

ANALYSIS – What factors drove the surge in inflation?

Like other central banks, the Riksbank has in recent years attempted to understand which factors lie behind the rapid rise in prices and how long the period of high inflation might last. To some extent, various surveys and model estimates have helped us with this analysis. All in all, they point towards both supply and demand factors playing a role in how inflation has developed in recent years. The supply factors seem to explain a somewhat larger part, but there is considerable uncertainty regarding the estimates, which is to some extent due to which approach one chooses and how the specifications look.

Several exogenous events affected the development

The surge in inflation in 2022 led to major forecast error and created major challenges for economic policy-makers around the world.⁴³ Clearly, a series of supply-side events such as the pandemic, the substantial energy price shocks and the war in Ukraine explain some of the development. However, sharp shifts in demand, in some cases substantial fiscal support, and changes in consumption and pricing behaviour have also played a major role.⁴⁴ When inflation started to rise sharply, there was a lively debate about what was really behind the rise, how it should be managed and how long it would last.

Factors that contributed to the price increases according to companies

The National Institute of Economic Research's quarterly business tendency survey reports which factors have affected price changes in trading firms and service companies. The results since 2015 are shown in Figure 34 below. The bars show the upward or downward impact of each factor on prices in the last quarter.⁴⁵

Since 2021, domestic and import-related costs (light blue and yellow bars respectively) have been the main factors explaining price changes, according to companies.⁴⁶ Demand contributed to slightly higher prices, especially in 2021 and 2022, but compared with the cost components, it seems to have played a very limited role in recent years. The Riksbank's Business Survey also includes questions on the drivers of price

⁴³ For a more detailed review of the drivers of the surge in inflation, see M. Lof and P. Stockhammar (2024), "What drove the surge in inflation?", Staff memo, June 2024, Sveriges Riksbank.

⁴⁴ In addition to the factors mentioned above, the krona also depreciated markedly in 2022 and 2023, which has affected the development of inflation in Sweden. There are also signs that the pass-through of the krona depreciation to consumer prices has been larger and faster than before.

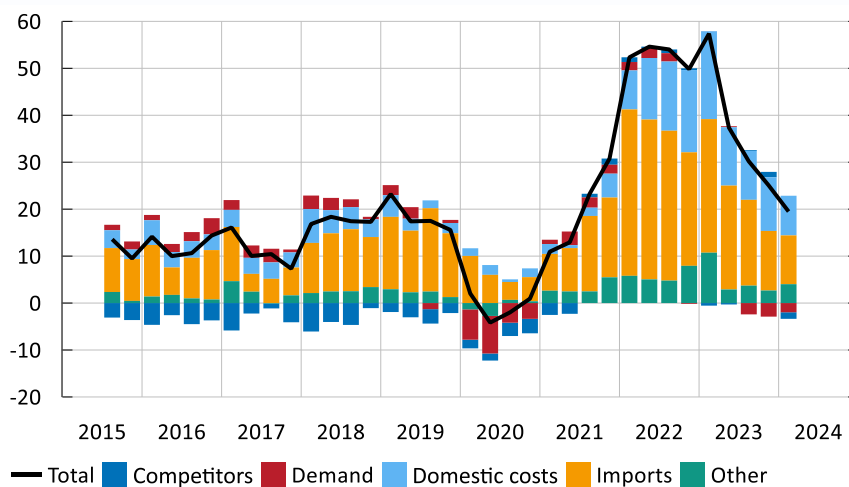
⁴⁵ A bar above zero means that the factor has contributed to rising prices, while a negative bar means that it has contributed to lower prices.

⁴⁶ The import-related costs have to some extent been driven by the weaker krona.

changes and the results are similar there.⁴⁷ Although higher costs seem to be the clearly dominant reason behind price increases according to companies, there may be other underlying explanatory factors that are also important. For example, the strong purchasing power in Sweden appears to have created the conditions for a change in pricing behaviour in the economy, whereby cost increases by companies could be passed on to consumers more quickly than before. According to the companies, the price increases also seem to have been more accepted by consumers than before, at least initially.

Figure 34. Drivers of pricing behaviour among retail and service companies

Net figures



Note. Companies answer whether prices have risen or fallen in the last quarter and then indicate which factor has been the most important in explaining price developments. The net figures are calculated as an average of the net figures for retail and service companies.

Sources: The National Institute of Economic Research and the Riksbank.

Explanatory factors according to different model approaches

An analysis from the Federal Reserve presents a method based on the definition of supply and demand shocks.⁴⁸ Inflation is demand-driven if prices and quantities move in the same direction in a specific area of consumption. If, on the other hand, inflation tends to be supply-driven, prices and quantities should move in different directions. The method thus identifies periods that have been dominated by either supply or demand shocks for each consumption area. This is done with the aid of estimated equations. Weights for the different categories are then used to calculate the supply- and demand-related contributions to aggregate price growth. We have performed a

⁴⁷ Again, higher costs, such as purchasing costs, labour costs and energy costs, are the dominant driver of pricing in recent years. The exchange rate is also highlighted as an important factor explaining the price increases, especially among household-related businesses (retail and some services). In the Business Survey, however, the question is forward-looking, unlike the corresponding questions in the Economic Tendency Survey, which refer to the current situation.

⁴⁸ See A. H. Shapiro (2022) "Decomposing supply and demand driven inflation", Federal Reserve Bank of San Francisco Working Paper 2022-18. OECD (2022), Economic Outlook, Issue 2 also used the method with data for eight OECD countries, including the United States and Sweden.

similar analysis for Sweden, using data from the Swedish National Accounts (NA) for 75 different consumption areas.⁴⁹

Table 4 shows a few variants of the method (see row 1 labelled Shapiro). Overall, the results suggest that various supply-side factors explain slightly more than half of the development of inflation in recent years. The table also presents similar results from two other models:

- Method 2 is a time series model with 4 variables presented by the Dutch Central Bank (DNB).⁵⁰
- Method 3 is the Riksbank's macro model MAJA, which is normally used more continuously to decompose the development of inflation into different explanatory factors.⁵¹

Table 2. Decomposition of inflation into supply and demand factors

Contribution to price growth over the period 2022 to 2023

Method	Supply	Demand
1) Shapiro (mean of 3 specifications)	0.7	0.3
2) Ascari et al. (BVAR)	0.7	0.3
3) MAJA (DSGE)	0.9	0.1

Note. Method 1) is an average of three different model specifications. In the first variant, the energy price components in the NR are included. In the second variant, the energy price components are excluded and in the third, food components, other goods components and services components are modelled separately and then weighted together according to CPIF weights. In Methods 2) and 3), energy is included and has been categorised as a supply factor.

Source: The Riksbank.

Both supply and demand contributed to the inflation dynamics

Overall, the results here suggest that supply-side factors explain a larger part of the development of inflation in recent years, but that demand shocks have also been an important explanatory factor. There are now many signs that supply factors have become less important - for example, energy prices have fallen and companies report more normal delivery times.

It is difficult to measure with any great precision which explanatory factors have been the most important, especially since it is mainly imbalances between supply and demand that affect inflation. The results should therefore be interpreted with caution.

⁴⁹ The equations always include 4 lags of the variables expressed in logarithmic levels.

⁵⁰ See G. Ascari, P. Bonomolo, M. Hoeberichts and R. Trezzi (2023), "The euro area great inflation surge", De Nederlandsche Bank Analysis Series, March 2023.

⁵¹ See V. Corbo and I. Strid (2020), "MAJA: a two-region DSGE model for Sweden and its main trading partners", Working Paper Series No. 391, Sveriges Riksbank. As in methods 1 and 2, we have defined such shocks as affecting inflation and output in opposite directions, while demand shocks affect them in the same direction. Among the supply shocks, it is mainly energy prices and two price mark-up shocks that have substantial effects on inflation. Common to these is that they at the same time have minor effects on output.

Neither should the results be seen as a definitive analysis, but instead be interpreted as a compilation of the approaches the Riksbank has examined so far.

Negative supply shocks cannot be directly handled with interest rate changes. But if there is a risk that inflation exceeds 2 percent for a long time, a tighter monetary policy may be necessary to maintain confidence in the inflation target.⁵² Inflation has now slowed down and the Riksbank's assessment is that the monetary policy conducted has contributed to this development, partly through stabilising inflation expectations and dampening demand.

⁵² The Riksbank warned of this at an early stage, see for example the article "Price rises are spreading in the economy" in Monetary Policy Report June 2022, Sveriges Riksbank. See also J. Hassler, P. Krusell and R. Vestman (2024), "Evaluation of monetary policy 2023" (only in Swedish), Report from the Riksdag 2023/24:RFR5: RFR15 and B. English, K. Forbes and A. Ubide (2024), "Monetary policy responses to the post-pandemic inflation", CEPR Press. Both say that responding to supply shocks with interest rate hikes is fully in line with established theory and proven experience. They also emphasise the importance of using monetary policy to respond to supply shocks to reduce the risk of spillover effects via expectations and wages.