large changes in the level and composition of spending ("demand"), while another is that bottlenecks had formed in the global economy ("supply"). This led to some imbalances in product and labour markets, pushing up consumer price inflation. Energy prices also increased markedly in 2022, particularly gas prices, largely in response to the conflict in Ukraine.

One of the challenges has been in unpicking the underlying causes of this increase in consumer price inflation in the UK. We replicate recent research on [Bottlenecks and monetary policy by the European Central Bank \(ECB\)](#), where we look to classify those goods or services that have been particularly affected by the reopening of the economy or supply bottlenecks. This is carried out at the 85 Consumer Prices Index (CPI)-class level. We then track these contributions to show the impact of these items on headline UK CPI movements in recent years. This includes how these price movements compare with the more "normal" times of 2012 to 2019, where CPI inflation was at the 2% inflation target over this period. This provides some indication of the extent to which these inflationary pressures have built lately.

For the purposes of this research, we take these ECB classifications at face value which are then imposed on the UK. However, it is important to highlight that there are uncertainties in this exercise.

A product has been classified as being particularly affected by either the reopening of the economy or supply bottlenecks, which is kept the same throughout the period so we can track how these prices have evolved. However, reopening the economy and supply bottlenecks have had wide-ranging impacts on many products. Given the impacts of Brexit, the coronavirus (COVID-19) pandemic, and the recent energy price shock, the inflationary dynamics have likely been more complicated, including for these products.

The UK is experiencing a similar energy price shock to Europe, but the UK also has a tighter labour market. This might reflect the fall in labour supply in the UK, particularly given the effects of early retirement and long-term sickness on inactivity in the UK. As such, the ECB classifications might not fully reflect these supply bottlenecks in the UK.

The energy intensity of CPI reflects that there are also indirect effects of higher energy prices, which demonstrates how much energy is an intermediate input into their production. It might be that some of these items affected by the reopening of the economy or supply bottlenecks are also more energy intensive. Alternatively, it might be that some of these supply and demand effects have begun to fade, but indirect energy costs are now playing more of a role.

Despite the uncertainties, the transparency of this research provides some new insights into understanding better how these changes in demand and supply might have affected UK CPI inflation in recent years.

3 . Increases in underlying core inflation and inflationary pressures

Food and energy have been the largest contributors to Consumer Prices Index (CPI) inflation over the last year, which have largely reflected the effects of the conflict in Ukraine on energy and commodity prices. Food inflation rose to 16.8% in the year to December 2022, while prices for household energy (gas, electricity, and other fuels) increased by 88.7% over the same period. The contributions of food and energy explain around half of headline consumer price inflation (Figure 1). This is in sharp contrast to the experience of the period of January 2012 to December 2019, where CPI inflation was around its 2% target.

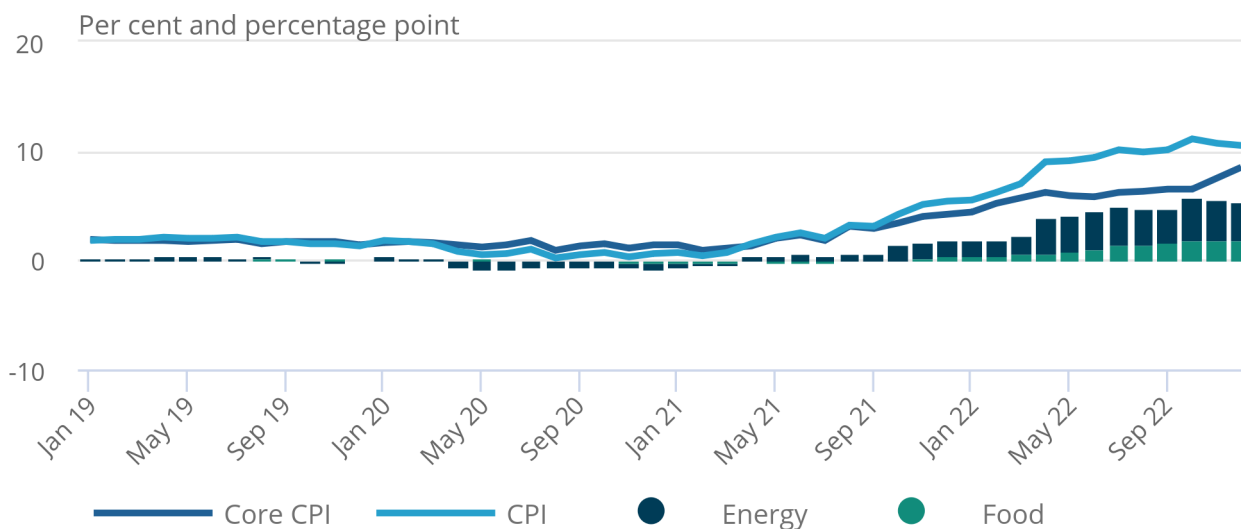
However, inflationary pressures have not only been confined to food and energy prices, as there has been a broadening of some of these price increases. [Core inflation](#) is one proxy of the underlying rate of inflation in an economy, removing some of the more volatile price movements which typically contain less information about where inflation might be in the future. Figure 1 shows core inflation (which excludes energy, food, alcohol, and tobacco) increased by 8.5% in the 12 months to December 2022. This is its highest rate of price inflation since 1992, highlighting there are broader inflationary pressures in the economy.

Figure 1: Food and energy prices have been the largest contributors to Consumer Prices Index (CPI) inflation this year

12-month rates of CPI and core inflation and contributions from food and energy to CPI inflation, January 2019 to December 2022, UK

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12-month rates of CPI and core inflation and contributions from food and energy to CPI inflation, January 2019 to December 2022, UK



Source: Consumer price inflation from the Office for National Statistics

Notes:

1. "Core" inflation excludes energy, food, alcohol, and tobacco.

4 . The role of demand and supply factors

Supply and demand imbalances in product and labour markets have been much larger than usual because of the coronavirus (COVID-19) pandemic. The "reopening of the economy" captures those goods and services that are most likely to have been affected by shifts in consumer demand in response to coronavirus restrictions in place - for example, recreation and culture and clothing and footwear. The goods and services under "supply disruptions" are those where bottlenecks in product and labour imbalances have been particularly acute, such as for furniture and household equipment.

Figure 2 shows that those items affected by these demand and supply factors have made significant contributions to the 12-month rate of Consumer Prices Index (CPI) inflation over the last year. They accounted for an average of 57% of the inflation from core components in 2022, despite accounting for only 39% of the core components of the CPI inflation basket by weight. This is consistent with the experience in the euro area (Figure 3), where these products accounted for 54% of the inflation from core components on average in 2022, and 17% of total CPI inflation.

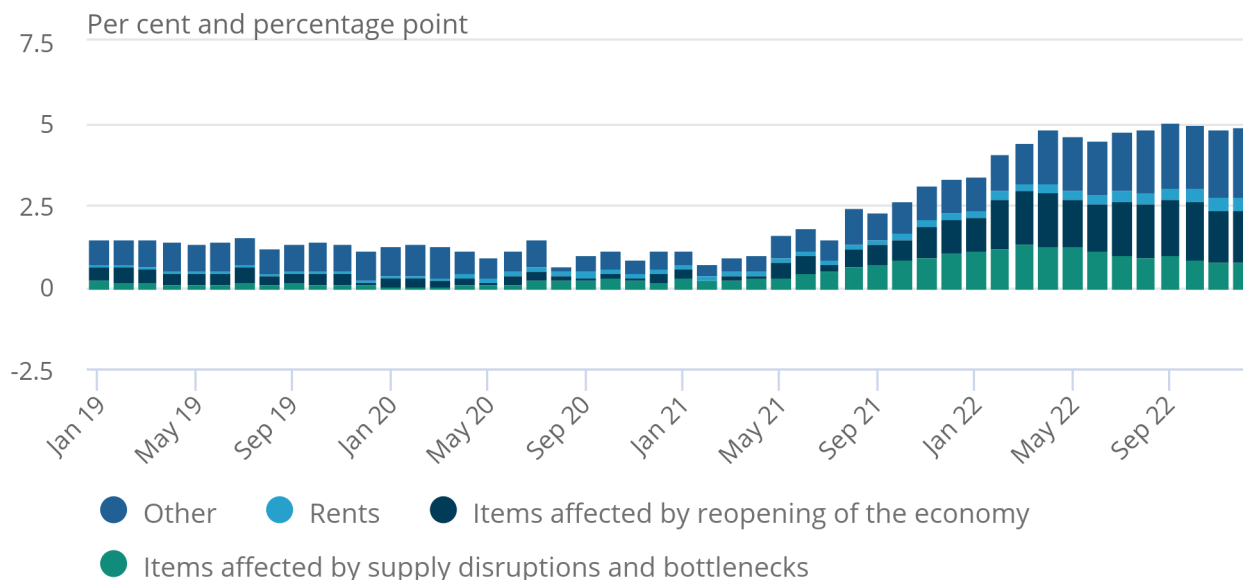
Those items affected by supply factors also picked up around the same time, consistent with the experience of the euro area. This was reported as "the high level of inflation excluding food and energy observed recently has been driven mainly by supply disruptions and bottlenecks and by effects related to the reopening of the economy" in [Recent inflation developments in the United States and the euro area - an update](#).

Figure 2: Supply and demand factors have been pushing up UK inflation since the coronavirus (COVID-19) pandemic

Contributions to the 12-month rate of Consumer Prices Index (CPI) from core components, UK, January 2019 – December 2022

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Contributions to the 12-month rate of Consumer Prices Index (CPI) from core components, UK, January 2019 – December 2022



Source: Consumer price inflation from the Office for National Statistics

Notes:

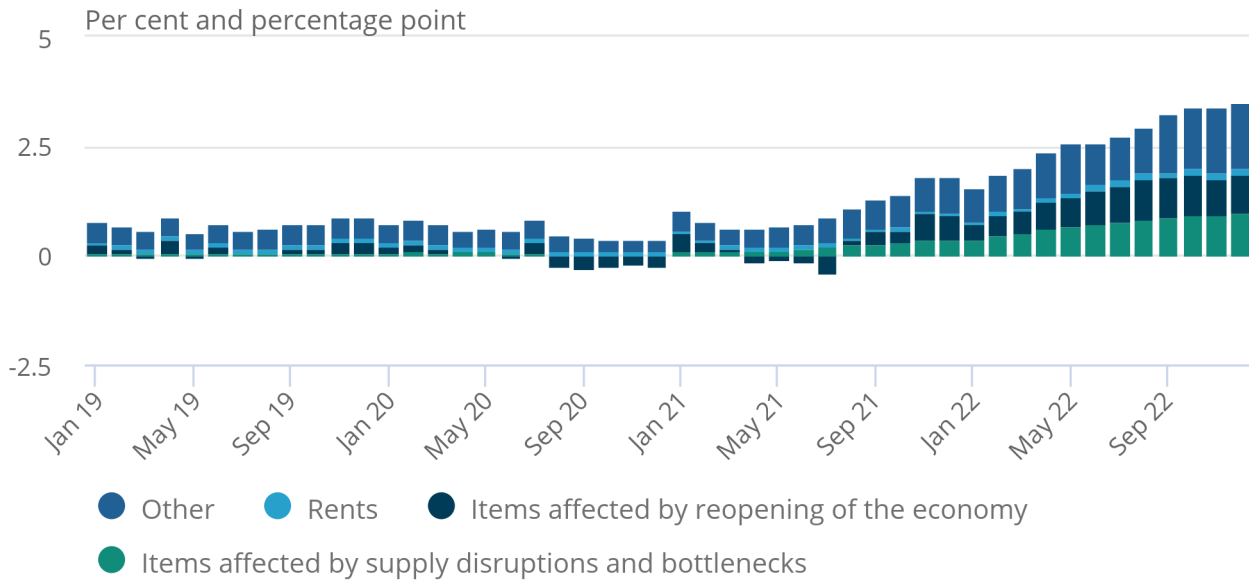
- Contributions are to headline CPI inflation, not core CPI inflation.
- Items affected by the reopening of the economy comprise clothing and footwear; recreation and culture; recreation services; hotels and motels, and domestic and international flight prices. Weight: 219 parts per thousand.
- Items affected by supply disruptions comprise new motor cars, second-hand motor cars, spare parts and accessories for personal transport equipment, and household furnishings and equipment (including electronics). Weight: 82 parts per thousand.
- Rents comprise actual rents paid by tenants. Weight: 87 parts per thousand.
- Other comprises the remaining components of core CPI. Weight: 379 parts per thousand.

Figure 3: Supply and demand factors have also made increased contributions to euro area inflation since the coronavirus (COVID-19) pandemic

Contributions to the 12-month rate of Consumer Prices Index (CPI), euro area, January 2019 to December 2022

Figure 3: Supply and demand factors have also made increased contributions to euro area inflation since the coronavirus (COVID-19) pandemic

Contributions to the 12-month rate of Consumer Prices Index (CPI), euro area, January 2019 to December 2022



Source: Eurostat

Notes:

- Contributions are to headline CPI inflation, not core CPI inflation.
- Items affected by the reopening of the economy comprise clothing and footwear, recreation and culture, recreation services, hotels and motels, and domestic and international flight prices.
- Items affected by supply disruptions comprise new motor cars, second-hand motor cars, spare parts and accessories for personal transport equipment, and household furnishings and equipment (including electronics).
- Rents comprise actual rents paid by tenants.

5 . The reopening of the economy

Coronavirus (COVID-19) restrictions were in place for periods through 2020 and 2021, particularly on the hospitality and retail industries in the UK. Border restrictions were also in place, which had an impact on international travel. As these restrictions were lifted, there was an increase in demand for these goods and services. The components considered to be particularly affected by the reopening of the economy include clothing and footwear, recreation and culture, accommodation services, and air fares. As restrictions lifted and the economy began to reopen, the contributions from these components rose sharply (Figure 4).

For some components, such as clothing and footwear and air fares, usual seasonal patterns of price movements were disrupted. For example, there was evidence of firms selling off out-of-season stock and not being able to follow their usual sales patterns. Clothing and footwear were affected by a sharp fall in footfall as coronavirus restrictions were in place, which was not fully substituted by a rise in online shopping in the industry. Some of these challenges were reflected by the deflationary pressures from clothing and footwear contributions over the coronavirus pandemic. From March 2020 to April 2021, clothing and footwear contributions were negative for 12 out of the 13 months.

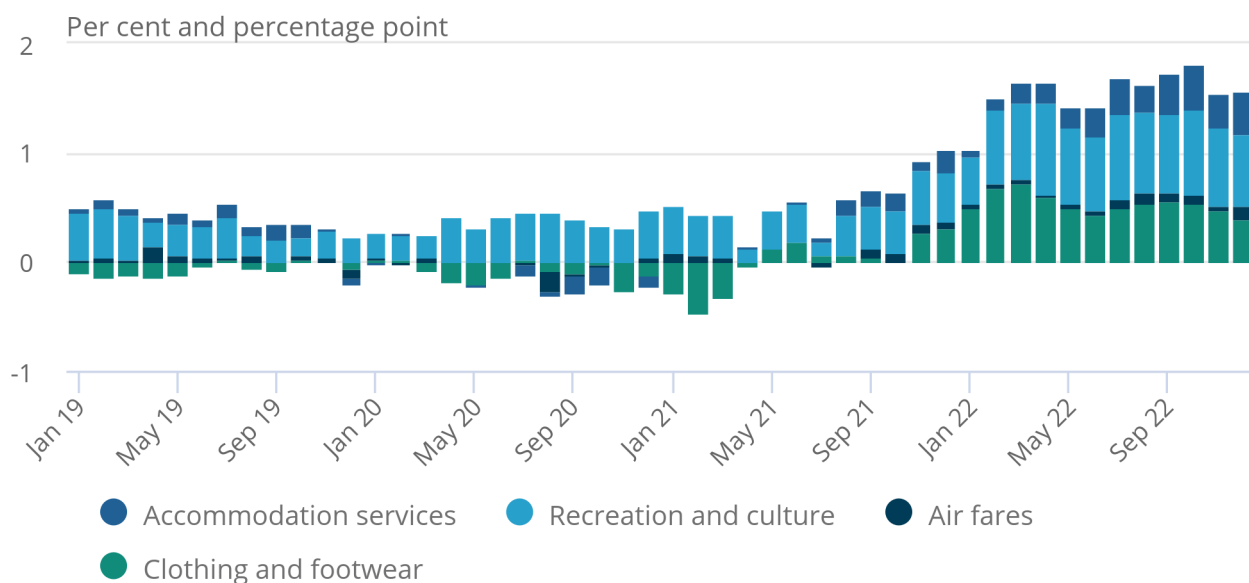
For other components, such as recreational and cultural services, the additional health concerns posed by potential COVID-19 exposure curtailed demand even as these parts of the economy initially reopened. Inflationary pressure here was relatively low in 2020 and 2021, which might have reflected challenging operating conditions for businesses. For instance, there is some evidence of these businesses facing higher operating costs, such as compliance with new health and safety measures, but there being less scope to pass those costs on to consumers.

Figure 4: Components associated with reopening the economy have been putting strong upward pressure on inflation

Consumer Prices Index (CPI) contributions, January 2012 to December 2022, UK

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Consumer Prices Index (CPI) contributions, January 2012 to December 2022, UK



Source: Consumer price inflation from the Office for National Statistics

High energy costs are likely to have contributed to the ongoing inflationary pressure for these products as businesses with a physical operating premises, like accommodation services and some recreation and cultural services, face increased fixed costs to deliver their service. Likewise, labour shortages have posed some challenges to the airline and airport industries, exacerbating the effects of increased demand.

6 . Supply disruptions

One of the challenges for the global economy has been the extent to which it could reallocate factors of production – labour, capital, materials – to keep up with the increase in demand as economies re-opened. These were particularly acute for specific goods and services. Contributions from supply bottlenecks began to pick up from mid-2021.

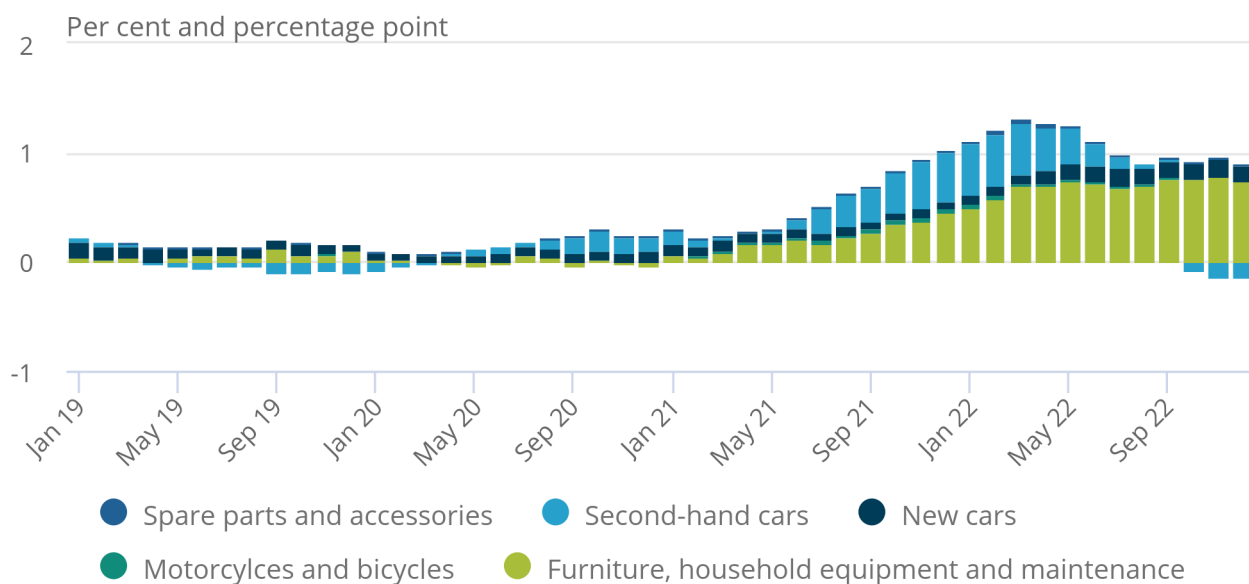
For example, second-hand cars had been putting upward pressure on inflation in 2020 but became a main contributor in 2021. There have been supply challenges with computer chips, which affected the availability of new cars, which then fed through into the used car market. People substituted to used cars from new cars, given their limited availability. Health concerns also might have explained why there was some substitution from public transport to used cars. Furthermore, the supply of used cars would have been limited if owners became less able or less willing to sell their cars. The effect of bottlenecks on new cars came primarily through shortages and production delays, though it was more likely to be through price increases for used cars. Contributions from those items affected by supply disruption have been declining in recent months, although these are still elevated by recent historical standards.

Figure 5: Furniture and second-hand cars have been strong contributors to inflation

Contributions to Consumer Prices Index (CPI) from supply disruption and bottleneck components, January 2019 to December 2022, UK

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Contributions to Consumer Prices Index (CPI) from supply disruption and bottleneck components, January 2019 to December 2022, UK



Source: Consumer price inflation from the Office for National Statistics

One feature of this research is that we are able to track the price movements of these same items affected by the reopening of the economy and supply disruptions in 2021 and 2022. We can therefore see what their typical contributions to headline Consumer Prices Index (CPI) inflation were before the coronavirus (COVID-19) pandemic, which provides some insight into how large their recent price movements have been. Table 1 shows how the contributions of these items have evolved over the last decade, highlighting how these imbalances help explain the recent increase in consumer prices. Compared with a more "normal" period, these affected goods and services have exhibited higher inflation in 2022. This indicates that it is not only the direct effects of higher energy prices that have contributed to higher consumer price inflation. Future research will look more into the indirect effects of higher energy prices.

Table 1: The contributions of items affected by the reopening of the economy and supply bottlenecks have increased markedly over the last year
Consumer Prices Index (CPI) contributions, January 2012 to December 2022, UK

	Items affected by the reopening of the economy	Items affected by supply disruptions	Food and energy	Rents	Other	CPI
2012 to 2019	0.36	0.1	0.4	0.13	0.83	1.8
2020	0.2	0.15	-0.27	0.12	0.65	0.85
2021	0.46	0.54	0.72	0.15	0.71	2.59
2022	1.56	1.06	4.44	0.31	1.68	9

Source: Consumer price inflation from the Office for National Statistics

Notes

1. We look at January 2012 to December 2019, where the 12-month rate of CPI was 1.8% on average over these 96 months.
2. These figures reflect the average of the 12-month contributions in these periods.
3. These categories have the following weights for 2022, in parts per thousand: Reopening of the Economy: 219; Supply Disruptions: 82; Food and Energy: 233; Rents: 87; Other: 379.

One of the challenges has been the extent to which we can unpick the effects of recent product and labour market imbalances in explaining the movements in Consumer Prices Index (CPI) inflation in recent years. We have provided new insights on these effects on UK CPI inflation, although we recognise that there is an inherent uncertainty in these estimates.

7 . Glossary

Consumer Prices Index (CPI)

The CPI is a measure of consumer price inflation produced to international standards and is based on European regulations for the [Harmonised Index of Consumer Prices](#). The CPI is the inflation measure used in the government's target for inflation.

Consumer price inflation

Consumer price inflation is the rate at which the prices of goods and services bought by households rise or fall. It is estimated by using price indices. For an overview of the indices and their uses, please see our [Consumer price indices, a brief guide: 2017 article](#).

8 . Related links

[Consumer price inflation, UK: January 2023](#)

Bulletin | Released 15 February 2023

Price indices, percentage changes, and weights for the different measures of consumer price inflation.

[Global inflation: 1970 to 2022](#)

Article | Released 22 November 2022

Examining trends in consumer price and producer price inflation in the global economy over the last 50 years, including the main drivers and the extent of co-movements.

[New estimates of core inflation, UK: 2022](#)

Article | Released 10 October 2022

Measures of consumer prices inflation excluding the items that record the more volatile price changes each month.

9 . Cite this article

Office for National Statistics (ONS), released 9 March 2023, ONS website, article, [Demand and supply factors in CPI inflation: 2021 to 2022](#).