

ARTICLE – Higher inflation – temporary or persistent?

Inflation has recently increased rapidly around the world. This is mainly due to higher prices for energy, commodities and electronic components and substantially increased transport costs. Some service prices has also risen in sectors affected by the pandemic, where demand has now rapidly picked up. The Riksbank's analysis indicates that the upturn in inflation is mainly transitory and that it will decrease in 2022 once the contributions from energy prices fall back, supply problems are resolved and demand normalises. But there are risks of inflation expectations being more noticeably affected and of inflation as a result becoming more persistently high. This is particularly true in countries where inflation has risen substantially, such as in the United States, while the risk is deemed lower in the euro area and Sweden, where the upturn in inflation is not as great. How inflation ultimately develops also depends on how monetary policy is adapted.

Inflation has risen rapidly abroad and in Sweden

The inflation rate has risen rapidly in several countries. Many of the causes are common, although the effects vary in magnitude between countries. This article firstly describes the most important causes of the recent rise in inflation. Next, it studies the development of inflation in the United States, the euro area, the United Kingdom and Sweden separately in order to highlight similarities and differences.

Energy prices have increased rapidly, not least in Europe, which has contributed to a *direct effect* on inflation, as prices of fuel and electricity are included in the normal measures of inflation. But there are also delayed effects of higher energy prices, which are difficult to quantify. An example of a so-called *indirect effect* is when higher fuel costs lead to more expensive transport and thus to higher prices for the products being transported. Another type of indirect effect arises if, for example, commodity prices of timber increase substantially and gradually affect the consumer price of furniture. It is normal for indirect effects to arise as a result of price rises on inputs, but the pass-through into consumer prices may vary over time and between countries.

Another type of delayed effect is normally referred to as a *second-round effect*. Such effects arise when higher inflation affects expectations of future price developments and the behaviours of companies and households. Higher inflation expectations can lead to companies raising their prices more quickly than what they otherwise would have done and to wage earners demanding higher wages. This in turn can force companies to compensate by increasing prices further.

Why has inflation risen?

Higher energy prices

Since the beginning of the year, the oil price has increased by almost USD 30, or about 60 per cent, to just over USD 80 a barrel (See Figure 28 in Chapter 3). This development has affected fuel prices in both the United States and Europe, but to a varying degree in different countries depending on, for example, how fuel is taxed. In the United States, the price of gasoline has risen by more than 50 per cent, or by USD 1.2/gallon since the beginning of 2021. In Sweden, the price has risen by more than 25 per cent, or almost SEK 4 per litre during the same period. The rise in oil prices is due both to increased demand and most recently to production limitations.²¹ According to forward pricing, the oil price is expected to fall back somewhat from the beginning of 2022.

At the same time, deliveries of natural gas from Russia have been unusually low. As the total volume of stored gas has fallen in Europe, the price has risen rapidly. Since around a fifth of the EU's electricity production is based on natural gas, electricity prices have also been substantially affected in Europe. This has also led to more coal now being used in electricity production instead. As a result, coal has also increased in price and as the burning of coal creates more carbon emissions than the burning of natural gas, the price of emission allowances has also risen.

In October, the market prices for electricity had risen by almost 300 per cent in Germany and France, measured in annual percentage change, but prices in the consumer channel have increased significantly less.²² According to forward pricing, electricity prices in Europe are expected to be high for some time to come and then fall back after the winter.

A particular reason for the development in Swedish electricity prices is the lower-than-usual rainfall during the spring and summer. This created a deficit in water reservoirs and as a result lower hydropower capacity.²³ Another explanation is the rapidly rising electricity prices in Europe, to which Sweden exports some of its power production. This, in turn, has pushed up prices further in Sweden. This is particularly true of the electricity price in southern Sweden, as there are limitations in the transfer of electricity from northern Sweden, where most of Sweden's power is produced. However, as it has been very windy in southern parts of the country (and in Denmark and northern Germany) in recent months, the production deficit in southern Sweden has decreased and prices have tended to fall.

Over the last two months, electricity prices in Sweden have fallen back but are still relatively high, at least in the south of the country. Forward pricing also indicates that

²¹ At the latest meeting, OPEC+ decided not to increase production to meet the rising demand.

²² Electricity prices according to the HICP rose by around 2.5 per cent in both Germany and France in October. The time lag is due to many consumers having fixed electricity price agreements.

²³ Another cause is that the Ringhals nuclear power plant had a longer-than-planned inspection stoppage, which has also reduced capacity in the core grid.

prices will remain high over the winter and then fall back slightly. However, the development of the electricity price in Europe and Sweden is difficult to predict with any great precision, as it depends to a considerable extent on weather and wind. Price developments since the summer, however, show that energy supply in Europe is very sensitive to unexpected events and that even minor disruptions can cause very substantial price variations.

The Riksbank's assessment is that the positive contribution from energy prices to inflation will remain high during the winter and then diminish relatively quickly during spring and summer 2022 (see Figure 4 in Chapter 1). Although there are some minor differences, this applies not only in Sweden but in the euro area and United States.

Transport bottlenecks, higher commodity prices and shortage of inputs

The pandemic has led to sharp fluctuations in economic activity across the world. First, demand fell dramatically during the spring of 2020. The subsequent recovery has been very rapid. In the United States and Europe, major fiscal and monetary policy measures have been implemented to support households and companies, which has contributed to the rapid improvement. There has also been a shift, where household demand for goods increased rapidly in conjunction with the pandemic, when the scope for consuming services was limited.

At the beginning of the pandemic, many shipping companies deregistered their vessels to reduce costs as freight orders fell. When demand then recovered and production also picked up, supply has found it difficult to keep up while freight traffic has been disrupted by several incidents during the spring and summer of 2021.²⁴ Sea freight costs have therefore risen dramatically since summer 2020. The situation is still problematic and logistic problems are considerable despite some apparent improvement of late. According to the World Container Index, which reflects the average container price for a number of common shipping routes, the price level has fallen somewhat in October, but prices remain unusually high.²⁵

Both the rapid fluctuations in demand and various production stoppages have also led to other disruptions in global supply chains in the form of shortages of commodities and inputs.²⁶ A particular example is the current shortage of semi-conductors, which are an important component in many industries, including automotive and home electronics.

Some commodities have also increased in price since spring 2020. Price growth in metals, commodities used in the manufacturing sector and food increased rapidly when the economic situation became brighter. Prices were at their highest in the spring and have fallen back since then, but they remain high.

²⁴In March, the container vessel Ever Given got stuck in the Suez Canal, which caused long queues of sea traffic. In addition, several large container ports in China have closed down due to COVID-19 outbreaks at various periods.

²⁵ World Container Index (WCI) according to Dewry was in October just over 280 per cent higher than the same week in 2020.

²⁶ Examples of such commodities include steel, timber, plastic and some textiles.

Unusually large variation in consumer prices for services

The pandemic has also contributed to unusually large variation in service prices. When restrictions on socialising were introduced in 2020, they held back price development in services such as hotels and restaurants. When restrictions were then eased, demand increased rapidly for these types of services, at the same time as several companies have had difficulties rehiring or recruiting new staff who had switched sectors or retrained during the pandemic. Overall, service prices have recently increased unusually rapidly.

In addition to energy prices and knock-on effects of the rapid changes in demand, measurement problems, changed consumption patterns and tax measures have, to a certain extent, contributed to increased volatility in the development of inflation during the pandemic. But these effects will not be discussed in more detail here.

Many common elements, but differences between countries at the same time

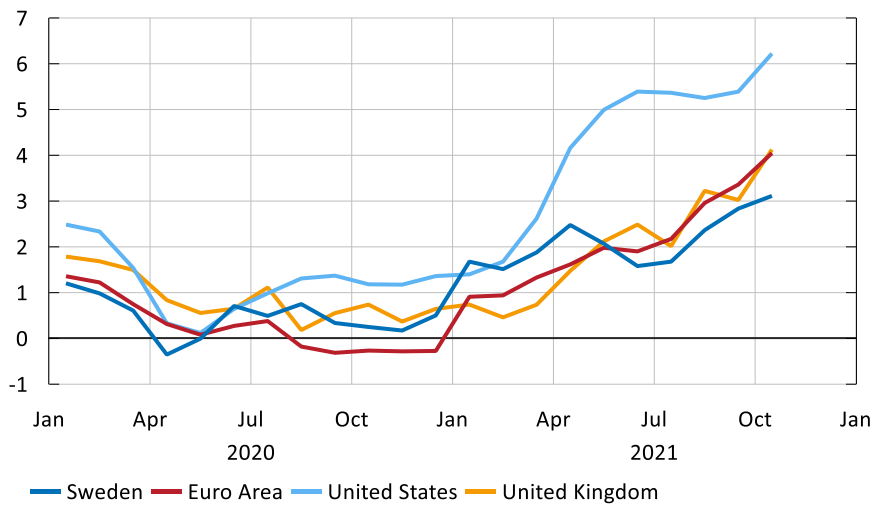
Inflation in the United States is at its highest since 1990

In the United States, CPI inflation has risen particularly rapidly during the year and amounted to 6.2 per cent in October (see Figure 52).²⁷ The direct effects of higher energy prices are significant in the United States, where the rate of increase in fuel prices was almost 50 per cent in October. More recently, higher prices of cars, and particularly of used cars, have contributed to the higher inflation. These prices increased rapidly during the spring and at the beginning of summer 2021, after having fallen somewhat in 2020. A shortage of semi-conductors also seems to have hampered production and contributed to the price upturn in this sector. Most recently, higher prices of food and housing costs have also contributed to higher inflation; CPI inflation adjusted for food and energy prices, referred to as core inflation, amounted to 4.6 per cent in October.

²⁷ Inflation according to the price index PCE-deflator (Personal Consumption Expenditure) has also risen, but is on a somewhat lower level, 4.4 per cent.

Figure 52. Inflation in Sweden and abroad

Annual percentage change



Note. CPI inflation for the United States and the United Kingdom, HICP inflation for the euro area and CPIF inflation for Sweden.

Sources: Macrobond and Statistics Sweden.

The Federal Reserve considers much of the inflation upturn to be transitory. The effects of various bottlenecks have indeed been greater and more prolonged than expected, which has led to successive upward adjustments to this year's inflation forecasts. However, even if these effects are prominent at the moment, the Federal Reserve expects them to diminish. When they do so, inflation is expected to fall back.²⁸

The indirect effects of higher energy and producer prices are also noticeable in the United States. An example is that higher costs for fuel and chemical fertiliser in agriculture have led to smaller margins and as a result upward pressure on food prices. Another example is that rising costs for the operation and heating of property seem to have pushed up rents.²⁹

As regards prices of goods, services and food in the United States, the rate of increase is highest for goods prices, but food prices and service prices have also risen (see Figures 53–55). Compared with the euro area, the United Kingdom and Sweden, the rate of price increase in goods stands out, although food prices have clearly risen most rapidly in the United States. There therefore seems to be some signs of indirect effects in the United States, especially when the price increase seems to be relatively broad.

²⁸ See for example a speech by J. Powell (2021), August 2021, Federal Reserve. [Monetary Policy in the Time of COVID](#).

²⁹ Over the years, the Riksbank has made various estimates of how large the indirect effects of higher energy prices can be on inflation in Sweden. Such estimates often assume that the energy price will be permanently higher. One study indicates that the indirect effects of a higher oil price are relatively limited in the United States and the euro area, see C. Conflitti and M. Luciani (2017). "Oil price pass-through into core inflation," *FEDS Notes*, August 2017.

As price growth has increased quite considerably in a short time, inflation expectations and wage expectations can be affected more than usual. Resource utilisation in the labour market is therefore a key issue. Labour demand continues to rise and unemployment is falling in the United States. There are also some indications of increased wage pressures.

Inflation has also risen rapidly in the euro area and in United Kingdom

In the euro area, HICP inflation was 4.0 per cent in October, but the differences are considerable between the Member States. Some examples of countries with comparatively low inflation are Portugal (1.8 per cent), Greece (2.8 per cent) and Finland (2.8 per cent) while Lithuania (8.2 per cent), Estonia (6.8 per cent) and Germany (4.6 per cent) have significantly higher inflation. Much of the total price increase since the turn of the year in the euro area is explained by higher housing and transport costs. In addition, there are some specific, positive contributions to the inflation rate that arise when unexpectedly low prices in 2020 have become more normal this year, referred to as base effects.³⁰

The rise in housing costs can primarily be explained by higher gas and electricity prices. As the pass-through of higher energy prices into the consumer channel is partly delayed, they are expected to contribute to higher inflation for a while longer, despite spot prices for natural gas and electricity having now fallen back somewhat. Higher petrol and diesel prices explain much of the upturn in transport costs, which are also affected by price increases in air tickets and cars to a certain extent. The European Central Bank, ECB, considers many of the factors currently fuelling inflation, such as higher energy prices, to be temporary and will gradually fall away in 2022.³¹

Inflation has also risen in the United Kingdom after having been low for much of 2020. In October, CPI inflation was 4.1 per cent. Some of the upturn is due to last year's VAT reductions on services and subsidies of restaurant meals no longer dampening the inflation rate.³² As in the euro area and the United States, energy prices are also contributing to higher inflation, albeit to a somewhat limited extent. The Bank of England (BoE) states that energy prices and bottlenecks, which have caused high global freight costs and shortages of certain goods, have affected consumer prices. The BoE also points out that the reopening of the economy has led to higher prices for certain consumer services. In its latest forecast, the Bank of England assesses that the inflation upturn may persist until the second half of 2022 and then subside as cost pressures ease.³³

³⁰ Examples of base effects that have affected the inflation rate in the euro area in the second half of 2021 include the resetting of the VAT reduction in Germany that was introduced in 2020, and delayed summer sales last year.

³¹ See, among others, transcript from the press conference on 28 October 2021, ECB. [Monetary Policy Statement](#).

³² See open letter from Governor A. Bailey to the UK Government, September 2021, Bank of England, [Letter from the Governor](#) and speech by S. Tenreyro, October 2021, Bank of England, [International trade, global supply chains and monetary policy](#).

³³ See *Monetary Policy Report*, November 2021, Bank of England.

Inflation adjusted for energy prices and prices of unprocessed food is 3.4 per cent in the United Kingdom, while the HICP excluding energy and unprocessed food in the euro area was 2.1 per cent in October. The difference between headline inflation and underlying inflation is thereby relatively small in the United Kingdom.

Prices of both goods and services are rising more rapidly in the United Kingdom than in the euro area while the converse is true for food prices (see Figure 53–55). In the euro area, the rate of increase in goods prices has been very volatile over the past year, which is probably due to diverse pandemic-related measurement problems and weighting adjustments.

Overall, the indirect effects in the United Kingdom and euro area are not as significant as they are in the United States, but there are still signs of spillover effects, particularly in the United Kingdom.

The upturn in the recorded inflation rate in the euro area and the United Kingdom is also reflected, as in the United States, in higher inflation expectations according to surveys. Long-term market-based inflation expectations have also increased. Resource utilisation in the labour market has also strengthened in the euro area and in the United Kingdom, but it is difficult to find any clear tendencies towards increased wage pressures so far.³⁴

Inflation has also increased in Sweden

According to the Riksbank's latest Business Survey, costs have risen in almost all industries. This development can be explained by rising prices of, for instance, energy, commodities, steel, metals, timber and electronic components, as well as sharply rising transport, storage and logistics costs over the year. Capacity problems and high fuel prices increase the costs for Swedish transport companies. The trade sector and companies selling services to households also see rising costs.³⁵

CPI inflation has risen gradually in the past year and the Riksbank's assessment is that it will be 3 per cent on average for the next six months. An important cause of the inflation upturn in Sweden is, just as in other countries, higher energy prices. The contribution from energy prices has gradually increased during the year and was 1.4 percentage points in October (see Figure 47 in Chapter 3).

³⁴ Wage demands in Germany, for example, are so far lower than they were before the pandemic. German wage agreement negotiations will mainly take place in autumn 2022, which means that it will take time before there are any clear signals about wage development.

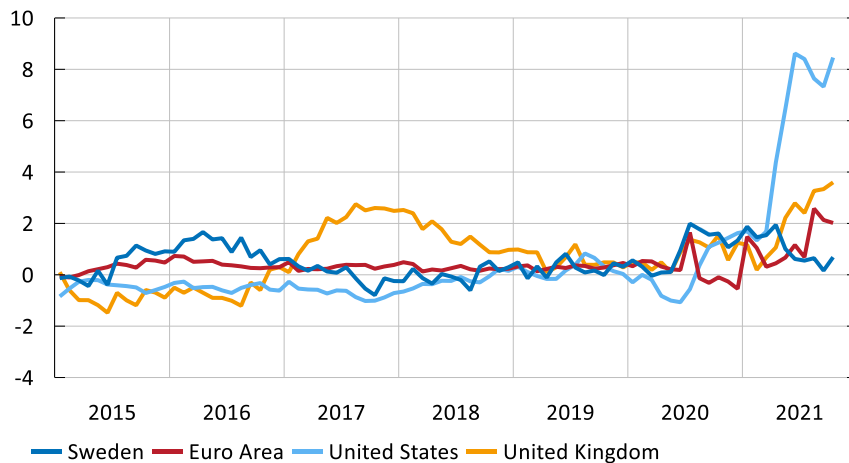
³⁵ See "As soon as you find one component, you realise you're missing another", *The Riksbank's Business Survey*, September 2021, Sveriges Riksbank.

This year, the annual average of CPIF inflation excluding energy is expected to be two tenths lower than in 2019 and only one tenth higher than in 2020. An increasing contribution from service prices has been counteracted by a gradually lower contribution from prices for food and other goods during the year (See Figure 47 in Chapter 3).³⁶

Goods prices have increased significantly more slowly in Sweden than in the United States, the euro area and the United Kingdom (see Figures 53). The profile of the annual percentage change in Swedish service prices is characterised by changed weights for foreign travel and has been very volatile during the pandemic (see Figure 55). Food prices have developed approximately in the same way in Sweden, in the euro area and the United Kingdom, but significantly more strongly in the United States (See Figure 54).

Figure 53. Goods prices excluding energy and food in different countries and regions

Annual percentage change



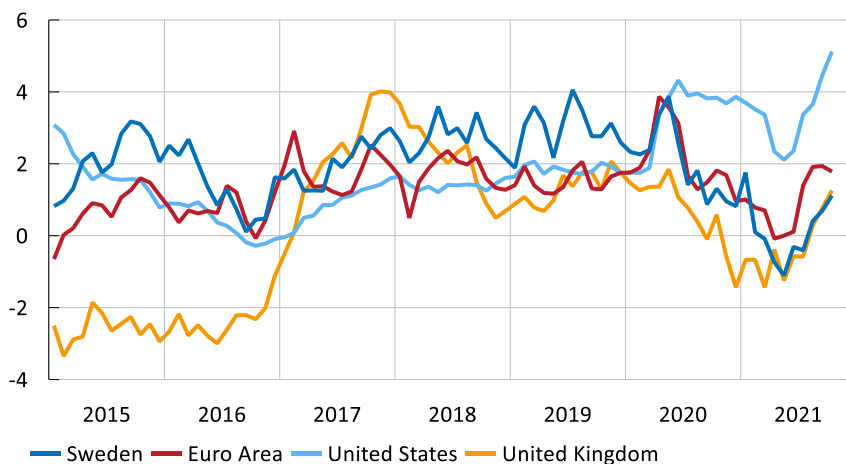
Note. Inflation measured as the HICP for Sweden and the euro area and the CPI for the United States and the United Kingdom.

Source: Macrobond.

³⁶ However, developments in the CPIF excluding energy, and other measures of inflation, have been even more difficult to interpret for a time due to pandemic-related factors, such as weighting changes and measurement problems. Changed consumption patterns affect not only weight calculations in Sweden but also inflation calculations globally. What Statistics Sweden will do with the weights in 2022 has not yet been decided, but the choice of method will affect the monthly profile of inflation outcomes, especially next year. An announcement is expected in December. For more information on the impact and expected impact of changed consumption patterns during the pandemic, see J. Johansson, M. Löf and O. Tysklind, "Changed consumption during the pandemic affects inflation", *Economic Commentaries*, No. 14, 2020, Sveriges Riksbank.

Figure 54. Food prices in various countries and regions

Annual percentage change



Note. Inflation measured as the HICP for Sweden and the euro area and the CPI for the United States and the United Kingdom.

Source: Macrobond.

It is thus still difficult to see any clear, indirect effects in Sweden when slightly broader aggregates are studied, but there are examples of goods and service prices that have been affected over the past year. Table 1 summarises the price development of a few selected goods that may have recently been affected by higher commodity prices, higher freight costs and other supply disruptions. Table 1 also presents the price development of a few services that may have been affected during the pandemic. The price development so far this year is compared with the average price development in the period 2015–2019. There are some signs that the prices for a number of products are now rising slightly faster than usual. As far as goods are concerned, the price development of bicycles, some white goods and cars stands out. On the services side, the prices of sports events and cinema tickets are rising slightly faster just now. But there are also prices that are rising more slowly among these selected goods and services.³⁷

Although the prices for certain products are rising more rapidly than usual, it is difficult to see any clear trends in consumer prices so far. But as prices in the producer channel have risen relatively rapidly, they are expected to affect prices in the consumer channel with a certain time lag. According to the Economic Tendency Survey, the share of companies wanting to increase their prices has recently risen quite considerably, especially in the retail trade, where the share of companies planning price increases has recently risen rapidly since the beginning of 2021 and is now at a record-high level. Different indicators therefore point to more consumer prices being raised in the near term.

³⁷ The total weight in the CPI basket of the goods and services presented in the table is 7.1 and 4.1 per cent respectively.

Table 1. Price development of a few selected goods and services

Annual percentage change

| Goods (7.1%): | 15–19 | 20–21 | 21 | Services (4.1%): | 15–19 | 20–21 | 21 |
|----------------------|--------------|--------------|-----------|-------------------------|--------------|--------------|-----------|
| Furniture | 0.7 | 1.4 | 1.1 | Sports tickets | 0.6 | 1.2 | 2.4 |
| Cars | 0.9 | 2.7 | 3.0 | Cinema tickets | 2.9 | 1.5 | 4.3 |
| Bicycles | 0.2 | 6.6 | 9.4 | Theatre tickets | 2.6 | 1.4 | 0.6 |
| TV sets | -7.1 | -7.4 | -8.7 | Amusement park tickets | 2.8 | 3.4 | 3.9 |
| Dishwashers | -0.7 | 3.6 | 1.6 | Hotel rooms (weekend) | 3.5 | -5.5 | 3.3 |
| Refrigerators | -0.9 | 0.1 | -4.3 | Lunch (daily menu) (1) | 2.5 | 2.8 | 1.3 |
| Washing machines | -1.6 | 2.0 | 2.8 | Lunch (daily menu) (2) | 2.7 | 1.9 | 1.9 |
| | | | | À la carte | 2.1 | 2.5 | 2.2 |
| | | | | Dinner | 3.0 | 0.1 | 0.4 |

Note: The column with the heading 15-19 refers to average annual percentage change between 2015 and 2019. The column with the heading 20-21 indicates annual percentage change for 2020 and 2021, while the heading 21 indicates the average annual percentage change from January 2021 up to the end of September 2021. (1) refers to a slightly simpler lunch while (2) indicates lunch at a restaurant. Figures in brackets on the first row refer to aggregate weight in the CPIF for goods and services respectively presented in the column. According to the Riksbank's classification, the total weight in the CPIF is 28 per cent for goods and 43 per cent for services.

Sources: Statistics Sweden and own calculations.

As in many other countries, the situation in the labour market has improved in Sweden and inflation expectations on various horizons have risen gradually since summer 2020. Expectations will probably continue to rise for a while as inflation remains higher for a number of months. The covariation between actual inflation and inflation expectations is clear. If CPIF inflation rises, inflation expectations also tend to rise after one or two months. A simple correlation analysis also shows that inflation expectations covary significantly with the price growth of various energy components.³⁸

It is therefore reasonable to assume that both inflation expectations and companies' pricing will be more affected if the cost increases become more persistent. But, in such a situation, it is also reasonable to assume that monetary policy will be adjusted and the effects reduced.

Will inflation in Sweden be temporarily or persistently higher?

The sudden changes in demand have caused problems for commodity producers, subcontractors and transport companies in adjusting production quickly enough and disruptions have occurred in global supply chains in several regions. Lockdowns in many economies have also exacerbated these problems. Among other effects, they have led to shifts in demand from services to goods. Difficulties in meeting the rapidly rising

³⁸ See for example L. Kilian and X. Zhou (2020), "Oil Prices, Gasoline Prices and Inflation Expectations: A New Model and New Facts", *Working Paper* No. 2025, Federal Reserve Bank of Dallas. In Swedish data, it also appears to be the case that changes in the energy price affect inflation expectations. In other words, if the energy price rises, inflation expectations are affected with a certain time lag. This is probably because fluctuations in energy prices have such a significant impact on inflation.

demand have led to sharp upturns in commodity prices, transport prices and gradually also companies' producer prices.

The effect on consumer prices of these disruptions has been significant in the United States, but so far limited in the euro area and Sweden.

In Sweden, it is still difficult to see any clear tendencies towards indirect effects. Prices of certain goods and services have risen, but the upturn is not broad. Goods prices excluding energy and food (the Riksbank's definition) are still falling measured in annual percentage change. At the same time, energy prices have risen rapidly, which has contributed to a more direct effect on inflation. Inflation expectations on longer horizons have not moved more than expected, however. Concern over a persistent upturn in Sweden inflation should not therefore be exaggerated.

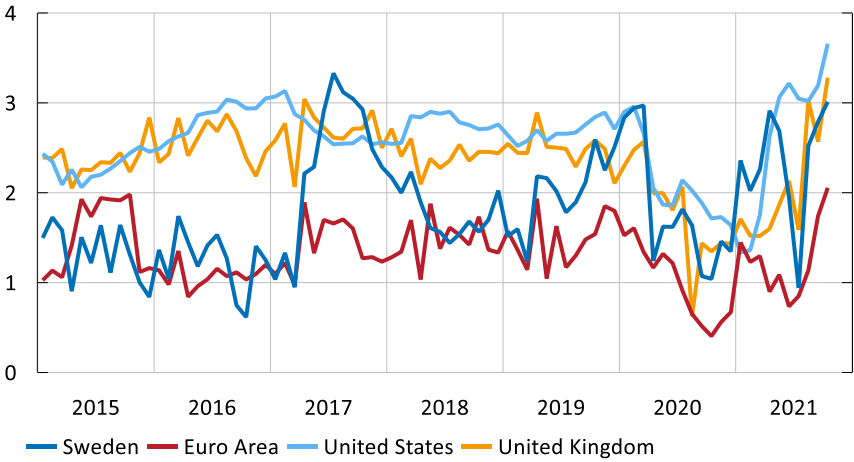
How inflation develops in the slightly longer term depends on how the inflation expectations of companies and households are affected and how monetary policy is adjusted. The Riksbank's analysis shows that there is good reason to believe that the upturn in inflation is transitory. As long as energy prices do not increase further from their currently high levels, their positive contribution to the inflation rate will diminish at approximately the same pace as it has risen this year.³⁹

However, some of the price and cost increases that are due to supply disruptions are expected to affect the consumer channel and contribute to higher price growth in certain goods over the next year. At the same time, the demand for hotel and restaurant services has risen rapidly and contributed to an upward pressure on service prices as well. However, supply problems and the sudden fluctuations in demand are expected to diminish gradually in 2022. Monthly price growth is expected to be somewhat higher than normal going forward and the annual percentage change in the CPIF excluding energy will rise. The rate of increase will fall somewhat in the second half of 2022. In 2023 and 2024, inflation will then rise gradually towards 2 per cent.

³⁹ See the fact box "Link between price level and inflation rate" in *Monetary Policy Report*, July 2020, Sveriges Riksbank.

Figure 55. Service prices in various countries and regions

Annual percentage change



Note: Measured as the HICP for Sweden and the euro area and the CPI for the United States and the United Kingdom.

Source: Macrobond.