SVERIGES RIKSBANK

# Account of monetary policy

2017

# Account of monetary policy 2017

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 Account of Monetary Policy 2017 may be downloaded in PDF format from the Riksbank's website www.riksbank.se, where more information about the Riksbank can also be found.

# Monetary policy in Sweden

**MONETARY POLICY STRATEGY**

- According to the Sveriges Riksbank Act, the objective for monetary policy is to maintain price stability. The Riksbank has defined this as a 2 per cent annual increase in the consumer price index with a fixed interest rate (the CPIF).
- At the same time as monetary policy is aimed at attaining the inflation target, it is also to support the objectives of general economic policy for the purpose of attaining sustainable growth and a high level of 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's publications include an 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, and any potential supplementary measures necessary, 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 monetary policy so that inflation is expected to be fairly close to the target in two years' time.
- To illustrate the fact that inflation will not always be exactly 2 per cent each month, a variation band is used that stretches between 1 and 3 per cent, which captures around three quarters of the historical monthly outcomes of CPIF inflation. The Riksbank always aims for 2 per cent inflation, regardless of whether inflation is initially inside or outside the variation band.
- 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 monetary policy 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.

**THE DECISION-MAKING PROCESS**

The Executive Board of the Riksbank usually holds six monetary policy meetings per year at which it decides on monetary policy. A Monetary Policy Report is published in connection with these meetings. 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 current decision and to see the arguments put forward by the different Executive Board members.

**PRESENTATION OF THE MONETARY POLICY DECISION**

The monetary policy 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.

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# CHAPTER 1 – Target attainment

The Riksbank has over several years conducted a very expansionary monetary policy to maintain confidence in the inflation target. This policy has contributed to a high level of growth, to an increase in employment and a decline in unemployment as well as to inflation rising. During 2017, inflation was close to the target level again. CPIF inflation amounted to 2.0 per cent on average, while CPI inflation was 1.8 per cent. Long-term inflation expectations were also around 2 per cent over the year. Target attainment was thus good. However, it has taken a long time and required a very low repo rate and extensive asset purchases to contribute to this.

## Economic developments and inflation in 2017

### CPIF inflation was on average on target in 2017

The expansionary monetary policy in recent years has contributed to the Swedish economy continuing to develop well. Both CPIF inflation and measures of underlying inflation have shown a rising trend since 2014 and were on average close to target in 2017 (see Figure 1:1 and Table 1:1).[1]

CPIF inflation amounted to 2.0 per cent on average in 2017, compared with 1.4 per cent in 2016. Inflation was thus on average on target, as the CPIF has been not only the operational target variable, but also the formal one since September 2017 (see Chapter 2). CPI inflation and inflation excluding energy prices (the CPIF excluding energy) also rose markedly from 2016 to 2017.

**Table 1:1. Inflation according to different measures**
Annual percentage change, annual average

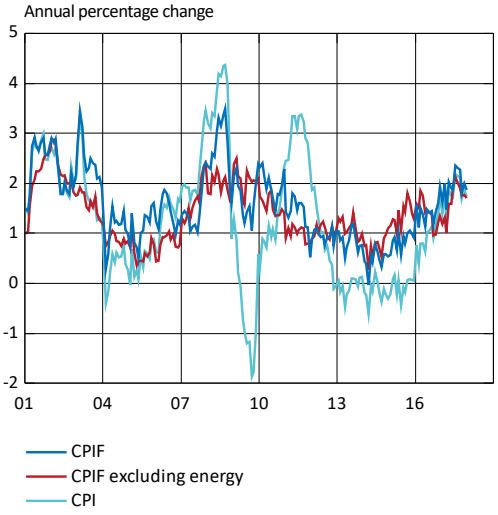
| | 2015 | 2016 | 2017 |
|---|---|---|---|
| CPIF | 0.9 | 1.4 | 2.0 |
| CPIF excluding energy | 1.4 | 1.4 | 1.7 |
| CPI | 0.0 | 1.0 | 1.8 |

Source: Statistics Sweden

The Riksbank has conducted a very expansionary monetary policy over several years to maintain confidence in the inflation target, with a historically low repo rate and large-scale purchases of government bonds. One result of this policy is that the more long-term inflation expectations – which were worryingly low in 2014 and 2015 – have risen (see Figures 1:2 and 1:5). Towards the end of 2016 these inflation expectations were once again very close to 2 per cent and they remained there during 2017. The policy the Riksbank has conducted thus appears to have contributed to maintaining confidence in the inflation target.

[1] According to the Sveriges Riksbank Act, the objective for monetary policy is "to maintain price stability". The Riksbank has interpreted this objective to mean a low, stable rate of inflation. More precisely, the Riksbank's target is to hold CPIF inflation around 2 per cent a year. The Riksbank and other central banks with inflation targets conduct a policy of flexible inflation targeting. This means that at the same time as trying to attain the inflation target, they take into account developments in the real economy.

**Figure 1:1. CPIF, CPIF excluding energy and CPI**
Annual percentage change




Sources: Statistics Sweden and the Riksbank

**Figure 1:2. Inflation expectations among all participants**
Per cent, mean, CPI


Note. Participants surveyed are social partners, purchasing managers and money market participants.

Source: TNS Sifo Prospera

**Expansionary monetary policy over a long period of time**

To put developments during 2017 into perspective, it is useful to take a look back in time. This is also justified by developments in inflation and the real economy in 2017 being affected by the monetary policy conducted in the previous years.

The Swedish economy has developed well in an international perspective, following the global financial crisis 2008–2009 (see Figure 1:3). Nevertheless, inflation in Sweden has been below the inflation target for longer than in many other countries (see Figure 1:4).

During 2014 there were signs that economic agents were beginning to question whether the Riksbank would attain an inflation rate of 2 per cent. This was expressed, for instance, in the mean value of the long-term inflation expectations among money market participants beginning to fall further below the target (see Figure 1:5). The rapid fall in the median of the participants' inflation expectations, which have long been exactly on target, illustrates clearly the change and the seriousness of the situation in 2014. Actual inflation had then been lower than 2 per cent for a long period (see Figure 1:1). In the general debate, the Riksbank's possibilities to bring inflation back on target were called into question.

Monetary policy in 2014 and 2015 therefore focused increasingly on bringing inflation and inflation expectations back to 2 per cent. The repo rate was cut by 0.5 percentage points to 0.25 per cent in July 2014 and further to zero per cent in October. At the beginning of 2015, inflation was still very low and inflation expectations were developing in a troubling manner. The repo rate was cut further in 2015 and early 2016 to –0.5 per cent. The Riksbank also began to purchase government bonds on a large scale and declared it was ready, if necessary, to intervene on the foreign exchange market to counteract an overly rapid appreciation of the krona.

In recent years, the Riksbank has needed to take into account in its monetary policy decisions the fact that many other central banks have conducted a very expansionary policy. This applies not least to the European Central Bank (ECB), which has also applied a policy of a negative policy rate and extensive asset purchases. If the Riksbank had maintained a too high repo rate, or refrained from asset purchases, there would have been a risk of the krona appreciating rapidly and substantially. This in turn would have resulted in the already low Swedish inflation falling further and it would thereby have been even more difficult to attain the target and anchor expectations.

**The prices of most components of the CPIF increased faster in 2017**

To return to developments in 2017, the rate of inflation measured as the CPIF was on average 2.0 per cent during the year. This is higher than the average rate of inflation in

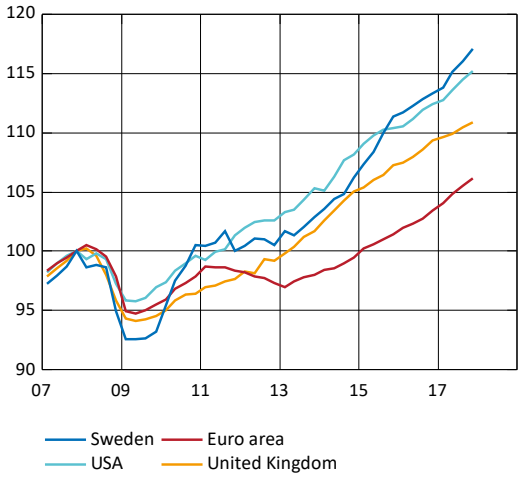
**Advantages of an inflation target of 2 per cent**

In conjunction with the introduction of inflation targeting in 1993, the Riksbank decided that the level of the inflation target should be 2 per cent. A well-defined target that could comprise a clearer anchor for price-setting and wage formation was considered necessary to break the earlier pattern of high and varying inflation, and to create the conditions for a good economic development going forward. When economic agents have a common perception of how prices will develop in the future, it becomes easier to plan for the long term.

One advantage of the target being 2 per cent and not lower is that wage formation can be impaired when average inflation is excessively low. The reason is that it has proved difficult in practice to lower nominal wages. If inflation is on average low and nominal wages cannot be lowered, it becomes difficult to adjust real wages between different companies and sectors. This can ultimately bring about both higher unemployment and poorer productivity growth in the economy. These problems can be mitigated if there is some underlying inflation.

Another advantage of a target of 2 per cent, which has been particularly clear in recent years, is that a very low average rate of inflation makes it more difficult for monetary policy to counteract recessions. If average inflation is low, the nominal interest rate will also be low, on average. The lower the interest rate is in normal conditions, the less scope there is to lower it before it hits its lower boundary, even though it is not evident where this boundary lies. This means that the possibility to make monetary policy more expansionary via cuts in the policy rate is limited and supplementary monetary policy measures can become necessary. Even with a target of 2 per cent, several central banks have been forced to cut their policy rates as far as is deemed possible and to remain there for a long period. With a lower target, the period with the policy rate at its lower bound would have been even longer.

**Figure 1:3. GDP development in Sweden and abroad**
Index, 2007 Q4 = 100, seasonally- and calendar-adjusted data




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

2000–2016, which was 1.5 per cent (see Table 1:2). There was a rise in service prices, which have the largest weighting in the CPIF, of 2.4 per cent, which was considerably more than the average since 2000 (see also the article "Why inflation has risen"). Food prices, which increased relatively modestly in 2016, also rose faster in 2017 and roughly in line with the historical average. Other goods prices usually fall and did so in 2017 as well, unlike in 2016. The component that measures the value of households' housing stock (which Statistics Sweden call Capital stock) increased substantially, which reflects rising housing prices but also a method change, as tenant-owned housing is included in the index with effect from 2017.[2]

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

| | Weight (per cent) | 2000–2016 | 2016 | 2017 |
|---|---|---|---|---|
| Services | 44.5 | 1.8 | 2.0 | 2.4 |
| Goods | 26.9 | –0.5 | 0.0 | –0.7 |
| Food | 18.0 | 1.8 | 1.1 | 2.1 |
| Energy | 7.0 | 3.4 | 1.4 | 5.8 |
| Capital stock | 3.6 | 4.9 | 5.8 | 9.4 |
| CPIF | 100 | 1.5 | 1.4 | 2.0 |

Note. The weights are those applying for 2017.
Source: Statistics Sweden

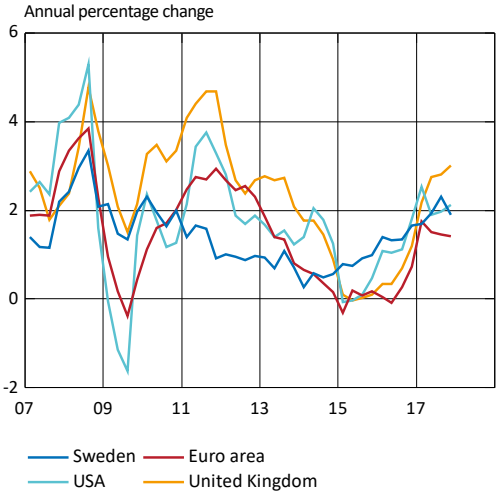
## Continued good GDP growth, but slowdown in the housing market

The Swedish economy developed well in 2017 (see Table 1:3). GDP grew by 2.4 per cent, which was somewhat slower than in 2016, but still in line with the historical average, which has been just over 2 per cent since 1980. From an international perspective, too, the development in Sweden was good. Growth was, for instance, on a par with the euro area and somewhat higher than in the United States (see Figure 1:6).

The situation on the labour market has improved more or less constantly since the beginning of 2013, with a rising employment rate and falling unemployment. During 2017 the labour force participation rate continued to increase, as did the employment rate, and unemployment fell somewhat further to an average of 6.7 per cent (see Figure 1:7 and Table 1:3). The strong economic activity means that demand for labour is high and it has become increasingly difficult for companies to recruit qualified personnel. This is expected to affect local wage formation and bring about rising wage increases over and above the levels in the central agreements. But despite increasingly high activity in the economy and the fall in unemployment, wages have not

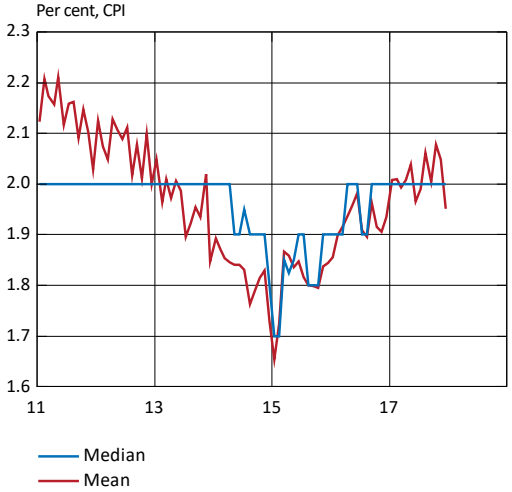
[2] The capital stock index measures the change in purchase value of the household's housing stock and was previously a relatively sluggish measure. However, as of 2017, tenant-owned apartments are also included in the calculation of the capital stock, which means that the capital stock index is now growing at a somewhat faster pace than before. See further the sidebar "Minor direct effects of housing prices on the CPIF", Monetary Policy Report December 2017.

**Figure 1:4. Inflation in Sweden and abroad**
Annual percentage change



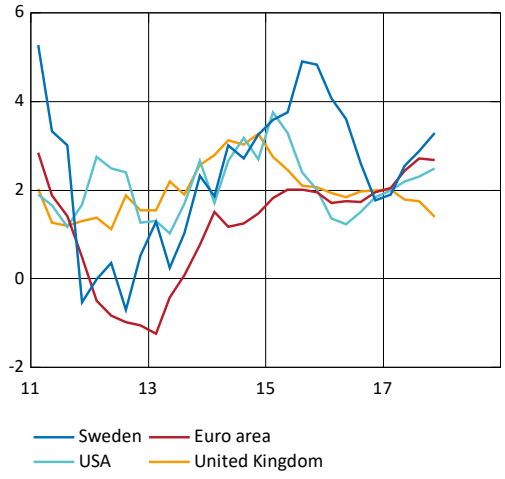

Note. The CPIF is shown for Sweden and the HICP for the euro area. Others refers to the CPI.
Sources: Bureau of Labour Statistics, Eurostat, Office for National Statistics, U.S. Department of Labor and Statistics Sweden

**Figure 1:5. Inflation expectations among money market participants, 5 years ahead**
Per cent, CPI




Note. The median shows the inflation value that has as many measurement values above as below it. Unlike the average, the median value is not sensitive to extreme values.
Sources: TNS Sifo Prospera

**Figure 1:6. 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

risen at the rate expected considering the historical correlation between wages and economic activity.[3]

**Tabell 1:3. Production and the labour market according to different measures**
Annual percentage change, annual average

| | 2015 | 2016 | 2017 |
|---|---|---|---|
| GDP | 4.5 | 3.2 | 2.4 |
| Number of hours worked | 1.5 | 2.7 | 1.2 |
| Number of employed | 1.4 | 1.5 | 2.3 |
| Labour force, 15–74 years | 0.8 | 1.0 | 2.0 |
| Unemployment | 7.4 | 6.9 | 6.7 |

Note. Unemployment refers to percentage of the labour force.
Source: Statistics Sweden

## Resource utilisation was higher than normal in 2017

The level of activity in the economy is often summarised in the form of some measure of resource utilisation. However, there is no clear-cut method for measuring this. The Riksbank therefore uses a number of indicators to assess the level of resource utilisation: The GDP gap and the hours worked gap, which measure the percentage deviations of GDP and the number of hours worked from their respective estimated long-run levels, and the so-called RU indicator, which summarises information from different surveys and labour market data with the assistance of a statistical method. If the respective measure is positive, it indicates a high level of activity in the economy and a higher level of resource utilisation than normal. The opposite applies when the measurements are negative. If the measurements are equal to zero, the situation is normal and there is cyclical balance.

The overall view given by the different measures is that resource utilisation was higher than normal in 2017 (see Figure 1:8). The Riksbank assesses that resource utilisation will remain higher than normal over the coming years and that this is necessary to bring inflation in line with the target during this period.

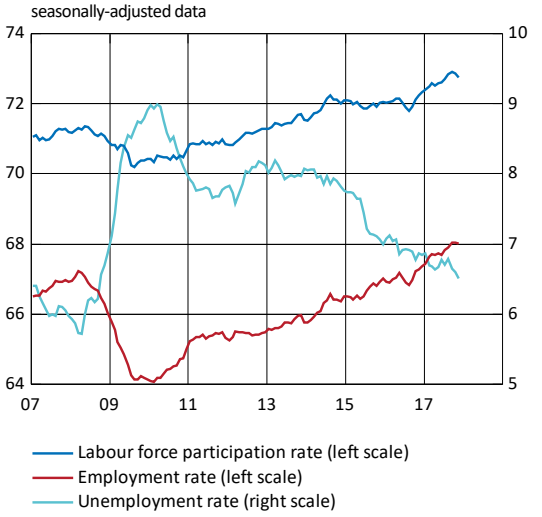
## Household debt has continued to increase

The low interest rates and the increasingly strong economic activity have contributed to a continued increase in housing prices and household debt. This increase has been going on more or less continuously for twenty years. The Riksbank has long pointed to the problems linked to rising debts and housing prices. The problems on the housing market are essentially structural and the repo rate is not an appropriate tool for trying to deal with them. Moreover, it has been necessary to aim monetary policy at maintaining confidence in the inflation target (see further Chapter 2).

Towards the end of the year, housing prices turned downwards for the first time since 2011. Developments on the housing market increase the uncertainty of the Riksbank's forecasts. However, the Riksbank assesses that housing prices will stabilise and that going forward they will increase at a

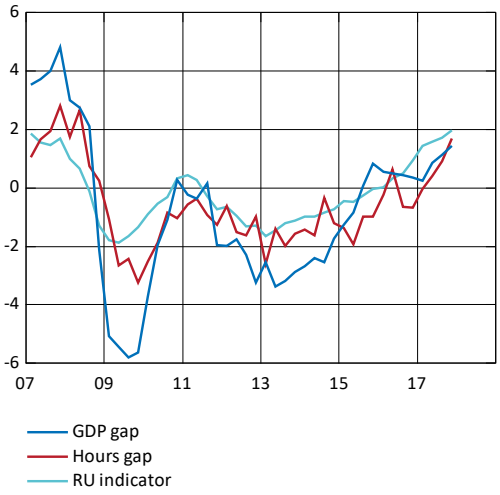
[3] For further details on this, see the article "Strong economic activity but subdued wage increases" in the Monetary Policy Report July 2017.

**Figure 1:7. Labour force, employment and unemployment**
Per cent of the population and per cent of the labour force, 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. GDP gap refers to the GDP deviation from trend, calculated using a production function. The hours gap refers to the deviation of number of hours worked from the Riksbank's assessed trend. The RU indicator is normalised so that the mean value is 0 and the standard deviation is 1.
Source: Statistics Sweden and the Riksbank

more moderate rate than before. The more subdued price developments in the housing market contribute to reducing the rate of increase in household indebtedness.

**No overheating in wages and prices**

To summarise, the Riksbank's expansionary monetary policy has contributed to a high level of growth, rising employment and rising inflation. It is sometimes stated in the debate that activity in the economy is so high that the expansionary economic policy risks leading to overheating in prices and wages. Although the Riksbank did assess that resource utilisation was higher than normal in 2017, there were nevertheless few signs of risks for wages and prices in general to rise too quickly.[4] Regarding wages in particular the situation was rather the opposite. However, this does not mean that the risks linked to the high activity in the Swedish economy can be ignored and there is thus still reason to thoroughly analyse both resource utilisation and the housing and mortgage markets, as well as household indebtedness.

[4] See the article, "Is activity in the Swedish economy too high?" in the Monetary Policy Report October 2017.

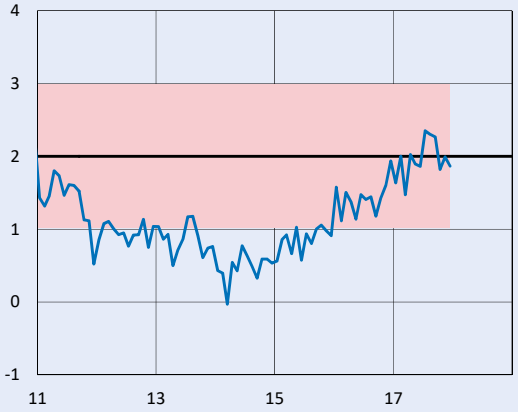
# ARTICLE – Why inflation has risen

Inflation has been rising since 2014 and in 2017, average CPIF inflation was on target. Several factors have contributed to this. An ever-stronger economic situation, underpinned partly by an expansionary monetary policy, has made it easier for companies to increase their prices. Factors that previously contributed to pushing down inflation in Sweden, including weak and uncertain economic activity abroad and unusually low energy prices, have had less and less of an effect. A depreciating krona exchange rate during the period has also contributed to the upturn in inflation.

## Rising inflation since 2014

Chapter 1 illustrated that inflation has shown a rising trend since 2014 and in 2017, average CPIF inflation was 2.0 per cent, i.e. on target (see Figure 1:9 and Table 1:1 in Chapter 1). The trend increase has taken place against the backdrop of ever-stronger economic developments and increasingly high activity in the Swedish economy.

**Figure 1:9. CPIF and variation band**
Annual percentage change



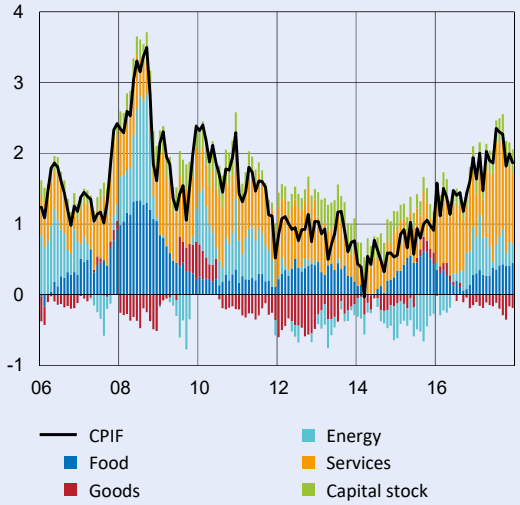

Note. The pink area shows the Riksbank's variation band and covers about three-quarters of the outcomes since January 1995. The variation band is a means of showing whether the deviation from the inflation target is unusually large.

Sources: Statistics Sweden and the Riksbank

### Prices for services have contributed to the upturn in inflation

To better understand the causes behind the upturn in inflation, it is informative to study how various sub-indices in the CPIF have developed. Figure 1:10 shows that prices for services have contributed to the upturn in CPIF inflation and in 2016 and 2017, the contribution was greater than the previous years.[5] A more detailed breakdown indicates that areas such as foreign travel have been a significant sub-component behind the increase in service prices.[6] But the upturn has been broad insofar as it can be explained by several components other than foreign travel.

**Figure 1:10. Contribution to the CPIF**
Percentage points and annual percentage change




Note. The bars illustrate the contribution of each price group to the rate of change in CPIF in the past twelve months. The contribution can be interpreted as the annual rate of change in each group, multiplied by the group's weight in CPIF.

Sources: Statistics Sweden and the Riksbank

### Other prices have also risen

Energy prices contributed to the upturn in CPIF inflation above all in 2017 – conversely, the contribution from energy prices in 2014 and 2015 was negative (see Figure 1:10). Energy prices fell for a number of years, so the market prices for energy are still not particularly high in a historical perspective, despite the increase in 2017. Relatively substantial tax increases in recent times have

[5] There have been variations in the rate of increase in service prices during the period, however (see Chapter 3).

[6] Foreign travel is normally a volatile item in the CPIF. In January 2017, Statistics Sweden changed the measurement method for charter travel prices in the consumer price index. The new method follows the recommendations from Eurostat and mainly means that prices of trips not sold during a certain period of the year will not have an impact on the index. According to the previous method, off-peak travel (e.g. holidays to skiing resorts during the summer) were included in the calculation of the foreign travel index under the assumption that their prices were not changed. The first year of using the new method (that is, 2017) the new seasonal pattern affected the annual rate of change in the CPIF. The maximum effect of the new seasonal pattern is deemed to have been 0.3 of a percentage point in July 2017. The method change mainly affected the pattern in the development of inflation during the year – the effect on the average for inflation in 2017 is very minor. In coming years, the annual rate of change will not be affected by the new seasonal pattern, as the twelve-month comparisons will then be based on the same method.

also contributed to higher energy prices at the consumer level.

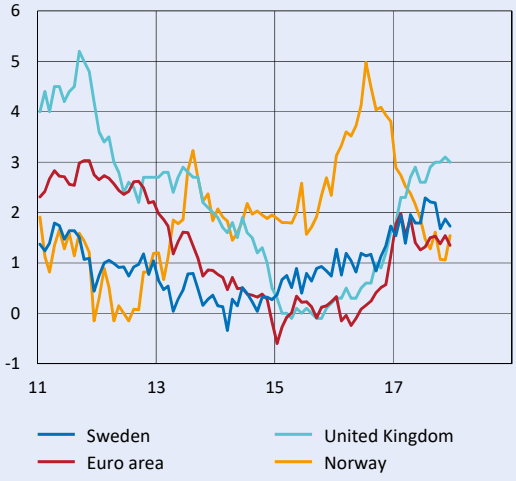
Prices for goods have been falling for a long period and have thereby contributed to holding back CPIF inflation to a relatively large extent. From 2014 and onwards, however, prices for goods have not dampened inflation to the same degree as in 2012–2013. During a period from mid-2015 to mid-2016, the contribution was positive, probably as a delayed effect of the krona depreciation in 2014 (see further below). As regards food prices, the contribution has, on average, been on an approximately normal level since 2014.

## Small direct inflationary impulses from abroad and from wage development

**Price pressures from abroad have been low**

Sweden is a small, open economy and is affected to a great extent by what happens abroad. It is therefore interesting to look at the development of inflation in other countries with which Sweden has a significant amount of trade in order to identify the extent to which rising inflation is being driven by price pressures in these countries. In several of the economies that are important for Swedish exports and imports, including the euro area, demand has risen and in some countries, resource utilisation is now close to or slightly above normal. Despite this, wage and price pressures have been limited. Only in recent years has the rising demand started to have an impact on inflation (see Figure 1:11).[7] Underlying inflation abroad is still low, however. One reason for this may be that it takes time before rising resource utilisation affects wages and inflation.

**Figure 1:11. Inflation in different countries**
HICP, annual percentage change




Note. HICP refers to the EU-harmonised index for consumer prices.

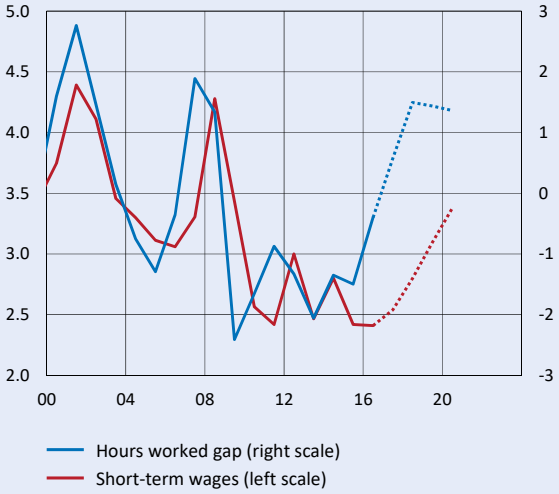
Source: Statistics Sweden and Eurostat

[7] The development of inflation in Norway has been special insofar as it rose temporarily to a high level in 2016, mainly as a result of a weakened exchange rate. Since then, however, inflation has fallen significantly.

**Limited wage growth despite strong economic activity**

Despite increasingly high activity in the economy, wages have not risen at the rate expected taking into account the historical correlation between wages and the economic situation (see Figure 1:12).[8] This is true for both centrally negotiated wage increases and wage development over and above central agreements. It does not seem likely, therefore, that the increasingly high price rises are primarily a direct consequence of rising wage costs in companies.

**Figure 1:12. Hours worked gap and short-term wages**
Per cent and annual percentage change, respectively




Note. The hours worked gap refers to the deviation in the number of hours worked from the Riksbank's assessed trend. Broken lines refer to the Riksbank's forecasts in February 2018.

Sources: Statistics Sweden, The National Mediation Office and the Riksbank

## Different driving forces behind the upturn in inflation

**Low energy prices are no longer pushing down inflation**

So what does the rising inflation in Sweden in recent years depend on? Identifying how individual factors have affected inflation is difficult. Certain factors do affect the CPIF in a direct and relatively straightforward way, however. For example, changes in international energy market prices have a direct effect on Swedish consumer prices via prices of oil-related products such as propellant and fuel oil. The market price of electricity also has a direct effect on consumer prices, even though it is not as obvious as the oil price effect. As mentioned above, higher energy prices contributed to pushing up CPIF inflation in 2017, partly as a result of ever-stronger demand.

[8] See the article "Strong economic activity but subdued wage increases" in Monetary Policy Report July 2017.

**Low but rising cost pressures**

In addition to a direct effect, changes in energy prices also have an indirect impact on the inflation rate as they affect companies' costs. The upturn in energy prices in 2017 should therefore have led to rising cost pressures among companies, which may also have contributed to more substantial price increases. It is difficult, however, to identify the extent to which this has been the case as it depends on factors such as how companies adapt their price-setting to changes in energy prices.

Cost pressures in companies are affected to a large extent by wage development. As described above, wage increases have been low in relation to the economic situation in recent years. But output per hour worked, i.e. productivity, has also developed weakly. This has contributed to the rate of increase in unit labour costs nevertheless rising again after showing a falling trend for a long time (see Figure 1:13).

The link between changes in unit labour costs and the rate of price increase is not always so immediate, however. As Figure 1:13 illustrates, inflation fell in 2011–2013 to a significantly greater extent than cost pressures, for example. The link between cost pressures and inflation is not direct, however. It is therefore unlikely that the rise in inflation since 2014 can only be explained by a somewhat faster increase in costs pressures recently.

**Figure 1:13. Inflation and unit labour costs**
Annual percentage change


Note. The trend in unit labour costs (refers to the economy as a whole) has been calculated using a so-called HP filter. To calculate the trend, the Riksbank's forecast in February 2018 and an assumption that unit labour costs will increase by 2 per cent beyond the forecast horizon are used. Broken lines refer to the Riksbank's forecasts in February 2018.

Sources: Statistics Sweden and the Riksbank

**Ever-stronger economic activity has made it easier for companies to raise their prices**

The ever-stronger economic activity and increasing resource utilisation in Sweden in recent years should also have played a role, however. And it is not just in Sweden that resource utilisation has risen, but also abroad. As mentioned above, direct price pressures from abroad have been relatively low. It is clear, however, that ever-stronger economic activity has contributed to the upturn in inflation in countries that are important for Swedish trade. The improved economic situation has also contributed to holding up demand for Swedish exports. A very weak and uncertain economic situation abroad, above all in the euro area, previously held back Swedish developments to a large extent. It seems reasonable, therefore, to assume that recent improvements in the economic situation internationally has contributed to the upturn in Swedish inflation, even though the direct inflationary impulses have so far been moderate.

**A relatively weak krona has contributed to the upturn in inflation**

Another factor that should periodically have driven up inflation in Sweden since 2014 is the exchange rate. In 2014 the krona weakened against a weighted index of currencies in countries that are important for Swedish international transactions (see Figure 1:14). Having strengthened slightly in 2015, the krona weakened again in 2016. A weaker exchange rate makes imports more expensive expressed in krona. This contributes to rising prices, for instance for energy, food and other goods. However, it takes time for changes in the exchange rate to impact prices, which the contributions from both food prices and prices for other goods to CPIF inflation indicate (see Figure 1:10). This suggests in itself that the rising inflation in 2017 as well is partly an effect of the previous weakening of the krona.

**Figure 1:14. KIX-weighted nominal exchange rate**
Index, 18 November 1992 = 100


Note. KIX refers to an aggregate of countries that are important for Sweden's international transactions.

Source: The Riksbank

**Inflation expectations have risen during the period**

Rising inflation expectations have also made it easier for companies to raise their prices. Both short- and long-term inflation expectations have risen since 2015 and since the

end of 2016, longer-term expectations have remained around the inflation target of 2 per cent (see Figure 1:2).

**Monetary policy has contributed to bringing inflation back on target**

Monetary policy affects several of the factors behind rising inflation mentioned above, even though it is difficult to determine the exact magnitude of this effect. In addition to cutting the repo rate to a historically low level, the Riksbank has purchased government bonds to make monetary policy more expansionary (see further the article "The negative repo rate and complementary monetary policy measures"). Communication of monetary policy has also been a tool used to a great extent to emphasise the determination to achieve the inflation target and to affect expectations regarding inflation and the repo rate. The combined monetary policy measures have had the desired effect – inflation has shown a rising trend since 2014 to a level around 2 per cent and there is confidence in the inflation target. It has taken a long time, however, and required a lot of support from monetary policy.

# CHAPTER 2 – Monetary policy 2017

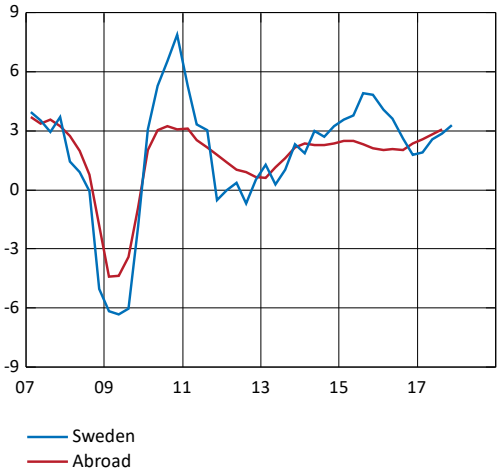
It has taken a long time and required expansionary monetary policy to bring up inflation and inflation expectations to the target level. The Riksbank emphasised during the year that it would entail risks to change its policy too quickly, despite inflation being close to the target. Monetary policy was not changed very much during 2017, with the exception of the decision in April, when it was made slightly more expansionary. A decision was then taken to extend the purchases of government bonds, and it was expected to take longer before it would be possible to begin raising the repo rate. In December, it was also decided to bring forward reinvestments of the large numbers of bonds that mature in early 2019. In September, the Executive Board decided to make CPIF inflation, which had long functioned as a target variable in practice, the official target variable. A variation band around the target was introduced at the same time, as a way of illustrating that inflation tends to vary and that monetary policy cannot steer it in detail.

## Monetary policy in brief

During 2017, Swedish monetary policy was conducted in an environment characterised by an increasingly stable and stronger global economic activity and a faster increase in world trade. GDP growth abroad increased from 2 per cent in 2016 to 3 per cent in 2017 (see Figure 2:1). But despite the relatively good development abroad, inflation was subdued in many areas. Continued weak inflation prospects contributed to the assumption that the normalisation of monetary policy abroad would take time. As in 2016, different countries were in different phases of the economic cycle, which was reflected in the monetary policy. The US central bank, the Federal Reserve, raised its policy rate on three occasions over the year, and in October the central bank began to gradually taper its asset holdings. In the euro area, the ECB continued to make monetary policy more expansionary and decided in October to continue its purchases of securities until at least September 2018.[9]

The improved international economic climate and expansionary domestic monetary policy contributed to the continued strong development of the Swedish economy. Both CPIF inflation and different measures of underlying inflation were close to the target in 2017. Over the year, the Riksbank emphasised the importance of the strong economic activity continuing to have an impact on prices and of inflation expectations remaining compatible with the inflation target. Monetary policy therefore remained expansionary. The Riksbank also emphasised the importance of the krona exchange rate not strengthening too quickly, as it can make it more difficult to maintain inflation at the target.

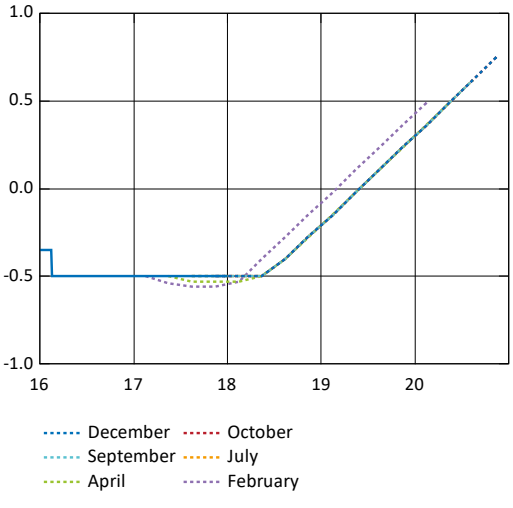
**Figure 2:1. GDP growth in Sweden and abroad**
Annual percentage change




Note. GDP abroad is KIX-weigthed.

Source: National sources, Statistics Sweden and the Riksbank

**Figure 2:2. Repo rate, forecasts 2017**
Per cent




Note. Outcome data are daily rates and forecasts are quarterly averages. The repo-rate paths in April, July, September, October and December largely coincide with each other.

Source: The Riksbank

[9] See the article "The Riksbank's strategy for a gradual normalisation of monetary policy" in the Monetary Policy Report December 2017.

Below follows a brief account of monetary policy in 2017 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 2:2–2:7.

**Uncertain international climate at beginning of year**

At the meeting in February, it was assessed that there was considerable economic and geopolitical uncertainty abroad, with a risk for setbacks in economic activity. For instance, it was uncertain what shape US economic policy would take and how the United Kingdom's relationship to the EU and other countries would look. But the recovery was nevertheless expected to continue in line with earlier forecasts. The Swedish economy had been showing strong development for some time, which was expected to provide good conditions for inflation to continue rising. The Riksbank assessed that it would be appropriate to begin raising the repo rate at the start of 2018 (see Figure 2:2). However, the interest forecast reflected the fact that it was more probable during the near term that the rate would be cut than that it would be raised. The Executive Board also decided to extend the mandate given to the Governor and the First Deputy Governor to be able to quickly intervene on the foreign exchange market, if necessary. This mandate was also extended in October, but there never was any need for interventions on the foreign exchange market.

**Downward revision to forecast for cost pressures in April**

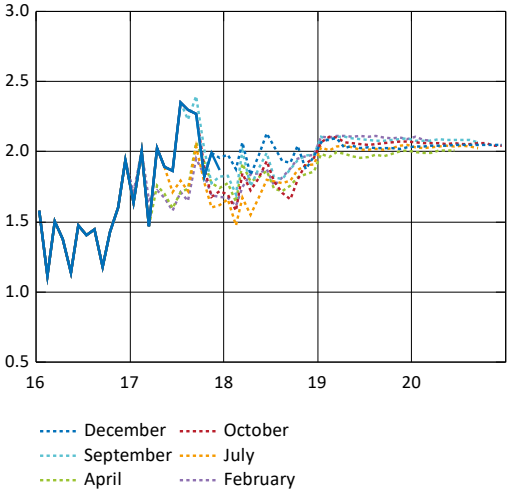
The view of cost pressures was revised somewhat at the meeting in April. The collective labour market agreements indicated that cost pressures in the economy would rise more slowly than expected. To further support inflation, the Executive Board therefore decided to make monetary policy more expansionary by extending the purchases of government bonds by SEK 15 billion during the second half of 2017. The forecast for when raises in the repo rate would begin was also moved forward to the middle of 2018, and it was still assessed to be more likely that the repo rate would be cut than that it would be raised in the near term (see Figure 2:2).

**Few changes in the assessments during the second half of the year**

At the meeting in July it was observed that inflation had been a little higher than expected and that the risks of setbacks abroad had declined. This was assessed to reduce the probability that monetary policy would need to be made more expansionary and the slightly greater probability of a cut than an increase in the near term was removed.

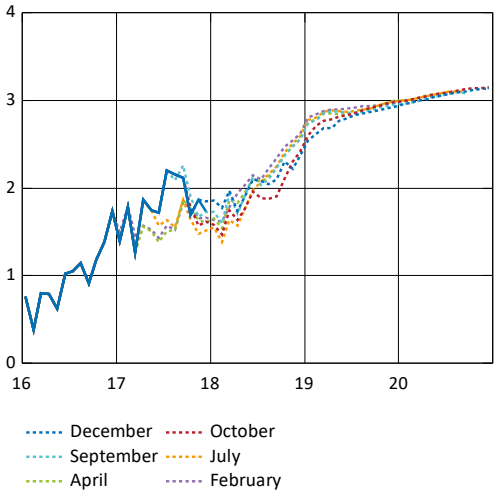
The economic outlook and inflation prospects were then not changed very much during the remainder of the year. The upturn in economic activity abroad became clearer and the Swedish economy continued to develop well and in line with

**Figure 2:3. CPIF, forecasts 2017**
Annual percentage change



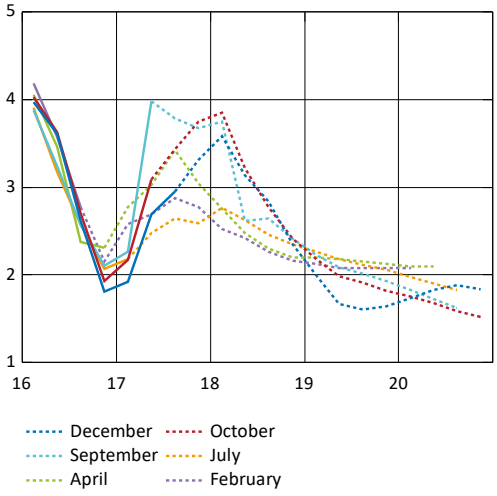

Sources: Statistics Sweden and the Riksbank

**Figure 2:4. CPI, forecasts 2017**
Annual percentage change




Sources: Statistics Sweden and the Riksbank

**Figure 2:5. GDP, forecasts 2017**
Annual percentage change




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

the Riksbank's forecasts. To keep inflation close to 2 per cent, the repo rate was held unchanged at –0.50 per cent at all monetary policy meetings over the year. The forecast for the repo rate was also largely unchanged.

**Decision in December on bringing forward reinvestment**

The Riksbank's purchases of government bonds since 2015 amounted at the end of 2017 to a nominal value of SEK 290 billion (see Figure 2:8).[10] In accordance with the decision in February 2016, maturities and coupon payments are reinvested in the government bond portfolio until further notice. Large maturities, amounting to a good SEK 50 billion, will occur during the first half of 2019. In addition, there will also be coupon payments of a total of around SEK 15 billion from January 2018 to June 2019. To maintain the Riksbank's presence in the market, and achieve a relatively even purchase rate going forward, the Executive Board decided in December to begin reinvestments of these redemptions and coupon payments in January 2018. The reinvestments will then continue until the end of June 2019. This means that the Riksbank's holdings of government bonds will increase temporarily in 2018 and the beginning of 2019 (see also the article "The negative repo rate and complementary monetary policy measures").

## CPIF becomes target variable and variation band introduced

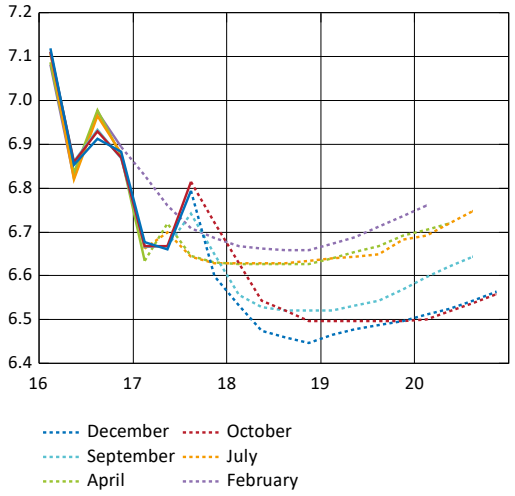
In September, certain adjustments were made to the monetary policy framework. The Executive Board of the Riksbank decided then to adopt inflation measured in terms of the CPIF (the consumer price index with a fixed interest rate) as the formal target variable for monetary policy, instead of inflation measured as the CPI. In practice, the CPIF had been the Riksbank's operational target variable for several years and, by making the CPIF a formal target variable, the Executive Board confirmed this practice. At the same time, the Executive Board decided to introduce a variation band of 1–3 per cent for outcomes for CPIF inflation. The interval is intended to illustrate in a simple manner that inflation varies and that monetary policy cannot steer inflation in detail. These changes are based on an analysis described in the Account of monetary policy 2016.

Preparations for the decision included a memorandum referred for consultation to 50 organisations and authorities by the Riksbank in May 2017, which described the adjustments the Riksbank was considering making. An annex to the minutes connected to the decision presented a summary of the referral bodies' statements and the Executive Board's considerations.[11]

[10] A bond's nominal amount is the amount it is issued for.

[11] "Change of target variable and introduction of variation band", memorandum, 11 May 2017, Annex 1 to press release no. 9, "The Riksbank considers new target variable and fluctuation band", 16 May 2017.

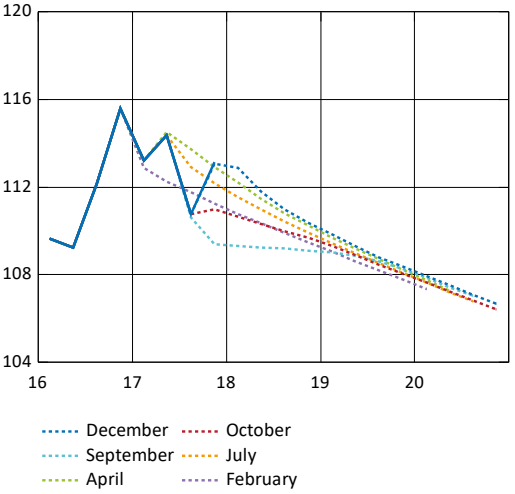
**Figure 2:6. Unemployment, forecasts 2017**
Per cent of the labour force, aged 15–74, seasonally-adjusted data




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

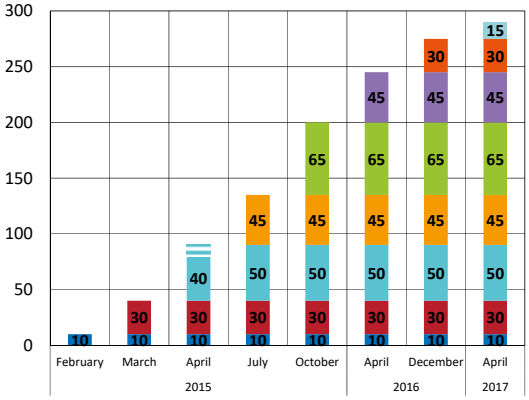
**Figure 2:7. KIX-weighted nominal exchange rate, forecasts 2017**
Index, 18 November 1992 = 100




Note. KIX refers to an aggregate of countries that are important for Sweden's international transactions.

Sources: National sources and the Riksbank

**Figure 2:8. Purchases of government bonds decided by the Riksbank**
Nominal amounts, SEK billion




Note. Government bond purchases, excluding reinvestments.

Source: The Riksbank

# Challenges and trade-offs in monetary policy

**Rising inflation but subdued wage increases**

A subject that was discussed over the year was the correlation between wage developments and resource utilisation in the economy. One specific question was whether the correlation has weakened as wages have risen slowly despite the increasingly strong economic activity. As noted, the Riksbank assessed in April that the relatively low collective wage agreements meant that cost pressures in the Swedish economy would rise more slowly than had previously been assumed.

But even if the wage increases have been modest, inflation has risen in line with the increase in resource utilisation (see also the article "Why inflation has risen"). During 2017, service prices, which are to a great extent affected by domestic demand, rose faster than their historical average, although the increase slowed down somewhat towards the end of the year (see Figure 2:9). The Riksbank observed that structural changes in the labour market make the forecasts uncertain, but assessed that economic activity would gradually have a greater impact on prices and become an increasingly important driving force behind inflation. This is expected to balance the effects of a gradually stronger krona and contribute to inflation continuing to develop in line with the target.

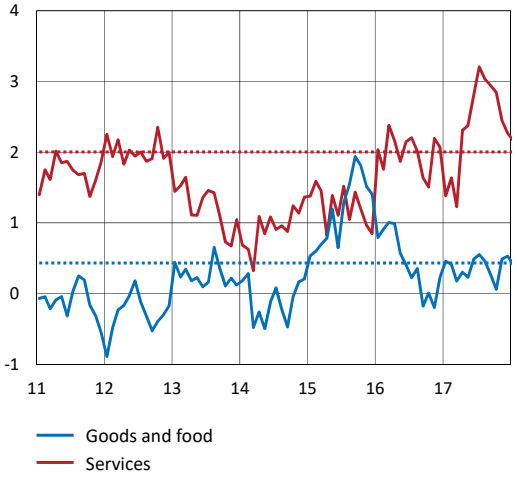
In Sweden, there has been a debate on wages, the inflation process and that it can be difficult to attain the inflation target. It may be worth noting that a corresponding debate has recently begun to arise internationally, as well. The Swedish experiences of using expansionary monetary policy for a sufficiently long period of time to get inflation to rise towards the target are positive in this respect. [12]

**The side-effects of the Riksbank's bond purchases are manageable**

The Riksbank's bond purchases have contributed to interest rates being lower than they would otherwise have been. When the Riksbank buys government bonds, the volume available for trade on the market declines. A question increasingly discussed as the Riksbank's holdings have increased is how the functioning of the market is being affected by these purchases. One example of a possible effect is that primary dealers may choose only to offer prices for smaller quantities and it will therefore take a longer time for an investor to purchase or sell a larger post of bonds.

The Riksbank has all along closely monitored developments by, for example, having regular contacts with the various participants. Investors were assessed as still being

**Figure 2:9. Prices of goods and services in CPIF**
Annual percentage change




Note. Goods and food is a combination of the aggregate goods and food in the CPIF. Together, these account for 45 per cent of the CPIF. Service prices account for 45 per cent of the CPIF. The broken lines represents the mean value since January 1995.

Sources: Statistics Sweden and the Riksbank

[12] See, for example, Per Jansson, "The ideological debate on monetary policy – lessons from developments in Sweden", speech at Fores, Stockholm, 6 December 2017, for a discussion of this.

able to execute the transactions they needed to make within a reasonable amount of time during 2017. There was also considerable interest in participating in the Swedish National Debt Office's recurring issues and investor interest in making bids to buy or sell bonds was still considerable in relation to the volume on offer. All in all, the side-effects of the Riksbank's bond purchases have been manageable.

**Continued discussion of debt and housing prices**

A central theme in the general debate on monetary policy has for some years been that the expansionary monetary policy contributes not only to higher growth and rising inflation but also to an increase in housing prices and indebtedness. This issue was intensively discussed in 2017.

The Executive Board has long been clear about its views and continued to communicate them over the year.[13] The low interest rates entail increased risks with regard to developments in housing prices and household debt. But it is important to realise that real interest rates in Sweden and abroad are currently very low, and this is not something that monetary policy can affect to any great extent (see Figure 2:10).[14] Low real interest rates mean that central banks' policy rates are on average low, both when monetary policy is expansionary and when it is contractionary. The fact that monetary policy in Sweden is currently expansionary does contribute to the risks being higher than they would otherwise have been, but the main problem on the housing market is not that the repo rate is currently low. Housing prices and household indebtedness have risen almost constantly for twenty years (see Figure 2:11) and during this time monetary policy has been both expansionary and contractionary.[15] This is an indication that the problems are essentially structural and that a lasting solution needs to be found in other policy areas than monetary policy.

If the Riksbank were to indicate, for the purpose of dampening developments, that the inflation target is no longer given such clear priority, there would be a risk that inflation and inflation expectations could get stuck at a level considerably lower than 2 per cent. Regaining confidence in the inflation target once it has been lost could be both difficult and costly.

**The distributional effects of monetary policy**

In recent decades there has been little discussion of the potential distributional effects of monetary policy measures. This is probably because monetary policy has in recent decades contributed to low and stable inflation and it is

**Figure 2:10. Real interest rates**
Per cent


Note. 10-year yield on real government bonds in Sweden, Germany and the United States. Swedish real interest rate is zero coupon yields interpolated from bond prices using the Nelson-Siegel method.

Sources: Federal Reserve, Thomson Reuters and the Riksbank

**Figure 2:11. Housing prices, household debt and disposable income**
Index, 2000 Q1 = 100


Note. Disposable income refers to four-quarter moving average and housing prices refers to property price index.

Source: Statistics Sweden and the Riksbank

[13] See, for instance, Stefan Ingves, "Monetary policy challenges – weighing today against tomorrow", speech at the Swedish Economics Association, Stockholm School of Economics, 16 May 2017.
[14] It is generally assumed that monetary policy can only affect real interest rates in the short term, while real interest rates in the long run are determined by factors outside of monetary policy, such as demographics and global savings and investment tendencies, see for instance L. Rachel and T. D Smith, "Are low real interest rates here to stay?", *International Journal of Central Banking*, September 2017, vol. 13(3), pp. 1–42, and the article "The long-term repo rate" in the Monetary Policy Report of February 2017.
[15] As household debt has increased faster than households' disposable incomes, households' debt-to-income ratios have increased, from 100 per cent at the end of the 1990s, to a good 180 per cent in 2017.

primarily high and fluctuating inflation that gives rise to undesirable distributional effects. Indeed, this was one of the reasons for introducing a policy of inflation targeting. During the more normal economic cycles prior to the financial crisis, it was also clearer that the distributional effects of monetary policy are small, as periods with relatively low policy rates are followed by periods with higher policy rates.

However, in recent years the question of the distributional effects of monetary policy has begun to be discussed once again in many areas. The main reason for this is the unusually long period with very low interest rates that has contributed to prices of shares and other assets, both financial and real, rising rapidly.

In the short term, an expansionary monetary policy does entail rising equity prices, which can increase the spread of household incomes. But an expansionary monetary policy also contributes to lower unemployment, higher employment and stronger growth, which even out the spread of incomes. A monetary policy that succeeds in the task of attaining price stability also counteracts the negative distributional effects of inflation. Thus, monetary policy affects household incomes and wealth in ways that are more indirect, but probably more meaningful, than via asset prices.

Members of the Executive Board discussed the question of the distributional effects of monetary policy in different speeches over the year.[16] It was noted, among other things, that a reason why it is difficult to calculate the total distributional effects of monetary policy is the lack of relevant data.

## Monetary policy decisions 2017

| | |
|---|---|
| 14 February | The repo rate was held unchanged at −0.50 per cent and the delegated mandate for foreign exchange interventions was extended until October 2017. This mandate, initially decided by the Executive Board in January 2016, means that the Governor and First Deputy Governor have a mandate to determine the precise details for possible interventions on the foreign exchange market in the event that it is not possible to wait for a decision from the entire Executive Board. Martin Flodén entered a reservation against the decision on the delegation mandate with the same motivation as in January, February and July 2016, that is, that it was appropriate to wait before employing |

[16]See Henry Ohlsson, "The distributional effects of monetary policy", speech at the Swedish Trade Union Confederation, 7 April 2017, and Cecilia Skingsley, "What role for monetary policy in achieving inclusive and sustainable growth?", speech at the International Forum of the Americas, OECD Conference Center, Paris, 7 December 2017.

| | |
|---|---|
| | further monetary policy stimuli and that foreign exchange interventions were not a suitable tool for making policy more expansionary in the current situation. |
| 26 April | The repo rate was left unchanged at –0.50 per cent and the Executive Board decided to purchase government bonds for a further SEK 15 billion during the second half of 2017. The forecast for coming rate rises was postponed slightly. Martin Flodén, Henry Ohlsson and Cecilia Skingsley entered reservations against carrying out further bond purchases, as they considered that monetary policy did not need to be made more expansionary. |
| 3 July | The repo rate was held unchanged at −0.50 per cent. |
| 6 September | The repo rate was held unchanged at −0.50 per cent. |
| 25 October | The repo rate was held unchanged at −0.50 per cent and the delegated mandate for foreign exchange interventions was extended until July 2018. Martin Flodén entered a reservation against extending the delegation mandate on the same grounds as before. Henry Ohlsson entered a reservation with the justification that in a situation with inflation and inflation expectations close to the target level, there was time to manage questions of potential interventions without a special mandate. |
| 19 December | The repo rate was held unchanged at −0.50 per cent and the Executive Board decided to begin reinvestment of the bonds that mature in 2019 during January 2018. Martin Flodén and Henry Ohlsson entered reservations against this decision. They advocated that the Executive Board should decide at a later stage when the bonds maturing in 2019 should be reinvested. |

# ARTICLE – The negative repo rate and complementary monetary policy measures

Over the last three years, the Riksbank has conducted unusual monetary policy from a historical perspective – the repo rate was cut below zero and the Riksbank purchased government bonds on a large scale. This policy has had the intended effects. But as the Riksbank navigated new and unusual monetary policy territory, there were strong reasons to proceed cautiously and to evaluate in stages. This article describes this course of events. Even though the exact effects are difficult to estimate, it can be ascertained that capital market rates followed suit when the repo rate was cut below zero. Corporate lending rates have declined in parity with the repo rate, while there has been less of an impact on household mortgage rates.

**A new type of monetary policy**

During 2015 the Riksbank implemented monetary policy measures that had not been used before: the repo rate was cut below zero and the Riksbank began purchasing government bonds on a large scale. The latter measure is normally referred to as "quantitative easing".

However, the Riksbank was not the first central bank to introduce a negative policy rate or to start employing quantitative easing The ECB cut its deposit rate below zero in 2014, and the central banks in Denmark and Switzerland had lowered their policy rates to –0.75 per cent in early 2015. Quantitative easing had previously been employed in countries like the United States and the United Kingdom.

As described in Chapter 1, the situation at the turn of 2014–2015 was worrying for the credibility of the inflation target. For several years, inflation had been below target and the more long-term inflation expectations were too low. The repo rate had admittedly been gradually lowered to zero per cent, but there were few signs that inflation had started to pick up.

In January 2015, the ECB had furthermore announced bond purchases of EUR 60 billion per month to make its monetary policy more expansionary.[17] The Riksbank expected these measures to gradually have a positive effect on Swedish inflation as they would provide stimulus to an important Swedish export market. But, by weakening the euro, and hence strengthen the krona, the ECB's measures risked exerting price pressure on a significant portion of Swedish imports over the short term.

Against this backdrop, the Executive Board of the Riksbank decided at the monetary policy meeting in February 2015 to make monetary policy more expansionary by cutting the repo rate by 0.10 per cent to –0.10 per cent and to adjust down the repo-rate path. In addition, it was decided that the Riksbank would purchase government bonds for SEK 10 billion.

At an extraordinary meeting in March, the Riksbank continued to make monetary policy more expansionary. The repo rate was cut by 0.15 percentage points to –0.25 percent and a decision was taken to purchase government bonds for a further SEK 30 billion. One important reason was that the krona had appreciated sharply, primarily against the euro, which was deemed to be a consequence of the ECB having begun its large-scale asset purchases.

**The need to proceed cautiously and evaluate in stages**

The gradual introduction of both the negative repo rate and government bond purchases reflects the fact that the Riksbank was navigating new and untested monetary policy territory. Strong reasons were deemed exist for proceeding with cautious steps and evaluating the effects before deciding to move on. This strategy has characterised policy ever since, but was especially important to start with as there was a great deal of uncertainty at that time.

For example, it was not obvious which combination of rate cuts and bond purchases the Riksbank would use to make monetary policy more expansionary. The position taken at the Executive Board's meetings was that there was no reason to commit to any one particular tool in advance.

After the repo rate had been cut to –0.35 per cent in July 2015, it was then held unchanged until February

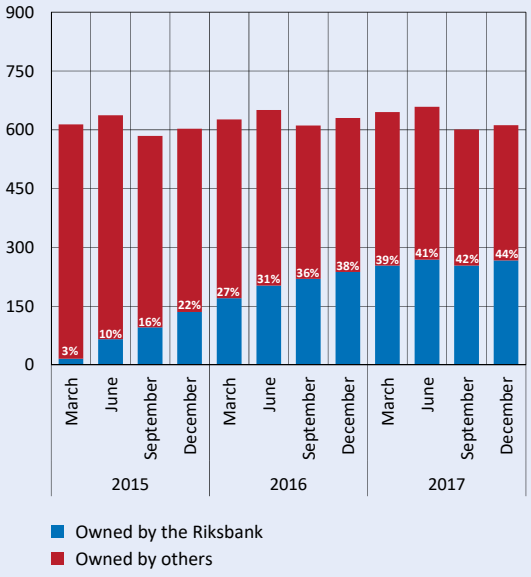
[17] Purchases were originally due to continue at least until September 2016 and could also be extended depending on how inflation developed.

2016, whereupon it was lowered to −0.50 per cent. During the second half of 2015, the Riksbank relied instead on bond purchases, which were extended by SEK 110 billion. One of the reasons for focusing on bond purchases during this period was that the ECB had clearly signalled that its purchases were to continue. The Riksbank's previous purchases had been of less scope and implemented during shorter periods to maintain flexibility in relation to the ECB's purchases. But because of the ECB's clear signals about continued purchases, the Riksbank could also decide on a longer programme, and thereby create better predictability in the market concerning the Riksbank's actions.

**The Riksbank's purchases of government bonds**

In 2015 and almost the entire first half of 2016, the Riksbank's purchases comprised solely of nominal government bonds. The purchasing programme covered all maturities of up to 25 years, in order to create a broad impact on interest rate-setting. The distribution of remaining maturity has largely been the same for the entire period.

**Figure 2:12. Outstanding stock of nominal government bonds and the Riksbank's holdings**
Billions and percentage of stock



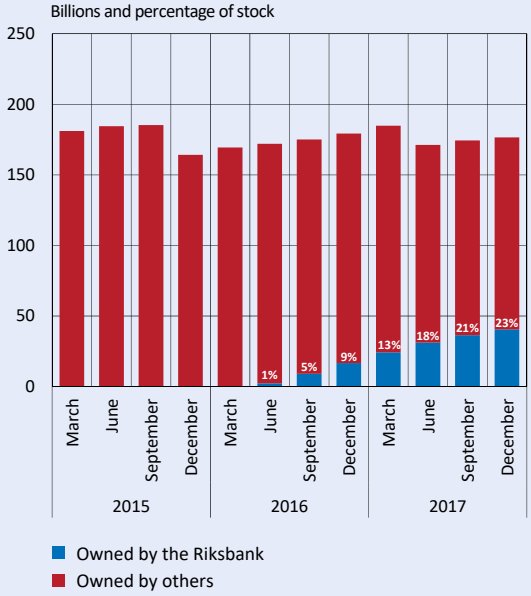

Note. Both outstanding stock and the Riksbank's holdings refer to nominal amount.
Sources: Swedish National Debt Office and the Riksbank

To begin with, weekly purchases were relatively large, as the intention was to ensure that the Riksbank's purchases were significant in relation to the size of the market. The time period between the Executive Board's decision and the time by which the decided volumes were to have been purchased was gradually extended in 2015. When the decisions were taken in February and March, the horizon was one month and just under two months respectively. When the decision was taken in April, the horizon was five months, six months in July and eight months in October.

The extensive purchases meant that the Riksbank's holdings of nominal government bonds grew to just over 20 per cent of the outstanding volume at the end of 2015, and to just under 40 per cent at the end of 2016 (see Figure 2:12). At the end of 2017, this share had increased slightly more, to 44 per cent. The Riksbank's holdings of nominal government bonds amounted at that time to SEK 267 billion, expressed as a nominal amount.[18]

Since June 2016, the Riksbank has also purchased real government bonds. At the end of 2017, these holdings amounted to SEK 40 billion, the equivalent of 23 per cent of the outstanding stock (see Figure 2:13).

**Figure 2:13. Outstanding stock of real government bonds and the Riksbank's holdings**
Billions and percentage of stock




Note. Both outstanding stock and the Riksbank's holdings refer to nominal amount.
Sources: Swedish National Debt Office and the Riksbank

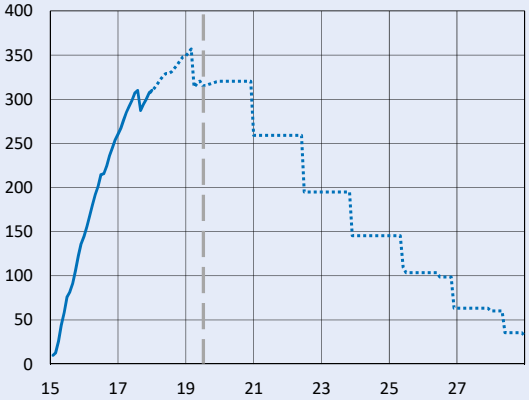
To ensure monetary policy would not be less expansionary, the Riksbank has also continuously reinvested redemptions and coupon payments in the government bond portfolio since February 2016. Without reinvestments, the Riksbank's holdings of government bonds would gradually decrease in relation to the decided purchases. The Swedish government bonds purchased by the Riksbank mature in a small number of large steps. To achieve a well-balanced purchase volume, reinvestments have been distributed evenly over time.

In 2017, the Executive Board of the Riksbank only decided on new bond purchases at the monetary policy meeting in April. To maintain the Riksbank's presence in the market, and achieve a relatively even purchase rate, the Executive Board decided in December to bring

[18] A bond's nominal amount is the amount it is issued for.

forward reinvestments of the large redemptions due to occur in the first six months of 2019. Reinvestments of these redemptions and coupon payments mean that the Riksbank's holdings of government bonds will increase temporarily in 2018 and at the beginning of 2019 (see Figure 2:14).[19]

**Figure 2:14. The Riksbank's holdings of government bonds**
Nominal amounts, SEK billion




Note. Forecast December 2017 up until June 2019, after that a technical projection with the assumption that no further reinvestments are made. The development of the holdings is also affected to a certain extent by the bonds' market prices and by which bonds the Riksbank chooses to reinvest in. The vertical line marks the shift between the forecast and technical projection.

Source: The Riksbank

A question increasingly discussed as the Riksbank's holdings have increased is how the functioning of the market is being affected. As noted in Chapter 2, the Riksbank has constantly followed developments very carefully and makes the assessment that the side-effects of the purchases have been manageable.

**Clear effects on capital market rates of the negative repo rate**

According to the Riksbank's analysis, the repo rate cuts have had a clear impact on many financial variables.[20] As the repo rate was cut below zero, both short interbank rates and government bond yields fell (see Figure 2:15). Even if the fixed-income market is affected by other factors that have nothing to do with monetary policy decisions, it is clear that the repo rate cuts have had an impact. The Riksbank's bond purchases have also contributed to the fall in capital market rates.[21]

**Figure 2:15. Interest rates in Sweden with up to 2–year maturity**
Per cent


Note. The rate for government bonds and mortgage bonds refers to the implied zero coupon rate.

Source: The Riksbank

The effects from lower capital market rates spread in the economy through the various channels of the monetary policy transmission mechanism. Both banks and non-financial corporations obtain a significant proportion of their funding on the capital market, which means that changes in capital market rates have a direct impact on companies' funding costs. The large Swedish banking groups obtain about half their funding on the capital market and about 70 per cent of Swedish mortgages are funded on the capital market.[22] In recent years, the share of capital market funding has amounted to 20–30 per cent for non-financial corporations (see Figure 2:16). Capital market rates also play a crucial role in the development of the exchange rate, which is also an important channel in the monetary policy transmission mechanism.

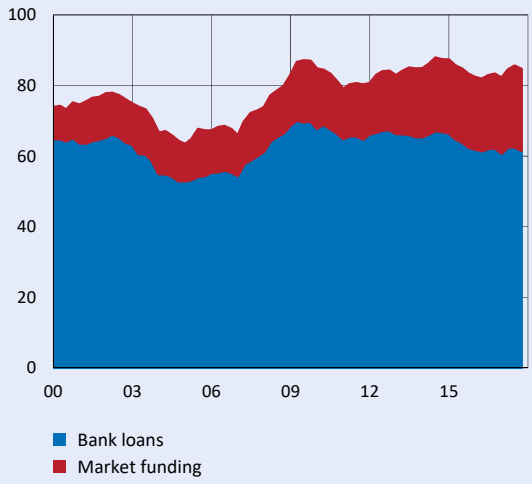
[19] At the end of 2017, the Riksbank's total holdings amounted to about SEK 310 billion, expressed as a nominal amount. In addition to purchases made since February 2015, the holdings also include the portfolio built up during 2012 and reinvestments of coupon payments. See also "The Riksbank's holdings of government bonds" in Monetary Policy Report December 2017.

[20] See, for instance, the article "Effects of the Riksbank's monetary policy, 2015-2016" in Account of monetary policy 2016.

[21] See the article "The effects of monetary policy on financial variables" in Monetary Policy Report April 2017.

[22] Calculated as a ratio between Swedish covered bonds and banks' (MFIs') lending with housing as collateral. Sources: Association of Swedish Covered Bond Issuers and Statistics Sweden.

**Figure 2:16. Non-financial companies' debts in Sweden**
Per cent of GDP




Note. Market funding refers to certificates and bonds.

Sources: Statistics Sweden and the Riksbank

## Deposit rates close to zero for households and companies

As regards deposit rates, the impact has been slightly less than normal during the period of negative repo rates. Average deposit rates for households and companies have remained largely unchanged since the middle of 2015 and have been close to zero (see Figure 2:17).[23]

As a significant share of banks' lending is funded on the capital market, their funding costs have fallen due to the repo rate being cut, even since it has been negative. This has provided scope for cutting lending rates. This effect is not captured in analyses that assume that only deposits are used to fund lending.

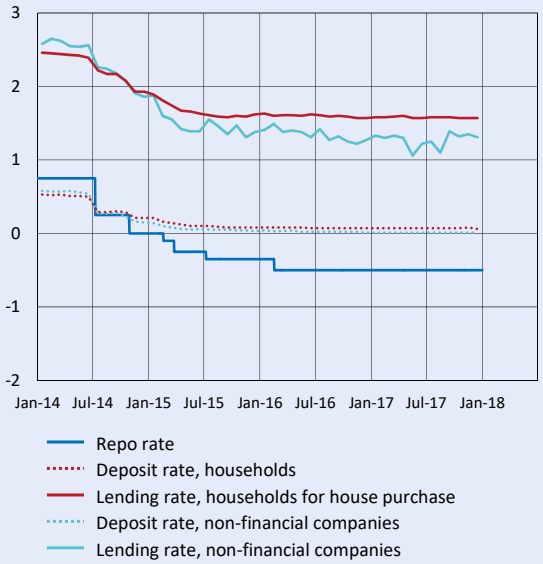
## Lending rates to households and companies have fallen slightly less than the repo rate

To correctly analyse whether banks have utilised this scope, we must study interest rates on loans that have actually been granted and not banks' listed rates. The reason for this is that the latter refer to hypothetical loans, for which neither fixation periods nor interest rates coincide with actual loans that are granted later on.

Since February 2015, interest rates for banks' new loan agreements with households and companies have fallen slightly less than the repo rate (see figure 2:17). Lending rates to companies have periodically been pushed lower. Interest rates on new mortgages to households fell in tandem with the repo rate during the first half of 2015, but the impact has been weaker since then. One possible explanation for this is that banks do not reduce mortgage rates as much as they could have done if deposit rates had followed the repo rate into negative territory.

All in all, this review suggests that repo rate cuts below zero have had a substantial, albeit not full, impact on lending rates.[24]

**Figure 2:17. Repo rate together with the average deposit and lending rate to households and companies, new contracts**
Per cent




Note. MFIs' average deposit and lending rates are a weighted average of all interest rates for different maturities.

Sources: Statistics Sweden and the Riksbank

## Difficult to estimate the exact effects of bond purchases

Purchases of government bonds affect market rates and the financial conditions in the economy. This may happen as a result of: the purchases signalling that the repo rate will continue to be low in the period ahead; bonds being less available, which pushes bond prices upwards so that rates fall; or the purchases having knock-on effects on other asset prices. It may also be the case that some of the monetary policy effects may arise due to the amount of liquidity in the banking system increasing when the Riksbank pays for the bonds. This may lead to banks' being marginally prepared to increase lending to households and companies. This channel goes via the Riksbank's operational framework for the implementation of monetary policy and has an impact via the volume of money rather than as a result of an interest rate effect. The economy as a whole is then affected via all these channels.[25]

It is not at all easy to measure the magnitude of these effects, however. There is only limited experience of conducting monetary policy in this way and there are

[23] Deposit rates for financial corporations, large non-financial corporations and some municipalities and county councils have fallen, however, as the repo rate has decreased. Fees have also increased, reducing the total return on bank balances.

[24] See also J. Alsterlind, H. Armelius, D. Forsman, B. Jönsson, and A-L. Wretman, "How far can the repo rate be cut?", *Economic Commentaries* No. 11, 2015.

[25] For a more detailed discussion, see J. Alsterlind, H. Erikson, M. Sandström and D. Vestin, "How can government bond purchases make monetary policy more expansionary?", *Economic Commentaries*, no. 12, 2015. See also the article "Effects of the Riksbank's monetary policy, 2015-2016" in Account of monetary policy 2016.

relatively few empirical studies. One way of gaining some understanding of the effects is to study the immediate effects on the financial markets following the announcement of a new decision to purchase government bonds. If the decision comes totally or partially unexpected for market participants, the new information is taken into account in the prices of financial assets directly after the decision has been made public.

This type of announcement effect can be substantiated in Swedish data. The effects are in line with those observed in other countries.[26] A complication with this method is that the decision to purchase bonds need not be a surprise, but may very well be expected. If market participants have predicted the measure, it has already been considered in their pricing prior to the announcement. As this can have occurred gradually and over a long period, it is much more difficult to identify the effect and link it to the purchases of government bonds.

An alternative approach to estimating the effects of central bank purchases of government bonds and other asset types is to simulate the measures in economic models. There is a small but growing amount of international literature on this subject. A relatively new study from the Federal Reserve that uses an empirical macroeconomic model finds that quantitative easing does not have any substantial effect during periods of high real interest rates. During periods of low interest rates, on the other hand, when monetary policy is hampered by the policy rate reaching its effective lower bound, quantitative easing does have an impact.[27]

Research on the effects of quantitative easing is still in its infancy, however, and it will probably take time before they can be analysed with a similarly established conceptual framework as traditional monetary policy.

[26] See, for example, R.B. De Rezende, D. Kjellberg and O. Tysklind, "Effects of the Riksbank's government bond purchases on financial prices", *Economic Commentaries*, no. 13, 2015, and R. B. De Rezende, "The interest rate effects of government bond purchases away from the lower bound", *Journal of International Money and Finance*, vol 74, 2017, pp. 165–186, and the article "Effects of the Riksbank's monetary policy, 2015–2016" in Account of monetary policy 2016.

[27] M. T. Kiley, "Quantitative easing the 'new normal' in monetary policy", *Finance and Economics Discussion Series* 2018–004, Board of Governors of the Federal Reserve System, 2018.

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

Inflation has shown a rising trend in recent years. But the upturn has been slower and required more substantial monetary policy effort than the Riksbank anticipated, which has been documented in earlier issues of Account of monetary policy. The forecasts made by the Riksbank in 2016 predicted economic developments and the upturn in inflation during 2017 relatively well. The repo rate also followed the Riksbank's forecasts relatively closely during the corresponding period. Previously, the Riksbank's forecasts for inflation have been less accurate than those of other analysts, but this trend has been broken in the inflation forecasts for 2017. As in earlier years, the Riksbank's forecasts for real economic developments in 2017, especially for unemployment, compared well with those of other analysts.

## The Riksbank's forecasts 2015–2016

Target attainment, as discussed in Chapter 1, is a natural starting point for an assessment of monetary policy. However, a comparison between the outcomes for inflation and the inflation target does not necessarily show how well monetary policy has been conducted. Monetary policy affects inflation with a certain time lag and is therefore based on forecasts for inflation and the rest of the economy. But inflation is also affected by a number of other factors than monetary policy, as the economy is constantly subjected to shocks. This means that even well-founded and carefully-analysed forecasts often prove to be wrong, and that deviations from the inflation target are the rule rather than the exception.

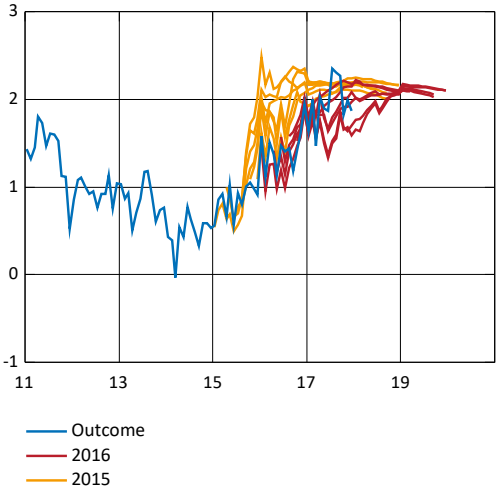
Analysing the Riksbank's forecasts and how they have been revised over time provides a picture of the monetary policy conducted and the assessments it has been based on. When a forecast is changed, this is usually because something unexpected has occurred. The correlation between different economic quantities can also be different to what was expected.[28]

**How the forecasts have been revised provides guidance on why they were not realised**

It was primarily the monetary policy conducted in 2015 and 2016 that gave the Riksbank the opportunity to influence the outcome for inflation in 2017. Monetary policy in 2015–2016 was based on the forecasts made by the Riksbank then, and by studying how these forecasts changed one can form an opinion of which factors contributed to the forecasts not being realised. However, there are no clear limits regarding the time lag for the effects of monetary policy. Inflation and economic developments in 2017 in general were also affected

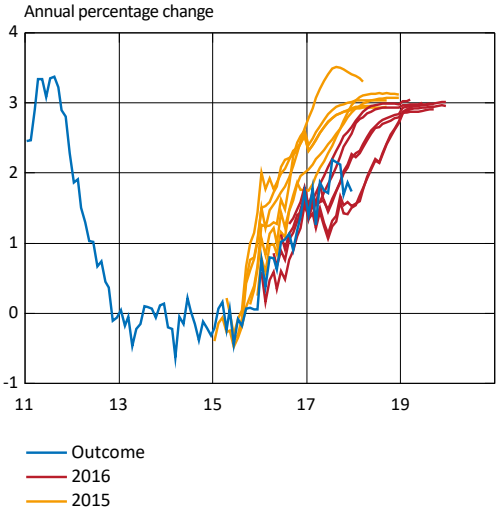
[28] A more detailed and technical review of the Riksbank's forecasts and the factors behind the development of inflation has been performed in a separate study, see "Evaluation of the Riksbank's forecasts", *Riksbank studies*, March 2018.

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




Note. The yellow and red lines represent the Riksbank's forecasts 2015 and 2016.
Sources: Statistics Sweden and the Riksbank

**Figure 3:2. CPI, outcome and forecasts**
Annual percentage change




Note. The yellow and red lines represent the Riksbank's forecasts 2015 and 2016.
Sources: Statistics Sweden and the Riksbank

to some extent by the monetary policy conducted in the same year. Monetary policy in 2017 and the deliberations on which it was based are discussed in Chapter 2.

Figures 3:1–3:10 show the actual developments and the Riksbank's forecasts during the years 2015 and 2016 for a number of central variables.[29] The purpose of the figures is to illustrate in a general manner how the Riksbank's view of the future during these years compared with the later outcomes. It is therefore not necessary to distinguish individual forecasts.

**Forecasts for a trend upturn in inflation were realised**

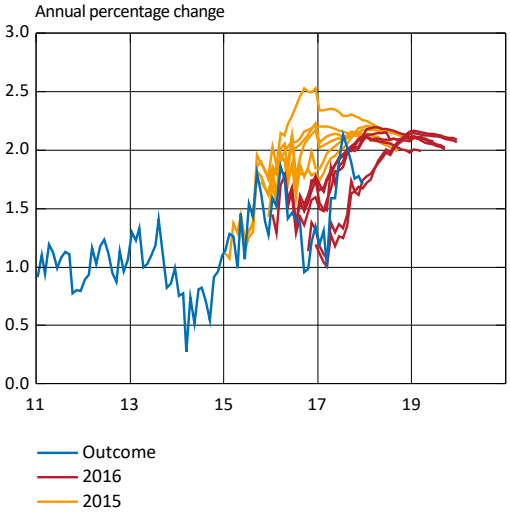
The figures show, among other things, that the trend upturn in CPIF inflation envisaged by the Riksbank has been realised (see Figure 3:1). The forecasts made during 2015 were too optimistic about the strength of the upturn, something that was described in detail in last year's Account of monetary policy. The forecasts made by the Riksbank in 2016, on the other hand, predicted economic developments and the upturn in inflation during 2017 accurately. In contrast to previous years, the forecasts for both CPIF and CPI inflation were, if anything, at the lower edge of developments during 2017 (see Diagrams 3:1 and 3:2). The surprisingly rapid increase in inflation during the summer months was due in part to Statistics Sweden changing its calculation method for charter travel in the CPIF in 2017 (see the article "Why inflation has risen").

CPIF inflation excluding energy prices was weaker in autumn 2015 and at the beginning of 2017 than the Riksbank had expected (see Figure 3:3). Low increases in prices for services were one factor contributing to this. At times, the development of food prices was also unusually weak. As a result of the volatile energy prices rising during this period, the CPIF nevertheless increased roughly as the Riksbank had expected. But measured in terms of CPIF inflation excluding energy prices, the underlying inflation rate thus remained low at the beginning of 2017. During the spring and summer, CPIF inflation excluding energy prices instead rose quickly, partly as a result of Statistics Sweden's method change for charter trips which is discussed above.

Inflation having more or less developed roughly as expected since the beginning of 2016 is reflected in the fact that the repo rate has also followed the Riksbank's forecasts relatively closely during the corresponding period (see Figure 3:4). However, the Riksbank decided to make monetary policy more expansionary in 2016 and early 2017 by continuing its purchases of government bonds (see the article "The negative repo rate and complementary monetary policy measures").

[29] The starting point for the forecasts is not always on the curve for the outcomes. It may, for example, be due to the outcome having been revised afterwards, the weights used to compile the outcome series having been changed or differences in seasonal adjustment.

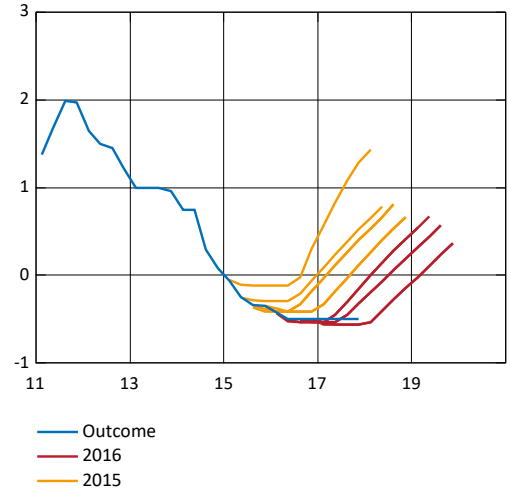
**Figure 3:3. CPIF excluding energy, outcome and forecasts**
Annual percentage change




Note. The yellow and red lines represent the Riksbank's forecasts 2015 and 2016.

Sources: Statistics Sweden and the Riksbank

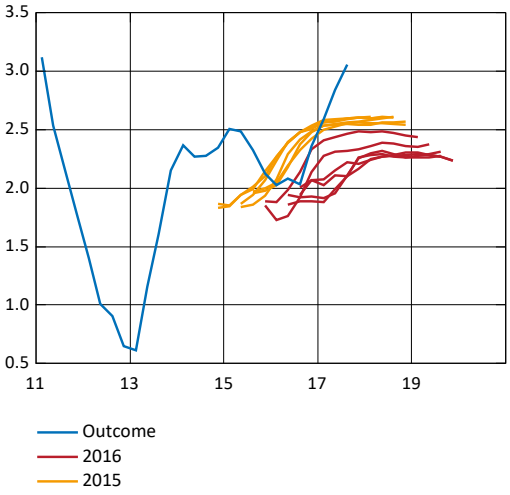
**Figure 3:4. Repo rate, outcome and forecasts**
Per cent, quarterly averages




Note. The yellow and red lines represent the Riksbank's forecasts 2015 and 2016.

Source: The Riksbank

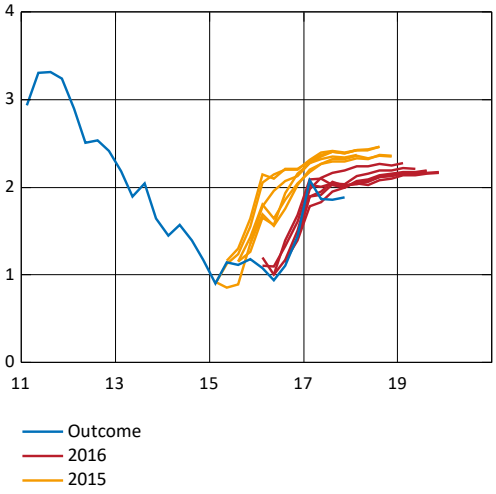
**Figure 3:5. GDP abroad, outcome and forecasts**
KIX-weighted, annual percentage change




Note. The yellow and red lines represent the Riksbank's forecasts 2015 and 2016. KIX refers to an aggregate of countries that are important for Sweden's international transactions.

Sources: National sources and the Riksbank

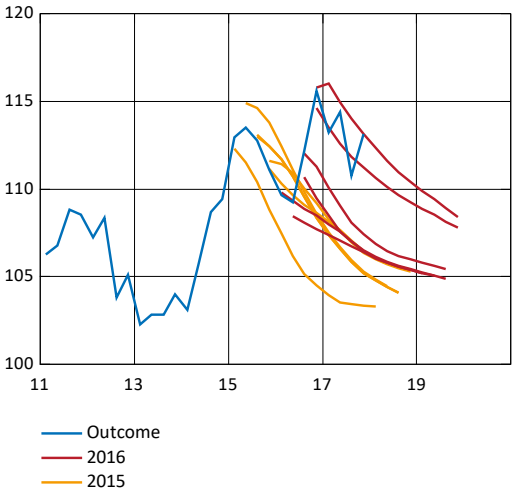
**Figure 3:6. Inflation abroad, outcome and forecasts**
KIX-weighted, annual percentage change




Note. The yellow and red lines represent the Riksbank's forecasts 2015 and 2016. KIX refers to an aggregate of countries that are important for Sweden's international transactions.

Sources: National sources and the Riksbank

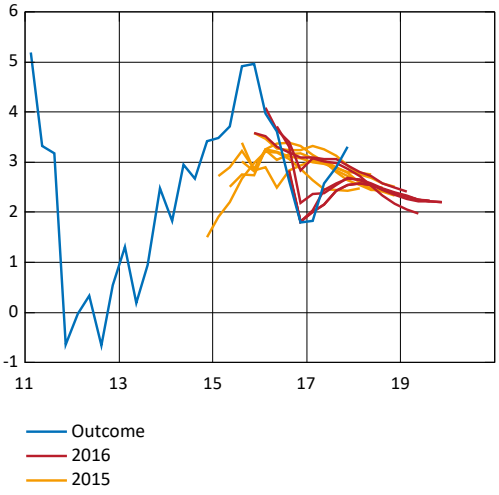
**Figure 3:7. KIX-weighted nominal exchange rate, outcome and forecasts**
Index, 18 November 1992 = 100




Note. The yellow and red lines represent the Riksbank's forecasts 2015 and 2016. KIX is an aggregate of countries that are important for Sweden's international trade.

Source: National sources and the Riksbank

**Figure 3:8. GDP, outcome and forecasts**
Annual percentage change, calendar-adjusted data




Note. The yellow and red lines represent the Riksbank's forecasts 2015 and 2016.

Sources: Statistics Sweden and the Riksbank

**Unexpectedly rapid international economic upswing**

The continued upturn in inflation is explained by several factors (see also the article "Why inflation has risen"). International economic activity improved more rapidly than expected and during 2017, GDP growth was relatively strong in those countries that are most important for Sweden's economy (see Figure 3:5). The economic upswing helped international inflation rise relatively quickly, in line with the Riksbank's forecasts made in 2016, from low levels (see Figure 3:6).

The exchange rate plays a major role in how prices in krona for imported goods and services fluctuate. However, it is often difficult to identify what drives fluctuations in the krona exchange rate and what the impact will be on inflation.[30] During the second half of 2015 and at the beginning of 2016, the exchange rate strengthened approximately as expected (see Figure 3:7). For most of 2016, however, the krona weakened in a way that was not predicted in the Riksbank's assessment. It takes time for fluctuations in the exchange rate to have an impact on prices, which suggests that the earlier weakening of the krona contributed to the upturn in inflation during 2017.

**Domestic economic developments approximately as expected**

In Sweden, the good economic developments continued. As discussed in last year's Account of monetary policy, GDP was higher than expected in 2015 and early 2016. This is also indicated in Figure 3:8, although it should be noted that the unusually large difference between forecasts and outcomes in 2015 is partly the result of later revisions of the GDP statistics which were virtually impossible to predict when the forecasts were made.

GDP growth slowed at the end of 2016 to a level in line with a long-term average, but then rose again in 2017. This pattern was also evident in the Riksbank's forecasts made in 2016, even though the slowdown and subsequent upturn were more pronounced than expected. Both domestic demand and exports were slightly higher than expected by the Riksbank during the second half of 2016. Good economic activity contributed to a further fall in unemployment during 2017, in line with the Riksbank's forecasts made in 2016 (see Figure 3:9). All in all, Swedish economic activity in 2017 was relatively close to the assessment made by the Riksbank in 2016.

**Moderate wage growth but cost pressures in line with the Riksbank's assessment**

Good economic activity and continued falling unemployment contributed to increased pressure on the labour market in

[30] See the article "The impact of the exchange rate on inflation" in the Monetary Policy Report December 2016.

2017. Wage growth was higher than the year before, even though it was unexpectedly moderate in comparison with earlier periods with a similar level of economic activity.[31] Wage growth leads to cost increases for companies if it is not matched by increased productivity. Similar to wages, productivity grew slightly more weakly than expected in 2017 compared with the Riksbank's assessment. As the difference between the increase in total wage costs and productivity growth is equal to the development of unit labour costs, in total this means that the outcome for 2017 was in line with the Riksbank's assessment of cost pressures according to this measure (see Figure 3:10).

## The Riksbank's forecasts for 2017 compared with those of other forecasters

In addition to seeing how the Riksbank has revised its forecasts, there is also reason to compare the Riksbank's forecasts with those of other analysts. Such a comparison can provide information on whether the Riksbank has in any way made significantly different analyses than those of other forecasters, or whether its reasoning has been more or less the same. Apart from the Riksbank, there are few analysts who make forecasts three years ahead. This means that the analysis below starts in 2016, i.e. the figures show forecasts made from 2016 onwards for developments in 2017. Another difference compared with the analysis above is that it is the forecasts for the annual outcome for 2017 that are in focus, not the forecasts for each quarter. This is a consequence of only relatively few analysts publishing forecasts on such a detailed level.

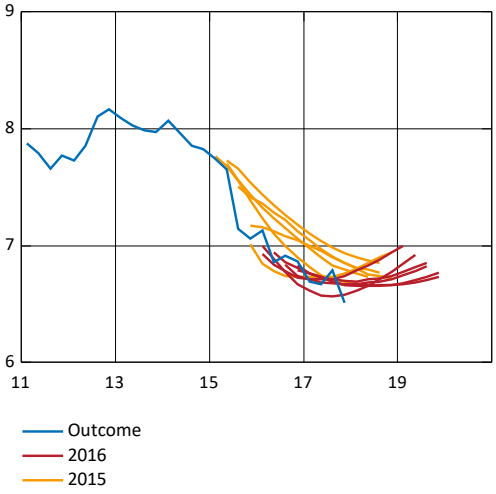
Figures 3:11–3:17 show how forecasts for 2017 by the Riksbank and other analysts have developed for a number of central variables, from the beginning of 2016 until the end of 2017. Outcomes are represented by broken lines in the figures.

The typical pattern is that the forecasts made in early 2016 were further from the outcome than the forecasts made at the end of 2017. This is natural, as towards the end of 2017 there was much more information on which to base the forecasts. One example is the forecasts for GDP growth in the euro area (see Figure 3:17). However, there are also examples, such as unemployment, where the forecasts were from the start relatively close to the final outcome (see Figure 3:15).

The figures also show that most analysts' forecasts were often close to one another and that they were revised in a similar way. This is a good illustration of the fact that there are constant changes in the economy which are difficult to predict and which mean that forecasts must be successively

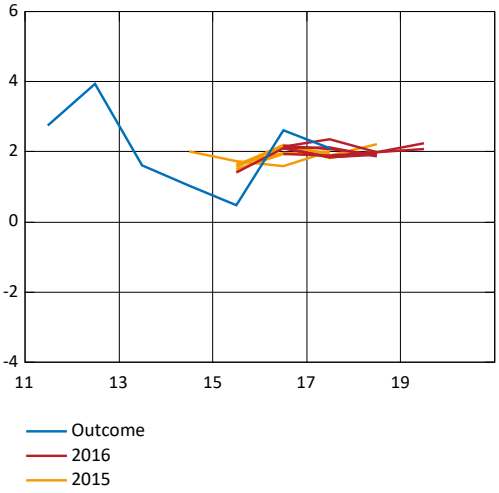
[31] See the article "Strong economic activity but subdued wage increases" in Monetary Policy Report July 2017.

**Figure 3:9. Unemployment, outcome and forecasts**
Per cent of the labour force, aged 15–74, seasonally-adjusted data



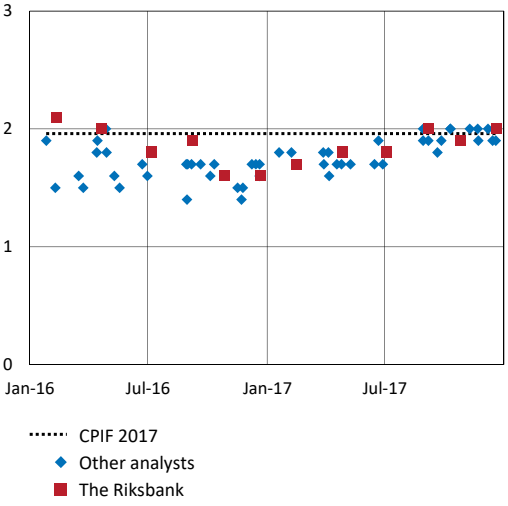

Note. The yellow and red lines represent the Riksbank's forecasts 2015 and 2016.
Sources: Statistics Sweden and the Riksbank

**Figure 3:10. Unit labour cost, outcome and forecasts**
Annual percentage change




Note. The yellow and red lines represent the Riksbank's forecasts 2015 and 2016.
Source: Statistics Sweden and the Riksbank

**Figure 3:11. Forecasts 2016 and 2017 for CPIF inflation in 2017**
Annual percentage change, annual average




Note. Other analysts refer to the Ministry of Finance, HUI Research AB, the National Institute of Economic Research, the Swedish Trade Union Confederation (LO), Nordea, SEB, Svenska Handelsbanken, the Confederation of Swedish Enterprise and Swedbank.
Sources: Respective analysts, Statistics Sweden and the Riksbank

revised along the way. But there are also examples where the spread in the forecasts is greater, see the forecasts for Swedish GDP growth in Figure 3:13.

**The Riksbank improved its forecasts for inflation**

In recent years, most analysts have tended to overestimate inflation, but the Riksbank's forecasts for inflation have been higher and less accurate than those of other forecasters.[32] These patterns have been broken, however, as a result of inflation forecasts made for 2017. In 2016 and the first half of 2017, most analysts underestimated inflation in 2017, measured in terms of both the CPIF and the CPI (see Figures 3:11 and 3:12), while the Riksbank's forecasts were more accurate than those of most other forecasters. The Riksbank's forecasts were close to the outcome up until autumn 2016, but during the latter part of the year, the Riksbank revised down its assessment of inflation in 2017.

One explanation for why the Riksbank changed its view of inflation prospects for 2017 is that the Brexit vote in June 2016 led to a downward adjustment of the forecast for economic development and Swedish GDP growth (see Figure 3:13). Similar to other forecasters, the Riksbank grew more pessimistic about real developments in the euro area (see Figure 3:17), which resulted in lower forecasts for Swedish GDP growth as well. The increased uncertainty about economic developments also lead to a slight downward adjustment in the forecast for CPIF inflation.[33]

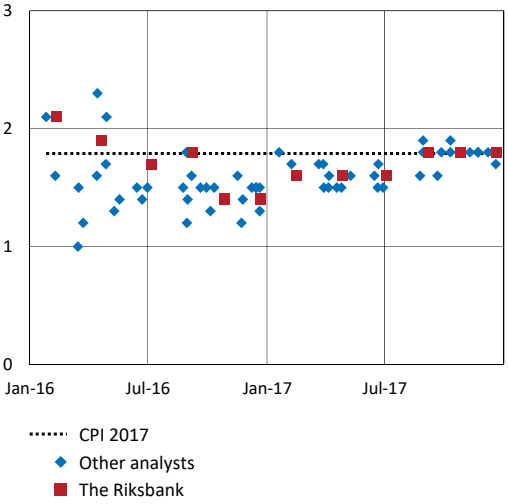
Surprisingly low outcomes for inflation in the late summer of 2016 also led to the Riksbank making the assessment that underlying inflationary pressures were lower than earlier thought. The fact that prices for services in particular had increased unusually slowly suggested this. The Riksbank therefore changed its view of inflation prospects for 2017 and calculated that it would take more time to reach 2 per cent. In 2017, however, the Riksbank gradually revised up the forecasts. Other analysts revised their inflation forecasts in a similar manner. Resource utilisation was deemed to have been higher than normal during 2017, which also had an impact on underlying inflation.[34] Furthermore, prices for services rose unexpectedly quickly later in the year.

**Large spread in GDP forecasts but the Riksbank's forecasts for unemployment close to the outcome**

GDP growth in the euro area in 2017 was significantly higher than was expected by Swedish forecasters in 2016 and most of 2017 (see Figure 3:17). [35] In contrast with this development, the forecasts for Swedish GDP growth were more dispersed but more in line with the final outcome (see

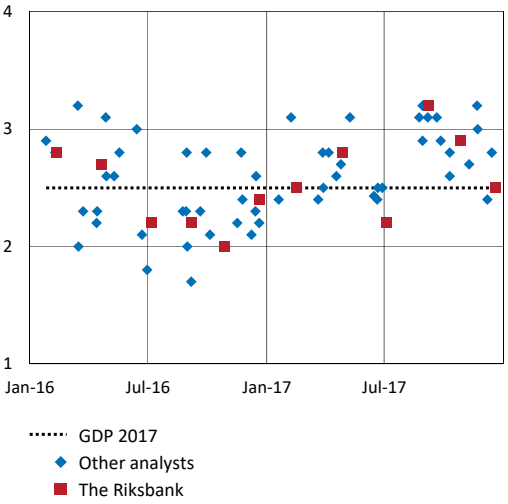
[32] See "Evaluation of the Riksbank's forecasts", *Riksbank studies*, May 2017.
[33] See also Chapter 2 in Account of monetary policy 2016.
[34] The forecasts for GDP growth in the euro area and for Swedish GDP growth were also revised up.
[35] An example of the difficulties caused by the variation in forecasting variables over time is that the opposite was the case for forecasts of GDP growth in the United States in 2016, which was consistently overestimated in 2015 and most of 2016, see Account of monetary policy 2016.

**Figure 3:12. Forecasts 2016 and 2017 for CPI inflation in 2017**
Annual percentage change, annual average



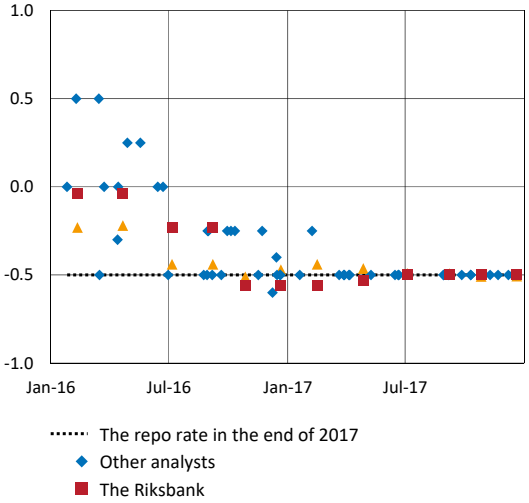

Note. Other analysts refer to those specified in Figure 3:11.
Sources: Respective analysts, Statistics Sweden and the Riksbank

**Figure 3:13. Forecasts 2016 and 2017 for GDP growth in 2017**
Annual percentage change, annual average




Note. Other analysts refer to those specified in Figure 3:11.
Sources: Respective analysts, Statistics Sweden and the Riksbank

**Figure 3:14. Forecasts 2016 and 2017 for the repo rate at the end of 2017**
Per cent




Note. Other analysts refer to the Ministry of Finance, the National Institute of Economic Research, HUI Research AB, Confederation of Swedish Enterprise, Nordea, SEB, Svenska Handelsbanken and Swedbank. Market expectations are calculated according to market pricing of forward rates. The forward rates are calculated using derivative contracts (RIBA and FRA) adjusted for credit risk premiums.
Sources: Respective analysts and the Riksbank

Figure 3:13). It is not so easy to identify from Figure 3:13 any clear patterns in how analysts changed their forecasts, apart from the fact that they tended collectively to overestimate GDP growth in 2017.[36]

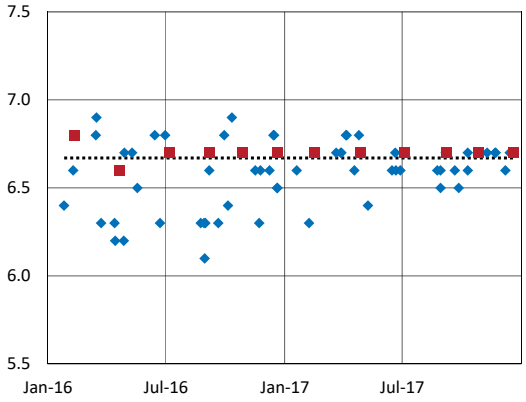
In a longer perspective, the Riksbank has made relatively accurate forecasts for real economic variables, which is made clear in the evaluation of forecasting performance since 2007, which the Riksbank conducts on a regular basis.[37] While most forecasters largely overestimated the improvement of the Swedish labour market in 2017, the Riksbank's forecasts were very close to the final outcome (see Figure 3:15).

## Conclusions on forecasts and monetary policy in recent years

In recent years, the Riksbank's monetary policy has been focused on bringing up inflation and safeguarding confidence in the inflation target. The very expansionary monetary policy has had the intended effect: inflation has shown a rising trend since 2014 and came back to target in 2017. Long-term inflation expectations are anchored around 2 per cent.

As discussed in earlier years' Account of monetary policy, the upturn in inflation has taken longer and required more substantial monetary policy efforts than the Riksbank has anticipated. From 2016, however, both economic activity in general and inflation have developed well in line with the Riksbank's forecasts. It is also clear when the Riksbank's forecasts are compared to those of other analysts.

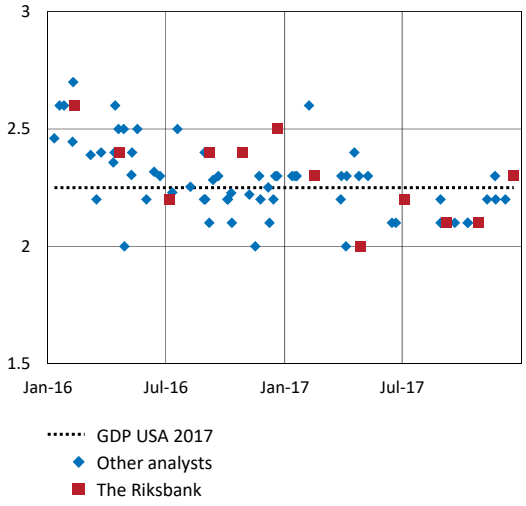
**Figure 3:15. Forecasts 2016 and 2017 for unemployment in 2017**
Annual percentage change, annual average




Note. Other analysts refer to those specified in Figure 3:11.

Sources: Respective analysts, Statistics Sweden and the Riksbank

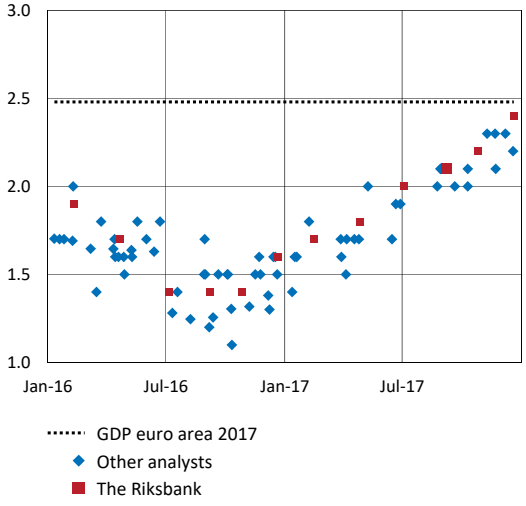
**Figure 3:16. Forecasts 2016 and 2017 for GDP growth in the United States in 2017**
Annual percentage change, annual average




Note. Other analysts refer to Consensus Economics, the Ministry of Finance, IMF, the National Institute of Economic Research, the Swedish Trade Union Confederation (LO), Nordea, OECD, SEB, Svenska Handelsbanken, the Confederation of Swedish Enterprise and Swedbank.

Sources: Respective analysts, Bureau of Economic Analysis and the Riksbank

**Figure 3:17. Forecasts 2016 and 2017 for GDP growth in the euro area in 2017**
Annual percentage change, annual average




Note. Other analysts refer to those specified in Figure 3:16.

Sources: Respective analyst, Eurostat and the Riksbank

[36] The difference in accuracy between forecaster is relatively large for GDP growth in 2017, according to the formal measures calculated in "Evaluation of the Riksbank's forecasts", *Riksbank studies*, March 2018.
[37] See "Evaluation of the Riksbank's forecasts", *Riksbank studies*, March 2018. According to calculations in this report, 2017 was a relatively easy year to make forecasts for, evaluated for GDP growth in Sweden. In retrospect, the CPIF outcome for 2017 was also relatively easy to forecast, although more difficult than 2016.

# ARTICLE– Riksbank's development work

Over the year, the Riksbank continued to develop its monetary policy analysis. One question that was analysed concerned which repo rate level can be expected over the long term, given that global real interest rates have fallen for a long time and are currently conspicuously low. Another example of work carried out over the year is the compilation produced by the Riksbank of its experiences of publishing interest rate forecasts. The work of deepening the analysis of inflation also continued.

**Revised assessment of the repo rate in the long term**

International studies point out that the long-term, more normal level of the real interest rate today is significantly lower than previously. This reflects a structural development implying, among other things, that the propensity to save has increased, while the propensity to invest has decreased in the world as a whole. As the global economy recovers and the effects of the financial and debt crisis gradually wear off, interest rates are expected to rise. However, various structural factors are deemed to be still contributing to interest rates being lower than before the financial crisis. Many international studies suggest that, in the long run, the real interest rate will probably be around 1 per cent or even lower. With inflation expectations of about 2 per cent, this would correspond to a nominal rate of around 3 per cent. In the light of this global trend in interest rates, several central banks have adjusted their assessments of their own economy's long-term, normal rate downwards. Over the year, the Riksbank made the assessment that the repo rate, in the long run, can be expected to be between 2.5 and 4.0 per cent.[38] The assessment is in line with those made by other central banks and analysts of international long-term rate levels. The estimate is lower than the Riksbank's previously published interval of 3.5–4.5 per cent from 2010, which was, in part, based on historical real interest rates and growth. An update of these factors indicates that the long-term interest rate level has fallen by around 1 percentage point. The new assessment has been integrated into the Riksbank's forecast models.

**The Riksbank's experiences of publishing interest rate forecasts**

The Riksbank started publishing its own forecasts of the repo rate in 2007. In their review of the Riksbank's monetary policy 2010–2015, conducted by Marvin Goodfriend and Mervyn King on behalf of the Riksdag Committee on Finance and published in January 2016, the authors recommended the Riksbank to evaluate its experience of publishing its own interest rate forecasts.[39] In its annual evaluation of monetary policy, the Riksdag Committee on Finance also considered that the experience gained from publishing the repo rate path should be thoroughly evaluated.[40]

The Riksbank published such an evaluation in June 2017.[41] The study noted that, overall, the Riksbank's experiences of making its own repo rate forecasts are positive. The Riksbank's internal work on the material for monetary policy decision-making has developed and improved. The scope for an open discussion and external evaluation of monetary policy have also improved due to the Riksbank's publication of its own forecasts for the repo rate.

However, there have also been challenges. One of these has been that the repo rate forecasts have not been particularly accurate. However, as the study shows, this is true of many countries and many analysts. Possible explanations for this include the trend decline in global real interest rates that has occurred in recent decades and the large negative shocks to which the global economy has been exposed since 2008, in the form of both the global financial crisis and the European sovereign debt crisis. Another challenge lies in the differences between market rates and the Riksbank's repo rate forecasts.

Two things for the Riksbank to continue to address are how the accuracy of repo rate forecasts can be improved and what the monetary policy significance of actual changes in the repo rate is in relation to changes in the forecast for the future repo rate.

As a result of Goodfriend and King's recommendation to evaluate its experience of publishing repo rate forecasts, the Riksbank arranged, on 11–12 May, the international conference The Future of Forward Guidance for invited participants and speakers. The focus of the

[38] "The repo rate in the long run", article in Monetary Policy Report February 2017.
[39] M. Goodfriend and M. King, "Review of the Riksbank's monetary policy 2010–2015" (2015/16:RFR6), Riksdag Printing Office, Stockholm.
[40] Evaluation of the Riksbank's monetary policy 2014–2016, Committee on Finance Report 2016/17:FiU24.
[41] "The Riksbank's experiences of publishing repo rate forecasts", *Riksbank studies*, June 2017.

conference was how central banks should communicate with regard to their future monetary policy.

The analysis and measures previously implemented by the Riksbank as a result of other recommendations in Goodfriend and King's review are described in the article "The Riksbank's development work and analysis of the monetary policy framework" in Account of monetary policy 2016.

**Continued in-depth inflation analysis**

The work on enhancing the inflation analysis continued over the year. One project has examined the extent to which information from the Internet can be used to improve inflation forecasts. The amount of information published on-line is increasing very rapidly. Since the spring of 2015, the Riksbank has collected some on-line price data with the aim of evaluating the extent to which these can be used as a basis for inflation forecasts. During the year, the project has been evaluated in an Economic Commentary.[42] The results imply that it is possible to automate on-line data collection and that the data can help improve the accuracy of short-term inflation forecasts.

Another analysis dealt with the correlation between wage development and the economic situation, and was summarised in an article in the Monetary Policy Report in July.[43] Wages have risen slowly both in Sweden and abroad, even though economic activity has strengthened. The article noted that wage growth may have been held back by different factors, such as structural changes to the labour market, and that wage and inflation expectations may have been adapted to the long period of low inflation. This brings an element of uncertainty to the Riksbank's forecasts in the years ahead. The link from wages to inflation goes, above all, via unit labour costs and, as the Riksbank expects both wages and productivity to develop weakly in the years ahead, these costs are still expected to rise in line with the historical average.

**Analysis of the monetary policy framework**

Last year's Account of monetary policy described parts of the analysis work implemented by the Riksbank in 2016 as regards various aspects of inflation targeting. It looked at issues such as which inflation measure to use and whether it was appropriate to reintroduce an interval around the target. The project also analysed aspects of inflation targeting that have been discussed more in the international debate, including proposals to raise the level of the inflation target or change the target for inflation to a target for price level or nominal GDP instead. The results of these analyses were reported during 2017.[44] As regards the proposal to raise the level of the inflation target, one of the conclusions was that the threshold for increasing the target is high, primarily because there are significant practical problems linked to abandoning a target that is already established.

In theory, a price level or nominal GDP target can make monetary policy more effective than today's flexible inflation targeting policy. But this result is reliant on relatively strong assumptions about how households and companies form their expectations. In addition, practical aspects may make the GDP measure less appropriate as a target, including the fact that it is published with a long time lag and often revised. As no country in modern times has so far introduced a price level or nominal GDP target, there is no empirical evidence to rely on, nor does the theory provide any unambiguous answers to what the benefits are.

**Study of the consideration of international developments in the forecasts**

Sweden is a small, open economy that is affected to a large extent by developments abroad. An important question is whether Swedish forecasters properly account for Sweden's international dependence in their forecasts of domestic developments. A study from the Riksbank analyses forecasts made during the period 2007–2017 for GDP growth by a number of major Swedish forecasters. It implies that several forecasters, including the Riksbank and the National Institute of Economic Research, take less account of international developments in the forecasts for Swedish GDP growth in the long run than is motivated by the historical correlation between international GDP and Swedish GDP.[45] The same applies to the inflation forecasts in the long run. In the short run, however, the revisions to the forecasts appear to largely correspond to historical correlations. This applies in particular when taking into account international inflation, while the correlation with international GDP growth is still not given full consideration.

[42] I. Hull, M. Löf and M. Tibblin, "Price information collected on-line and short-term inflation forecasts", *Economic Commentaries*, no. 2 2017.
[43] "Strong economic activity but subdued wage increases", article in Monetary Policy Report July 2017.
[44] M. Apel, H. Armelius and C.A. Claussen, "The level of the inflation target – a review of the issues", *Economic Review* 2017:2 and B. Andersson and C.A. Claussen, "Alternatives to inflation targeting", *Economic Review* 2017:1.
[45] J. Lindé and A. Reslow, "Do Swedish forecasters properly account for Sweden's international dependence?", *Economic Review* 2017:2.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