

# Account of monetary policy

2019





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The Riksbank is an authority under the Riksdag, the Swedish Parliament, with responsibility for monetary policy in Sweden. Since 1999, the Riksbank has had an independent position with regard to the Riksdag and the Government. This means that the six members of the Executive Board decide on monetary policy issues without seeking or taking instructions. Nor may any other authority determine how the Riksbank should decide on issues concerning monetary policy.

The way in which the Riksbank carries out the delegated task is followed up in various ways by the Riksdag. For instance, every year the Riksdag Committee on Finance examines whether the General Council of the Riksbank and the Executive Board can be discharged from liability for their administration during the past year. Every year, the Riksdag Committee on Finance also examines and assesses the monetary policy conducted by the Riksbank during the preceding years. The Riksbank compiles and publishes material for this assessment.

The material compiled by the Riksbank is thus a basis for assessment – not an assessment in itself. On the other hand, this does not mean that it is a pure compilation of figures. The account also includes analyses of outcomes, forecasts and events as the Riksbank believes that those who evaluate monetary policy should have access to the Riksbank's interpretation of the material. It is then up to the Committee on Finance, and others who wish to assess the material, to concur with the Riksbank's conclusions or to make another interpretation.

The main features of the report are summarised in Chapter 1. Chapter 2 examines target attainment in 2019, while Chapter 3 gives an account of the monetary policy conducted over the year. Chapter 4 analyses the accuracy of the forecasts. The report also contains a number of boxes, describing for instance, the development of inflation in a more long-term perspective and the Riksbank's development work.

The Account of Monetary Policy in 2019 is available, like the previous reports, on the Riksbank's website [www.riksbank.se](http://www.riksbank.se). It is also possible to order a printed version of the report free of charge on the website, or to download the report as a PDF.

# Monetary policy in Sweden<sup>1</sup>

## MONETARY POLICY STRATEGY

- According to the Sveriges Riksbank Act, the objective for monetary policy is to maintain price stability. The Riksbank has specified this as a target for inflation, according to which the annual change in the consumer price index (CPI) is to be 2 per cent.
- While monetary policy aims at attaining the inflation target, it simultaneously supports the objectives of general economic policy with a view to achieving sustainable growth and high employment. This is achieved through the Riksbank, in addition to stabilising inflation around the inflation target, endeavouring to stabilise production and employment around paths that are sustainable in the long term. The Riksbank therefore conducts what is generally referred to as flexible inflation targeting. This does not mean that the Riksbank neglects the fact that the inflation target is the overriding objective.
- It takes time before monetary policy has a full impact on inflation and the real economy. Monetary policy is therefore guided by forecasts for economic developments. The Riksbank publishes its own assessment of the future path for the repo rate. This repo-rate path is a forecast, not a promise.
- In connection with every monetary policy decision, the Executive Board makes an assessment of the repo-rate path needed for monetary policy to be well-balanced. It is thus normally a question of finding an appropriate balance between stabilising inflation around the inflation target and stabilising the real economy.
- There is no general answer to the question of how quickly the Riksbank aims to bring the inflation rate back to 2 per cent if it deviates from the target. A rapid return may in some situations have undesirable effects on production and employment, while a slow return may have a negative effect on confidence in the inflation target. The Riksbank's ambition has generally been to adjust the repo rate and the repo-rate path so that inflation is expected to be fairly close to the target in two years' time.
- According to the Sveriges Riksbank Act, the Riksbank's tasks also include promoting a safe and efficient payment system. Risks linked to developments in the financial markets are taken into account in the repo-rate decisions. With regard to preventing an imbalance in asset prices and indebtedness, the most important factors, however, are effective regulation and supervision. Monetary policy only acts as a complement to these.
- In some situations, as in the financial crisis 2008 2009, the repo rate and the repo rate path may need to be supplemented with other measures to promote financial stability and ensure that monetary policy is effective.
- The Riksbank endeavours to ensure that its communication is open, factual, comprehensible and up-to-date. This makes it easier for economic agents to make good economic decisions. It also makes it easier to evaluate monetary policy.

## DECISION-MAKING PROCESS

The Executive Board of the Riksbank usually holds six monetary policy meetings a year, at which it makes decisions regarding the repo rate. In connection with three of these meetings a Monetary Policy Report is published and in connection with the other three a Monetary Policy Update is published. Approximately two weeks after each monetary policy meeting the Riksbank publishes minutes from the meeting, in which it is possible to follow the discussion that led to the interest rate decision and to see the arguments made by the different Executive Board members.

## PRESENTATION OF THE INTEREST RATE DECISION

The repo-rate decision is presented in a press release at 9.30 a.m. on the day following the monetary policy meeting. The press release also states how the individual Executive Board members voted and provides the main motivation for any reservations entered.

A press conference is held on the day following the monetary policy meeting.

<sup>1</sup> A detailed description of the monetary policy strategy is contained in the document *Monetary Policy in Sweden*. The document is available as a PDF file on the Riksbank's website, [www.riksbank.se](http://www.riksbank.se)

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## CHAPTER 1 – Target attainment

For several years, the Riksbank has conducted an expansionary monetary policy to bring up inflation and stabilise it close to the inflation target. Since the start of 2017, inflation has been close to 2 per cent. Inflation slowed down clearly in summer 2019, as energy prices fell, but underlying inflation was maintained according to the median of a number of different measures. Over the year the Swedish economy moved, after several years of unusually strong growth, from an activity level that was stronger than normal to a more normal level. Monetary policy has contributed to close-to-target inflation and good economic development.

### Inflation and the economic situation in general in 2019

#### Inflation close to target in 2019

CPIF inflation, which has been close to target since the start of 2017, fell in summer 2019, but rose again towards the end of the year. On average, CPIF inflation was 1.7 per cent in 2019.

It is common for inflation to be pushed up or down as a result of temporary changes in individual prices, such as volatile energy prices. The Riksbank continuously analyses alternative measures of inflation to better determine to what extent the changes in inflation are temporary or lasting. The median of several measures of core inflation, which excludes or reduces the significance of widely fluctuating prices, indicates that more persistent inflation has been relatively stable during 2019 and has been close to 2 per cent (see Figure 1:2 and Table 1:1). This indicates that it was not temporary effects that contributed to inflation being close to the target level in 2019.

**Table 1:1. Inflation according to different measures**

Annual percentage change, annual average

	2017	2018	2019
CPIF	2.0	2.1	1.7
CPIF excluding energy	1.7	1.4	1.6
Underlying inflation (median)	1.7	1.6	1.8

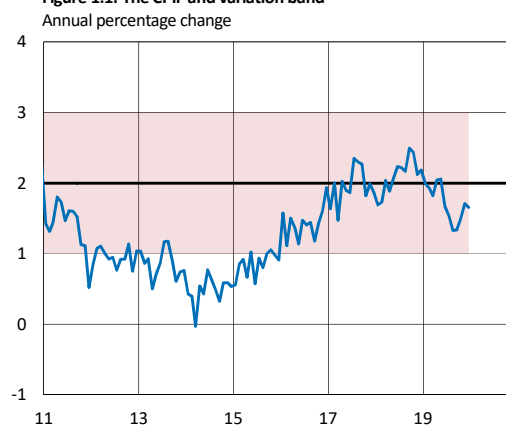
Note. Underlying inflation refers to the median of a number of measures of underlying inflation. The measures included are: the CPIF excluding energy, UND24, Trim85, CPIF excluding energy and perishables, persistence-weighted inflation (CPIFPV), factors from principal component analysis (CPIFPC) and weighted mean inflation (Trim1). See <https://www.riksbank.se/en-gb/statistics/macro-indicators/underlying-inflation/> for more information.

Sources: Statistics Sweden and the Riksbank

The rate of increase in the CPIF was higher in 2019 than the average increase between 2000 and 2018. Most components, with the exception of capital stock, increased at a faster pace than average (see Table 1:2).

The purchase price for households' own single-family dwellings and tenant-owned apartments (the component in Table 1:2 called capital stock) showed a somewhat weaker increase than the average rate of increase since 2000. The development of the capital stock is similar to a moving average of the development in housing prices over the past ten years.

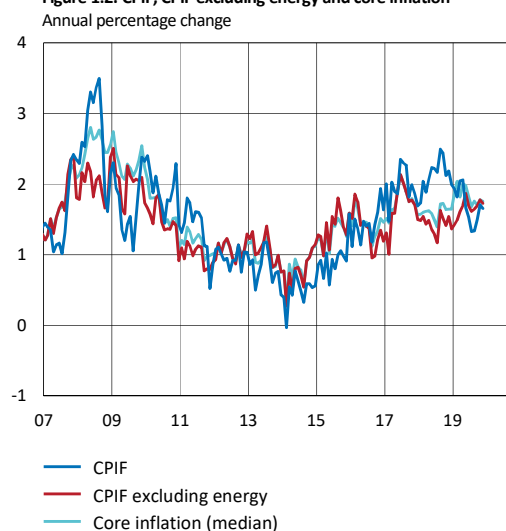
**Figure 1:1. The CPIF and variation band**



Note. The pink area shows the Riksbank's variation band and covers about three-quarters of the outcomes since January 1995. The variation band is a means of showing whether the deviation from the inflation target is unusually large.

Sources: Statistics Sweden and the Riksbank

**Figure 1:2. CPIF, CPIF excluding energy and core inflation**



Note. Underlying inflation refers to the median of a number of measures of underlying inflation. The measures included are: the CPIF excluding energy, UND24, Trim85, CPIF excluding energy and perishables, persistence-weighted inflation (CPIFPV), factors from principal component analysis (CPIFPC) and weighted mean inflation (Trim1).

Sources: Statistics Sweden and the Riksbank

**Table 1:2. Development of the CPIF and its components**  
Annual percentage change, annual average

	Weight (per cent)	2000-2018	2018	2019
Services	45	1.7	1.9	2.0
Goods	27	-0.5	-0.4	-0.1
Food	18	1.8	2.2	2.6
Energy	7	2.4	10.5	3.2
Capital stock	3	6.2	7.1	5.8
CPIF	100	1.4	2.1	1.7

Note. The weights are those applying for 2019.  
Source: Statistics Sweden

**Inflation expectations lower but close to 2 per cent**

Monetary policy is aimed at stabilising inflation around the inflation target. The aim is to create stability and predictability in price setting and wage formation and to contribute to favourable economic development in Sweden. It is important in attaining the target that economic agents trust that the central bank will return inflation to the target level when economic shocks have caused it to deviate. That long-term inflation expectations do not deviate too much from the target can be seen as a sign that economic agents have such confidence in monetary policy.

In Sweden the more long-term inflation expectations have in recent years been close to 2 per cent, both according to surveys and pricing on the financial markets (see Figure 1:3).

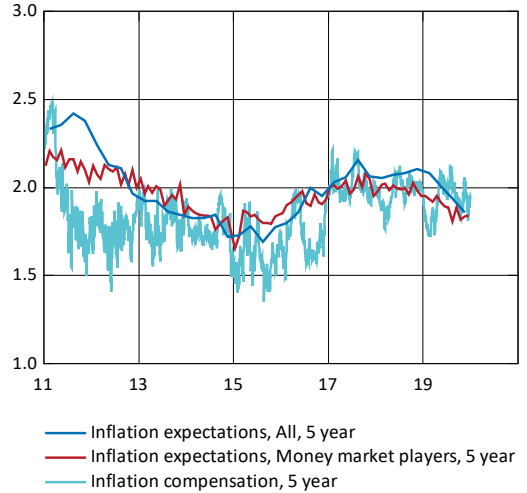
According to Kantar Sifo Prospera’s survey, money market participants’ inflation expectations five years ahead fell slightly during the first half of 2019, but have since been relatively stable. The survey results published in December 2019 showed that money market participants expected CPI inflation to be 1.8 per cent in 5 years’ time. A broader group of respondents, including trade and industry and social partners, showed similar results for long-term inflation expectations (see Figure 1:3). The decline is limited so far, but it is of course important to follow how expectations continue to develop.

**More normal economic situation**

Since the end of 2018, the Swedish economy, like many other economies around the world, has entered a phase of lower growth (see Figure 1:4). The moderate GDP growth in 2019 is explained by several different factors. One was the weak development on Swedish export markets in 2019, which led to poorer prospects for the Swedish manufacturing sector. In addition, less housing was built, although the rate of construction was still high in an historical perspective.

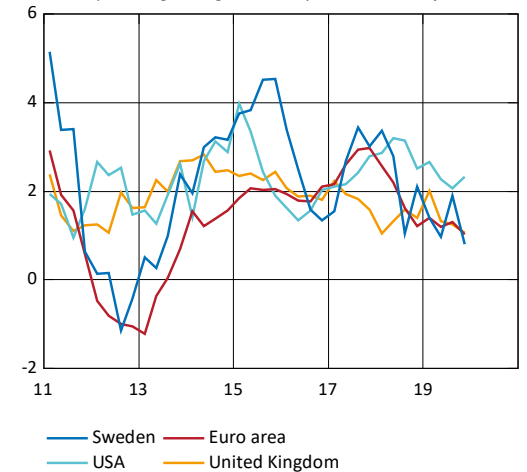
Economic prosperity measured in terms of GDP per capita has increased slowly in recent years. But in an international perspective, development in Sweden since the financial crisis has been relatively good (see Figure 1:5). In an international perspective, Sweden also has a favourable labour market situation, with a high employment rate and high labour force participation. Unemployment is at a relatively high level in Sweden, partly because many people want to have a job and are participating in the labour force (see Figure 1.6). The labour market situation weakened somewhat during 2019, when

**Figure 1:3. Long-term inflation expectations, Sweden**  
Per cent



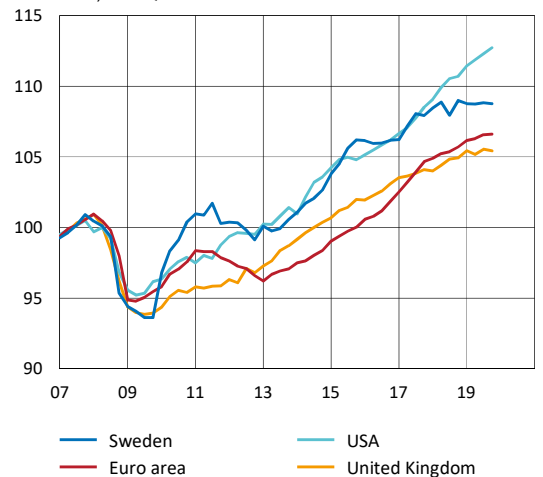
Note. Market-based expectations refer to average inflation over a 5-year period, starting in 5 years’ time and calculated from bond yields.  
Sources: Kantar Sifo Prospera, Macrobond and the Riksbank

**Figure 1:4. GDP growth in Sweden and abroad**  
Annual percentage change, seasonally- and calendar adjusted data



Sources: Bureau of Economic Analysis, Eurostat, Office for national statistics and Statistics Sweden

**Figure 1:5. Development in GDP per capita in Sweden and abroad**  
Index, 2007 Q1 = 100



Sources: Eurostat and the OECD



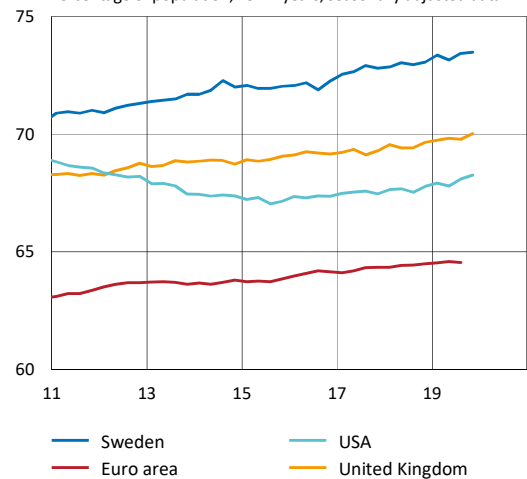
demand for labour slowed down. Unemployment rose somewhat, but the percentage of people employed in the population aged 15–74 was unchanged at a historically high level (see Figure 1:7). The slowdown on the labour market came after several years of high growth and strong development.<sup>2</sup> Since the start of last year, housing prices have increased gradually, and prices are now back at the same levels as prior to the fall in autumn 2017. Household debt in relation to disposable income is expected to increase slightly in the coming years, from an already high level.

### Resource utilisation in the Swedish economy towards a normal situation

The level of activity in the economy is often summarised in various measures of resource utilisation. What one tries to measure is to what extent the productive resources of the economy – labour and capital – are used in relation to what is sustainable in the long term. As it is not possible to measure resource utilisation exactly, the Riksbank estimates it with the aid of a number of indicators, including the so-called output gap and hours worked gap. These measure the percentage deviation in GDP and the number of hours worked from their respective estimated long-term levels. A further indicator is the RU indicator, which summarises information from various surveys and labour market data. A positive measure indicates higher-than-normal resource utilisation and vice-versa if the measure is negative.

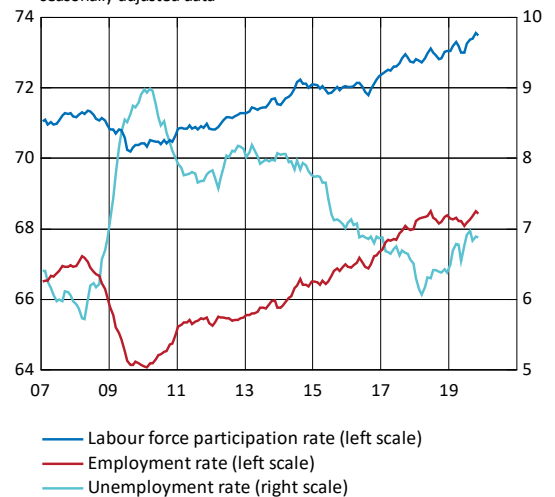
All three indicators show that resource utilisation declined in 2019, after having been high for several years, and that it approached a more normal situation (see Figure 1:8).

**Figure 1:6. Labour force participation**  
Percentage of population, 15-74 years, seasonally adjusted data



Source: the OECD

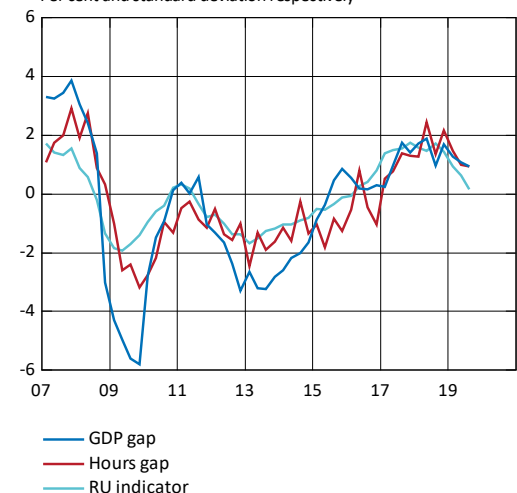
**Figure 1:7. Labour force, employment and unemployment**  
Per cent of population and labour force respectively, 15-74 years, seasonally-adjusted data



Note. Three-month moving averages.

Source: Statistics Sweden

**Figure 1:8. GDP gap, hours gap and RU indicator**  
Per cent and standard deviation respectively



Note. The GDP gap refers to the deviation from trend in GDP, calculated using a production function. The hours gap refers to the difference between the actual number of hours worked and the Riksbank's assessment of the trend for the number of hours worked. The RU indicator is normalised so that the mean value is 0 and the standard deviation is 1.

Sources: Statistics Sweden and the Riksbank

<sup>2</sup> During autumn 2019, Statistics Sweden announced there were serious quality flaws in the data collection of its external suppliers. In November, Statistics Sweden therefore decided to publish revised statistics for the period July 2018 – September 2019. This is now based on only half of the sample – the part of the survey for which Statistics Sweden's own department is responsible. Basing the statistics on a sample that is half the size increases the uncertainty in the figures. For a long time, the LFS has had problems with a high non-response rate; this has been close to 50 per cent over the last year. The Riksbank also takes into account other sources than LFS to gain a nuanced and more complete picture of the labour market. See, for instance, Häkkinen Skans, I., "Developments on the labour market according to different statistical sources", Economic Commentary No. 6, 2019, Sveriges Riksbank, for a description and discussion of different sources of statistics that measure developments on the labour market.

## CHAPTER 2 – Monetary policy 2019

Monetary policy continued to be expansionary in 2019 – the repo rate was low and the Riksbank's holdings of government bonds were substantial. The trade conflict between the United States and China, as well as the United Kingdom's withdrawal from the EU, created uncertainty over international economic developments, which affected the financial markets and worsened sentiment in the manufacturing sector. Central banks abroad made their monetary policies more expansionary, which contributed to the stabilisation of economic indicators. In Sweden, the economy moved from a strong to a more normal economic situation. At the start of the year, the Riksbank's forecast indicated that the repo rate would be raised during the second half of the year, assuming that the economic outlook and inflation prospects turned out as expected. When interest rates abroad subsequently fell, the forecast for the repo rate over the longer term was revised downwards. However, developments over the autumn largely followed the Riksbank's assessment and, in December, the Riksbank carried out the announced repo rate rise from  $-0.25$  to zero per cent. The forecast indicated that the repo rate was expected to remain at zero per cent in the coming years.

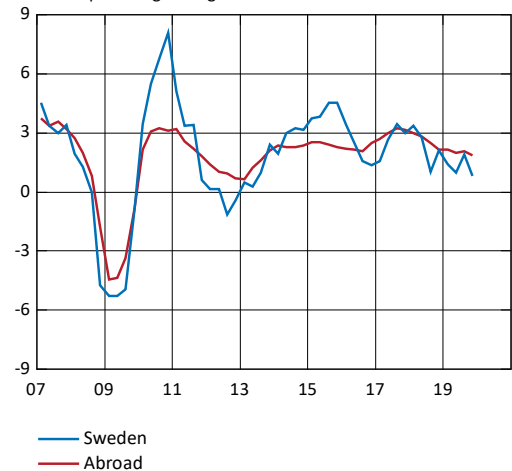
### Monetary policy in brief

In 2019, demand in the global economy weakened and GDP growth continued to slow down slightly and became more in line with the historical average (see Chart 2:1). Among other things, developments were marked by the trade conflict between the United States and China and the unclear situation surrounding the United Kingdom's withdrawal from the EU. This uncertainty affected the financial markets and contributed towards the deteriorating sentiment in the manufacturing sector, even if indicators of companies' confidence in the future stabilised towards the end of the year. At the same time, unemployment continued to be low in many countries and consumer confidence was at relatively high levels. Inflation was low, above all in the euro area, and inflation expectations in the euro area and United States fell.

Unease over economic activity, falling inflation expectations and signals of more expansionary monetary policies from central banks abroad led market participants to expect a more expansionary monetary policy and long-term government bond yields fell markedly over the year. However, judging from rising equity prices and falling yield differentials between risk-free and high-risk assets, among other things, there were no expectations of a rapid economic downturn.

The Swedish krona weakened against several currencies over the year, which was reflected in the krona index (KIX), which weighs together the krona's exchange rates against the currencies in the countries that are most important for Sweden's international transactions. Currencies in many small, open economies like Sweden usually weaken in times of rising uncertainty on the financial markets (see Figure 4:7). In addition, the krona weakened in conjunction with the publication of

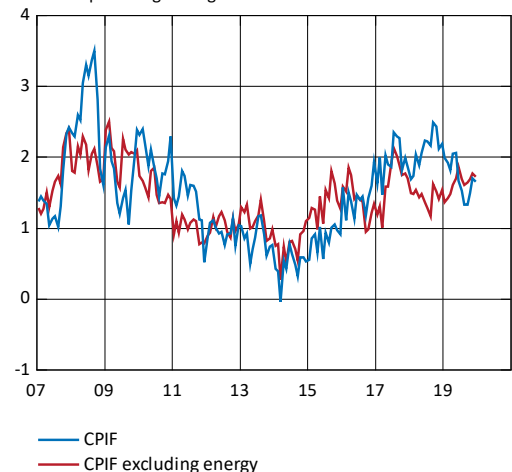
**Figure 2:1. GDP growth in Sweden and abroad**  
Annual percentage change



Note. GDP abroad is weighted using the weights in the krona index (KIX).

Sources: National sources, Statistics Sweden and the Riksbank

**Figure 2:2. The CPI and CPI excluding energy**  
Annual percentage change



Sources: Statistics Sweden and the Riksbank

statistics indicating that the domestic economic outlook would become weaker than the market participants had expected. Expectations of lower interest rates over a longer period in Sweden and abroad may also have contributed to the depreciation of the krona.<sup>3</sup>

The Swedish economy slowed down a little faster than expected in 2019, following a long period of strong development on the labour market and good GDP growth (see Figure 2:1). Unemployment rose slightly in 2019, but the proportion of the population aged 15–74 in work remained high from a historical perspective. CPIF inflation, which has been close to target since the start of 2017, fell over the autumn but rose again towards the end of the year (see Figure 2:2). On average, CPIF inflation was 1.7 per cent in 2019. The development of the Swedish economy in 2019 is described further in chapter 1.

Below follows a brief account of monetary policy in 2019 and the assessments made by the Riksbank. The forecasts for the most central variables, which formed a basis for the decisions taken, are shown in Figures 2:3–2:7.

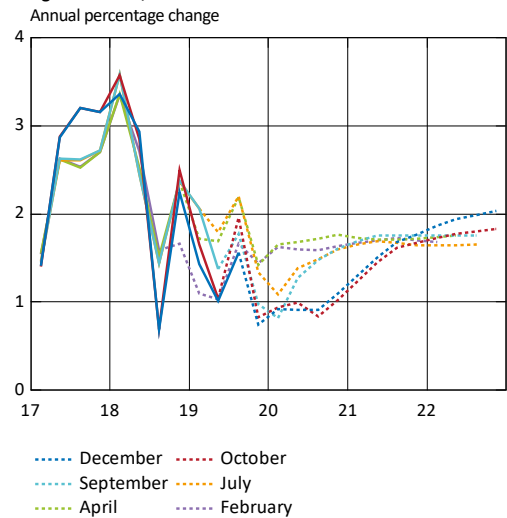
### Continued strong economic activity but lower growth and great uncertainty over the prospects

In December 2018, the Riksbank raised the repo rate to –0.25 per cent. This was the first repo rate rise since 2011. At the start of 2019, the Riksbank noted that economic developments both abroad and in Sweden had entered a more mature phase and that lower growth than in previous years was to be expected (see Figure 2:3). However, even though growth rates were lower, the economic situation remained strong in Sweden. Even so, the development of the global economy remained uncertain and reason existed for monetary policy to proceed slowly. The Riksbank's forecast indicated that the next repo rate rise would be during the second half of 2019, assuming that the economic outlook and inflation prospects turned out as expected. After this, the rate would probably have to be raised at a slow pace for inflation to stay close to the inflation target.

### Lower inflation than expected, both in Sweden and abroad

At the monetary policy meeting in April, the Riksbank noted that growth abroad had slowed down approximately in line with the previous assessment but that inflation, particularly in the euro area, had become weaker than expected. Inflation in Sweden had also become unexpectedly low. This was partly due to temporary factors, but also to rising costs and the strong economic activity having had less of an effect than expected on inflation. In light of this, the Riksbank revised its inflation forecast downwards (see Figure 2:4). As the inflation prospects looked slightly weaker, the assessment of the repo rate was also revised downwards. The forecast now indicated that the next rise would take place at the end of the year or at the start of 2020 and that rate rises thereafter would take place at a slightly slower pace compared with the assessment in February (see Figure 2:5).

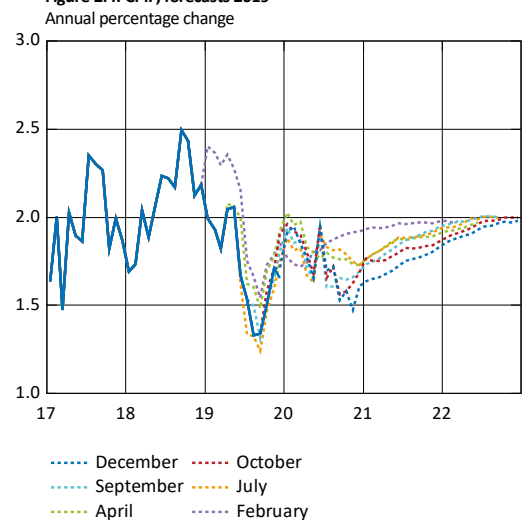
Figure 2:3. GDP, forecasts 2019



Note. Several outcome lines are shown in the figure. This is because the outcomes have been revised by Statistics Sweden.

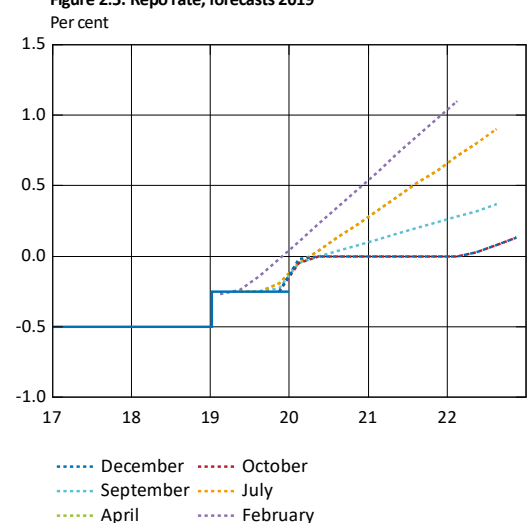
Sources: Statistics Sweden and the Riksbank

Figure 2:4. CPIF, forecasts 2019



Sources: Statistics Sweden and the Riksbank

Figure 2:5. Repo rate, forecasts 2019



Note. Outcome data are daily rates and forecasts are quarterly averages. The repo-rate path in April is identical to the one in July, and the repo-rate path in December largely coincides with the path in October.

Source: The Riksbank

<sup>3</sup> See also the section on the exchange rate in the section "The monetary policy debate" in Chapter 4.

### Increased uncertainty over international economic activity

Uncertainty over the development of the global economy increased over the summer and autumn. Unease over a further deterioration in the trading relationship between the United States and China, together with uncertainty over the United Kingdom's withdrawal from the EU, contributed to worsening sentiment, which affected pricing on the financial markets. Market rates then fell as several central banks cut their policy rates or communicated that monetary policy could become more expansionary.

In competition-weighted terms, the krona developed weaker than expected (see Figure 2:6). This was an effect, not least, of the increased uncertainty in the world economy and on the financial markets, but it was also due to new statistics that indicated that domestic economic development would be weaker than market participants had expected. In September, the Riksbank noted that the real economy and inflation abroad had, nevertheless, largely developed as expected. As previously, the Riksbank's forecast indicated that the next repo rate rise would take place towards the end of the year or at the beginning of 2020. After this, however, rises would happen at a slower pace due to the low interest rates and worsened sentiment abroad.

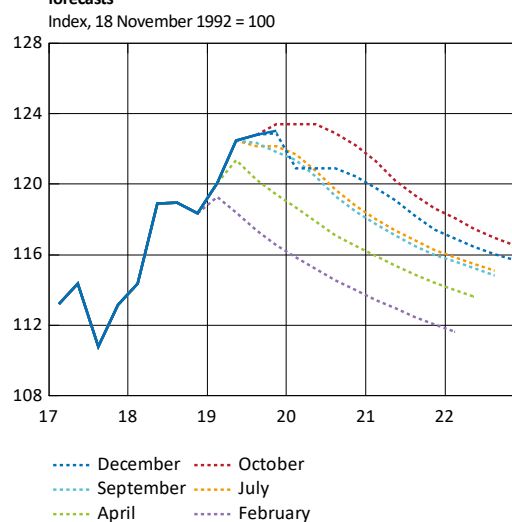
### Faster slowdown of economic activity than expected but unchanged prospects for inflation over the next year

New information received by the monetary policy meeting in October indicated that economic activity was slowing down faster than expected. However, this slowdown took place from a situation of high growth and good development on the labour market (see Figure 2:7).<sup>4</sup> All in all, the forecasts did not give a picture of an approaching recession, either abroad or in Sweden. The inflation prospects for the next year were unchanged and the Riksbank's forecast for the repo rate until the middle of 2020 thus remained the same. The Riksbank communicated that the forecast indicated that the interest rate would most probably be raised to zero in December. However, uncertainty over the economic prospects made it difficult to say when it would subsequently be appropriate to raise the repo rate. According to the assessment, resource utilisation would also fall towards a normal level a little faster than in the forecast from September. The forecast for the repo rate in the longer term was therefore revised down, meaning that the repo rate was predicted to remain unchanged for a longer time after the rise expected in the near term.

### Repo rate raised to zero per cent in December

Developments both abroad and in Sweden towards the end of the year were approximately as the Riksbank had expected. Sentiment on the financial markets had improved and, according

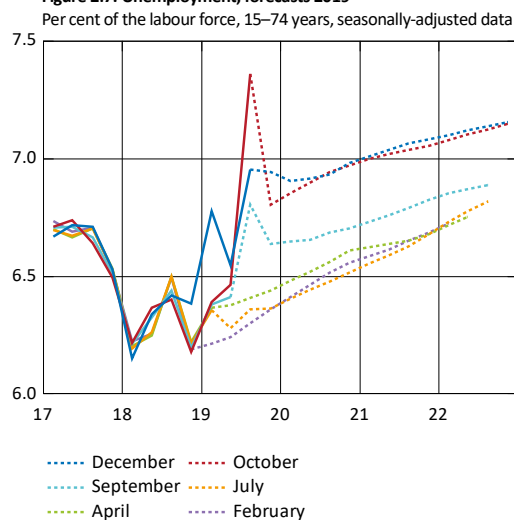
Figure 2:6. Competition-weighted nominal exchange rate, KIX, 2019 forecasts



Note. The KIX (krona index) is a weighted average of the currencies in the countries that are important for Sweden's international trade.

Sources: National sources and the Riksbank

Figure 2:7. Unemployment, forecasts 2019



Note. Several outcome lines are shown in the figure. This is partly because the series have been seasonally adjusted and the seasonal adjustment can change when a new outcome is published. In November, Statistics Sweden also revised the outcomes for the period July–September due to quality problems in the previously published statistics. The figure gives the impression that the Riksbank's forecast in October was based on the unrevised outcome. This is incorrect, however. In October, it became known that Statistics Sweden would be revising its statistics and the Riksbank's forecast was therefore based on an assessment of how the statistics would be revised. This assessment turned out to have been relatively correct, as can be seen by comparing the solid blue line with the broken red line.

Sources: Statistics Sweden and the Riksbank

<sup>4</sup> For a while, outcomes from Statistics Sweden's Labour Force Surveys (LFS) had indicated that the slowdown on the labour market was taking place significantly faster than expected. However, in the autumn, Statistics Sweden drew attention to serious quality flaws in its data collection and revised the outcomes for the period July 2018–September 2019. See the box "Revised labour market statistics following errors in LFS".

to pricing on the markets, the participants expected the economic slowdown to be limited. Growth abroad had been slightly higher than in the Riksbank's assessment in October and indicators of companies' expectations for the future had stabilised. For Sweden, the corrected LFS statistics showed that there had been a gradual slowdown on the labour market in line with the Riksbank's previous assessment.

Overall, the picture was that economic activity had slowed down from a strong position to a more normal one. As expected, inflation had risen again over the autumn after energy prices stabilised, and the conditions for inflation close to the target in the period ahead were deemed to be good. In line with the assessment in October, the repo rate was therefore raised to zero per cent in December. The forecast for the repo rate was unchanged, and the repo rate was expected to remain at zero per cent in the coming years.

### The Riksbank's holdings of government bonds to be held at approximately the same level as when net purchases were discontinued

In April 2019, the Executive Board made the assessment that monetary policy needed to remain expansionary so that inflation would stabilise around the target of 2 per cent. To maintain an appropriate level of government bond holdings and the Riksbank's presence on the market, the Executive Board therefore decided that, over the period July 2019–December 2020, the Riksbank would purchase Swedish government bonds for a nominal amount of SEK 45 billion (see Figure 2:9). This corresponds to around half of the principal payments and coupons the Riksbank will receive during this period (at the same time, the earlier decisions on regular reinvestments were revoked).

This decision means that the Riksbank's holding of government bonds will be kept at about the same level as it has averaged since the start of 2018, which is to say after net purchases were concluded (see Figure 2:10).

## The Executive Board's discussions and monetary policy considerations

### Uncertainty over the global economy and unclear economic outlook

Monetary policy decisions in 2019 were taken against a background of increased uncertainty over international economic developments. This uncertainty stemmed from several factors. For example, it was unclear how the rules for international trade would be affected by the trade conflict between the United States and China and what consequences this would have for trade patterns and the business sector as a whole. There were also uncertainties over the United Kingdom's withdrawal from the EU and the consequences for both the United Kingdom and

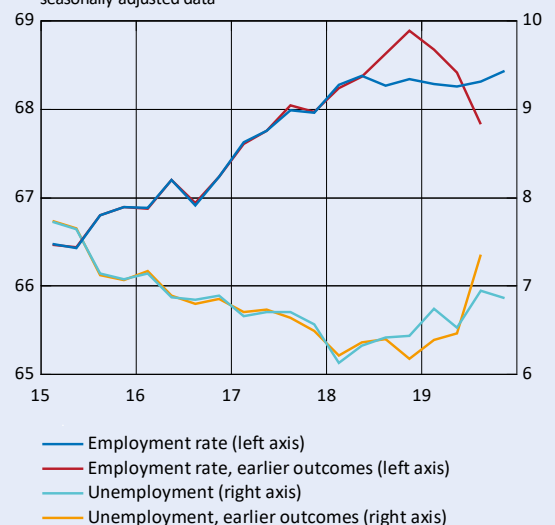
### Revised labour market statistics following errors in LFS

Labour force surveys (LFS) are a sample survey carried out every month through telephone interviews with around 29,500 people. From July 2018, an external data collection company, Evry, has gathered in half of the sample. During the autumn, Statistics Sweden detected serious quality problems with Evry's data collection, which meant that the statistics published were incorrect.

In November, Statistics Sweden therefore decided to publish revised labour market statistics for the period July 2018–September 2019. This is now based on only half of the sample – the part of the survey for which Statistics Sweden's own department is responsible. Basing the statistics on a sample that is half the size increases the uncertainty in the figures. For a long time, the LFS have had problems with a high non-response rate; this has been close to 50 per cent over the last year. A more limited sample also makes it more problematic to analyse the statistics at a detailed level. This means that the LFS statistics are less useful as a basis for decision-makers. Statistics Sweden has said that in 2020 they will extend their own collection, but not to the same sample size as before. Additionally, Statistics Sweden has begun, together with other authorities, an extensive and long-term change process for statistics in the labour market field, towards which the Riksbank naturally is positive.

The revised statistics show that, since the beginning of 2018, employment has risen roughly in line with the population aged 15–74 (see Figure 2:8). At the same time, unemployment has been revised up from July 2018 to June 2019, but since then revised down. This means that the picture of a dramatic slowdown on the Swedish labour market has changed and the outcome now shows that unemployment was lowest in early 2018 and has subsequently risen at a slow pace. With the revision of the LFS, the picture now corresponds better with measures of unemployment from other statistical sources, such as the Public Employment Service.

**Figure 2.8. Revision of employment rate and unemployment**  
Percentage of population and labour force respectively, 15–74 years, seasonally-adjusted data



Note. The series refer to quarterly data  
Source: Statistics Sweden

the rest of Europe. Further uncertainty factors included problems with central government finances and the banking sector in Italy.

Risks to international economic developments linked to these factors were a constant element in the Executive Board's monetary policy considerations in 2019. However, these risks were difficult to quantify in the forecasts. If the risks were to materialise, the effect on economic activity would be considerable and a completely different monetary policy would be on the cards. There was certainly no question of monetary policy-making allowances for such a development in advance. But uncertainty over the prospects and the risk of a rapid slowdown in economic activity argued for proceeding cautiously with monetary policy in general.

### Economic activity supported inflation

As always, the development of inflation, prospects in the short and long term and inflation expectations were the focus of the Executive Board's considerations. In 2017–2018, inflation in Sweden was close to the Riksbank's inflation target of 2 per cent. At the start of 2019, inflation in Sweden continued to be close to the target, but then fell back as the contribution made by the increase in energy prices declined.

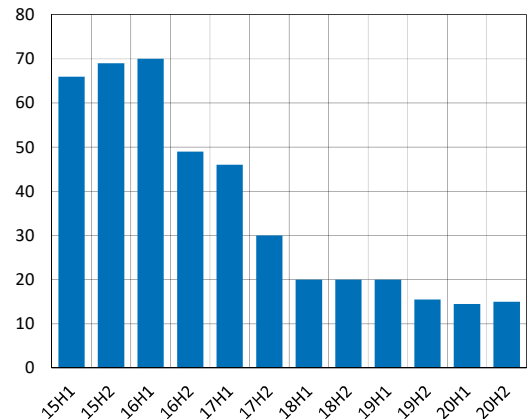
It was expected that inflation would develop like this. However, over the winter, inflation fell a little more rapidly than the Riksbank had expected, which can partly be explained by temporary factors and partly by the strong economic activity and weak krona having slightly less of an effect on inflation than expected. Even so, according to the Riksbank's various measures, the underlying, more permanent part of inflation rose. The assessment was that inflation would rise again over the year, which it also did.

Economic activity slowed down slightly faster than expected and sentiment abroad declined, which subdued the outlook for inflation in Sweden. More expansionary monetary policies in many countries were expected to stabilise economic developments, however. The economic situation in Sweden remained good at this time, and the conditions for inflation to be close to the inflation target over the next few years too were assessed to be good, given that rate rises were taking place at a slower pace.

### Housing market and household indebtedness risk factors for the Swedish economy

As in previous years, the Executive Board noted in 2019 that one of the greatest domestic risks was the development of the Swedish housing market. From a short-term perspective, it could affect economic developments. The upswing in housing construction and the high rate of increase in housing prices in earlier years contributed to the strong demand in the Swedish economy. After the housing market slowed down in 2017, prices fell (see Figure 2:11). Prices then recovered slightly, but development in the period ahead was uncertain at the start of 2019. One question that was asked was how a further fall in

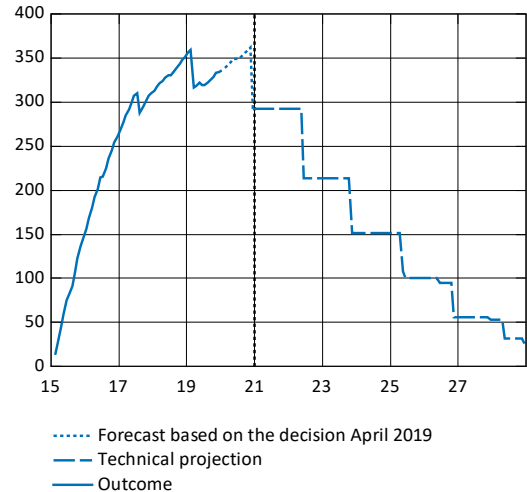
Figure 2:9. The Riksbank's purchases of government bonds  
SEK billion



Note. Nominal amount. Development from 2020 on is a forecast. The final amounts will depend on current market prices.

Source: The Riksbank

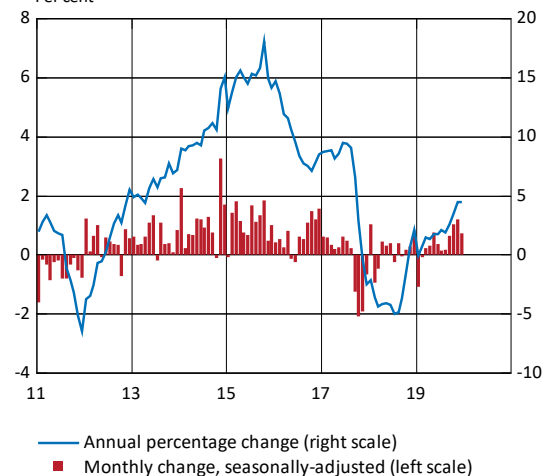
Figure 2:10. The Riksbank's holdings of government bonds  
Nominal amounts, SEK billion



Note. Forecast until December 2020, then subsequently a technical projection under the assumption that no further purchases are made. This was the assessment for the period until and including the monetary policy meeting in February. The vertical line marks the shift between forecast and technical projection.

Source: The Riksbank

Figure 2:11. House prices according to HOX Sweden  
Per cent



Sources: Valueguard and the Riksbank

prices would affect housing investment and household confidence and consumption. However, towards the end of the year, housing prices started to increase slightly faster and uncertainty over short-term development eased slightly.

At the same time, the Executive Board noted that the housing market also forms a risk for the Swedish economy over a longer perspective, which is because the market has a number of structural problems that are creating imbalances and risks, among other things linked to the high and growing indebtedness among households (see Figure 2:12). This is making the Swedish economy vulnerable and risks creating problems if economic developments were to worsen. The problems on the housing market are also affecting the efficiency of the economy in that it is becoming more difficult to move, for example due to a change of job. Addressing these structural problems requires reforms within housing and tax policy.

### Developments approximately as expected, but substantial risk of poorer economic activity

The Executive Board's considerations over the year were made against the background of a somewhat contradictory picture. On the whole, the economy, both internationally and in Sweden, developed in line with the Riksbank's assessments. After having been strong for a number of years, economic activity slowed down towards a more normal level. Inflation fell temporarily but subsequently rose, as expected, to return to close to the target. Resource utilisation was expected to be close to normal levels in the period ahead and, even though the economic outlook was revised downwards, it did not give the appearance of a recession. At the same time, the uncertainty over international economic activity affected sentiment: risks for a weaker development grew and interest rates fell internationally.

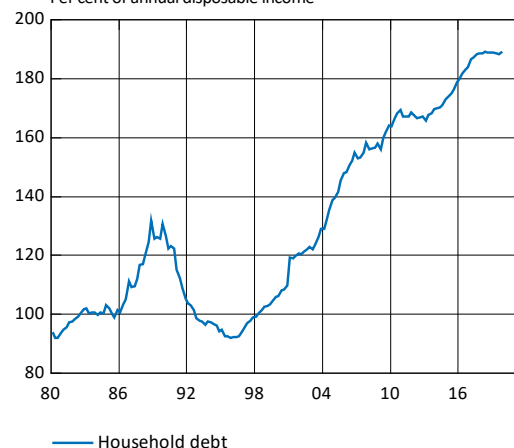
As the development towards a more normal economic situation went faster than expected, the inflation outlook was affected and the Executive Board therefore adjusted the forecast for the repo rate in the longer term downwards. In their considerations, the members of the Executive Board had slightly different opinions on the inflation picture and the risks to the inflation prospects, which meant, among other things, that there were slightly different opinions on whether the repo rate rise towards the end of the year should be implemented or if it could be postponed.

After having been negative since the start of 2015, the repo rate was raised to zero per cent in December. The Executive Board's assessment is that the negative repo rate has worked well and had a positive impact on the economy. But if negative nominal interest rates are perceived as a more permanent state, the behaviour of economic agents may change and negative

### The Riksbank decided to simplify the operational framework for monetary policy

The Riksbank's repo rate decisions are put into practice via the Riksbank's operational framework for the implementation of monetary policy. With the aid of this framework, the Riksbank ensures that the shortest market rates are stabilised close to the repo rate. In July, the Riksbank announced that it was necessary to change the operational framework, as developments on the payment market were making new demands for longer opening hours and better access to the payment system. In September, after having considered comments from its monetary policy counterparties and others, the Riksbank decided to implement certain changes to make the operational framework simpler and more flexible. The changes are taking place in two stages, with the first being taken at the start of October 2019. The adjustments to the operational framework are of a technical nature and are not intended to have any monetary policy effects.<sup>5</sup>

Figure 2:12. Household debt  
Per cent of annual disposable income



Note. Total household debt as a share of disposable household income added together over the last four quarters.

Sources: Statistics Sweden and the Riksbank

<sup>5</sup> Details of the changes and the background to them can be found in the article "The Riksbank's operational framework needs to be adjusted to new conditions" in the Monetary Policy Report for July 2019, as well as in the background material "Amendments to the Riksbank's operational framework for the implementation of monetary policy", Appendix A to the minutes of the Executive Board meeting of 30 September 2019 and "The Riksbank's new operational framework for monetary policy. A consultation from Sveriges Riksbank", July 2019.

effects may arise. See also the article “The Riksbank’s experiences of a negative repo rate”.

## Monetary policy decisions in 2019

12 February	<p>The repo rate was held unchanged at –0.25 per cent. The repo rate forecast was also held unchanged and indicated that the rate would be raised again in the second half of 2019 assuming that the economic outlook and inflation prospects turn out as expected. The mandate that facilitated rapid interventions on the currency market, which had been extended a number of times since introduction in 2016, expired on 12 February 2019. The Executive Board chose not to extend it further.</p>
24 April	<p>The repo rate was held unchanged at –0.25 per cent. The forecast for the repo rate was revised down. It now indicated that the rate would be raised again towards the end of the year, or at the beginning of 2020. Following this, rises were expected to take place at a slightly slower pace. The Executive Board also decided that the Riksbank would purchase government bonds for a nominal value of SEK 45 billion from July 2019 to December 2020. This would take place in order to maintain an appropriate level of holdings and the Riksbank’s presence in the market. Martin Flodén and Henry Ohlsson entered reservations against the decision to purchase government bonds from July 2019 to December 2020. They considered that further purchases would not contribute to attaining monetary policy targets in a clear way, but that there would be risks associated with additional purchases. They also referred to their previous reservations in connection with the Executive Board’s decisions on bond purchases.</p>
2 July	<p>The repo rate was held unchanged at –0.25 per cent. The forecast for the repo rate was also left unchanged and indicated that the rate would be increased again towards the end of the year or at the beginning of 2020.</p>
4 September	<p>The repo rate was held unchanged at –0.25 per cent. The forecast for the repo rate was revised down slightly. As previously, the forecast meant that the rate would be raised towards the end of the year or at the beginning of 2020. After that, however, changes to the rate were expected to be made at a slower pace than in the previous forecast.</p>
23 October	<p>The repo rate was held unchanged at –0.25 per cent. The forecast for the repo rate in the short</p>



18 December	<p>term was unchanged and meant a rate rise in the near term, most probably in December. The forecast for the repo rate after this indicated a longer period with an unchanged repo rate, compared with the earlier assessment.</p> <p>The repo rate was increased to zero per cent. The forecast for the repo rate was held unchanged. Anna Breman and Per Jansson entered reservations against the decision to raise the repo rate. Anna Breman considered that waiting before raising the repo rate in the near term would increase the probability of maintaining inflation close to the target in the longer run. She also considered that it would increase the possibility of continuing to make slow increases of the repo rate over the coming years. She preferred a repo rate path indicating an increase during the first half of 2020 and subsequent rises around once per year in 2021 and 2022. Per Jansson advocated a repo rate path indicating that the repo rate would be raised some way into the forecast period, in a future situation where it could be assumed that the conditions for meeting the inflation target would look a little better.</p>
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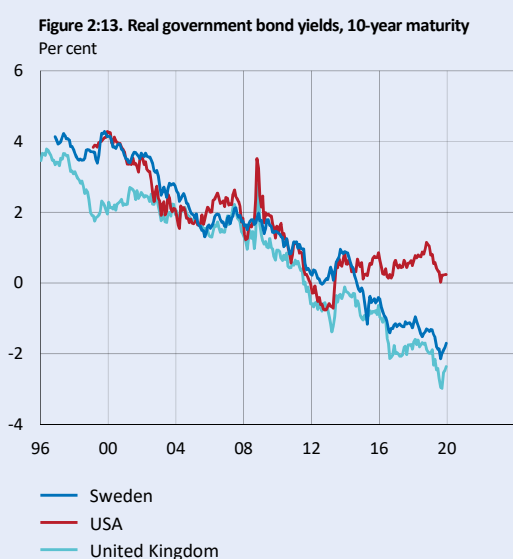
## ARTICLE – The Riksbank’s experiences of a negative repo rate

In February 2015, the Riksbank cut its repo rate below zero for the first time ever. Inflation had then been below the target for a long time and there was a risk that inflation expectations would become entrenched at low levels. In February 2016, the repo rate was cut further to  $-0.5$  per cent. Inflation gradually began to rise and eventually approached 2 per cent again. In December 2018, the repo rate was raised to  $-0.25$  per cent and in December 2019 to zero per cent. The Riksbank was thus the first of the central banks with negative policy rates to raise the rate back to zero. There may therefore be reason to summarise the Riksbank's experiences so far of monetary policy with a negative policy rate. The Riksbank's assessment is that the negative policy rate has had an expansionary effect on the economy and contributed to inflation being close to the target in recent years.

### Why a negative repo rate?

Since the beginning of 2015, the Riksbank has conducted a very expansionary monetary policy, with a negative repo rate and large purchases of government bonds. The Executive Board assessed that this expansionary monetary policy was necessary to bring inflation back to 2 per cent and in this way maintain confidence in the inflation target. The advantages of having an inflation target and why it is a good idea to have a target of 2 per cent are discussed in more detail in the section “The purpose of the inflation target” in Chapter 4.

An important explanation for the repo rate needing to be negative is that interest rates in general, both in Sweden and abroad have become historically low. This is in turn due to structural factors such as demographic developments and

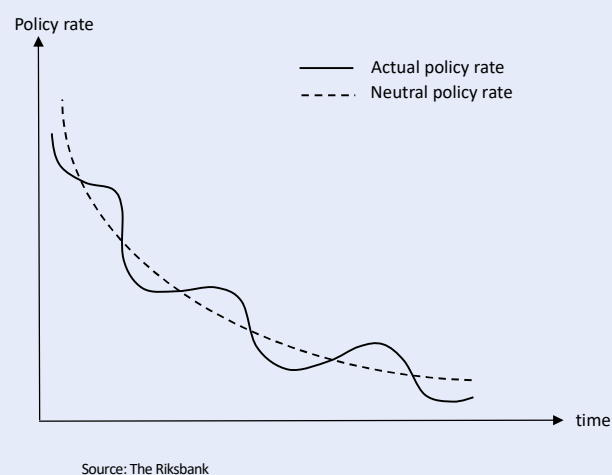


trends in productivity that have led to real interest rates in the world falling in recent decades (see Figure 2:13).<sup>6</sup> The central banks are not able to steer this development.

How this has contributed to the need for a negative repo rate is explained schematically in Figure 2:14.

One consequence of the low interest rates is that the level where central banks' policy rates are 'neutral' – that is, neither expansionary nor contractionary – has fallen over time. In Figure 2:14 the neutral policy rate is represented by the broken line.

Figure 2:14. The average policy rate has fallen



When central banks conduct monetary policy via the policy rate, they change it in the way described in the solid line. An interest rate that is lower than the neutral one stimulates demand and inflation, while an interest rate that is higher than the neutral one has the opposite effect. When the neutral interest rate is very low, the central bank's policy rate

<sup>6</sup> One of the reasons why the *nominal* interest rates around the world have fallen and are now lower than they were a few decades ago, is that inflation has fallen due, for instance, to the introduction of inflation targeting. The nominal interest rate includes compensation for inflation.

may need to be negative to obtain a sufficiently expansionary effect. The reason the Riksbank's repo rate has been negative is thus partly because interest rate in general are very low, and partly because the Riksbank needed to conduct a very expansionary policy to maintain confidence in the inflation target.

### The negative repo rate has had an expansionary effect

As a negative repo rate had not been used before in Sweden, the decision to introduce it had to be based on a thorough analysis.<sup>7</sup> Some of the analysis was published in autumn 2015 in the form of an Economic Commentary.<sup>8</sup> This also analysed whether a negative repo rate could be expected to have less effect on other interest rates in the economy than a positive one. To "test the waters" in this new environment, the Riksbank cut the repo rate in smaller steps than normal.

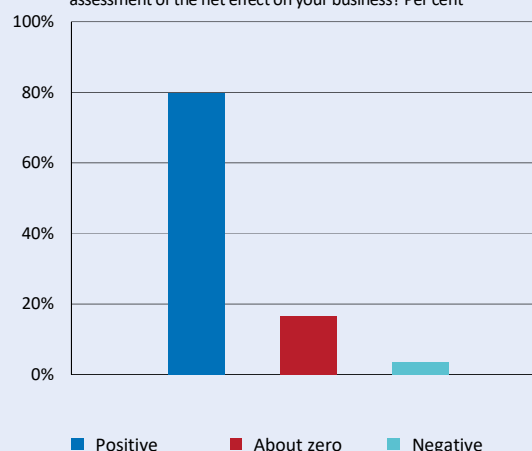
One fear raised by some was that rate cuts below zero would not have any effect, but perhaps even be counterproductive.<sup>9</sup> An empirical study by the Riksbank shows, however, that the negative repo rate has had a strong and immediate impact on Swedish money market rates and lending rates to companies, although the impact on lending rates to households was weaker and slower.<sup>10</sup> The study assesses that most of the monetary policy channels, such as market rates and the exchange rate, have functioned more or less as usual, even with a negative policy rate. The conclusion is that the negative repo rate has contributed to making monetary policy more expansionary, although the channel via bank loans to households may have been more subdued than normal. However, it is also pointed out that there is a possibility that the impact could gradually weaken if the repo rate were cut lower than  $-0.5$  per cent.

Another type of information comes from the Riksbank's Business Survey. In November 2019, the companies were asked how interest rates over the past five years had affected their business.<sup>11</sup> During this period, the repo rate was negative almost all of the time.

Four out of five companies considered that the net effect of the low interest rates over the five-year period has been positive, primarily because the low interest rates had helped to sustain general demand in the economy (see Figure 2:14). Just under a fifth considered that the effect had been approximately zero, while a small share considered that the low interest rates had had a negative effect on their business.

Figure 2:15. Question in the Riksbank's business survey

Regarding the low interest rates over the past five years: What is your assessment of the net effect on your business? Per cent



Note. Weighted share of companies choosing each response alternative.

Source: The Riksbank's Business survey

### International experiences paint a similar picture

Central banks in several other economies have also introduced negative policy rates, for instance in Denmark, Switzerland, Japan and within the euro area. A report from the Committee on the Global Financial System (CGFS) at the Bank for International Settlements (BIS) has compiled the central banks' experiences of unconventional monetary policy.<sup>12</sup> An overall conclusion is that the negative policy rate has had an impact. They also note, as was the case in Sweden, that the monetary policy transmission mechanism has functioned roughly as normal, with the exception of deposit rates to households in many cases not falling below zero.<sup>13</sup>

Altavilla et al have studied how negative policy rates affect banks and companies within the euro area.<sup>14</sup> They find that as long as the banks are healthy and function well, a negative policy rate will stimulate economic activity.<sup>15</sup> Brunnermeier and Koby, who also study the euro area, try to estimate at which policy rate further cuts will no longer stimulate lending, but instead have a contractionary effect. They find that this level is around  $-1$  per cent.<sup>16</sup>

All in all, the practical experiences so far in Sweden and other countries show that monetary policy functions even when the policy rate is negative, at least at the relatively moderate negative levels that so far have been implemented.

<sup>7</sup> A negative policy rate had immediately prior to this been introduced in the euro area, Denmark and Switzerland. As early as July 2009, the banks' deposit rate with the Riksbank, the floor in the interest rate corridor, was negative during a period of time when the Riksbank cut the repo rate to 0.25 per cent. However, it was not until February 2015 that the repo rate was cut below zero.

<sup>8</sup> J. Alsterlind, H. Armelius, D. Forsman, B. Jönsson, and A-L. Wretman, "How far can the repo rate be cut?", Economic Commentaries No. 11, Sveriges Riksbank, 2015.

<sup>9</sup> See, for instance, G.B. Eggertsson, R. E. Juelsrud, L. H. Summers and E. Gezt Wold, "Negative Nominal Interest Rates and the Bank Lending Channel", NBER Working Paper No. 25416, January 2019. They construct a model that they calibrate using Swedish data. They claim that a repo rate of  $-0.50$  no longer reduces the lending rate, but increases it.

<sup>10</sup> H. Erikson and D. Vestin, "Pass-through at Mildly Negative Policy Rates: The Swedish Case", Staff Memo January 2019, Sveriges Riksbank.

<sup>11</sup> The Riksbank's Business Survey November 2019.

<sup>12</sup> "Unconventional Monetary Policy Tools: A Cross-Country Analysis", CGFS Papers No. 63, October 2019, Bank for International Settlements. Unconventional monetary policy means, in addition to a negative policy rate, for instance purchases of various assets and what is known as forward guidance.

<sup>13</sup> See also "Negative Interest Rate Policies—Initial Experiences and Assessments", IMF Policy Paper, August 2017, International Monetary Fund for an earlier review of international experiences.

<sup>14</sup> C. Altavilla, L. Burlon, M. Gianetti and S. Holton, "Is there a zero lower bound? The effects of negative policy rates on banks and firms", ECB Working Paper Series No. 2289, 2019.

<sup>15</sup> See also M. Rostagno, C. Altavilla, G. Carboni, W. Lemke, R. Motto, A. Saint Guilhem and J. Yiangou, "A tale of two decades: the ECB's monetary policy at 20", ECB Working Paper Series, No. 2346, December 2019, for a review of the euro area's experiences of unconventional monetary policy in general.

<sup>16</sup> M.K. Brunnermeier and Y. Koby, "The Reversal Interest Rate", NBER Working Paper 25406, December 2018. The mechanism in brief means that the banks cease lending money in consideration of their own financial situation.

### Side effects – of a *negative* interest rate or *low* interest rate?

The Riksbank's analysis from 2015 also emphasised that a negative interest rate could have undesired side-effects. Here it is important to distinguish between the effects of the repo rate being *low* and monetary policy being expansionary in general, and the repo rate being *negative*. A negative policy rate is of course an especially low interest rate, but there are nevertheless reasons for distinguishing between low and negative rates. The extent to which, for instance, the krona depreciation in recent years is due to monetary policy concerns monetary policy being expansionary, rather than the repo rate being negative, per se. That the exchange rate is considered as too weak is thus not an argument against a *negative* policy rate.

### Negative repo rate has not led to large cash withdrawals

One side-effect that specifically concerns the negative interest rate is that if deposit rates become sufficiently negative for large groups, especially households, they may decide to withdraw their savings from the banks and hold them in cash instead. The reason is that the return on cash is zero, so it would then be higher than the negative interest rate on deposits. If such a situation were to arise, it would mean that the central bank can no longer use the policy rate to stimulate demand.

Large withdrawals of cash could also lead to a liquidity risk for the banks in that parts of their financing disappear and must be replaced by wholesale funding. If the outward flows become large or very sudden, the banks might have difficulty coping with them.

However, during the period with a negative repo rate, households in Sweden have not experienced a negative interest rate on their bank deposits. The problem of extensive cash withdrawals therefore never arose. It is possible that the risk of this is not as great in Sweden as in many other countries. As Swedes have largely abandoned cash in favour of other payment methods, such as charge cards and Swish (mobile payment app), the cost of holding cash is probably perceived as higher. It is therefore conceivable that it would take longer for Swedish households to react to a negative deposit rate than households in many other countries. It is also worth noting that companies and municipalities have had negative deposit rates with the banks, but have not withdrawn large amounts of cash.

### ... or to weaker banks

Another effect that specifically concerns a negative interest rate is if the banks choose *not* to allow deposit rates to go below zero, their profitability will decline. This is because their interest income declines when interest rates fall, while

the cost of financing through deposits does not fall to the same extent. The problem of a decline in profitability is that, for instance, it limits the banks' resilience to future losses and thus can contribute to financial instability, and it can also lead to a reduction in their credit granting. However, the major Swedish banks have had a good level of profitability throughout the period with a negative repo rate. One reason has been the high demand for mortgages, which has generated substantial profits.

The report from CGFS at the BIS on international experiences also draws the conclusion that this type of side-effect has been manageable so far. It concludes that the banks' mortgage margins have fallen, but this is linked to the low interest rates and not specifically to negative interest rates. There has not been any extensive hoarding of cash abroad, which in turn is linked to deposit rates not falling below zero for very many groups.

### Longer period with a negative interest rate can change incentives

It should be pointed out that the experiences both with regard to households' deposit rates and the banks' profitability of course refer to the period so far with a negative interest rate. In a hypothetical situation where the interest rate would be negative for a longer period of time, or be much more negative, it is possible that the conditions and incentives would change. For instance, several banks in Denmark and Germany have now introduced negative deposit rates for households. With regard to Sweden, one must also bear in mind that the competition on the Swedish mortgage market has increased in recent years, in that more participants have entered the market.<sup>17</sup> This could mean that the banks' profitability declines going forward, which in turn could affect their incentives to allow households' deposit rates to become negative.

### Negative interest rate can be perceived as unnatural

Another potential problem with a negative interest rate is that it can be perceived as unnatural and difficult to relate to. This is partly because a negative interest rate is perceived as abnormal in the good economic situation we have had. But there also appears to be a more general scepticism towards negative interest rates as such.

A negative nominal rate is a new phenomenon in historical terms, and it is not especially remarkable that it is perceived as abnormal. On the other hand, it has not been unusual for the *real* return on, for instance, bank accounts, that is the return adjusted for inflation, periodically being negative, even when the nominal interest rate has been positive. As it is the real yield that determines people's purchasing power and it is usually purchasing power that one

<sup>17</sup> See N. Engström, "New challengers on the mortgage market – Increased competition and possible pressure on interest rates", Economic Commentaries No. 1 2020, Sveriges Riksbank.

is concerned about, the view that a negative nominal rate is more special than a negative real rate can to some extent be regarded as an example of a so-called “money illusion”.<sup>18</sup>

One sign that a negative interest rate is perceived as unnatural is that arguments are often put forward in the Riksbank’s Business Survey that a negative interest rate for various reasons “intuitively feels wrong”, despite the economic effects on the whole being regarded as positive. It is possible that the main complications with negative rates are not so much a question of purely economic aspects, but rather of what is feasible according to social conventions and possible to create understanding for.

### ... but could become more common

Global real interest rates will probably remain low for the foreseeable future. It is therefore possible that policy rates below zero will be relatively common in coming decades. One therefore cannot rule out the possibility of economic agents’ views of what is normal also gradually changing.

It is however important that even if the agents were to begin to regard it as more normal that nominal interest rates now and then are negative, they do not begin to perceive an *inflation rate* significantly below 2 per cent as normal. If this were the case, and inflation and inflation expectations became entrenched at a very low level, monetary policy would become less effective and the policy rate would be negative even more often.

### Side-effects of expansionary policy are unavoidable

Other possible side-effects essentially concern the fact that monetary policy has been expansionary, rather than that the repo rate has been negative. For example, household debts have increased and many asset prices have risen, which may have led to wealth gaps increasing.

The fact that an expansionary monetary policy has effects on asset prices and debts is a part of the monetary policy transmission mechanism, in roughly the same way as monetary policy affects the krona exchange rate via the exchange rate channel.

When it comes to the distributional effects of monetary policy, one must of course also take into account the positive effects of an expansionary monetary policy contributing to higher employment and for instance higher equity prices benefiting many through the widespread saving in pension funds and mutual funds.

One can of course make the assessment that the negative effects have been so great that the Riksbank should not have conducted such an expansionary monetary policy. In practice, this means that the Riksbank should not have tried to maintain confidence in the inflation target, but should instead

have focussed on other factors that are not the statutory objectives of monetary policy.<sup>19</sup>

### Strong political support for the inflation target

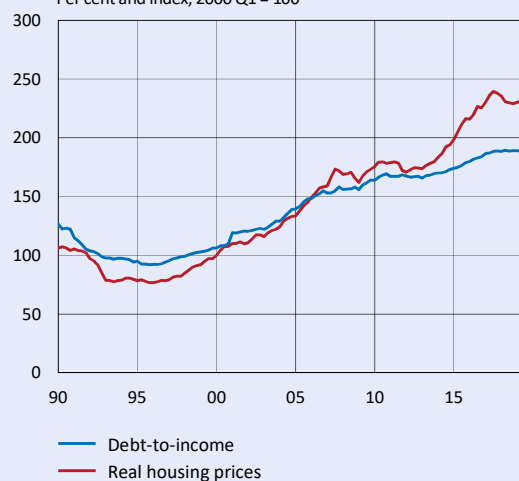
As observed in Chapter 4, there is broad political support for the Riksbank’s main task being to maintain confidence in the inflation target of 2 per cent. There are also good economic reasons for the Riksbank having this task. Nor does the Riksbank differ in this respect, but has largely the same framework as all other central banks in countries with floating exchange rates.

In the economic-political role allocation adopted in Sweden, this is the task allocated to the Riksbank. Finansinspektionen has been given the responsibility for macroprudential policy and is to, among other things, prevent the build-up of excessive debt among households. Income and wealth distribution in society is part of the Government’s remit.

### Low real interest rates important explanation for high debts and housing prices

As noted above, the general interest rates have fallen around the world. This has also had effects other than central bank policy rates in a neutral position having to follow these rates downwards, as in Figure 2:14. For example, it is one explanation why housing prices and household debt in many countries, including Sweden, have increased in parallel and almost constantly for more than twenty years (see Figure 2:16). During this period, monetary policy has been both expansionary and contractionary, that is, in terms of Figure 2:14, the repo rate have been both below and above its neutral position.

Figure 2:16. Households’ debt-to-income ratio and real housing prices  
Per cent and index, 2000 Q1 = 100



Note. The debt-to-income ratio refers to the percentage of households’ debts in relation to their annual disposable incomes. Real house prices refer to the property index (single-family dwellings) deflated using the CPI-F.

Sources: Statistics Sweden and the Riksbank

<sup>18</sup> Money illusion is a tendency to think in nominal terms instead of real terms, and thereby disregard the fact that inflation affects purchasing power.

<sup>19</sup> Alternatively, one can hypothesise that confidence could have been maintained even if the policy has been less expansionary than it was. This is of course difficult to either reject or confirm in formal

terms. But given that inflation was below 1 per cent at the beginning of 2015 and long-term inflation expectations were at record-low levels, and that the policy conducted has had an effect, it is reasonable to assume that it would have been difficult to maintain confidence in the target with a less expansionary policy.

The expansionary monetary policy in recent years has contributed to pushing up asset prices and debts further. But the trend fall in the real interest rate, in combination with structural problems on the housing market, is probably a more important contributory factor for why housing prices and debt are on the level they are today. However, developments on the housing market have been calmer since 2017 and the increase in household debt has also slowed in recent years, precisely because structural factors have changed while monetary policy has remained expansionary.

### **Summary**

The Riksbank's assessment is that the negative policy rate has had an expansionary effect and contributed to inflation being close to the target in recent years. The potential problems of a *negative* interest rate specifically – widespread cash withdrawals and weakened banks – have not materialised. International experiences also suggest that a negative interest rate is an effective measure.

The fact that the repo rate was increased to zero was not because of bad experiences of a policy rate lower than zero, but because the Riksbank made the assessment that the repo rate no longer needed to be negative. Cutting the repo rate below zero is a monetary policy measure that can be relevant also in the future.

## CHAPTER 3 – The Riksbank’s forecasts and monetary policy in recent years

Monetary policy affects inflation and the rest of the economy with a delay and is therefore based on forecasts. Normally, the Riksbank adapts monetary policy so that the forecast for CPIF inflation is close to the target a few years ahead. This means the monetary policy conducted by the Riksbank in 2017 and 2018 – and the forecasts it was based on – was highly significant for target attainment in 2019. Monetary policy continued to be very expansionary in 2017 and 2018, when the repo rate remained at –0.5 per cent at the same time as the Riksbank’s holdings of government bonds were considerable. In December 2018, the first repo rate rise since 2011 was implemented, from –0.5 to –0.25 per cent. The forecasts that guided monetary policy in 2017 and 2018 captured the future development of inflation and economic activity relatively well. But the slowdown in Swedish economic activity was somewhat sharper than was reflected in the forecasts. Overall, this has meant that monetary policy has largely followed the forecasts outlines in 2017 and 2018, although the repo rate increases from –0.5 up to zero percent occurred somewhat later than expected.

### The forecasts made in 2017 and 2018 formed the basis of the monetary policy conducted during these years

One way of approaching the question of whether monetary policy in 2017–2018 contributed to good target attainment in 2019 is to study the accuracy of the Riksbank’s forecasts for inflation and the rest of the economy made during these years. This provides a picture of the monetary policy conducted and the assessments upon which it was based.

A starting-point for such an analysis is that the effects of monetary policy on the economy mainly arise a few years ahead. One should, however, be aware that certain effects of monetary policy can arise more rapidly than this. This applies, for example, when changes in the exchange rate affect the prices of imported goods. The monetary policy conducted during 2019, described in Chapter 2, may therefore also have affected inflation to a certain extent during the same year. But that said, the rest of this chapter will focus on the Riksbank’s forecasts and monetary policy in 2017 and 2018.

Figures 3:1-3:9 show the actual developments and the Riksbank’s forecasts during the years 2017 and 2018 for a number of central variables. The purpose of the figures is to in a general manner illustrate the Riksbank’s view of the future during these years and compare it with the outcomes. It is therefore not necessary to distinguish individual forecasts.

### Inflation largely in line with the Riksbank’s forecasts

Figure 3:1 shows that CPIF inflation since 2017 has largely developed in line with the Riksbank’s forecasts, although it was somewhat lower than expected in 2019. In 2017 and particularly in 2018, rising energy prices contributed significantly to inflation. The forecasts made by the Riksbank in 2018 reflected an expectation of slower energy price growth in the period ahead,

#### Even well-founded forecasts can be wrong

Target attainment, as discussed in Chapter 1, is a natural starting point for an assessment of monetary policy. But the extent to which inflation deviates from the target does not necessarily give the full picture of how well monetary policy has been conducted.

Monetary policy is based on forecasts as it affects economic activity and inflation with a certain time lag. The objective is obviously that the Riksbank’s forecasts shall be correct so that monetary policy decisions are based on an accurate picture of economic developments going forward. However, unforeseen events occur all the time in the economy, which means that deviations from the inflation target are more the rule than the exception. Some statistics are also revised, leading to outcomes that were taken for granted when the forecasts were made may subsequently be changed. All these factors together mean that even well-founded and carefully prepared forecasts often turn out to be wrong.

so that the inflation rate would decline. This pattern also became apparent in the actual development of inflation. By excluding energy prices, which vary a great deal, a supplementary picture can be obtained of how well the Riksbank's forecasts captured future development. The forecasts for inflation measured with the CPIF excluding energy made by the Riksbank in 2017 and 2018 proved to be slightly too high (see Figure 3:2).

Overall, however, the forecasts for CPIF inflation made by the Riksbank in 2017 and 2018 captured future development relatively well.

**The repo rate has been relatively close to the Riksbank's forecasts since the beginning of 2017**

The development of the repo rate in relation to the forecast since the beginning of 2017 is a reflection of how accurate the Riksbank's forecasts were in general. The Riksbank's forecast at the beginning of 2017 indicated that the repo rate was expected to be unchanged at -0.50 per cent for another year or so and then be raised during the second half of 2018. The rate was then expected to reach zero per cent at the start of 2019.

The actual development of the repo rate proved to be quite well in line with the forecasts made by the Riksbank in 2017 and 2018 (see Figure 3.3). This is due to the overall relatively minor deviations between the forecasts and outcomes with regard to CPIF inflation. But as the forecasts overestimated future CPIF inflation somewhat, the repo rate rises occurred somewhat later than expected (see Figure 3:3). The first increase from -0.5 to -0.25 per cent was implemented in December 2018, and the next up to zero per cent was implemented one year later, in December 2019. In a longer time perspective, the deviations between the actual development of the repo rate and the earlier forecasts can be considered very minor.<sup>20</sup>

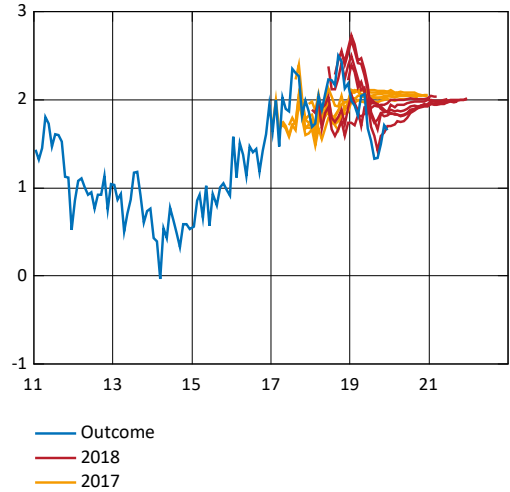
**Developments abroad captured relatively well in the forecasts**

Sweden is a small, open economy, which means that developments abroad are highly significant. To capture developments overall, the Riksbank weighs different countries together based on their significance for Sweden's foreign trade with the help of the KIX krona index. Development in the euro area is clearly the most significant, and these have a weight of almost 50 per cent in the index.

That growth abroad in 2017 was stronger than the Riksbank expected was due in part to growth in the euro area picking up, after a long period of weak development in the wake of the European debt crisis (see Figure 3:4). The slowdown that occurred in growth after 2017 was also sharper than the Riksbank had expected. This was in part due to major political uncertainty in the wake of the trade conflict between the United States and China and the toing and froing over the United Kingdom's withdrawal from the EU.

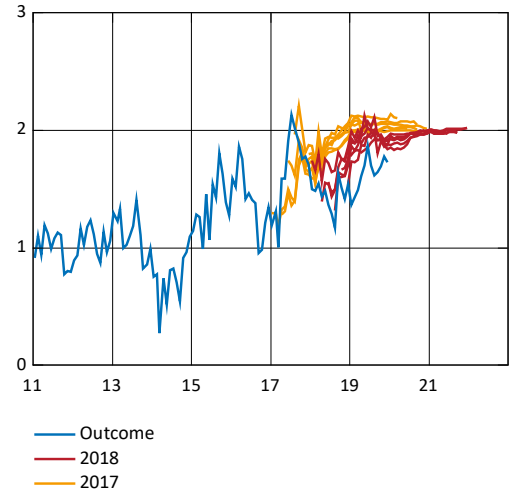
<sup>20</sup> See, for example, "The Riksbank's experiences of publishing repo rate forecasts", Riksbank Studies, June 2017.

**Figure 3:1. CPIF, outcome and forecasts**  
Annual percentage change



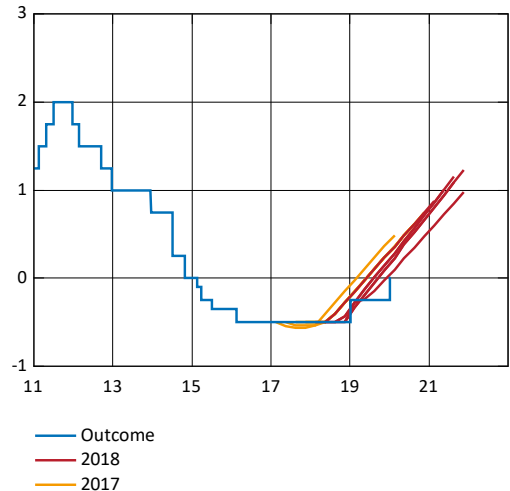
Note. The yellow and red lines represent the Riksbank's forecasts 2017 and 2018. Sources: Statistics Sweden and the Riksbank

**Figure 3:2. CPIF excluding energy, outcome and forecasts**  
Annual percentage change



Note. The yellow and red lines represent the Riksbank's forecasts 2017 and 2018. Sources: Statistics Sweden and the Riksbank

**Figure 3:3. Repo rate, outcome and forecasts**  
Per cent



Note. The yellow and red lines represent the Riksbank's forecasts 2017 and 2018. Some of the forecasts made in 2017 largely coincide with each other. Outcomes are daily data and forecasts refer to quarterly averages. Source: The Riksbank



Inflation development abroad up to 2019 was captured quite well by the forecasts made by the Riksbank in 2017 and 2018 (see Figure 3:5). In 2019, however, international inflation was clearly lower than the Riksbank had expected. An important explanation for this is that underlying inflation in the euro area was unexpectedly low. Furthermore, variations in the oil price have led to greater fluctuations in development than indicated by the forecasts.

### The krona exchange rate was clearly weaker than expected

A link between inflation abroad and in Sweden is the krona exchange rate. The most direct effect is via import prices.<sup>21</sup> As shown in Figure 3:6, the krona exchange rate has been much weaker than the Riksbank expected in 2017 and 2018. As the forecasts have not captured future development particularly well, the Riksbank has reviewed its exchange rate forecasts. More details about this can be found in the article “The Riksbank’s exchange rate forecasts”.

The Riksbank’s assessment is that the weak krona exchange rate has made a significant contribution to Swedish inflation in recent years. The effect is mainly due to the rise in the price of Swedish imports.<sup>22</sup>

### Economic slowdown in Sweden occurred more rapidly than expected

The Riksbank’s forecasts for GDP growth in Sweden made in 2017 and 2018 indicated that growth would slow in the coming years, towards a historically normal rate of around 2 per cent (see Figure 3:7). But the slowdown occurred more rapidly than expected. An important cause of this was developments on the housing market. The fall in housing prices in the autumn of 2017 led to a sharp reduction in Swedish housing investment, and household consumption was also negatively affected.

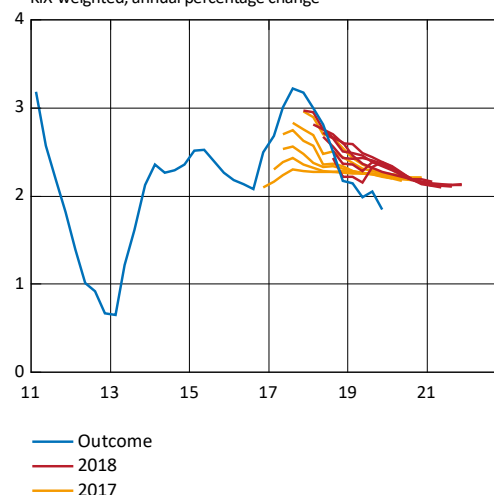
That the economic slowdown in Sweden was sharper than expected is also evident when comparing the Riksbank’s forecasts for unemployment with the actual development. Although the decline in unemployment was unexpectedly substantial up until 2018, the subsequent upturn was steeper than expected (see Figure 3:8). It should be noted, however, that Statistics Sweden, the agency responsible for official labour market statistics, reported major problems with the quality of the statistics last year. It is therefore difficult to evaluate the Riksbank’s forecasts for unemployment in particular. The sharp rise in unemployment indicated by the statistics at first proved, for example, not to be correct.<sup>23</sup> But the qualitative conclusion, that economic activity slowed more rapidly than expected, seems reasonable based on an overall assessment of labour market statistics from different sources.

<sup>21</sup> Assume that the nominal krona (SEK) exchange rate against the euro weakens by 10 per cent. For a Swedish company importing a product from the euro area priced in euros, this means that the price in SEK will be 10 per cent higher.

<sup>22</sup> See, for example, “The significance of the krona for inflation”, article in Account of Monetary Policy 2018, Sveriges Riksbank.

<sup>23</sup> See the box “Revised labour market statistics following errors in LFS” in Chapter 2.

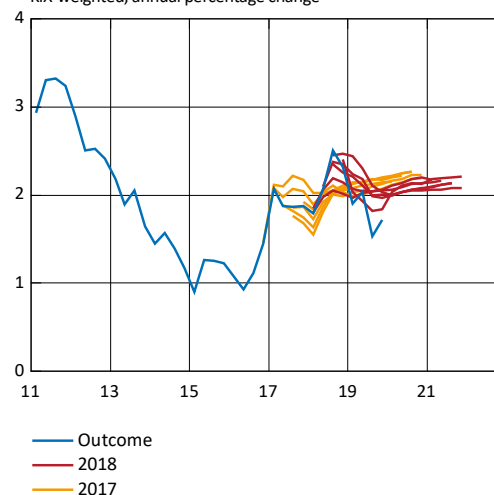
Figure 3:4. GDP abroad, outcome and forecasts  
KIX-weighted, annual percentage change



Note. The yellow and red lines represent the Riksbank’s forecasts 2016 and 2017. KIX refers to an aggregate of countries that are important for Sweden’s international transactions.

Sources: National sources and the Riksbank

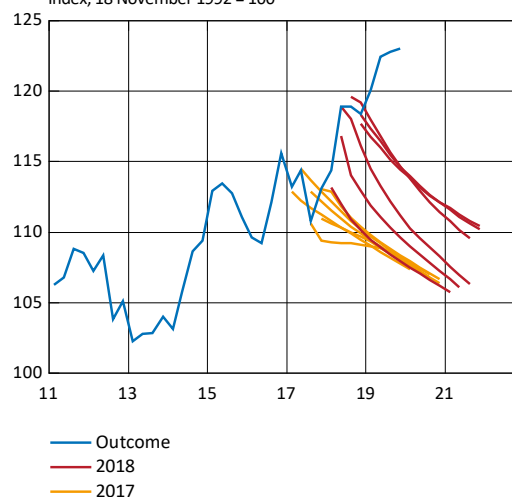
Figure 3:5. Inflation abroad, outcome and forecasts  
KIX-weighted, annual percentage change



Note. The yellow and red lines represent the Riksbank’s forecasts 2017 and 2018. KIX refers to an aggregate of countries that are important for Sweden’s international transactions.

Sources: National sources and the Riksbank

Figure 3:6. KIX-weighted nominal exchange rate, outcome and forecasts  
Index, 18 November 1992 = 100



Note. The yellow and red lines represent the Riksbank’s forecasts 2017 and 2018. The KIX (krona index) is a weighted average of the krona exchange rate against currencies in countries that are important for Sweden’s international transactions. A higher value indicates a weaker exchange rate.

Sources: National sources and The Riksbank

### Unexpectedly high domestic cost pressures, despite modest wage growth

Domestic cost pressures are normally measured in terms of unit labour costs, that is wages in relation to productivity. In comparison with earlier periods of corresponding economic activity, wage growth in the Swedish economy has been unexpectedly modest in recent years.<sup>24</sup> However, similar to regions such as the United States and the euro area, productivity growth in Sweden has been remarkably weak, leading to unit labour costs rising unexpectedly rapidly, despite the modest wage growth. The rate of increase in unit labour costs has been higher than forecast by the Riksbank in 2017 and 2018 (see Figure 3:9).

### Companies have been cautious with regard to increasing prices

As unit labour costs have grown unexpectedly rapidly at the same time as the krona exchange rate has been clearly weaker than expected, the question arises as to why Swedish inflation did not go even higher in 2019. In the Riksbank's business survey in May 2019, more detailed questions were asked about companies' pricing. The survey indicated that 60 per cent of companies raise prices when they see that costs are increasing (see Figure 3:10). At the same time, however, around 70 per cent stated that they are cautious with regard to increasing prices, as their competitors may not do so. This was particularly evident among companies that primarily sell to households, where all of them said they consider such matters. Among consumer-related companies, that have a direct effect on inflation, there would seem to be particularly strong resistance to passing on cost increases to consumers.

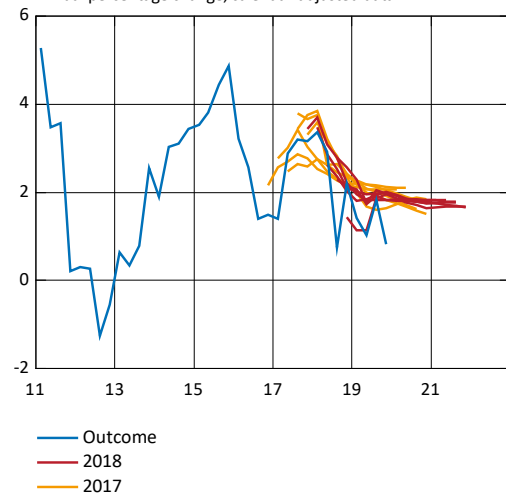
### No major differences between the Riksbank's and other analysts' forecasts in recent years

To shed further light on the forecasts and monetary policy in recent years, the Riksbank's forecasts can be compared with those of other analysts. Every year, the Riksbank publishes detailed documentation containing such a comparison. The forecasts made in 2017 and 2018 show that all analysts had expected CPI inflation and the repo rate to be slightly higher than they actually were in 2019. On the whole, the differences among the analysts are minor. This is described in more detail in "A review of the Riksbank's forecasts", Riksbank Studies, March 2020 and the corresponding report from March 2019.

### Monetary policy has contributed to close-to-target inflation

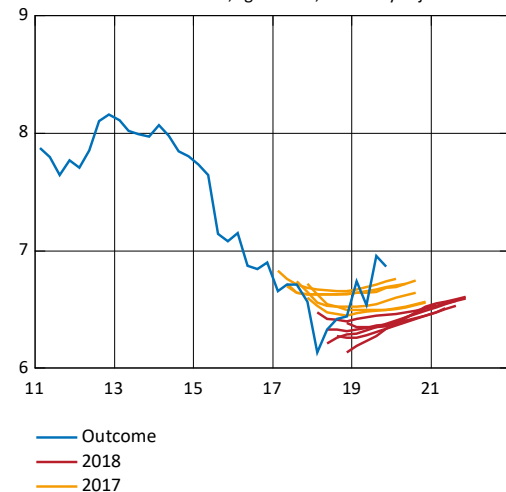
The monetary policy conducted in 2017 and 2018 was still very expansionary. The Riksbank aim was to safeguard confidence in the inflation target by ensuring that inflation remained close to 2 per cent in the years ahead. Broadly speaking, the Riksbank's assessment of future economic development both abroad and in

Figure 3:7. GDP, outcome and forecasts  
Annual percentage change, calendar-adjusted data



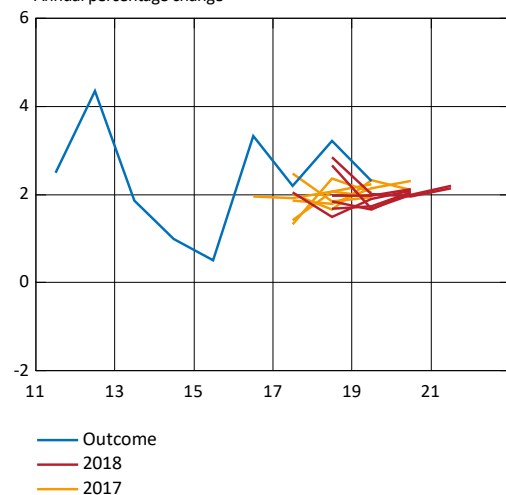
Note. The yellow and red lines represent the Riksbank's forecasts 2017 and 2018.  
Sources: Statistics Sweden and the Riksbank

Figure 3:8. Unemployment, outcome and forecasts  
Per cent of the labour force, aged 15-74, seasonally-adjusted data



Note. The yellow and red lines represent the Riksbank's forecasts 2017 and 2018.  
Sources: Statistics Sweden and the Riksbank

Figure 3:9. Unit labour cost, outcome and forecasts  
Annual percentage change



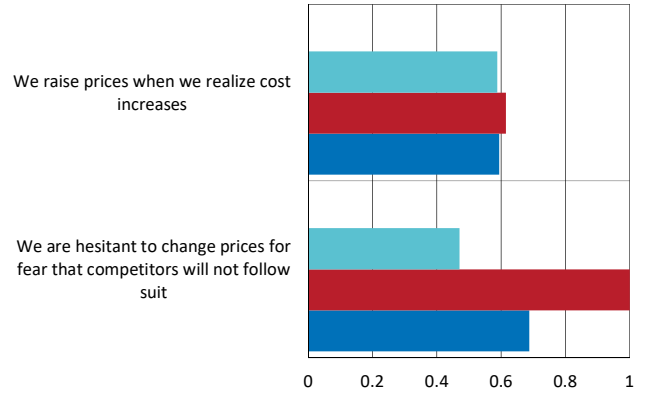
Note. The yellow and red lines represent the Riksbank's forecasts 2017 and 2018.  
Source: Statistics Sweden and the Riksbank

<sup>24</sup> See the article "The Phillips curve and monetary policy" in Monetary Policy Report, July 2018.

Sweden has captured the actual development. Monetary policy has thereby been based on forecast data that has subsequently proven to be reasonable. In this way, monetary policy has had the intended effect and contributed to close-to-target inflation and stable development of the real economy.

**Figure 3:10. Statements that companies think best describe their pricing behaviour**

Share of companies choosing each response alternative, per cent



- All companies
- Companies that mainly sell to households
- Companies that mainly sell to other companies

Note. The figure shows a sample of responses about pricing behaviour in Figure 5 in the article "Why don't prices change more?" in the Riksbank's Business Survey, May 2019. The question was: Which of the following statements corresponds best with how you decide your sales prices (choose one or more alternatives)? A total of 32 companies answered the question, two of whom stated that the public sector was responsible for the largest share of their revenue.

Source: The Riksbank's Business Survey

## ARTICLE – Analysing exchange rates – a few key concepts

This article discusses a few key concepts in the analysis of exchange rate development. The aim is to provide an introduction and background to the subsequent article “The Riksbank’s exchange rate forecasts”, which describes both how the Riksbank has made its assessments of the future development of the Swedish krona (SEK) and the current development work. To begin with, the article explains the difference between nominal and real exchange rates and the concept of a trade-weighted exchange rate. After that, the equilibrium real exchange rate and the most common theories for how it is determined are discussed.

### Nominal and real exchange rates

The krona’s *nominal exchange rate* shows the number of SEK per unit of foreign currency, for example, SEK 10.50 per euro (EUR) or SEK 9.50 per US dollar (USD). The krona’s *real exchange rate* shows the relation between Swedish and foreign price levels, expressed in the same currency, according to the following formula:

$$\text{Real exchange rate} = \text{Nominal exchange rate} \times \frac{\text{foreign price level}}{\text{Swedish price level}}$$

The development of the real exchange rate is therefore determined by the nominal exchange rate and by how the price level develops in Sweden compared with other countries. Note that a *lower level signifies a stronger rate*, in exactly the same way as for the nominal exchange rate.<sup>25</sup>

When making economic decisions, the real exchange rate is normally most significant. Assume that a household in Sweden has the choice between buying a product in a Swedish shop or via an online store in Germany.<sup>26</sup> That the nominal exchange rate is, for example, SEK 10.50 per euro (EUR) does not provide much guidance for this decision. But if the product costs SEK 100 in Sweden and EUR 10 in Germany, the calculation of the real exchange rate shows that the price is SEK 105 in Germany and SEK 100 in Sweden. In this example, it would therefore appear to be more tempting to buy the product in Sweden.

It is the real exchange rate that influences the krona’s purchasing power and competitiveness in an international perspective. The stronger the real krona exchange rate, the greater the krona’s purchasing power, but the weaker

the competitiveness of the Swedish export sector. How does this fit together?

Since 1986, The Economist has tracked the price of a Big Mac hamburger in different countries expressed in the same currency, in other words a real exchange rate for a single product. Table 3:1 below looks back in history, from 1986 to 2019. In 1986, a Big Mac cost SEK 17 in Sweden but only SEK 11 in the United States. For the price of a Big Mac in Sweden, the holder of SEK who then exchanged them for USD could therefore buy about one and a half Big Macs in the United States. In this way, the krona’s purchasing power was strong. But if we toy with the idea of having exported the Big Mac from Sweden to the United States for SEK 17, demand had not been particularly high, as the price in the United States was SEK 11.<sup>27</sup> In this way, the strong real exchange rate meant that the competitiveness of the Swedish export sector was weak.

Table 3:1. Illustration of the nominal and real exchange rates using a Big Mac

	Nominal exchange rate, SEK/USD	Big Mac in Sweden, SEK	Big Mac in United States, USD	Big Mac in United States, SEK	Real exchange rate
1986	6.90	17	1.6	11	11/17≈0.65
1993	7.40	26	2.3	17	17/26≈0.65
2013	6.80	42	4.6	31	31/42≈0.74
2019	9.50	51	5.7	54	54/51≈1.06

Sources: The Economist and Sveriges Riksbank.

During the first year with a floating exchange rate, 1993, the nominal krona rate was somewhat weaker than in 1986.<sup>28</sup> But the price of a Big Mac in Sweden had risen slightly more than in the United States, so that the relation between the price in SEK in the United States and in Sweden, the real krona exchange rate, was about the same. If we quickly move

<sup>25</sup> A stronger rate therefore means that a certain amount of SEK can be bought with foreign currency. One should be aware that real and nominal exchange rates can sometimes be defined in the opposite way, so that the value rises when the exchange rate strengthens. The definition is based on the nominal exchange rate being measured as the number of units of foreign currency per unit of domestic currency. If the krona is 9.50 against the dollar, the nominal krona exchange rate would instead be  $1/9.50 \approx \text{USD } 0.11$  per krona. The real exchange rate is defined in this example as the price level in Sweden converted into USD and divided by the price level in the United States.

<sup>26</sup> To facilitate the comparison, we can assume that the online store does not charge a shipping fee.

<sup>27</sup> In practice, it is more likely that an export product from Sweden to the United States has been priced in USD. The price of a Big Mac in Sweden was  $17/6.90 \approx \text{USD } 2.5$ , which is significantly higher than the price in the United States of USD 1.6. The conclusion about competitiveness is therefore the same. This method of comparing price levels follows the alternative definition of the real exchange rate in Footnote 25.

<sup>28</sup> The fixed exchange rate was abandoned on 19 November 1992.

twenty years forward in time to 2013, we see instead that the nominal krona exchange rate had strengthened somewhat compared with 1993. However, the price of a Big Mac had increased faster in the United States than in Sweden, so that the real krona exchange rate had nevertheless weakened somewhat.

In recent years, the krona's nominal exchange rate has weakened substantially, from SEK 6.80 per USD in 2013 to SEK 9.50 per USD in 2019. The Big Mac had gone from being SEK 11 cheaper in the United States than in Sweden in 2013 to being SEK 3 more expensive in 2019, which means that the real exchange rate has weakened substantially. The weakened purchasing power is illustrated by the fact that the price of a Big Mac in Sweden in 2019, SEK 51, would not even have bought a single Big Mac in the United States, where the price was SEK 54. If we again toy with the idea of having exported a Big Mac from Sweden to the United States for SEK 51, this would now appear to be competitive, as the price in the United States was SEK 54.

The movements in the nominal exchange rate are the most important explanation for the weakening of the real exchange rate since 2013.<sup>29</sup> In general, it is the case that most of the variation in real exchange rates is driven in the short term by the nominal exchange rate, as this is determined on a daily basis by financial market agents, while it takes time to change consumer prices. But as we saw in the comparison between 1993 and 2013, differences in price development can play a major role in the development of the real exchange rate over longer periods of time.

### Trade-weighted exchange rate

When the Riksbank analyses and forecasts the krona exchange rate, a broad perspective is needed and not just the exchange rate against a single currency like the US dollar. For this purpose, there is the KIX krona index, which weighs together the krona exchange rate against different currencies according to the significance of the currency area for Sweden's foreign trade. The euro area is Sweden's largest trading partner and makes up about 50 per cent of the index.<sup>30</sup> The KIX is an example of a *trade-weighted exchange rate*, also called an effective exchange rate.<sup>31</sup>

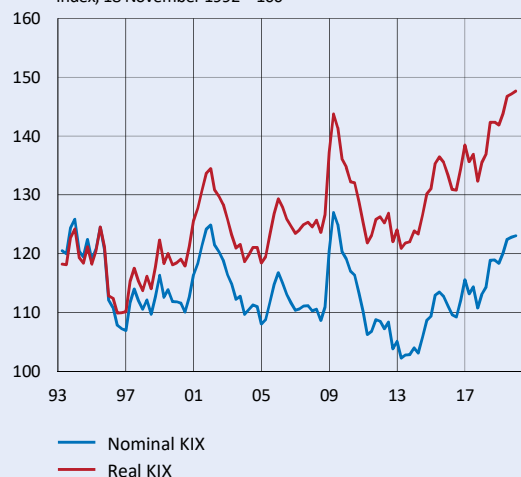
To calculate the real trade-weighted exchange rate, broad price indices are used, such as the consumer price index (CPI), as a measure of the price level in the various countries. Figure 3:11 shows the krona's nominal and real exchange rate measured in terms of the KIX and the CPI

during the period with a floating exchange rate, that is, from 1993 onwards. *Just as for individual currencies, a higher value of the nominal and real KIX signifies a weaker nominal and real krona exchange rate respectively.*

A few interesting observations can be made based on the figure. Just as in the Big Mac example, we see that movements in the nominal exchange rate guide movements in the real exchange rate in the short term. Another similarity is that the real krona exchange rate in 2013 was approximately the same as in 1993, and then weakened significantly, which is reflected in a rising index. We also see that the relative price level can play a significant role in the longer term and cause the nominal and real exchange rates to develop differently.<sup>32</sup> Compared with 1993, the nominal krona exchange rate was on approximately the same level as in 2019, while the real krona exchange rate had weakened by more than 20 per cent.

Figure 3:11. Nominal and real krona exchange rates according to the krona index (KIX)

Index, 18 November 1992 = 100



Note. The real exchange rate is calculated using the CPI for Sweden and the CPI for the rest of the world. The KIX (krona index) is a weighted average of the currencies in the countries that are important for Sweden's international trade. A higher value indicates a weaker exchange rate.

Sources: National sources, Statistics Sweden and the Riksbank

### Real equilibrium exchange rate

Exchange rates vary substantially and it is widely acknowledged that they are difficult to forecast. Although it is difficult to make a better forecast of the nominal exchange rate level in the short term than assuming the current level will also prevail in the future, the real exchange rate has a tendency to return towards a *real equilibrium exchange rate* in the longer term.<sup>33</sup> There are

<sup>29</sup> The price of the Big Mac in domestic currency increased slightly more in the United States than in Sweden. The price increase from USD 4.6 to USD 5.7 is 24 per cent while the increase from SEK 42 to SEK 51 is 21 per cent. The nominal weakening of the exchange rate was about 40 per cent.

<sup>30</sup> The weights are constantly updated and published on the Riksbank's website. For more information, see <https://www.riksbank.se/en-gb/statistics/search-interest-exchange-rates/explanation-of-the-series/effective-exchange-rate-indices>.

<sup>31</sup> Formally, the KIX is a competition-weighted exchange rate, that also captures the significance of export competition for Swedish products with what are known as "third-country effects". For a detailed description, see J. Alsterlind, "Effective exchange rates – theory and practice", Sveriges Riksbank Economic Review, 2006:1.

<sup>32</sup> A known historical example is the fixed exchange rate regime of the 1980s, when inflation in Sweden was significantly higher than abroad. This led to a real appreciation of the krona of about 25 per cent between 1983 and 1992, despite the nominal exchange rate remaining stable.

<sup>33</sup> The Riksbank has analysed the krona's real equilibrium real exchange rate on numerous occasions. See, for instance, Lagerwall, Björn and Nessén, Marianne, "The long-term developments of the krona", Economic Commentaries no. 6, 2009, Karolina Ekholm, "Monetary policy and the exchange rate", speech published 12 January 2010, "A long-term perspective on the krona", article in Monetary Policy Report, July 2013, and "The krona's development in the longer term", article in Monetary Policy Report, October 2018 and "Trend development of the Swedish krona", article in Monetary Policy Report, July 2019.

three fundamental theories to determine the real equilibrium real exchange rate: purchasing power parity, that the real exchange rate is stronger in richer countries, and that the real exchange rate creates balance in foreign trade.

Indisputably the most well-known theory for assessing the real exchange rate's equilibrium level is *purchasing power parity*. The theory was launched by the well-known Swedish economist Gustav Cassel about 100 years ago, although the fundamental principles of the theory go even further back.

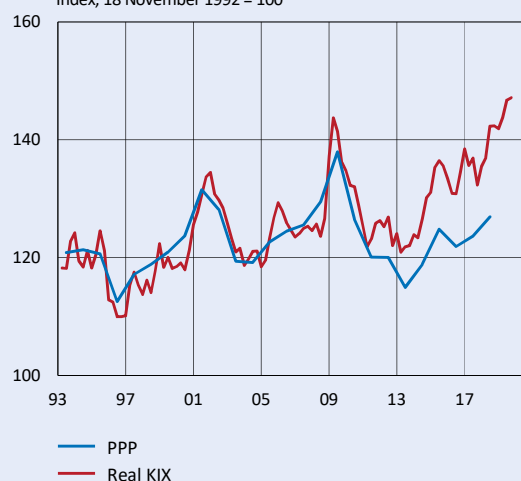
Absolute purchasing power parity is based on the law of one price, which states that a product costs the same in different countries, converted into the same currency. The idea behind the law is that if prices were to differ, so-called arbitrage opportunities would arise, i.e. a product bought in a country where it is cheap could be sold in another country where the price is higher. The Big Mac example above can therefore be seen as a test of the law of one price, and the law does not hold in this case.

When purchasing power parity is examined in general, price levels in the entire economy are compared, and these are normally measured in terms of different price indices, such as the CPI. Absolute purchasing power parity therefore means that the price level expressed in a common currency shall be the same in different countries. It is not possible to compare levels on the consumer price index in the same way as prices of identical products. The indices are just comparative figures *aimed at capturing price development over time*.<sup>34</sup> In addition, definitions and compositions of the indices differ among different countries. An alternative to the consumer price index is to compare identical products, like in the Big Mac example, but with a larger basket that better reflects total household consumption. Eurostat and the OECD compile such statistics, normally referred to as PPP data. In this way, an idea of the price level in Sweden compared with other countries, measured in the same currency, can be obtained. Figure 3:12 shows a calculation of the real trade-weighted krona rate calculated using PPP data, together with the earlier shown real exchange rate calculated using the CPI. We see that the different series have largely followed each other, apart from in recent years, when the depreciation of the real krona exchange rate has been significantly less according to the PPP-based calculation. A major disadvantage with the PPP statistics compared with the consumer price index, however, is that it has a narrower base and is published less often and with a greater time lag.<sup>35</sup> This means that the Riksbank often focuses on the CPI-based trade-

weighted real krona exchange rate in its analyses and forecasts.

An alternative concept to analyse the real exchange rate is *relative purchasing price parity*, which means that differences in the rate of price increase – i.e. inflation – between countries are matched by equally large changes in the nominal exchange rate.<sup>36</sup> In this case, the real exchange rate is held at a constant level. The most common definition of relative purchasing power parity in practice is that the real exchange rate shall not have a trend in any particular direction. As we saw, this seems to tally quite well for both the Big Mac and the krona's real trade-weighted exchange rate between 1993 and 2013. Figure 3:12 illustrates that the development of the PPP-based real trade-weighted krona exchange rate tallies quite well with relative purchasing power parity for the entire period since 1993.<sup>37</sup> If the real exchange rate does not have any trend, it will gradually return to its mean value in the long run.

Figure 3:12. Different measures of the Swedish real effective exchange rate  
Index, 18 November 1992 = 100



Note. The real exchange rate is calculated using the CPI for Sweden and the CPI for the rest of the world. The KIX (krona index) is a weighted average against currencies in the countries that are important for Sweden's international transactions. A higher value indicates a weaker exchange rate. PPP refers to annual data. The sample is limited to countries and years in which the data available for the measures based on the PPP.

Sources: National sources, Statistics Sweden and the Riksbank

An alternative theory in order to determine the equilibrium real exchange rate is based on the assertion that *the price level measured in the same currency is higher in richer countries*. Returning to the Big Mac example, data from 2019 shows that the five most expensive Big Macs could be found in Switzerland, the United States, Sweden, Canada and Norway, all of which are among the world's 20 richest

<sup>34</sup> The CPI in Sweden has 1980 as its base year, which means that the value for that year is set at 100. In 2019, the value was 334, which only indicates that the price level was just over three times higher in 2019 than in 1980.

<sup>35</sup> For descriptions and illustrations of the krona's real exchange rate measured using PPP data, see "Trend development of the Swedish krona", article in Monetary Policy Report, July 2019 and "Development of the Swedish krona in the longer term", article in Monetary Policy Report, October 2018.

<sup>36</sup> Price changes can also be more difficult to compare between countries for the consumer price index than for identical products. An example of this is differences in how quality improvements are

considered in calculation of the consumer price index. See O. Tysklind, "Quality adjustments and international price comparisons", Staff Memo, January 2020, Sveriges Riksbank, and the article "Inflation not fully comparable between countries", Monetary Policy Report, February 2020, Sveriges Riksbank.

<sup>37</sup> For a detailed analysis of Big Mac prices and purchasing power parity, see for example Pakko, M.R. and Pollard, P.S., "Burgernomics: A Big Mac Guide to Purchasing Power Parity", Federal Reserve Bank of St. Louis Review, November/December 2003, and Parsley, D.C. and Wei, S.-J., "A Prism into the PPP Puzzles: The Micro-foundations of Big Mac Real Exchange Rates", Economic Journal 117, 1336-1356, 2007.

countries measured in terms of GDP per capita. In general, it is also true that countries with high GDP per capita tend to have a higher price level, measured in the same currency.<sup>38</sup>

One conclusion of this is that if a country's GDP per capita grows in relation to other countries, the real exchange rate should strengthen. But how does this effect arise? The Balassa-Samuelson Theory explains the differences in price developments and real exchange rates between countries. A central element in the theory is to assume that purchasing power parity applies to products traded internationally, but not to services that are not traded internationally. The thinking is that countries with high productivity growth in the goods sector have higher cost and price increases in the service sector. The box below explains how prices can develop differently for goods and services. Productivity growth in the goods sector is reflected quite well in growth in GDP per capita. The conclusion is then that countries with strong growth in GDP per capita in relation to abroad typically see a strengthening of the real exchange rate.

#### Price development of goods and services

According to the Baumol-Bowen theory, productivity growth is higher in the goods sector than in the services sector, which in turn means that service prices rise more quickly than goods prices. For example, a string quartet is not much more productive today than during Beethoven's lifetime. In the manufacturing industry, however, productivity has increased constantly, which means that fewer employees are required to manufacture the same amount of goods. Nevertheless, wages have risen substantially for both factory workers and musicians in string quartets since the 19th century. Cost development is normally measured in terms of unit labour costs, which corresponds to the difference between wages and productivity. The conclusion is then that the costs have increased much more for string quartets than in the industrial sector, which spills over into price development. This is the most important reason why the price of classical concert tickets rises much more than the price of industrial products.

In addition to GDP per capita, a country's relative wealth can change via its terms of trade, which reflect the difference between export and import prices. The higher the export prices in relation to import prices, the stronger the terms of trade.<sup>39</sup> Just as is the case with a rising GDP per capita relative to other countries, improved terms of trade would lead to a stronger real exchange rate. A simple way to

understand this is to consider the goods sector in a small, open economy that is particularly focused on the export of a particular commodity. When the global market price of the commodity rises, the goods sector receives higher import revenues, which causes wages to rise.<sup>40</sup> This wage growth spreads to the service sector, where costs and prices also go up. The real exchange rate will therefore strengthen.<sup>41</sup> For a small, open economy like Sweden, the terms of trade are also significantly affected by the global market price of exports from and imports to Sweden. For example, an increase in the oil price on the global market would contribute to a deterioration in the Swedish terms of trade, as imported oil becomes more expensive.

Another theory in order to determine the equilibrium real exchange rate is to link it to the balance in foreign trade. It is normally assumed that a weaker real exchange rate increases a country's surplus in foreign trade as competition improves: Relatively speaking, exports become cheaper abroad and imports into the country become relatively more expensive. To balance foreign trade in the longer term, the real exchange rate shall therefore move in a certain direction. If a country has a large surplus in foreign trade, it indicates that the real exchange rate in the long term will strengthen so that the surplus decreases.

This conceptual framework has been a key element of the IMF's analyses of exchange rates, where the Swedish krona has often been considered undervalued in light of Sweden's large surplus in foreign trade.<sup>42</sup> Note that this approach requires an assessment of the long-term equilibrium in foreign trade, which does not need to be zero. Structural factors such as the design of the pension system, may justify a surplus or deficit in the long term. If an incorrect assessment has been made of the long-term foreign trade level, there is a risk of the assessment of the long-term equilibrium real exchange rate also being incorrect.<sup>43</sup>

#### Overall conclusions

The real krona exchange rate, which shows the price level in Sweden compared with other countries in the same currency, reflects the competitiveness of companies and the purchasing power of households.

For the Riksbank, the most important thing is to follow the trade-weighted krona exchange rate, as it captures the overall development of the krona in relation to the countries that are the most important for Sweden's foreign trade.

<sup>38</sup> When comparing prosperity levels between countries, therefore, purchasing power is normally taken into account in the exchange rate by adjusting for the difference in price level; see for example H. Gabriellson, "How does prosperity growth in Sweden compare with other countries?", Economic Commentaries no. 10, 2019, Sveriges Riksbank.

<sup>39</sup> Terms of trade are measured as the ratio between the export price index and the import price index.

<sup>40</sup> Highly simplified, imagine that companies in the goods sector allow unit labour costs to follow the commodity price, according to the following ratio: Commodity price = wage/productivity. This means that wages in the goods sector can rise not only due to increased productivity in the goods sector, as in the Balassa-Samuelson theory, but also due to an increase in the price of the commodity on the global market.

<sup>41</sup> The concept of *commodity currencies* is often used to denote the currency in small, open economies with substantial exports of a certain commodity, such as Norway, Canada, New Zealand and Australia. The real exchange rate is affected by changes in global market prices of the commodity, via the effect on the terms of trade. See for example Y-C Chen and K. Rogoff, "Commodity currencies", *Journal of International Economics*, pp. 133-160, 2003, and Cashin, P., LF Céspedes and R. Sahay, "Commodity currencies and the real exchange rate", *Journal of Development Economics*, pp. 239-268, 2004.

<sup>42</sup> See, for example, IMF, 2018 External Sector Report: *Tackling Global Imbalances amid Rising Trade Tensions*.

<sup>43</sup> See for example "A long-term perspective on the krona", article in Monetary Policy Report, July 2013, Sveriges Riksbank.

The equilibrium real exchange rate is a key cornerstone in the assessment of the krona's future development. The theory on purchasing power parity says that the real exchange rate shall not have a trend in any particular direction, but shall vary around its historical mean value. Another theory is based on the assertion that the real exchange rate is stronger in richer countries. This could explain changes in the equilibrium real exchange rate. Another theory is based on the real exchange rate moving in a way that achieves balance in foreign trade.

All the concepts explained in this article have, through the years, constituted key cornerstones in the Riksbank's assessments of the future development of the krona. The next article, "The Riksbank's exchange rate forecasts" gives a closer description of these assessments and the ongoing development work.



## ARTICLE– The Riksbank’s exchange rate forecasts

The Riksbank’s monetary policy does not have the goal of affecting the development of the exchange rate, but aims to attain the inflation target and a balanced development of the real economy. However, as changes in the krona exchange rate affect both inflation and the real economy, it is nevertheless important to analyse and forecast the development of the krona. An article in last year’s Account of Monetary Policy discussed how the krona affects inflation. The aim of this article is to discuss the Riksbank’s exchange rate forecasts. The forecasts are based on an assessment of the real krona exchange rate in the longer term. Over the past year, the Riksbank has conducted a review of exchange rate forecasts, that has resulted in two main changes. Firstly, the equilibrium level of the real krona exchange rate is deemed to be weaker than had previously been assumed and, secondly, the krona exchange rate is deemed to adjust towards this level more slowly. A thorough review of the definitions of the real exchange rate, trade-weighted exchange rate and real equilibrium exchange rate can be found in the preceding article “Analysing exchange rates – a few key concepts”.

In the latest evaluation of monetary policy, the Riksdag Committee on Finance noted that, in 2018, the Riksbank had had problems assessing both how the krona would develop and what effects any exchange rate changes would have. It also noted that the debate on the krona depreciation and the Riksbank’s assessments had been comprehensive over the year. The Committee therefore assumed that the Riksbank would review its analysis, its methods and models and its communication regarding assessments of the development of the exchange rate. This article presents both the Riksbank’s conceptual framework for the development of the krona in the longer term and the review of the exchange rate analysis the Riksbank made over the year.

### How does the Riksbank make exchange rate forecasts?

For a long time, the Riksbank’s exchange rate forecasts have been based on an assessment of the equilibrium real exchange rate. The reason for this is that economic theory provides guidance over the equilibrium that the real exchange rate should be moving towards a few years ahead. This is described in more detail in the article “Analysing exchange rates – a few key concepts”. In its forecast, the Riksbank assesses the exchange rate in two main steps:

- The real equilibrium level for the krona
- How the krona will move towards the equilibrium level from the current level

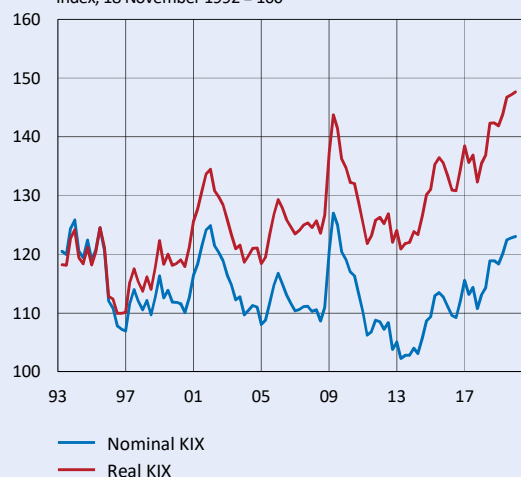
Over the years, the greatest focus in the Riksbank’s analysis has been on the first of these steps, namely

determining the real equilibrium rate in the longer term. The Riksbank has reviewed both steps over the last year.

### Step 1: Determining the long-term level of the real exchange rate

Figure 3:13 shows the nominal and real krona exchange rates measured in terms of KIX and CPI over the period with a floating exchange rate, which is to say from 1993 on.<sup>44</sup>

Figure 3:13. Nominal and real krona exchange rates according to the krona index (KIX) Index, 18 November 1992 = 100



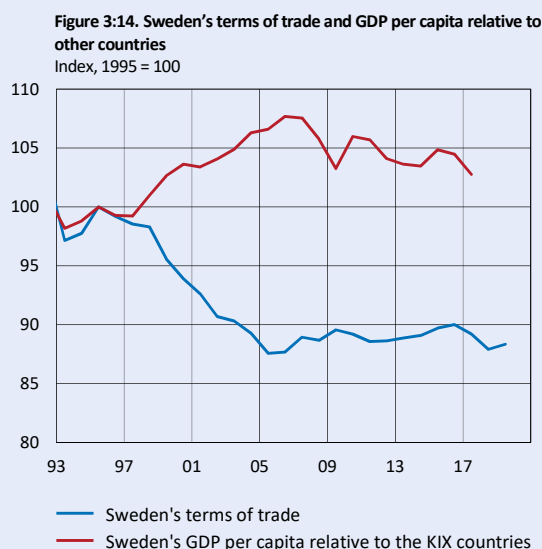
Note. The real exchange rate is calculated using the CPI for Sweden and the CPI for the rest of the world. The KIX (krona index) is a weighted average of the currencies in the countries that are important for Sweden’s international trade. A higher value indicates a weaker exchange rate.

Sources: National sources, Statistics Sweden and the Riksbank

<sup>44</sup> The fixed exchange rate was abandoned on 19 November 1992.

According to the theory of relative purchasing power parity, the real exchange rate does not have any trend, but returns to its average in the long run. In the case of the krona's trade-weighted exchange rate, the mean value since 1993 could be considered to be the equilibrium real exchange rate. Until 2013, the development seemed to correspond fairly well with the theory of relative purchasing power parity. After this, the real exchange rate weakened substantially. But is this a sign of the equilibrium real exchange rate also having weakened?

Figure 3:14 shows two different measures of Sweden's 'wealth' in relation to the rest of the world, which could justify a trend change of the krona's equilibrium real exchange rate: GDP per capita and the terms of trade.<sup>45</sup> Over a ten-year period from the middle of the 1990s, Sweden's GDP per capita developed significantly better than that of other countries. This suggests there was a stronger real equilibrium rate over this period. At the same time, however, the terms of trade fell substantially, which is connected, among other things, with falling prices on the world market for high-tech export products from Sweden. This would instead suggest that the real equilibrium rate had weakened. Over the last ten-year period, there has been no clear trend in either the terms of trade or GDP per capita in relation to the rest of the world.



Note. Data for the euro area as a whole prior to 1995 is missing and has been replaced by an aggregate of a smaller group of countries. Overall, this means that the sample is limited to 18 KIX countries for the period prior to 1995, which corresponds to 84 per cent of KIX with 1994 weights. Prior to 1995, constant KIX weights from 1994 are used. Sources: IMF and World Bank

To sum up, traditional explanatory factors – based on the theory that “real exchange rates are stronger in wealthier

countries” – do not give any clear indication that the equilibrium real exchange rate has changed in Sweden over the period of floating exchange rates.

When making forecasts for the real exchange rate, the Riksbank has used statistical models, in which the real exchange rate is estimated together with relative GDP per capita and the terms of trade. The estimates have confirmed that there have not been such major changes to the equilibrium real exchange rate, just as the review of Figure 3:14 indicated. Typically, the estimates have been fairly close to a historical average for the real exchange rate since 1993, which is the equilibrium real exchange rate that the theory of relative purchasing power parity had indicated. Consequently, it has not made much difference whether estimates of the equilibrium real exchange rate have been based on theories of Sweden's relative wealth in relation to other countries or on relative purchasing power parity. Other approaches have also been used over the years, above all ones assuming that Sweden's surplus on current account will reach a balance in the long run, which has justified a stronger real exchange rate.<sup>46</sup>

## Step 2: How is the krona to move towards the long-term level?

Once the equilibrium real exchange rate has been assessed, it can be compared to the actual real krona exchange rate to obtain an indication of its future direction. The next step of the analysis is to assess *how rapidly the krona will adjust towards its long-term level*. Normally, the Riksbank has assessed that the adjustment to the equilibrium exchange rate will happen “in a few years' time” or in “5–10 years' time”. As most of the variation in the real exchange rate over the forecast period of three years is driven by the nominal exchange rate, the adjustment towards the real exchange rate has, in principle, been driven almost completely by the nominal exchange rate. The forecasts for the nominal and real exchange rates have therefore looked very similar, except for the differences in starting point. These differences come from the nominal and real exchange rate having developed differently since 1993 (see Figure 3:13).

One important element in assessing how the krona will adjust towards the equilibrium level is a short-term analysis, aimed at clarifying how conditions on the financial markets affect the krona's movements over the next few quarters. A central part of the short-term analysis is assessing how the krona is affected by different kinds of news on the macroeconomy and Swedish

<sup>45</sup> How this functions is described in the article “Analysing exchange rates – a few key concepts”.

<sup>46</sup> See, for instance, Lagerwall, Björn and Nessén, Marianne, “The long-term developments of the krona”, Economic Commentary no. 6, 2009, Karolina Ekholm, “Monetary policy and the exchange

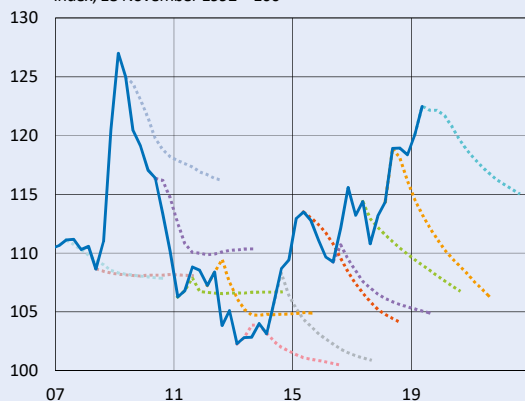
rate”, speech published 12 January 2010, “A long-term perspective on the krona”, article in Monetary Policy Report, July 2013, and “The krona's development in the longer term”, article in Monetary Policy Report, October 2018.

monetary policy. When unease increases on the financial markets, currencies in small open economies like Sweden have a tendency to depreciate. Insights like this can be integrated into the short-term forecast. If the Riksbank expects to communicate a more expansionary monetary policy than is reflected by the market's expectations, this is also deemed to lead to a weaker exchange rate in the short term. The so-called exchange rate channel is one of the ways that monetary policy affects inflation and the real economy.<sup>47</sup>

### The krona has become weaker than the Riksbank expected

Figure 3:15 shows the Riksbank's forecasts for the nominal trade-weighted krona exchange rate (KIX) in the Monetary Policy Report for July each year since 2007. As we can see, the forecasts have usually been based on expectations of an appreciation. Normally, however, such appreciations have only occurred in periods preceded by a heavy depreciation. After the krona had depreciated heavily during the global financial crisis of 2008–2009, the Riksbank expected the depreciation to be temporary and to be reversed rapidly. This also proved correct and the krona even appreciated faster than forecast. When the krona depreciated again around 2014, there was also an expectation that it would strengthen rapidly. This did not happen but the krona instead continued to depreciate more or less continuously.

**Figure 3:15. A sample of the Riksbank's krona forecasts 2007–2019**  
Index, 18 November 1992 = 100



Note. The real exchange rate is calculated using the CPI for Sweden and the CPI for the rest of the world. The KIX (krona index) is a weighted average of the currencies in the countries that are important for Sweden's international trade. A higher value indicates a weaker exchange rate.

Sources: National sources, Statistics Sweden and the Riksbank

The difficulties in forecasting the development of the krona can also be noticed among other analysts. They have had a similar view of expected development and

have made similar misjudgements. Figure 3:16 shows the forecasts for the krona exchange rate against the euro made by money market participants 1 and 2 years ahead according to Prospera's survey. The pattern from Figure 3:15 recurs very clearly: just as in the Riksbank's forecasts, strong confidence that the krona will appreciate against the current level is reflected.<sup>48</sup>

**Figure 3:16. A sample of Swedish money market participants' krona forecasts 2007–2019**  
Kronor per euro



Note. The forecasts have been taken from Prospera's quarterly survey for the second quarter of the year for the years 2007–2019.

Sources: Kantar Sifo Prospera and the Riksbank

### An ongoing review

As the Riksbank has made relatively large forecast errors in recent years, a more extensive review of the methods used to analyse and forecast exchange rate trends is currently being performed.

The analyses the Riksbank has made over the year have so far been presented in two Economic Commentaries, an article in the Monetary Policy Report for July and a Staff Memo.<sup>49</sup> Further studies will be published in 2020.

### Why have the forecasts been wrong?

According to the previously described approach that the Riksbank has used in its exchange rate forecasts, a forecast error for the krona may, in principle, be due to two factors having been assessed incorrectly:

- the real equilibrium level
- the adjustment of the krona towards the equilibrium level

Over the year, the Riksbank has conducted a thorough review of both of these factors.

<sup>47</sup> See "The significance of the krona for inflation", article in Account of Monetary Policy 2018, Sveriges Riksbank, and C.J. Belfrage, V. Corbo and S. Ingves, "Perspective on the krona, inflation and monetary policy", Economic Commentaries No. 13, 2019, Sveriges Riksbank

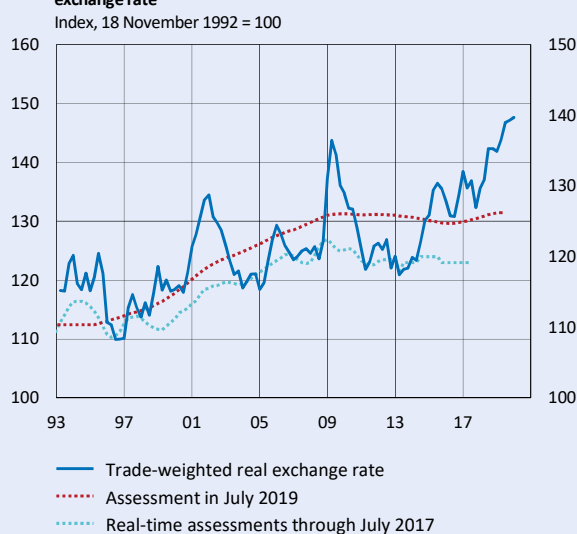
<sup>48</sup> No forecast for KIX is produced in Prospera's surveys, but the euro is by far the most important currency in KIX and has a weight of about 50 per cent.

<sup>49</sup> See E. Askestad, A.M. Ceh, P. Di Casola, P. and A. Ristiniemi, "Forecasting the krona", Economic Commentaries No. 12, 2019, Sveriges Riksbank, Belfrage, V. Corbo and S. Ingves, "Perspective on the krona, inflation and monetary policy", Economic Commentaries No. 13, 2019, Sveriges Riksbank, "Trend development of the Swedish krona", article in Monetary Policy Report July 2019, and C. J. Belfrage, P. Bonomolo and P. Stockhammar, "A time-varying equilibrium model for the long run real exchange rate", Staff Memo, February 2020, Sveriges Riksbank.

### The equilibrium real exchange rate of the krona is assessed to be weaker

As described earlier, the real exchange rate was about the same level in 2013 as when the krona began to float in 1993. Previously, the Riksbank's assessment was that the actual real exchange rate was close to the real equilibrium real exchange rate at this point. This is illustrated by the turquoise line in Figure 3:17. When the krona depreciated after 2013, the Riksbank thus concluded that the krona had become weaker than its equilibrium level and that it would soon strengthen. As the krona continued to depreciate, the forecasts thereby pointed to greater and greater future appreciations of the krona.

Figure 3:17. Historical assessments of the krona's equilibrium real exchange rate



Note. The real exchange rate is calculated using the CPI for Sweden and the CPI for the rest of the world. The KIX (krona index) is a weighted average of the currencies in the countries that are important for Sweden's international trade. A higher value indicates a weaker exchange rate.

Sources: National sources, Statistics Sweden and the Riksbank

With a few more years' data available and the support of new methods of estimation, the Riksbank today deems that the krona's real equilibrium level is weaker than had been previously assessed, as shown by the red line in Figure 3:17. The Riksbank bases its assessment on the same fundamental factors as previously, but a new empirical model has been developed as part of this work.<sup>50</sup> A combination of relative GDP per capita and the terms of trade explains the equilibrium level in the model, which is estimated using data from 1995 onwards.

One difference compared with earlier model estimates is that the deterioration of the terms of trade over the ten-year period from the mid-1990s has a greater effect on the equilibrium exchange rate than the improvement

in the relationship to other countries of GDP per capita over the same period. The model estimates now imply that the equilibrium real exchange rate weakened quite substantially from 1995 until the financial crisis of 2008–2009. Following this, the model does not give any indication that the equilibrium exchange rate should have changed. This is shown by the red line in Figure 3:17. One contributory factor for recent years' forecast errors may thus have been that the equilibrium real exchange rate was actually weaker than the Riksbank had assessed.<sup>51</sup>

### The krona is deemed to be moving more slowly towards the equilibrium level

The Riksbank is now assuming that the equilibrium real exchange rate is weaker than previously assessed. This is therefore a change of "step 1" of the analysis. But the method for making forecasts of *adjustment to equilibrium*, "step 2", has also been modified as a result of the ongoing review.

A large number of models for forecasting the nominal exchange rate over the short and medium terms have been estimated and evaluated.<sup>52</sup> Over the short term, a so-called naive forecast has proved to work well. This means that the forecast for the exchange rate in the period ahead simply stays on an unchanged level in comparison with the one observed at time of forecast. However, as regards forecasts two to three years ahead, the naive forecast works less well. Then, models based on the assumption that the real exchange rate will gradually adjust to a long-run equilibrium give better forecasts.

One way of using these results in practical work is to allow the short-term forecasts to be governed by the prevailing krona exchange rate at forecast date and longer-term forecasts by an assumption of adjustment to long-run equilibrium. The difference compared with previously is that the Riksbank then assessed that the adjustment towards the long-term level would start immediately, instead of after an initial period with an unchanged exchange rate. Compared with the methods previously used, it is now assumed that the *krona's* adjustment to the assessed long-term equilibrium level will now take place at a slower rate.

How then have the inflation forecasts been affected by the changed assessments of the exchange rate? As Figure 3:17 illustrates, the assessment of a weaker real equilibrium exchange rate means that the forecasts do not indicate a real appreciation of the krona to the same extent as before. This implies that the price level in Sweden compared with other countries, measured in the

<sup>50</sup> See C.J. Belfrage, P. Bonomolo and P. Stockhammar, "A time-varying equilibrium model for the long run real exchange rate", Staff Memo, February 2020, Sveriges Riksbank.

<sup>51</sup> For a more detailed review of the Riksbank's changed assessment of the equilibrium real exchange rate, see the article "Trend development of the Swedish krona" in the Monetary Policy Report of July 2019.

<sup>52</sup> For a more detailed description, see E. Askestad, A.M. Ceh, P. Di Casola, P. and A. Ristinieni, "Forecasting the krona", Economic Commentaries No. 13, 2019, Sveriges Riksbank

same currency, is generally expected to rise more slowly. The Riksbank's analysis indicates the greatest effect on the forecast occurs in the form of the nominal exchange rate forecast strengthening to a lesser extent, but the inflation forecasts also tend to be marginally lower.

**The Riksbank constantly works on developing its exchange rate assessments**

Even if the assessments are well balanced, forecasts can be wrong, as unexpected events that affect how the krona exchange rate moves in relation to its equilibrium level almost always occur. The ongoing review therefore also includes work that attempts to identify, to a greater extent, the factors underlying the more short-term fluctuations in the krona exchange rate.

This improves the conditions for supplying more accurate exchange rate forecasts going forward. The future will reveal to which extent this actually happens.

## CHAPTER 4 – Important monetary policy issues

The Riksbank's primary monetary policy task is securing confidence in the inflation target. This is important for several reasons. Firstly, long-term planning becomes easier when economic agents have a shared view of how prices will develop in the future. This, in turn, improves the possibility of achieving a favourable economic development. Secondly, a target of 2 per cent gives a certain amount of scope to counteract future recessions with interest-rate cuts. The external monetary policy debate over the year focused on issues such as the weak development of the krona and the need for the Riksbank to conduct a more flexible policy. This chapter presents the Riksbank's view of these issues.

### Perspectives on the expansionary policy

In recent years, the Riksbank's monetary policy has been focused on first bringing inflation up to the target of 2 per cent and thereafter getting it to remain close to the target level. The purpose has been to secure confidence in the inflation target.

The background to this policy was that inflation in Sweden for number of years from 2011 was unexpectedly low, falling below the inflation target by quite a broad margin at times (Figure 4:1). Inflation fell, in principle, until 2014, when it amounted to about 0.5 per cent. Even though the repo rate had been cut, inflation continued to be very low at the start of 2015. Inflation expectations also fell in a troubling manner (Figure 4:2) and there were signs that the position of the inflation target in wage negotiations had started to weaken. The Riksbank feared that confidence in the inflation target was becoming undermined. This was the reason that the repo rate was cut further, to a low point of -0.5 per cent at the start of 2016, and that the Riksbank also started widespread purchases of government bonds.

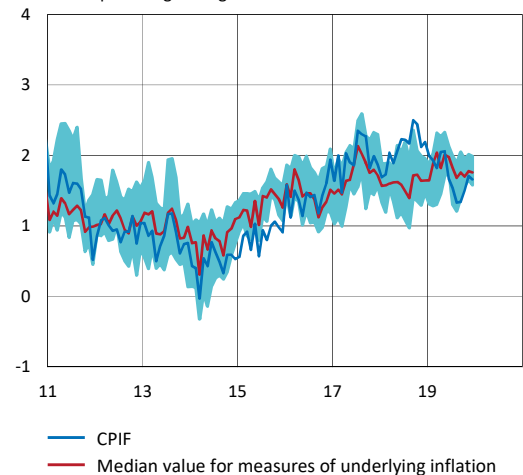
The expansionary policy gradually started to have an effect. Growth rose and employment increased. By 2017, inflation was again close to the inflation target of 2 per cent. Inflation expectations also turned upwards, both short-term and long-term. Inflation was subsequently close to target but decreased slightly in 2019. Changes in energy prices contributed to inflation holding up in 2018 and early 2019, and to it falling in the second half of the year. Measures of core inflation tended to be slightly below target over this period (Figure 4:1).

The purpose of the inflation target

#### A credible inflation target creates conditions for favourable economic development

There are good reasons for the Riksbank having the task of maintaining confidence in the target of 2 per cent. It is beneficial for the economy to have a credible inflation target, and it is good if this target is not too low.

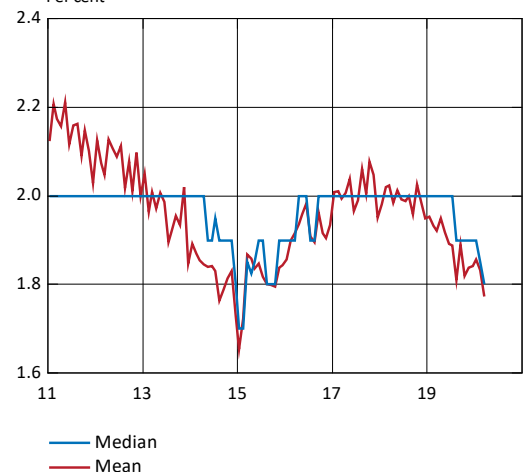
**Figure 4:1. The CPIF and different measures of underlying inflation**  
Annual percentage change



Note. The field shows the highest and lowest outcomes among different measures of underlying inflation. The measures included are the CPIF excluding energy, UND24, Trim85, CPIF excluding energy and perishables, persistence-weighted inflation (CPIFPV), factors from principal component analysis (CPIFPC) and weighted mean inflation (Trim1).

Sources: Statistics Sweden and the Riksbank

**Figure 4:2. Inflation expectations among money market participants, 5 years ahead**  
Per cent



Note. Refers to CPI inflation. The median shows the inflation value that has an equal amount of measures above as below it. Unlike the average value, the median value is not sensitive to extreme values.

Sources: Kantar Sifo Prospera

The idea of an inflation target is to act as a benchmark for price setting and wage formation in the economy – it becomes what is usually called a nominal anchor. When inflation does not vary so much and economic agents have a collective picture of how prices will develop in the future, it becomes easier to plan for the long term. This, in turn, improves the possibility of achieving a favourable economic development with good, stable growth.

In the 1970s and 1980s, the then fixed exchange rate was intended to act as a nominal anchor. Pegging the exchange rate, at least in theory, is the same as setting a target for domestic inflation. The idea is that the domestic rate cannot exceed (or fall below) inflation in the countries to which the domestic currency is pegged, at least not for any longer periods. However, this did not work as intended. Instead, price and wage increases became systematically too high in relation to other countries, which resulted in repeated cost crises and devaluations that only temporarily restored competitiveness.

Figures 4:3 and 4:4 show inflation and GDP growth per capita over the period with inflation targeting compared with the previous decades. Not unexpectedly, it can be seen that inflation has been significantly lower since inflation targeting entered into effect in 1995. It has also been considerably more stable. It can also be seen that growth has been higher, on average. Of course, several other changes have taken place in the Swedish economy over this period that have contributed to these favourable outcomes. But this development corresponds well with what inflation targeting was hoped and expected to achieve when it was introduced.

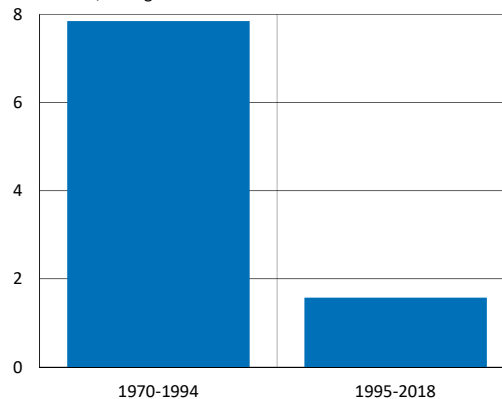
#### **A target of 2 per cent facilitates the adaptation of relative wages**

There are good economic reasons for having a target of 2 per cent and not lower. One reason is that the conditions for wage formation to effectively distribute resources in the economy can deteriorate when average inflation is too low. The reason for this is that, in practice, it is difficult to cut nominal wages. If inflation is low and nominal wages cannot be lowered, then it becomes difficult to adjust relative wages between different professions, companies and sectors. This can ultimately lead to both higher unemployment and poorer productivity growth in the economy. These problems can be mitigated if there is some underlying inflation.

#### **... and make it easier for monetary policy to counteract economic downturns**

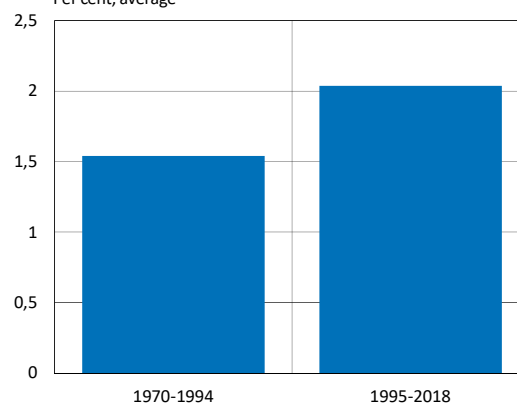
Another advantage of a target of 2 per cent, which has gained particular attention in recent years, is that a very low average rate of inflation would make it more difficult for monetary policy to counteract recessions. If average inflation is very low, the nominal average interest rate will also be low. This is because the nominal interest rate includes compensation for inflation. The lower the interest rate is in normal conditions, the less scope

**Figure 4:3. Significantly lower CPI inflation during the period with inflation targeting**  
Per cent, average



Sources: Statistics Sweden and the Riksbank

**Figure 4:4. Higher growth in GDP per capita during the period of inflation targeting**  
Per cent, average



Sources: National Institute of Economic Research and the Riksbank

there is to lower it before it reaches its lower bound.<sup>53</sup> It will thus become more difficult to counteract future economic downturns with the aid of interest rate cuts.<sup>54</sup> When the interest rate has reached its lower bound, continued falls in inflation and inflation expectations will also cause the real interest rate (the interest rate minus expected inflation) to rise, strengthening the economic downturn.

There is an international discussion on whether a target of 2 per cent, which most developed countries have now, provides sufficient scope to conduct a monetary policy that is as expansionary as one may sometimes need to do. A lower target would mean even less scope to counteract recessions. It would also mean that periods of negative interest rates would be longer as the central bank has to compensate for the reduced scope to cut the interest rate by remaining longer at the lower bound.

There is thus no intrinsic value in attempting to hold inflation close to 2 per cent. It is a means to accomplish long-term favourable economic development. It is in this light that the Riksbank's policy of recent years should be seen.

**An illustrative example**

The significance of the level of the inflation target and the importance of monetary policy scope are outlined in Figures 4:5 and 4:6. Figure 4:5 shows how the policy rate changes under two envisaged economic cycles, given that the inflation target is 2 per cent. With an inflation target and average inflation of 2 per cent, there is some scope to cut the interest rate before it reaches its lower bound and the downturn can thereby be counteracted fairly effectively.

In Figure 4:6, average inflation and the nominal interest rate are lower and the policy rate cannot be cut as much to stimulate the economy as it reaches the lower bound sooner. Recessions therefore become longer and the policy rate needs to remain at the lower bound longer.

**Broad political support for the inflation target**

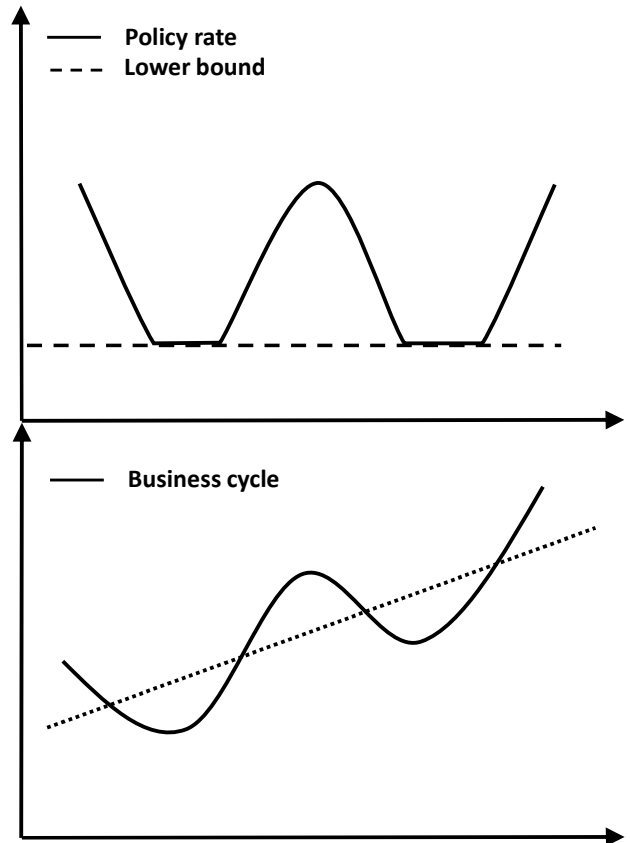
Monetary policy has seen lively discussion in recent years and 2019 was no exception. From outside the debate, the status of the Riksbank's inflation target may seem unclear. It may therefore be helpful to present a brief account of this.

The decision to introduce an inflation target of 2 per cent was taken by the General Council of the Riksbank in 1993. At this point, the General Council was the decision-making body of the

<sup>53</sup> Even if it turns out that policy rates can be cut to below zero, there is, for various reasons, a limit for how low they can be cut (see also the article "The Riksbank's experiences of a negative repo rate"). However, exactly where this boundary lies is unclear and varies from country to country.

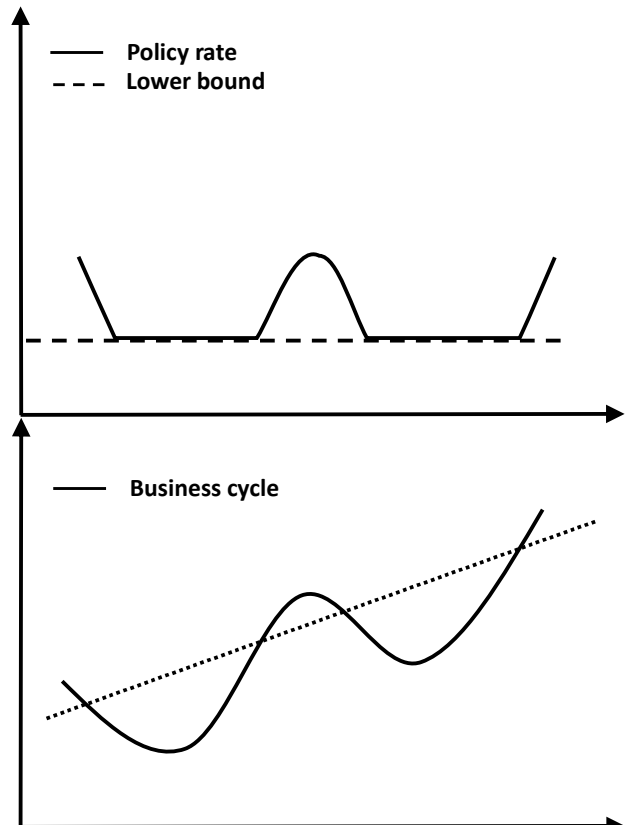
<sup>54</sup> The fact that excessively low inflation may make monetary policy ineffective is a problem that even concerns central banks with significantly higher policy rates. The US central bank governor Jerome Powell has described it in the following words. "[I]nflation running persistently below target can lead to an unhealthy dynamic in which inflation expectations drift down, pulling actual inflation further down. Lower inflation can, in turn, pull interest rates to ever-lower levels. ... [This] can make it harder for a central bank to support its economy by further lowering interest rates. That is why it is essential that we at the Fed use our tools to make sure that we do not permit an unhealthy downward drift in inflation expectations and inflation." (Speech "Building on the Gains from the Long Expansion", 25 November 2019).

Figure 4:5. More scope to cut the interest rate with a credible inflation target of 2 per cent – and easier to counteract recessions  
Development of the policy rate and milder recessions, respectively



Source: The Riksbank

Figure 4:6. Less scope to cut the interest rate with lower average inflation  
Development of the policy rate and deeper recessions



Source: The Riksbank



Riksbank and thus had a different role from today. It consisted of eight members, with seven being elected by the Riksdag and the eighth, the Governor of the Riksbank, being appointed by the others. Many of the members were active politicians.<sup>55</sup> The General Council was thus politically appointed on a completely different manner than the Executive Board of the Riksbank, which is the decision-making body today.

At the outset, the inflation target received a fair amount of criticism, even from politicians. But quite soon, when the advantages of the target had become clearer, broad support emerged for it. The target has not been questioned in the annual evaluations of monetary policy conducted by the Riksdag Committee on Finance for many years or in the evaluations that the Committee on Finance commissions two internationally well-reputed economists to conduct every few years.<sup>56</sup>

The strong political support the measure has was recently emphasised by the cross-party parliamentary committee that has examined the monetary policy framework and Sveriges Riksbank Act and that presented its final report in November 2019. The report states that the committee makes “the assessment that the Riksbank’s current specification – an inflation target, measured in terms of the CPIF, with a targeted rate of increase of 2 per cent – is an appropriate specification of the price stability objective. The current specification thereby has parliamentary support”.<sup>57</sup> It is important to bear this clear political support in mind when following and analysing the debate on monetary policy.

## The monetary policy debate

As in earlier years, the monetary policy debate in 2019 focused on a series of different issues, most of them related to the expansionary policy and negative repo rate. The article “The Riksbank’s experiences of a negative repo rate” in Chapter 2 summarises the Riksbank’s view of the period with a negative repo rate.

### **Weaker krona when the inflation target needs to be defended**

One question that was in particular focus in 2019 was the development of the krona and the significance of monetary policy for this. Some analysts argued that monetary policy had made the Swedish krona unacceptably weak and that monetary policy should therefore be changed.

At this point, it may be helpful to start by looking at the background. When Sweden introduced an inflation target in 1993, we chose an exchange-rate regime at the same time. Sweden did the same thing in 2003 when the referendum resulted in a decision not to replace the krona with the euro. A fixed exchange rate and an inflation target with a floating

<sup>55</sup> See, for example, B. Dennis, “Första året med flytande krona” [First year with a floating krona], in L. Jonung, (ed.), *På jakt efter ett nytt ankare* [Looking for a new anchor], SNS Förlag, 2003.

<sup>56</sup> So far, three such external evaluations have been made: by Francesco Giavazzi and Frederic Mishkin for the period 1995-2005, by Charles Goodhart and Jean-Charles Rochet for the period 2005–2010 and by Marvin Goodfriend and Mervyn King for the period 2010-2015.

<sup>57</sup> *A new Sveriges Riksbank Act*, final report from the Riksbank Committee, Volume 2, SOU 2019:46 (p. 617).

exchange rate are two different ways of trying to provide the economy with a nominal anchor, that is, a benchmark for price-setting and wage formation. An inflation target tries to steer inflation and expectations in the economy more directly, while a fixed exchange rate tries to steer them indirectly, by virtue of it becoming more costly if price increases and wage growth are higher than abroad. This latter disciplinary mechanism functioned poorly for Sweden, which led to the transition to a variable exchange rate and inflation targeting.

As noted above, there is broad political support for inflation targeting and thus also for the Riksbank to conduct a policy that maintains confidence in the target. This means that policy sometimes needs to be expansionary and sometimes contractionary. When the policy has to be expansionary, the krona exchange rate tends to depreciate. This occurs via monetary policy's normal exchange rate channel, which is to say that, if our interest rate is lower than those abroad, financial assets in Swedish kronor give lower returns than assets in other currencies do. The demand for kronor then decreases and the krona exchange rate depreciates. The expansionary policy and its effect on the exchange rate thus provide one explanation for why the krona has developed so weakly in recent years, even if it is far from the only explanation.

#### **The mandate for intervention may have played some part**

One factor that a number of analysts also suggest has affected the krona exchange rate is the heightened preparedness to intervene on the foreign exchange market that the Riksbank decided upon in January 2016. If the krona should strengthen too rapidly in relation to the forecast, the Governor of the Riksbank and First Deputy Governor could call the rest of the Executive Board to a meeting to decide upon a foreign exchange intervention. They were both also given the mandate to take the decision to intervene themselves, if they made the assessment that an Executive Board meeting would take too long to convene. However, the krona did not appreciate during this period and the Riksbank never intervened on the foreign exchange market. In February 2019, the Executive Board finally decided to revoke the mandate.

It is possible that this preparedness to intervene played a part in the development of the krona exchange rate by reducing purchase interest in the krona. However, for this to be able to explain any larger part of the krona depreciation, the market participants would have to have interpreted the mandate as meaning, in practice, that the Riksbank did not intend to allow any appreciation of the krona at all, but that its actual aim was, instead, to achieve a depreciation. In that case, this would be another message than the one communicated by the Riksbank, which was that this was an option to be used if the krona were to appreciate too much and too quickly.

### Currencies in small open economies have developed in a similar manner

One important observation that has received relatively little attention is that currencies of other small, open economies have also moved in a similar manner to that of the Swedish krona. Figures 4:7 and 4:8 show how the Swedish krona, the Norwegian krone, the Australian dollar, the Canadian dollar and the New Zealand dollar have developed in 2019 in relation to the euro and the US dollar. Unlike the other currencies, the Swedish krona depreciated quite heavily in January, but subsequently followed the others well, with the exception of the Canadian dollar.

Figures 4:9 and 4:10 show that there is also a clear common pattern in the slightly longer term. Currencies in small open economies tend to depreciate in times of uncertainty. A number of uncertainty factors have characterised global economic developments in recent years, not least the trade conflict between the United States and China. This uncertainty was difficult to predict a few years ago, along with the depreciation that has affected the krona and other small currencies.

The observation that Sweden does not stand out in any notable way provides some perspective on the debate surrounding the krona. It is also worth noting that the development of exchange rates has been similar despite the policy rates in the other countries being significantly higher than they are in Sweden and not having been reduced below zero.

### The exchange rate does not create prosperity

The depreciation of the krona also led to the debate on whether the monetary policy that has been conducted in recent years has contributed to making the people of Sweden poorer continuing into 2019. This argument may bring to mind changes in Sweden's prosperity in a wider sense. However, according to common measures of prosperity, such as GDP per capita, developments in Sweden have been relatively good from an international perspective (see Figure 1:5).

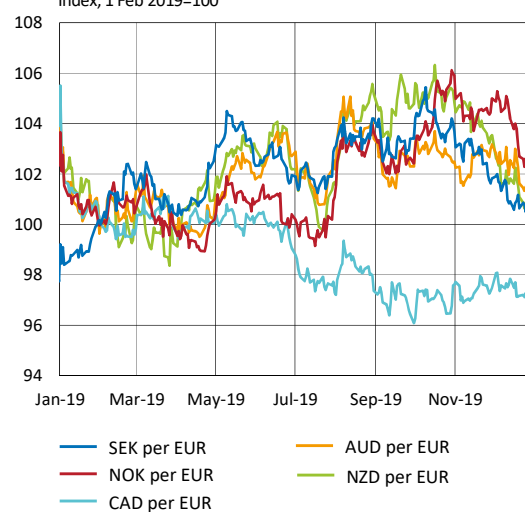
Neither is there any simple and clear-cut correlation between a country's exchange rate and its prosperity, as this concept is normally used. Economic research into what makes countries poor or rich concludes that prosperity is created through efficient institutions and clear rules for economic agents. A strong nominal exchange rate does not in itself create prosperity.

If one nevertheless takes the view that the movements in the krona experienced in Sweden are not acceptable, one may of course argue for a return to a fixed exchange rate. This would however be a political decision. Under the Currency Rate Act, the government takes decisions on the exchange rate system that is to be applied.<sup>58</sup>

### Flexibility requires confidence in the inflation target

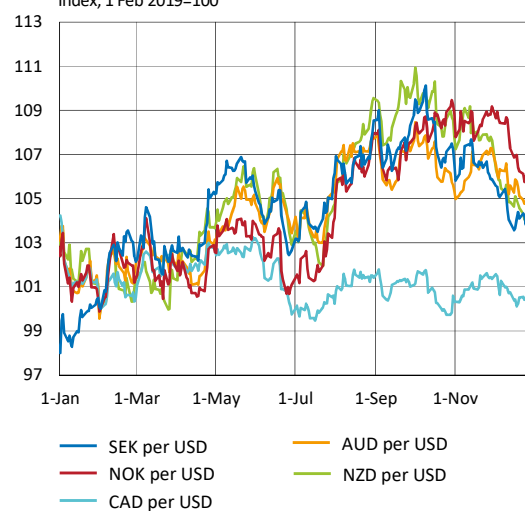
Another theme over the year was the opinion that the Riksbank has focused too much on the inflation target and has not been sufficiently "flexible". Some analysts argue that, if the Riksbank

Figure 4:7. Currencies in small open economies against the euro, 2019  
Index, 1 Feb 2019=100



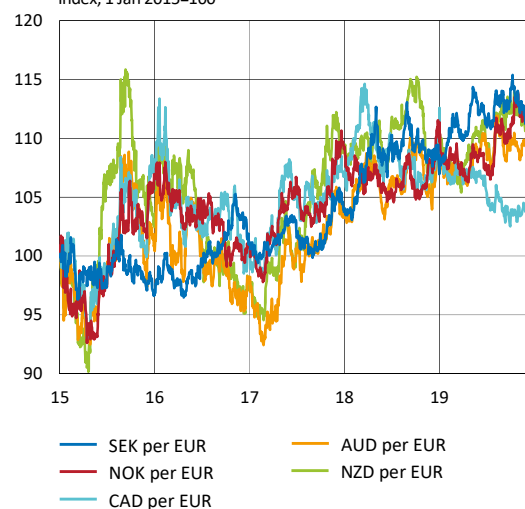
Source: Macrobond

Figure 4:8. Currencies in small open economies against the dollar, 2019  
Index, 1 Feb 2019=100



Source: Macrobond

Figure 4:9. Currencies in small open economies against the euro  
Index, 1 Jan 2015=100



Source: Macrobond

<sup>58</sup> Currency Rate Act (1998:1404), Section 2.

had focused less on the inflation target, monetary policy could have been used for other things, for example strengthening the krona or holding back the increase in household debt.

Like most other central banks, the Riksbank conducts, in practice, a flexible inflation targeting policy, where aspects other than inflation are also taken into account. In normal cases, when confidence in the inflation target is well anchored, it is also possible to make trade-offs between stability in inflation and in other variables, without risking that economic agents will believe the inflation target has been given lower priority.

However, in some situations, confidence in the inflation target risks being weakened so much that there is no longer any scope for flexibility. The economy could then start to expect lower inflation in the long term. In turn, this could lead to the problems described above, for example that the repo rate would become a less effective tool to counteract future recessions. As was noted at the start of this chapter, it is considerations of this kind that have characterised monetary policy in recent years. The Riksbank's assessment has been that a less expansionary monetary policy than the one conducted would have entailed risks to confidence in the target.

The stronger confidence in the inflation target is, the more flexible the policy can be. This is an important reason for why inflation is the principal objective, explicit or implicit, for most central banks.

#### Continued debate on the inflation target and wage formation

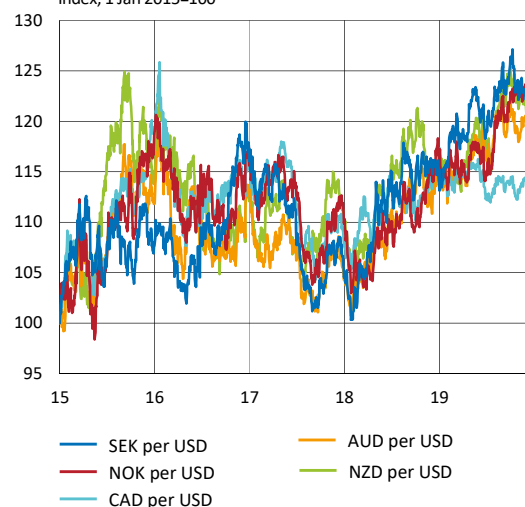
In 2019, the debate on the relation between wage formation and inflation also continued. This relation has important implications for the conditions for the inflation targeting policy.

For over 20 years, the level of centrally agreed wage increases in the economy has been set by the agreements concluded in the industrial sector, in accordance with the Industrial Agreement. The aim of the Industrial Agreement was to create more controlled wage formation that takes Sweden's international competitiveness into account. The Industrial Agreement has fulfilled an important function by creating orderliness in Sweden's wage formation process and has contributed to restrained wage increases over the last two decades.

However, in recent years, a number of problems with this system have increasingly been discussed. One potential problem is that it makes it more difficult to change relative wages from the perspective of fairness and distribution. For example, it can be an obstacle in the reduction of the gender pay differential.

There are also problems from a macroeconomic perspective. If relative wages are not flexible enough, this may counteract a socioeconomically effective distribution of the labour force among professions and sectors. Imbalances on the labour market could thereby arise. One misgiving is that the current wage formation system is not sufficiently flexible to be able to handle shortages efficiently, for example in schools and healthcare. A number of analysts therefore consider that the most important

Figure 4.10. Currencies in small open economies against the dollar Index, 1 Jan 2015=100



Source: Macrobond

goal for wage formation must be to achieve a balance on the labour market as a whole, rather than primarily safeguarding the manufacturing sector's international competitiveness.<sup>59</sup>

### Important to analyse the interplay between inflation targeting and wage formation

Another important aspect highlighted in the discussion is the extent to which this wage standardisation is compatible with inflation targeting. The reason this question has been brought up is that the overall nominal wage growth in the economy has been low in recent years, even though the economic situation has been good and inflation has been close to target (see Figure 4:11). The restrained wage agreements in Swedish industry have largely been due to the moderate wage growth in our European competitor countries. As the agreements in industry also set the standard for wage agreements in other sectors that are only partly or not at all exposed to competition, these agreements will also be low.

From a theoretical perspective, this type of wage standardisation should not be incompatible with inflation targeting in the long term as the euro area's inflation target is in line with Sweden's. But in periods when wage growth in the euro area is unusually low, standardisation based on industry contributes to low wage growth in the Swedish economy as well. Even though the Riksbank would make monetary policy more expansionary in such a situation, it may take longer than normal to reach the inflation target. During such a period, there is a risk of inflation expectations falling and of confidence in the inflation target weakening. We could then find ourselves in a situation with the problems described above.

In addition, when the Riksbank's repo rate has reached its lower bound, there arises a specific complication. If the rate of wage increases falls, this could lead to inflation falling further. However, the Riksbank cannot counter this by cutting the repo rate. The consequence of this will then be that the real interest rate (the interest rate minus expected inflation) rises, which will restrain demand in the economy and thereby employment. Lower wage increases may therefore be counterproductive if the repo rate is already at its lower bound.

An alternative view is that it is instead the inflation target that no longer fulfils any function as anchor for wage formation. It was only a means to bring down the excessively rapid wage increases in relation to other countries. But, as this has been achieved, the inflation target has fulfilled its purpose, according to this view. The need for the manufacturing sector to relate to prices determined abroad is usually also used as an argument for ignoring the inflation target.

But the point of an inflation target is that it is to be a permanent benchmark for price setting and wage formation in

Figure 4:11. Wages  
Annual percentage change



Note. The broken line represents mean values from 1992 to 2019.

Sources: National Mediation Office and the Riksbank

See, for example, L. Calmfors, S. Ek, A.-S. Kolm and P. Skedinger, *Kollektivavtal och lönebildning i en ny tid* [Collective agreements and wage formation in a new age], Dialogos, Stockholm, 2019. It should be pointed out that there are studies showing that there is a certain amount of wage flexibility with regard to changes in unemployment at a regional level, see M. Carlsson, I. Häkkinen Skans and O. Nordström Skans, "Wage Flexibility in a Unionized Economy with Stable Wage Dispersion", IZA Paper No. 12093, Januari 2019, Institute of Labor Economics.

the economy. It is to counteract not only excessively high inflation but also excessively low inflation. If the opinion that the inflation target no longer fulfils any function becomes widespread, this will also affect the Riksbank's ability to maintain confidence in the target. It is therefore important to analyse the interplay between the monetary policy framework and the forms for wage formation, and this is something that should be given more attention in the economic discussion.

## ARTICLE – How the Riksbank develops its monetary policy

The Riksbank works constantly on improving its monetary policy analysis. In 2019, work focused on areas like the development of the Swedish krona, which continued to be a key issue. The Riksbank's analysis in this area is described in the article "The Riksbank's exchange rate forecasts". Apart from the exchange rate, other aspects of the Swedish economy's international dependence were also the focus of the Riksbank's analysis. Furthermore, a new index was developed that makes it possible to assess financial conditions in Sweden. During the year, work also continued on increasing understanding of the economic consequences of structural changes linked to, for instance, demography and rapid technological development. The analysis of the conditions for stabilisation policy in Sweden was also deepened.

The Riksbank works constantly on improving its monetary policy analysis and studying the effects of monetary policy on the economy. This work includes both the analysis of different aspects of economic developments and the development of models that capture how the economy functions in a changing world.<sup>60</sup>

### In-depth analysis of the Swedish economy's international dependence

As in 2018, the Riksbank's development work in 2019 mostly concentrated on the development of the krona and several analyses on the subject were published – see also the article "The Riksbank's exchange rate forecasts". Factors that determine the exchange rate were also in focus at a conference on business cycles in small, open economies, which the Riksbank organised together with the central banks of Australia, Canada, Norway and New Zealand.

In addition to the exchange rate, other aspects of the Swedish economy's international dependence were also in focus in the Riksbank's analysis, including the development of Swedish labour costs in an international perspective. If Swedish labour costs increase more than those abroad, Swedish goods and services will be relatively more expensive and it will be more difficult for them to compete on a global market. Swedish wage formation should however be able to disregard this if the krona exchange rate depreciates at the same time and evens out the difference in labour costs in relation to abroad. But the krona is also affected by several other factors.

An article in the February Monetary Policy Report analysed how Swedish labour costs compare in an international perspective.<sup>61</sup> The conclusion was that Swedish unit labour costs were low at the beginning of 2019 compared with most competitor countries measured in the

same currency. The depreciation of the krona that had occurred up to then was an important explanation for this.

Conclusions on how economic prosperity has developed in Sweden compared with other countries can be influenced by the measures used in the comparison. This was studied in an Economic Commentary.<sup>62</sup> The conclusion was that Swedish prosperity growth has been quite stable in a longer-term perspective, and although the level has fallen slightly relative to other countries in recent years, it still compares well internationally.

Conclusions on economic development in different countries are not just influenced by the statistical measures that are compared, but also by *how* the statistics are calculated. Notwithstanding international calculation conventions, statistics producers in different countries are of necessity faced with choices that can matter when they wish to make comparisons with other countries. A staff memo studied how the comparisons of price statistics can be affected by the adjustments made in order to take quality changes into consideration.<sup>63</sup> It was shown that the relative development of prices adjusted for such changes differs considerably between different countries, which may be due to the choice of different calculation methods. The differences are so substantial that they may affect comparisons of the inflation rate in different countries, measured in terms of the annual percentage change in the EU-harmonised price index, the HICP. A comparison of the included sub-indices showed, for example, that the development of prices adjusted for quality changes has helped to push down inflation in Sweden quite substantially compared to in other countries.

<sup>60</sup> In 2019, the project to update and further develop a new macroeconomic model for the Swedish economy, MAJA (Model for General Equilibrium Analysis), which replaces the earlier model RAMSES. Information and documentation on the new model will be published in 2020.

<sup>61</sup> "Development of Swedish labour costs in an international perspective", article in Monetary Policy Report, February 2019.

<sup>62</sup> H. Gabriellson, "How does prosperity growth compare with other countries?", *Economic Commentaries* no. 10, 2019.

<sup>63</sup> O. Tysklind, "Quality adjustments and international price comparisons", Staff Memo, January 2020.

### New measure of financial conditions in Sweden

Monitoring and understanding developments on the financial markets is an important part of the monetary policy drafting process. Conditions on the financial markets not only reflect developments in the economy, but can also drive them. In addition, financial conditions are important as monetary policy affects to a large extent output, employment and inflation via the financial system. There are therefore several reasons for the Riksbank to analyse how financial conditions develop. As the conditions cannot be observed directly, they must be estimated in some way.

In 2019, the Riksbank developed a new index (the FCI, Financial Conditions Index) that reflects the financial conditions in Sweden by summarising the status for a number of indicators on important sub-markets in the Swedish financial system. The index weighs together indicators that reflect developments on the housing market, bond market, money market, equity market and foreign exchange market.<sup>64</sup> The Riksbank's FCI was presented in a Staff Memo that showed, for example, that the index provides a reasonable description of the financial conditions in Sweden since the beginning of the 1990s. The index is also robust in that it indicates a development similar to other FCIs based on more complicated calculations.

### What are the effects of changes to the Swedish economy's supply side?

In the period ahead, monetary policy both in Sweden and abroad will be conducted in an environment in which major change is occurring on the economy's supply side. One of the reasons for this is the ongoing demographic changes, with an increasing proportion of older people in the population and large migration flows. In 2019, the Riksbank continued the work of improving its understanding of these conditions. Among other things, it published a research review of migration to Sweden in recent decades and the macroeconomic effects immigration can have.<sup>65</sup> One specific question was whether immigration may make it easier to support an ageing population. Its conclusion was that immigration could help with this but that this would require integration into the labour market to function better than it does today. Another research review compared different sources of labour market statistics, including the picture they give of the situation for foreign-born persons. The analysis showed how a more complete picture of the Swedish labour market can be obtained by combining the various sources.<sup>66</sup>

Another trend with potentially major consequences for the labour market is the ongoing technological development with automation and robotisation. An Economic Commentary on empirical research in this area concluded that it is impossible to say whether total employment so far has decreased due to technological development.<sup>67</sup> On the other hand, some groups have been impacted harder as their skills are no longer in demand on the labour market to the same extent as previously. Rapid technological development thus risks leading to a clear division on the labour market. It is therefore necessary for the economy to have the ability to adjust so that resources can be transferred smoothly between activities and sectors.

An article in Sveriges Riksbank Economic Review summarised the findings in research literature as regards the effects of major structural changes that have affected the Swedish labour market over the last 25 years, including various reforms, changed demography and increased foreign trade.<sup>68</sup> One of the conclusions was that trade has had some effects on wages. But it is above all technological development that has benefited the highly educated that has had an effect on wage formation in that wage differentiation has increased.

Another article investigated whether structural changes on the labour market can explain the restrained development of prices and wages in recent years.<sup>69</sup> The conclusion was that increased labour force participation, weakened bargaining power among employees and a lower compensation rate during unemployment may have contributed to the development. Some of these changes may also have contributed to the increasingly high resource utilisation in the economy not leading to the same level of large wage growth as in previous years. However, this does not necessarily mean that the ability of monetary policy to affect inflation has diminished. An Economic Commentary showed that there is still a strong connection on the corporate level between sales prices and resource utilisation.<sup>70</sup>

### In-depth analysis of the conditions for stabilisation policy

When the general level of interest rates is low, monetary policy's ability to counteract weaker economic developments depends, among other things, on how far it is possible, in practice, to cut the repo rate. The Riksbank and a couple of other central banks have cut their policy rates to below zero, which was previously considered the lower bound. A staff memo analysed Sweden's experiences.<sup>71</sup> The analysis showed that market rates, both interbank rates and yields for

<sup>64</sup> J. Alsterlind, M. Lindskog, and T. von Brömsen, "An index for financial conditions" Staff Memo, February 2020.

<sup>65</sup> Å. Olli Segendorf and E. Theobald, "Can immigration resolve the problem of an ageing population?", *Sveriges Riksbank Economic Review* no. 1, 2019.

<sup>66</sup> I. Häkkinen Skans, "Developments on the labour market according to different statistical sources", *Economic Commentaries*, no. 6 2019.

<sup>67</sup> I. Häkkinen Skans, "Technological change and the labour market", *Economic Commentaries* no. 7, 2019.

<sup>68</sup> A. Westermark, "How can different structural changes in the economy affect wages and inflation?", *Sveriges Riksbank Economic Review*, no. 2, 2019.

<sup>69</sup> M. Jonsson and E. Theobald, "Changed labour market – effects on prices and wages, the Phillips curve and the Beveridge curve", *Sveriges Riksbank Economic Review* no. 1, 2019.

<sup>70</sup> E. Frohm, "The relationship between resource utilisation and inflation: a micro data perspective", *Economic Commentaries*, no. 1, 2019.

<sup>71</sup> H. Erikson and D. Vestin, "Pass-through at Mildly Negative Policy Rates: The Swedish Case", Staff Memo, January 2019.



government bonds, have followed the policy rate in tandem with the cuts. On the other hand, the banks' deposit rates have not fallen to a corresponding degree, something that the Riksbank had not expected either. The banks' lending rates with a three-month fixation period – the variable mortgage rates – have, however, followed the cuts to the policy rate, albeit after some delay. The conclusion of the analysis was that cuts taking the policy rate below zero have had an effect and have contributed to stimulating the economy further.<sup>72</sup>

The Riksbank and other central banks have had to cut their policy rates to today's very low levels as the level of interest rates in general in the global economy has gradually fallen over a number of decades. This has contributed to borrowing costs for purchases of houses and tenant-owned apartments have fallen, meaning that it has been cheap for Swedish households to borrow and that their debts have risen. A staff memo analysed how the functioning of the economy is affected when households are highly indebted and what this means for monetary policy.<sup>73</sup> Among other things, the analysis showed that unexpected changes in monetary policy have a greater impact on the economy in such an environment as households are more sensitive to changes in the interest rate. But higher interest-rate sensitivity among households also means that the economy as a whole becomes sensitive to shocks to the financial system.

One question that received increasing focus in the economic debate over the year concerned the extent to which fiscal policy needs to take greater responsibility in a future economic downturn. One argument for placing greater responsibility on fiscal policy is the fact that the low level of interest rates restricts the scope of monetary policy, while the scope of fiscal policy increases. In addition, theoretical and empirical research indicates that temporary fiscal policy measures can stimulate household consumption to a relatively great degree, particularly if the central bank's policy rate is close to its lower bound. An Economic Commentary published by the Riksbank discussed these arguments and the interplay between fiscal policy and monetary policy in more detail.<sup>74</sup>

**Table 1:1. Monetary policy-related studies conducted in 2019. Year of publication 2019, unless otherwise specified.**

Articles in Monetary Policy Reports
"Development of Swedish labour costs in an international perspective", February
"The Riksbank's operational framework needs to be adjusted to new conditions", July
"Trend development of the Swedish krona", July
"Inflation expectations in Sweden close to 2 per cent", September
"World trade in constant change", October

<sup>72</sup> See the article "The Riksbank's experiences of a negative repo rate".

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**SVERIGES RIKSBANK**  
SE - 103 37 Stockholm  
(Brunkebergstorg 11)

Tel +46 8 - 787 00 00  
Fax +46 8 - 21 05 31  
registratorn@riksbank.se  
www.riksbank.se

PRODUCTION SVERIGES RIKSBANK.  
ISBN 978-91-87551-02-4 (online)