

# Monetary Policy Report

December 2016



Correction 2016-12-21

Incorrect translation of a sentence in chapter 1 page 8. The error has been corrected in this version.

## Monetary Policy Report

The Riksbank's Monetary Policy Report is published six times a year. The report describes the deliberations made by the Riksbank when deciding what would be an appropriate monetary policy to conduct.<sup>1</sup> The report includes a description of the future prospects for inflation and economic activity based on the monetary policy that the Riksbank currently considers to be well-balanced.

The purpose of the Monetary Policy Report is to produce background material for monetary policy decisions, and to spread knowledge about the Riksbank's assessments. By publishing the reports, the Riksbank aims to make it easier for external parties to follow, understand and assess its monetary policy.

The Riksbank must submit a written report on monetary policy to the Riksdag (Swedish Parliament) Committee on Finance at least twice a year (see Chapter 6, Article 4 of the Sveriges Riksbank Act (1988:1385)). During the spring, special material is submitted as a basis for the evaluation of monetary policy. During the autumn, the current Monetary Policy Report is submitted as an account of monetary policy.

The Executive Board made a decision on the Monetary Policy Report on 20 December 2016. The report may be downloaded in PDF format from the Riksbank's website [www.riksbank.se](http://www.riksbank.se), where more information about the Riksbank can also be found.

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<sup>1</sup> See "Monetary policy in Sweden" on the next page for a description of the monetary policy strategy and what can be regarded as an appropriate monetary policy.

# 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 specified this as a target for inflation, according to which the annual change in the consumer price index (CPI) is to be 2 per cent.
- 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 publishes its own assessment of the future path for the repo rate. This repo-rate path is a forecast, not a promise.
- In connection with every monetary policy decision, the Executive Board makes an assessment of the repo-rate path needed, and any potential supplementary measures necessary, for monetary policy to be well-balanced. It 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.
- 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.

## 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 – Monetary policy considerations

Since the October Monetary Policy Report was published, the real economic prospects for Sweden and abroad have on the whole improved somewhat. The international recovery is expected to continue in the coming years, and global inflation is expected to rise from its currently low level. The expansionary monetary policy in Sweden, with a negative repo rate and purchases of government bonds, has contributed to stronger economic activity, a weaker krona, higher inflation and rising inflation expectations. Conditions are good for inflation to continue rising. It is expected to reach 2 per cent in the middle of 2018.

However, inflation has been somewhat weaker than expected in recent months, and it is still uncertain how quickly it will rise going forward. The upturn in inflation therefore needs continued support from monetary policy and the Executive Board has decided to extend the purchases of government bonds by SEK 30 billion during the first half of 2017. In addition, reinvestments of maturities and coupon payments on the government bond portfolio will amount to around SEK 30 billion during 2017. The repo rate is held at -0.50 per cent, but the repo-rate path reflects the fact that there will still be a greater probability that the rate will be cut than that it will be raised in the near future, and that slow increases in the repo rate will not begin until the start of 2018. The expansionary monetary policy underlines the Riksbank's aim to safeguard the role of the inflation target as nominal anchor for price-setting and wage formation.

### Brighter economic outlook in Sweden and abroad

The international recovery is proceeding at a moderate pace. Compared with the assessment in October, however developments look somewhat stronger. Continued expansionary monetary policy and to some extent also more expansionary fiscal policy will support the recovery.

Growth in the United States strengthened in the third quarter, following a few weak quarters. Growth is expected to be relatively rapid during the forecast period, with continued growth in consumption and a positive development in the labour market. The fiscal policy stimulation that has been announced is expected to make a positive contribution to economic activity and to higher inflation in the coming years. However, there is great uncertainty over the final wording of the proposals and to what extent they will then be implemented. In a long-run perspective, an overly expansionary fiscal policy could lead to public sector indebtedness reaching levels that instead threaten growth. If the announcements regarding more protectionist trade policy and stricter immigration laws were to become a reality, this would have negative effects on world trade and global growth. In the euro area, the recovery is expected to continue at a moderate pace in line with the earlier forecast.

The forecasts for GDP growth in the countries that are most important to the Swedish economy (KIX-weighted) are now somewhat higher for 2017 than was forecast in October. Growth is expected to rise from 2.0 per cent in 2016 to 2.3 per cent at the

**Table 1.1.**

| Important factors for monetary policy   |
|---|
| The global recovery is expected to continue.  |
| Central banks around the world are in different phases with their monetary policy.  |
| Economic activity in Sweden increasingly strong – resource utilisation somewhat higher than normal and expected to rise further.  |
| Long-term inflation expectations are close to 2 per cent again and inflation is expected to attain the target in the middle of 2018.  |
| However, the upturn in inflation needs continued support. The repo rate is retained at -0.50 per cent and the purchases of government bonds are being extended by SEK 30 billion during the first half of 2017. |

**Table 1.2.**

| Important revisions to the forecast   |
|---|
| Outcomes and indicators point to a somewhat stronger international development next year. |
| Exchange rate somewhat weaker 2017–2019.  |
| Swedish growth somewhat stronger in 2017.   |

end of the forecast period. Gradually higher resource utilisation abroad means that inflation will rise, although the upturn in the euro area will be slow. The KIX-weighted inflation rate is expected to rise from 1.1 per cent this year to 2.1 per cent 2019.

The US Federal Reserve raised the interval for its policy rate by 0.25 percentage points, to 0.5-0.75 per cent, at its monetary policy meeting in December. The median forecast from the members of the monetary policy committee was also adjusted upwards and now indicates three interest rate raises during 2017. Market expectations of increases in the US policy rate are somewhat lower, but have risen tangibly since the October Monetary Policy Report was published. In the euro area, the European Central Bank, ECB, decided to extend its asset purchase programme by a further nine months to December 2017. According to the new programme, the monthly purchases will be reduced from EUR 80 billion to 60 billion.

**Economic activity in Sweden increasingly strong**

Resource utilisation is currently close to or slightly above its normal level according to several indicators. Over the coming years, with a growth rate faster than normal, resource utilisation is expected to rise further.

Swedish GDP growth has been strong for some time, supported by an expansionary monetary policy (see Figures 1:1 and 1:2). The growth outcome for the third quarter was 2.0 per cent, compared with the second quarter and calculated as an annual rate, which was somewhat higher than the forecast in October. Confidence indicators point to rising optimism in both the business sector and the household sector and the growth forecast for 2017 has been revised upwards somewhat.

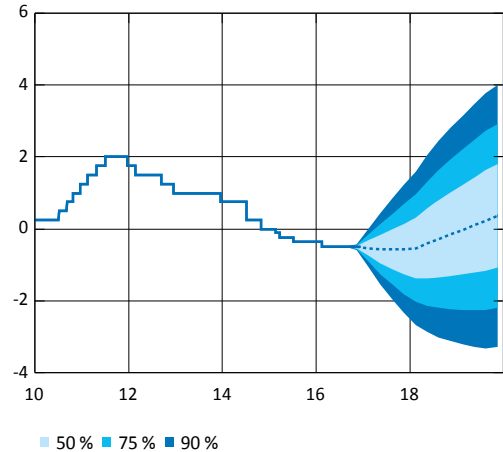
Demand on many of Sweden's most important export markets is expected to increase over the coming years and domestic demand to grow at a good pace. Demand for labour is substantial and the labour market is continuing to strengthen. All in all, GDP is expected to grow by 3.4 per cent this year. Thereafter, the growth rate will decline gradually to 2.1 per cent in 2019.

**Inflation rising slowly**

CPI inflation has long been low and is being held back by falling interest costs. During the past six months it has risen, however, and is now 1.4 per cent (see Figure 1:3). CPIF inflation has shown a rising trend since 2014 (see Figure 1:4). This is partly because resource utilisation and energy prices have risen, and the krona has weakened.

Inflation has shown a poorer outcome than expected in recent months, but as resource utilisation is expected to continue rising in the coming years, the conditions for a continued upturn in inflation are good. However, resource utilisation affects inflation after a time lag (see the article "The relationship between resource utilisation and inflation" in the October Monetary Policy Report). This means that today's healthy economic situation has not yet had a full impact on prices.

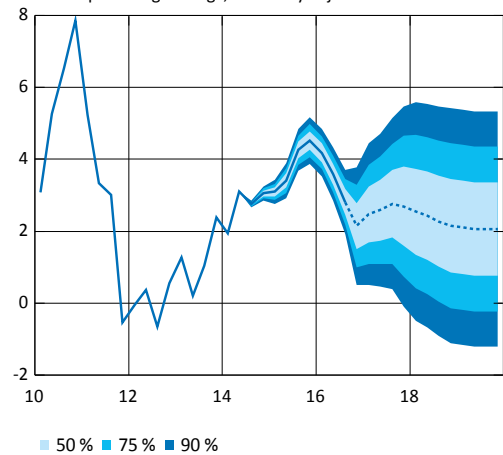
**Figure 1:1. Repo rate with uncertainty bands**  
Per cent



Note. The uncertainty bands for the repo rate are based on the Riksbank's historical forecasting errors and the ability of risk-premium adjusted forward rates to forecast the future repo rate for the period 1999 up to the point when the Riksbank started to publish forecasts for the repo rate during 2007. The uncertainty bands do not take into account the fact that there may be a lower bound for the repo rate. Outcomes are daily rates and forecasts refer to quarterly averages.

Source: The Riksbank

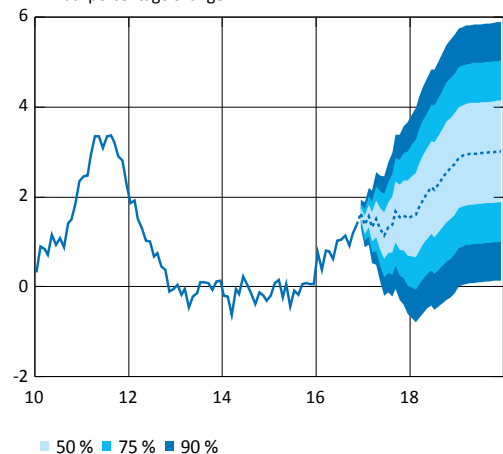
**Figure 1:2. GDP with uncertainty bands**  
Annual percentage change, seasonally-adjusted data



Note. The uncertainty bands are based on the Riksbank's historical forecasting errors. There is also uncertainty for the outcomes for GDP, as the figures in the National Accounts are revised several years after the preliminary publication.

Sources: Statistics Sweden and the Riksbank

**Figure 1:3. CPI with uncertainty bands**  
Annual percentage change



Note. The uncertainty bands are based on the Riksbank's historical forecasting errors.

Sources: Statistics Sweden and the Riksbank



The forecast for inflation remains largely unchanged when compared to October. Inflation measured as the CPI, the CPIF and the CPIF excluding energy is therefore expected to rise slowly and attain 2 per cent in the middle of 2018 (see Figures 1:5–1:7).

The krona exchange rate has weakened since the spring. Compared with the Riksbank's forecast in October, the krona has been weaker than expected. The krona is expected to strengthen slowly going forward. The forecast for the krona entails a somewhat weaker exchange rate over the entire forecast period, compared with the assessment in October (see Figure 1:8).

## Current monetary policy

For a long time, monetary policy in Sweden has been characterised by too low inflation, considerable uncertainty over international economic developments and low global interest rates. Given these circumstances, the Riksbank has cut the repo rate to –0.50 per cent and carried out extensive purchases of government bonds. The aim of the expansionary monetary policy is to push up inflation and stabilise it around the target of 2 per cent and to keep inflation expectations in line with the target. High confidence in the inflation target is creating the conditions for efficient price-setting and wage formation, as well as good economic growth in Sweden.

### Continued strong monetary policy support

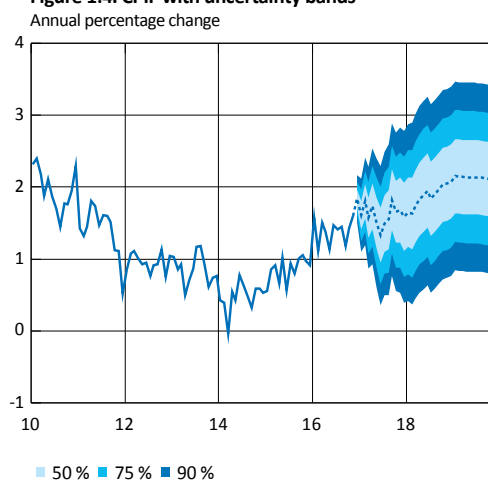
The Riksbank's expansionary monetary policy has had a broad impact and pushed down interest rates in the Swedish economy. Monetary policy has thus contributed to the positive development in recent years, with good growth, falling unemployment and rising inflation. Long-term inflation expectations are also back close to 2 per cent (see Figure 1:9).

The Executive Board decided at its monetary policy meeting in October to hold the repo rate at the current low level, –0.50 per cent, for six months longer than was assessed in September. The forecast for the repo rate also reflected the probability of a further cut being greater than before. At the same time, the Executive Board emphasised that it was ready to extend the purchases of government bonds at the monetary policy meeting in December.

Since the Monetary Policy Report was published in October, real economic developments abroad have on the whole been stronger than expected. The recovery in global economic activity is continuing and compared with earlier assessments, outcomes and indicators are now pointing to brighter prospects next year in economies important to Sweden's exports.

In Sweden, economic activity is strong and expected to continue improving in the coming years. The economic outlook is also a little brighter than before, as for the rest of the world. Confidence indicators point to rising optimism in both the business sector and the household sector, and demand for labour remains strong.

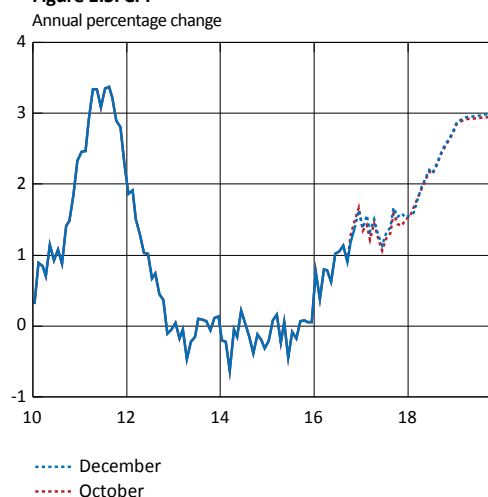
**Figure 1:4. CPIF with uncertainty bands**



Note. The uncertainty bands are based on the Riksbank's historical forecasting errors. The CPIF is the CPI with a fixed mortgage rate.

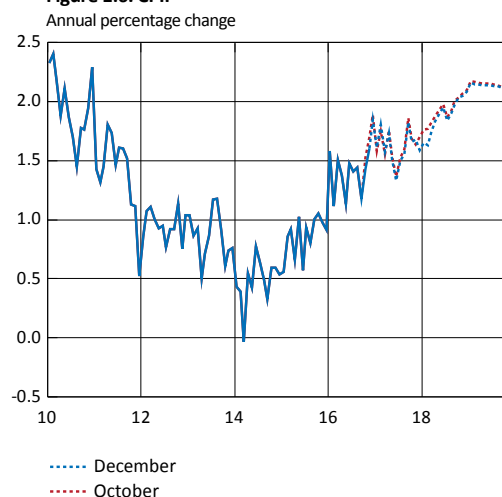
Sources: Statistics Sweden and the Riksbank

**Figure 1:5. CPI**



Sources: Statistics Sweden and the Riksbank

**Figure 1:6. CPIF**



Note. The CPIF is the CPI with a fixed mortgage rate.

Sources: Statistics Sweden and the Riksbank

At the same time, inflation in Sweden has been weaker than expected in recent months. The increasingly strong economic activity means that the conditions exist for inflation to continue rising, but it is uncertain how quickly inflation will be affected and how large the effect will be.

Monetary policy abroad has been very expansionary for a long time. However, central banks around the world are in different phases with their monetary policy. The increasingly high level of economic activity in the US economy has led the Federal Reserve to raise the interval for its policy rate, at the same time as the low inflation in the euro area has caused the ECB to further extend its monetary policy stimulation. In this monetary policy environment it is difficult to know how the krona exchange rate will develop. The Riksbank's forecast is that the krona will slowly strengthen going forward, and it is important to the upturn in inflation that this appreciation is slow.

Monetary policy needs to remain very expansionary for inflation to rise towards 2 per cent. The somewhat stronger real economic development reinforces the conditions for the upturn in inflation and the Executive Board has therefore decided to hold the repo rate unchanged at -0.50 per cent. However, in the near term there is still a great probability that the rate will be cut than that it will be raised. The repo-rate path also reflects the fact that slow increases in the repo rate will not begin until early 2018 (see Figure 1:10).

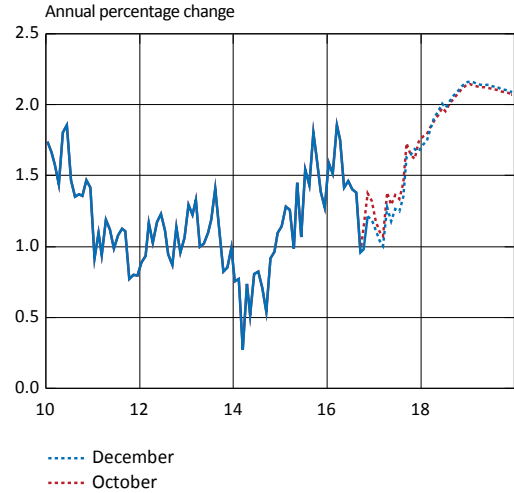
Monetary policy abroad and the krona exchange rate will continue to create risks for inflation. To further support inflation, the Executive Board has therefore resolved to extend the purchases of government bonds by SEK 30 billion during the first half of 2017 (see Figure 1:11). The purchases include both nominal and real government bonds, corresponding to SEK 15 and SEK 15 billion, respectively.

Until further notice, maturities and coupon payments will also be reinvested in the government bond portfolio. During 2017, these maturities and coupon payments will amount to around SEK 30 billion. There will be a large maturity in August, but reinvestments will begin at the start of 2017 and are planned to continue throughout the year. In the middle of 2017, the Riksbank's purchases will amount to SEK 275 billion, excluding reinvestments.

Just as in many other countries in the world, Swedish monetary policy is thus very expansionary and will remain so in the coming years. For example, the real repo rate is expected to be negative throughout the forecast period (see Figure 1:12).

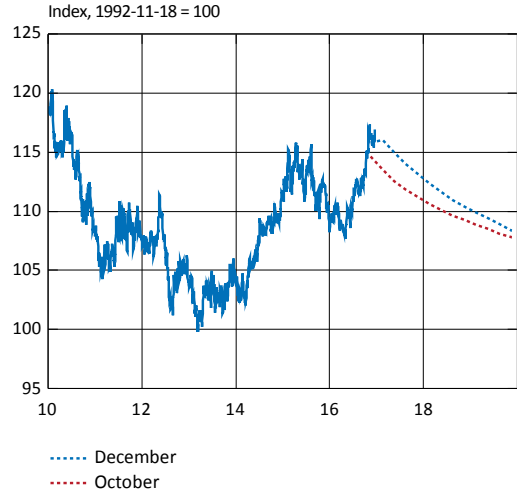
The Swedish economy has developed positively in recent years and the outlook is bright for the near future. But although the Swedish economy is currently well-equipped, negative surprises can occur in the future that make it necessary to adapt monetary policy. The Riksbank is therefore still prepared to make monetary policy even more expansionary if the upward trend in inflation were to be threatened and confidence in the inflation target weakened. All of the tools that the Riksbank has described

**Figure 1:7. CPI excluding energy**



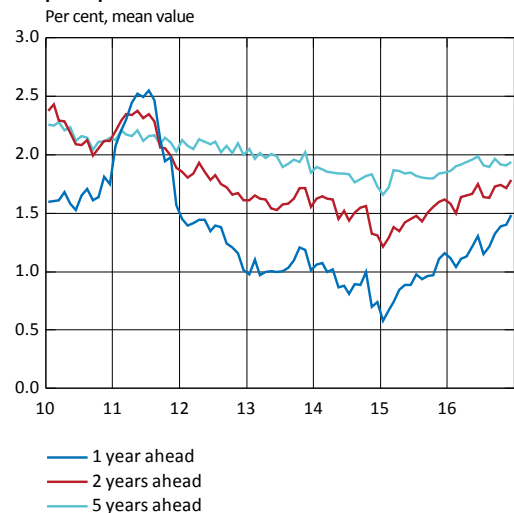
Note. The CPI is the CPI with a fixed mortgage rate.  
Sources: Statistics Sweden and the Riksbank

**Figure 1:8. KIX-weighted nominal exchange rate**



Note. Outcomes are daily rates and forecasts refer to quarterly averages. KIX refers to an aggregate of countries that are important for Sweden's international transactions.  
Sources: National sources and the Riksbank

**Figure 1:9. Inflation expectations among money market participants**



Source: TNS Sifo Prospera

in earlier Monetary Policy Reports, most recently in September, can still be used.

**Monetary policy considerations**

The shaping of monetary policy depends on a number of factors and considerations. On this occasion, the monetary policy discussion has largely concerned whether the repo rate should be cut further and whether the purchases of securities should be extended, and if so in what way.

At present, the Swedish economy is showing a growth level somewhat stronger than normal and a labour market that is becoming increasingly strained. Since the October Monetary Policy Report, real economic prospects for both Sweden and abroad look somewhat brighter. These circumstances indicate that there is little need for a more expansionary monetary policy.

However, inflation outcomes, and particularly underlying inflation, have been lower than expected in recent months, and it is still uncertain how quickly inflation will rise going forward. In this context, it is particularly worrying that services prices have been weak during the autumn, although some upturn has been discernible over the past month. Historically, price changes in services have been relatively persistent and the slowdown has caused the Riksbank to revise down its inflation forecast and to adjust monetary policy earlier in 2016. Weaker underlying inflationary pressures could mean that it takes longer for inflation to attain 2 per cent. This would call for a more expansionary monetary policy.

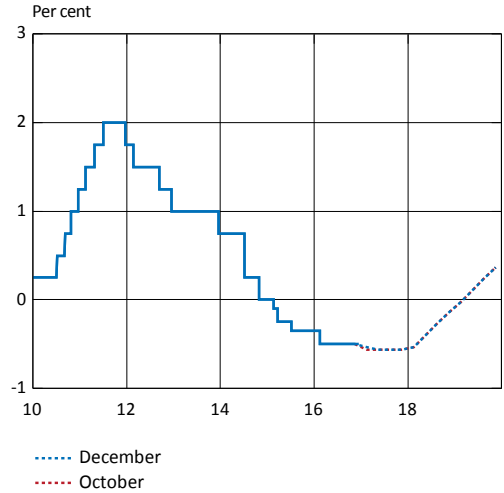
The inflation target is very sensitive to international factors and as international monetary policy affects the krona exchange rate, it has significance for inflation in Sweden. It is difficult to know how the krona exchange rate will develop in an environment where the ECB has extended its asset purchase programme, at the same time as the Federal Reserve has raised its policy rate. The Riksbank's assessment is that the krona will strengthen slowly in the period ahead. If the krona appreciation were too rapid, it could lead to prices of imported goods and services increasing more slowly and to demand for Swedish exports declining. This would make it more difficult for the Riksbank to bring up inflation and is thus a further factor indicating that monetary policy should be made more expansionary.

The strong real economic developments thus support the upturn in inflation, but there are still risks that could jeopardise it. The Executive Board has therefore decided that it is appropriate to continue purchasing government bonds in 2017. At the same time, the repo rate is held unchanged at -0.50 per cent.

**Uncertainty and risks**

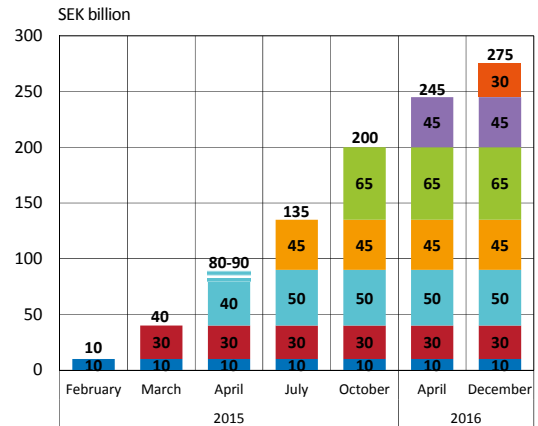
Forecasts of future economic developments are always uncertain, as illustrated by the uncertainty bands in Figures 1:1–1:4. In the Riksbank's forecasts the probability of a poorer outcome should in principle be as great as the probability of a

**Figure 1:10. Repo rate**



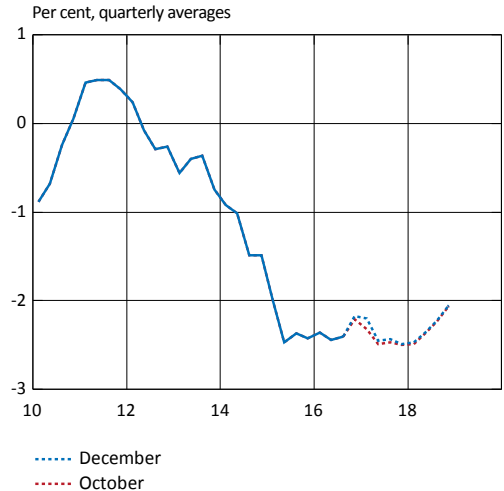
Note. Outcomes are daily data and the forecasts refer to quarterly averages.  
Source: The Riksbank

**Figure 1:11. Purchases of government bonds decided by the Riksbank, excluding reinvestments**



Note. Purchases of government bonds, excluding reinvestments, will continue until mid-2017.  
Source: The Riksbank

**Figure 1:12. Real repo rate**



Note. The real repo rate is a mean value of the Riksbank's repo rate forecast for the year ahead minus the inflation forecast (CPIF) for the corresponding period.  
Sources: Statistics Sweden and the Riksbank

better outcome. However, it is difficult to quantify these probabilities.

Neither is it obvious how monetary policy should relate to the uncertainty and risks. There are occasions on which, in our monetary policy deliberations, we may wish to pay particular attention to certain risks, the consequences of which may have a severe impact on economic development. But, on other occasions, we may need to await more information before monetary policy can be adjusted.

### **Uncertainty surrounding the inflation forecast**

The international recovery is expected to be moderate and is rather uncertain. Britain's decision to leave the EU probably entails reduced trade between countries and limits to labour force mobility. The policy announced by US president-elect Donald Trump could have similar effects. Such a global development would entail lower global economic growth, primarily in the slightly longer run. More protectionism and thereby higher import costs and lower competition would at the same time lead to higher inflation.

Trump has also announced extensive fiscal policy stimulation measures in the United States, but it is as yet unclear how these will be formulated and to what extent they will actually be implemented. This policy would probably entail higher inflation. This has already been reflected in higher inflation expectations and long-term interest rates. Higher demand and inflation could mean that monetary policy in the United States needs to be tightened sooner. This could in turn have negative effects for a number of emerging market economies and consequently repercussions on global growth. All in all, it is still uncertain how economic policy in the United States will be formulated and global growth and inflation could be higher or lower than in the main scenario.

An important risk in the euro area is linked to the banking sector, which in some countries has structural problems with poor profitability and a large share of non-performing loans. The situation is particularly serious in Italy, where political uncertainty has increased following the cabinet reshuffle. In China, the rapidly increasing corporate debt is a major challenge. These are just some examples of important risks abroad that the Riksbank and other central banks need to monitor closely, as unfavourable developments could rapidly change the conditions for monetary policy.

The krona is expected to appreciate gradually in the coming years, but it is difficult to assess how quickly this will happen. An overly rapid appreciation of the krona would hold back import prices and demand, which would make it more difficult to reach the inflation target at the pace that has been forecast. This could in turn affect confidence in the inflation target via lower inflation expectations. This risk is particularly high when inflation has been low for a longer period.

Resource utilisation is continuing to increase and will be higher than normal during the forecast period. According to

### **CPI, CPIF and HICP**

The most common measure of inflation in Sweden is the Consumer Price Index, CPI. The CPI is the target variable for monetary policy, but the aim of the measure is also to calculate the impact of price fluctuations on households' living costs and it is used, among other things, to calculate the price base amount. The CPI includes households' mortgage costs, which are directly affected by the Riksbank's repo rate. Instead, it is therefore sometimes appropriate to use the CPIF, in which mortgage rates are held constant. The EU-harmonised inflation measure HICP is not directly affected by changes in mortgage rates either, as households' housing costs are largely excluded. In contrast to the CPI, the HICP is not intended to be a cost of living index but is instead intended to be a measure that is good for monetary policy purposes. The HICP is therefore often called an inflation index and is target variable for monetary policy in the euro area and The United Kingdom. The fact that the CPI, CPIF and HICP have different purposes means that they are calculated in somewhat different ways. Despite the differences in construction, there are similarities between inflation according to the HICP and according to the CPIF, while CPI inflation varies more. Further information on various measures of inflation and related issues can be found in the Riksbank Study "The Riksbank's inflation target – target variable and interval".

historical correlations, wages should therefore increase at a faster pace and inflation should become higher going forward. But it is difficult to know exactly how quickly resource utilisation will affect the rate of wage increase and inflation, and this creates uncertainty in the forecasts for wages and inflation.

Inflation may also rise faster than in the forecast. If economic growth in Sweden were to be better than expected, for instance, resource utilisation and thus inflation may be pushed up fairly quickly. However, inflation has been below target for a long time and, if it were temporarily to exceed the forecast, this would not necessarily mean that monetary policy needs to be made less expansionary in the near future.

### Risks of low inflation

When inflation expectations are well-anchored around the Riksbank's inflation target of 2 per cent, it is easier for monetary policy to attain the target. If inflation is below the inflation target for a longer time, inflation expectations risk becoming entrenched on excessively low levels. This can create uncertainty for households and companies when making various financial decisions. For example, it may become more difficult for companies to assess how their own costs and revenues will develop, which may have a negative effect on investment and new recruitment.

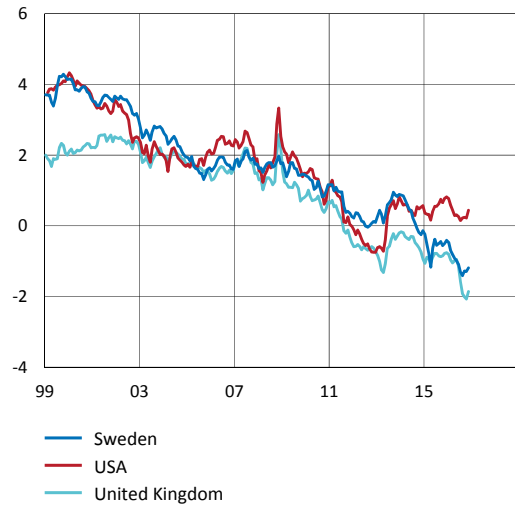
Firmly-anchored inflation expectations are particularly important for wage formation to function smoothly. Smoothly-functioning wage formation in turn lays the foundation for the positive development of the labour market and also, ultimately, for stable price development. A low inflation rate can moreover make it more difficult to adapt real wages as nominal wages usually rise and are rarely lowered. This can entail higher unemployment and further downward pressure on inflation.

The expansionary monetary policy with, for instance, a negative repo rate, aims to bring inflation up to the target to 2 per cent. A less expansionary monetary policy would increase the risk of inflation being low for a long time. If inflation is low over a long period of time, the repo rate will also need to be low for a longer period, and various negative side effects may thus be greater. It would then also be more difficult for monetary policy to counteract the effects of an economic recession. The current very expansionary monetary policy will thus contribute to interest rates being able to rise faster in the coming period than would otherwise have been the case. The risks of various negative side effects from low and negative interest rates can thus be expected to wane, and the scope for monetary policy to counteract new economic dips will be greater.

### Risks inherent in low and negative interest rates

The central banks' policy rates have been low and, in certain cases, negative for some time. This is primarily due to a downward global trend in real interest rates (see Figure 1:13). This trend means that central banks have needed to take very

**Figure 1:13. Real interest rates**  
Per cent



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

Sources: Bank of England, Federal Reserve, Thomson Reuters and the Riksbank

strong measures to stimulate economic growth and counteract the risks of excessively low inflation.

At the same time, the low interest rate environment may lead to assets becoming overvalued and to risks not being priced in full, which may increase the vulnerability of the financial system. Household debt as a percentage of disposable income will continue to increase in the coming years (see Figure 1:14). At the end of the forecast period, the proportion is expected to be over 190 per cent. A trend in which debts rise at a faster rate than incomes is not sustainable in the long term. Housing prices are also continuing to rise, even if the rate of increase has decreased in 2016 when measured as an annual percentage change (see Figure 1:15).

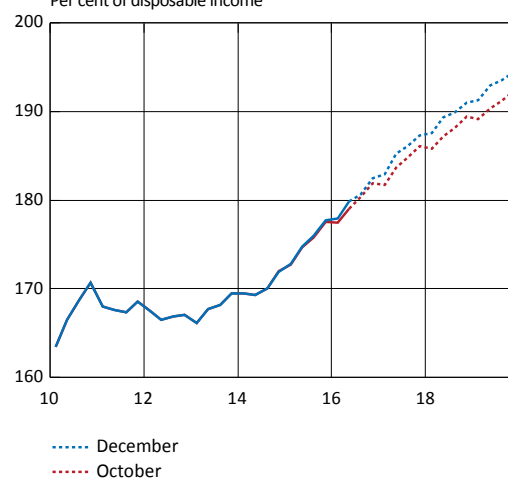
The Riksbank assesses that valuations in the Swedish housing market are high from a historical perspective. This, in combination with increasingly high indebtedness in the household sector and the fact that an ever-greater proportion of loans are at variable interest rates, has made both households and banks more vulnerable. High debts may be particularly problematic if economic growth should become significantly less positive than expected. Highly-indebted households may then be forced to reduce their consumption. This could further exacerbate the economic slowdown, particularly if housing prices also start to fall.

#### The risks associated with household indebtedness remain – urgent need for action

The high and increasing indebtedness could jeopardise financial and macroeconomic stability. A combination of measures in different policy areas is needed to attain a long-run sustainable development for the Swedish economy, with stable economic activity and inflation. As monetary policy needs to be expansionary to safeguard the inflation target, it is essential to have targeted measures in the fields of housing policy, taxation policy and macroprudential policy that limit the build-up of household debt. A large increase in the repo rate would certainly slow down the build-up of debts, but at the cost of a rapid deterioration in demand, lower inflation and higher unemployment. Compared with interest rate increases, measures in other policy areas can to a greater degree specifically manage the risks linked to household debt, and the negative effects on the economy in general could thus be reduced.

Finansinspektionen (the Swedish financial supervisory authority) has so far introduced an amortisation requirement, a loan-to-value limit and a risk-weight floor to restrain this development and reduce the risks. But further measures are needed, particularly in a situation characterised by low interest rates.<sup>2</sup> It is above all important to manage the underlying causes of the imbalances and risks. Given this, the housing market needs to be reformed to achieve a better balance between supply and demand. Reforms that make households less willing or able to

**Figure 1:14. Household debt ratio**  
Per cent of disposable income



Note. Households' total debts as a share of their disposable incomes totalled over the past four quarters.

Sources: Statistics Sweden and the Riksbank

**Figure 1:15. Housing prices**  
Annual percentage change



Source: Valueguard

<sup>2</sup> For a more detailed discussion of the measures, see Financial Stability Report 2016:2.

take on debt are also important. A potential further measure with regard to macroprudential policy could be to introduce a debt-to-income limit that restricts how much a household may borrow in relation to its income.

If no further measures are taken, the low interest rates will further increase the risks, which may potentially lead to increased imbalances and ultimately be very costly for the national economy.

## CHAPTER 2 – Financial conditions

Since the Monetary Policy Report in October, government bond yields with longer maturities have risen internationally and in Sweden. A large part of this increase occurred in conjunction with and after the US presidential election and may partly be explained by higher inflation expectations. Global stock markets have continued to be characterised by a positive mood and volatility is low. Since the Riksbank's decision in October, the krona has depreciated against many currencies and has also developed slightly more weakly than expected. In Sweden, households and companies are continuing to pay low interest rates and credit growth is high. All in all, the financial conditions are still deemed to be favourable for economic growth.

### International developments

Expectations of a more expansionary fiscal policy in the United States since the Republican Party won the presidential election in November, combined with strong macro signals, have caused US yields to rise. International long-term yields have followed this movement upwards, even though the world's central banks are in different phases. The US central bank, the Federal Reserve, raised the interval for its policy rate in December, while the European Central Bank, the ECB, presented further easing. In addition, since the Monetary Policy Report in October, the market expects faster interest rate rises from the Federal Reserve. The dollar has appreciated, while emerging market economies' currencies and share indices have fallen.

#### World's major central banks in different monetary policy phases

As expected, at its monetary policy meeting in December, the Federal Reserve raised the interval for its policy rate by 0.25 percentage points to 0.5–0.75 per cent. The median forecast from the members of the monetary policy committee was also adjusted upwards and now indicates three interest rate raises during 2017. The market's expectations of further increases of the US policy rate, which can be read from financial prices, are slightly lower but have clearly increased since October (see Figure 2:1).

Table 2:1.

| Developments on financial markets since the October Monetary Policy Report |  |
|--|--|
| Government bond yields   | Yields with longer maturities are higher in Sweden and abroad.                 |
| The foreign exchange market  | The krona is slightly weaker.  |
| The stock market   | Equity prices are higher.  |
| Interest rates for households and companies                                | Continued low interest rates for households and companies.                     |
| Credit growth  | Continued high growth in lending to households and non-financial corporations. |

#### The transmission mechanism – from the repo rate to interest rates for households and companies

The repo rate has a direct effect on short-term interbank rates and government bond yields via the overnight rate. Expectations regarding the future repo rate and government bond purchases affect the development of long-term government bond yields, which are also affected by foreign yields. Government bond yields act as an anchor for other types of bond yields, which in turn affect the banks' funding costs. This ultimately affects the interest rates offered to households and companies.





US government bond yields have risen over the autumn, as relatively strong outcomes for US economic activity have led expectations of a rate rise in December to successively increase. Government bond yields received a further boost after the US presidential election due to expectations of a more expansionary fiscal policy in the United States. The upturn in yields was driven, to an extent, by higher inflation expectations (see Figure 2:2). Uncertainty over the longer term consequences of a fiscal policy expansion have probably also contributed towards higher yields. Fluctuations in US yields have spilled over internationally, pulling international government bond yields with longer maturities upwards (see Figure 2:3).

In the euro area, the ECB decided to continue with its securities purchases beyond March 2017, when the current programme worth EUR 80 billion per month expires. The ECB’s asset purchases will continue for a further nine months but will be at a slightly lower pace (EUR 60 billion per month). However, the central bank is prepared to expand purchases further if necessary. The ECB also decided to amend part of the rules on asset purchases. Among other things, these amendments mean that it will now be possible for the ECB to purchase bonds with a yield below the deposit rate. These amendments, combined with slightly higher recent yields, entail increased scope for the central bank to purchase bonds.

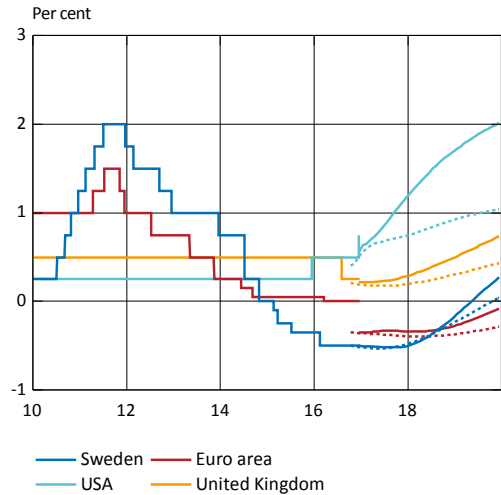
**Stronger dollar and weaker currencies for emerging market economies**

Market expectations ahead of the US presidential election that a Republican victory would be negative for investors’ risk propensity have not been realised. Stock markets in developed countries recovered rapidly from initial falls and the US stock markets has reached a new annual peak (see Figure 2:4). Volatility on the stock market rose directly after the election but subsequently fell to previous levels. Assets that are usually attractive in times of increased market uncertainty, such as gold, the Japanese yen and US government bonds, have fallen in price, while high-risk assets are continuing to be attractive. In this environment, the dollar has appreciated against most currencies.

However, possible increased protectionism in the United States, a stronger dollar and higher US interest rates have contributed to a weaker development on financial markets in emerging market economies. This is because many emerging market economies are relatively export-dependent and many also have a large proportion of loans in dollars. Higher US interest rates also entail a risk for capital outflows and lower asset prices in many emerging market economies. Stock prices in these economies fell after the presidential election (see Figure 2:4). They subsequently recovered slightly, but remain on a lower level than before the election. Most of these economies’ currencies have also depreciated, above all against the dollar.

On the commodities market, the price of oil fell at the start of November. It has subsequently risen since the members of OPEC decided to reduce oil production. Many oil producers outside

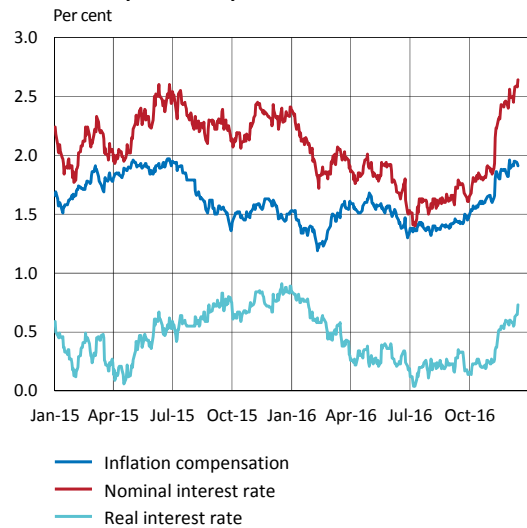
**Figure 2:1. Policy rates and rate expectations according to forward rates**



Note. Forward rates describe the expected overnight rate, which does not always correspond to the policy rate. There is no published overnight rate in Sweden, but it normally follows the repo rate closely. Unbroken lines are estimated on 16 December 2016, broken lines are estimated on 25 October 2016.

Sources: Macrobond and the Riksbank

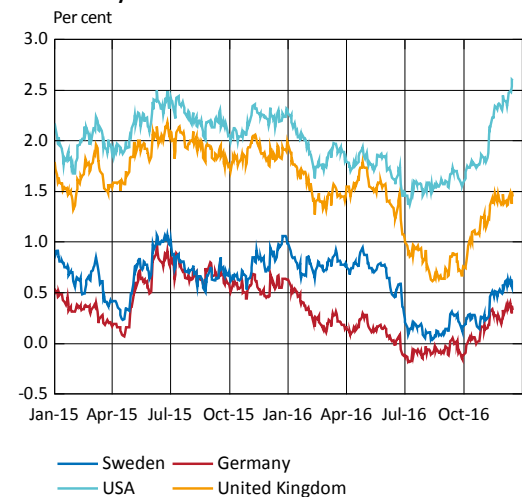
**Figure 2:2. Interest rates and inflation compensation in the USA, 10-year maturity**



Note. Inflation compensation is calculated as the difference between real and nominal government bond yields.

Source: Macrobond

**Figure 2:3. Government bond rates with 10 years left to maturity**



Note. Zero-coupon rates interpolated from bond prices using the Nelson-Siegel method.

Sources: Macrobond and the Riksbank

OPEC have also announced that they are prepared to reduce output.

## Financial conditions in Sweden

### Weaker krona

Since the monetary policy decision in October the krona has depreciated. The depreciation is broad and the krona has depreciated against most other currencies in the krona index (KIX), (see Figure 2:5). Compared with the forecast in the Monetary Policy Report in October, the krona is presently slightly weaker (see Figure 1:8).

### Market expectations in line with the repo rate path

Since October, financial prices indicate that expectations of the repo rate have risen slightly in the longer term (see Figure 2:1). Market pricing shows that expectations are now basically in line with the Riksbank's repo rate path (see Figure 2:6). According to survey responses, the money market participants expect a slightly higher rate in the long term than the Riksbank's repo rate path indicates.

### Higher Swedish government bond yields

Since the Monetary Policy Report in October, asset prices in Sweden, as well as abroad, have continued to indicate a relatively high level of risk propensity among investors. The Stockholm stock exchange has risen and reached a new annual high over the period (see Figure 2:4).

Swedish government bond yields with longer maturities have risen since October (see Figure 2:3). This is in line with international movements, with the greatest increase taking place since the US presidential election.

On the other hand, yields with shorter maturities remain unchanged or even slightly lower compared with the levels prevailing when the Monetary Policy Report was published in October. The yield of a treasury bill with a maturity of about 3 months has fallen slightly and is now quoted at around -0.85 per cent, which is far below the repo rate's level of -0.50 per cent (see Figure 2:7). One contributory factor to this is the Riksbank's purchases of government bonds.<sup>3</sup>

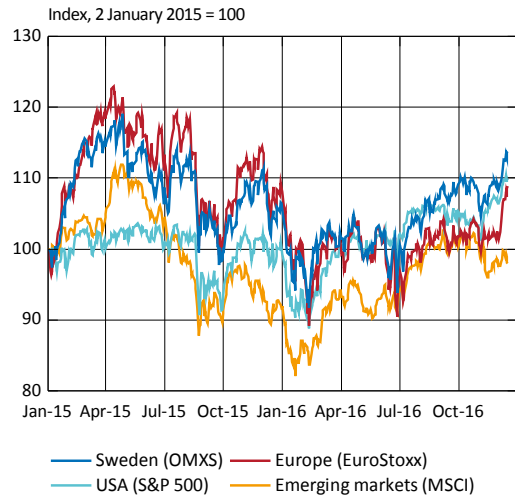
The Riksbank now owns around 40 per cent of the outstanding stock of nominal government bonds in Swedish kronor. This means that a relatively large proportion of the stock is not available for trade on the market. Indicators give a mixed view of how market liquidity on the government bond market has developed since the Riksbank initiated its purchases.<sup>4</sup> However, the Swedish government bond market is deemed to be continuing to function relatively well.<sup>5</sup>

<sup>3</sup> See "Government bond purchases push down long and short-term rates" in the Monetary Policy Report of October 2016.

<sup>4</sup> See also Bonthron, F. Johansson, T. and Mannent, J., Market liquidity on the Swedish bond market and its importance for financial stability. *Economic Commentary* no. 3, 2016, Sveriges Riksbank.

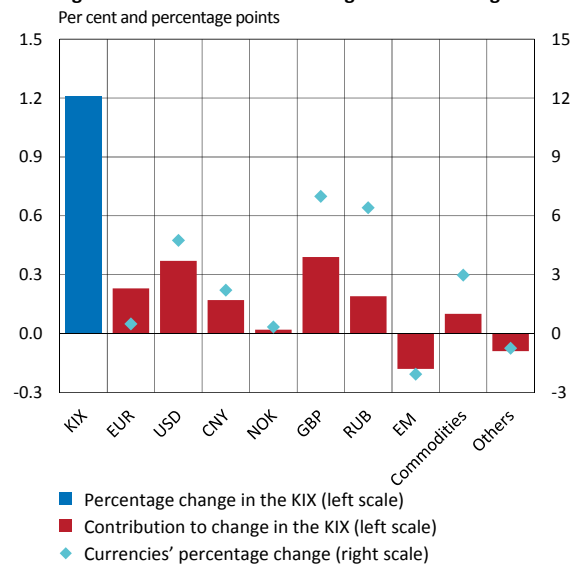
<sup>5</sup> For further information, see the *Financial Stability Report* 2016:2.

Figure 2:4. Stock market movements



Sources: Macrobond and Thomson Reuters

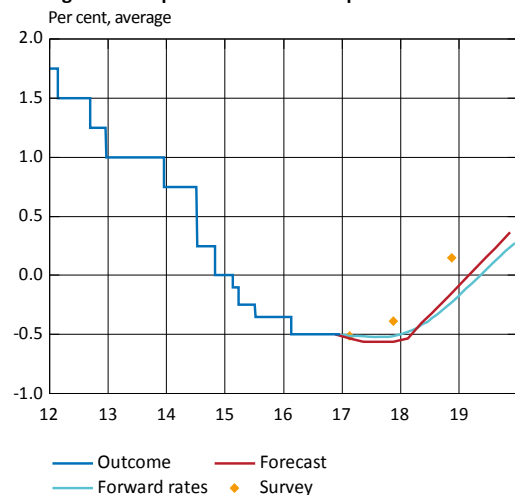
Figure 2:5. Contributions and changes to KIX exchange rates



Note. The figure shows change in KIX and contributions from different currencies between 27 October 2016 and 19 December 2016. EM refers to Brazil, Hungary, India, Mexico, Poland and Turkey. Commodities refer to Australia, Canada and New Zealand. Others refers to Czech Republic, Denmark, Iceland, Japan, South Korea and Switzerland.

Sources: Thomson Reuters and the Riksbank

Figure 2:6. Repo rate and market expectations



Note. The forward rates are estimated as of 16 December 2016 and measure the expected repo rate. The survey responses show the average for money market participants on 30 November 2016.

Sources: Macrobond, TNS Sifo Prospera and the Riksbank

### Continued high profitability in the major Swedish banks

Low loan credit losses and high cost efficiency are contributing towards the Swedish banks having continued high profitability, unlike many other banks in Europe. So far, the Swedish banks have refrained from introducing negative deposit rates for households and most companies, which has made this type of funding relatively more expensive when compared with the banks' wholesale funding. At the same time, the banks' commission income and lending volumes have increased over the year, which has improved profitability.

Since the monetary policy meeting in October, the Swedish banks' costs for obtaining funding with covered bonds have increased slightly. This is partly due to the rise in government bond yields, and partly due to the slight increase in risk premiums for this type of funding. However, as yields for covered bonds fell during the first six months of 2016, they are now lower than at the start of the year. Given the low interest rate environment, Swedish banks are assessed as still having good access to cheap funding, which creates good preconditions for lending to households and companies.

### Slightly lower growth rate in mortgage loans to households

The banks' continuing good funding conditions mean that lending rates to households and companies remain on historically low levels. The average mortgage rate for new agreements remained at 1.6 per cent in October, while the average interest rate for new bank loans for non-financial corporations amounted to 1.3 per cent. Deposit rates for households and companies have remained largely unchanged since the middle of last year and are close to zero (see Figure 2:8).<sup>6</sup>

Credit growth among households and companies continues to be high, even if it has slowed down slightly over the year (see Figure 2:9). In October, the annual growth rate in bank loans to households was, at 7.3 per cent, marginally lower than in September, while the rate of increase in lending to companies decreased slightly to 6.2 per cent. Corporate borrowing in securities is continuing to increase and, in October, the rate of growth rose to 6.3 per cent. Surveys confirm that companies' funding conditions continue to be good.

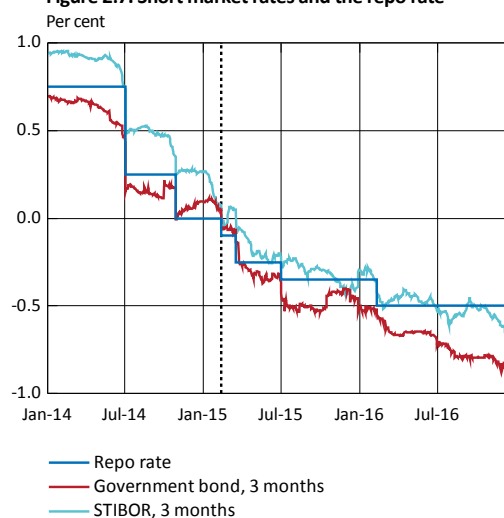
The rate of increase in housing prices, measured as an annual percentage change, has fallen in 2016 and was just over 7 per cent in November (see Figure 1:15). This can be compared with growth rates around 15–20 per cent in 2015. At the same time, surveys indicate that the public and estate agents expect housing prices to continue to rise.

### Financial conditions in Sweden are still expansionary

Although yields with longer maturities have risen slightly recently, this has been from historically low levels. Companies and

<sup>6</sup> Most financial undertaking corporations and some non-financial corporations and municipalities are experiencing negative deposit rates. However, these are usually charged in the form of a fee and are thus not visible in the statistics. Despite this, deposits at negative rates form a small portion of total deposits from non-financial corporations. See the article "Perspectives on the negative repo rate" in Monetary Policy Report July 2016.

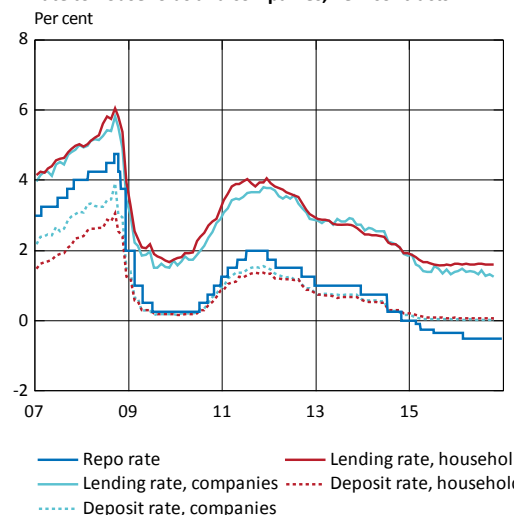
Figure 2:7. Short market rates and the repo rate



Note. The broken line refer to the start of the bond purchases.

Sources: Macrobond and the Riksbank

Figure 2:8. Repo rate together with the deposit and lending rate to households and companies, new contracts



Note. MFIs' average deposit and lending rates for households and companies.

Sources: Statistics Sweden and the Riksbank

Figure 2:9. Bank lending to households and companies



Note. MFIs' lending to households and non-financial companies according to financial market statistics adjusted for reclassifications and traded loans since 2006.

Source: Statistics Sweden

households are continuing to experience low lending rates and the credit terms are good. Credit growth among households and companies continues to be high. Volatility is low on the financial markets and asset prices are on high levels. In addition, the exchange rate has weakened since the spring of 2016. All in all, the financial conditions are still deemed to be favourable for economic growth in Sweden. At the same time, risks are also present, for example in connection with the development of the krona and the banking sector in some European countries (see Chapter 1).

## CHAPTER 3 – The current economic situation

International growth appears stronger than expected in the short term. The rising international inflation is largely due to the higher oil price, while underlying inflation is still low in many countries. Growth in Sweden has been higher than the Riksbank's previous forecast and moreover optimism is increasing both in the business sector and the household sector. The labour market situation has strengthened and resource utilisation in the economy is somewhat higher than normal. This will contribute to inflation rising gradually, and at present it is also being helped by higher than expected energy prices.

### Inflation

#### Dampened upturn in inflation

CPIF inflation has been showing a rising trend since 2014, partly because the krona has weakened and partly because resource utilisation in the economy has risen.<sup>7</sup> In November, CPIF inflation was 1.6 per cent, which was the highest level noted for more than five years. During the course of 2016, however, inflation has not risen to any great extent, although it has been higher than the immediately preceding years. CPI inflation has become gradually higher during 2016, which is primarily due to households' interest expenditure declining at a slower pace than before.

The dampening of the inflation upturn this year can be at least partly explained by the exchange rate fluctuations in recent years. Such fluctuations have an impact on inflation with some time lag and during a prolonged period (see the article "The impact of the exchange rate on inflation"). Consequently, the rapid weakening between the start of 2014 and the start of 2015 led to higher inflation in 2015 in particular, but also some way into 2016. After that, the positive contribution to inflation from the exchange rate is assessed to have declined. In addition, the krona strengthened during a period between the second half of 2015 and the beginning of 2016. The smaller contribution from the krona has meant that the upturn in CPIF inflation has been subdued (see Figure 3:1). The substantial weakening of the krona in the past six months is not yet thought to have had a full impact on inflation. However, it seems to have led to price increases in some foods, for instance.

#### Energy prices rising rapidly, but services prices have not gained new impetus

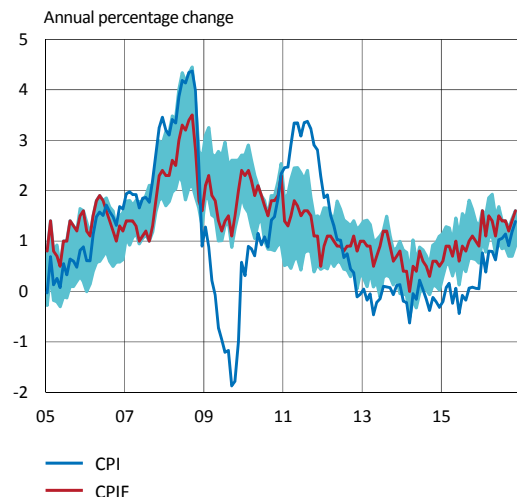
Another way of illustrating the recent subdued upturn in inflation is to show the development of different product groups in the CPI. To begin with the positive contribution from the volatile energy prices is now increasing (see Figure 3:2). This development is expected to continue in the coming months, but how large the contribution will be depends to a great extent on

Table 3.1.

| Expected development in MPR October  | Actual development   |
|--|--|
| CPIF inflation 1.5 per cent in October and 1.7 per cent in November.   | Slightly lower than forecast. Inflation was 1.4 and 1.6 per cent respectively.             |
| GDP growth 1.5 per cent, third quarter.  | Somewhat higher than forecast. Growth was 2.0 per cent.                                    |
| Unemployment 6.8 per cent in fourth quarter.   | In line with the forecast. So far the monthly outcomes indicate 6.8 per cent unemployment. |
| In the euro area, GDP increased by 1.6 per cent during the third quarter, according to the preliminary estimate. | The revised statistics are in line with the earlier ones. GDP growth was 1.4 per cent.     |
| GDP growth in the United States 2.8 per cent, third quarter.   | Somewhat higher than forecast. Growth was 3.2 per cent.                                    |

Note. MPR refers to the Monetary Policy Report. The CPIF is the CPI with a fixed mortgage rate. Inflation refers to the annual percentage change. GDP growth refers to the seasonally-adjusted quarterly change in per cent, calculated as an annual rate. Unemployment refers to percentage of the labour force, seasonally adjusted.

Figure 3:1. The CPI and different measures of underlying inflation



Note. The field shows the highest and lowest outcomes among different measures of underlying inflation. The measures included are the CPIF, the CPIF excluding energy, the CPIF with constant tax, UND24, Trim85, HICP excluding energy and unprocessed food, persistence-weighted inflation, factors from principal component analysis and weighted mean inflation.

Sources: Eurostat, Statistics Sweden and the Riksbank

<sup>7</sup> See also the article "The phase-out of unconventional measures" in the Monetary Policy Report, October 2016.

fluctuations in the oil price. At the same time, services prices have been surprisingly weak on several occasions recently. Although the increases in services prices were higher again in November, this is considered to be due to some extent to temporary factors (see Figure 3:3). As prices for services are in general sluggish, the weak outcomes indicate that the upturn in inflation will remain subdued in the coming months. Various measures of underlying inflation have on the whole moved sideways recently (see Figure 3:1), which confirms this picture.

**Inflation forecast revised marginally in the short term**

Several forward-looking indicators for inflation have remained largely unchanged recently. For instance, producer prices for consumer goods produced in Sweden have remained at a historically average level, according to the domestic market price index. On the other hand, the recent krona weakening has made other indicators, such as the import price index, continue to rise.

One way of aggregating information from outcomes and indicators is to use a model. One such analysis indicates that the CPIF excluding energy remains largely unchanged over the coming six months (see Figure 3:4). The Riksbank's assessment is that the CPIF excluding energy will develop in line with the model forecast, which entails a marginal downward revision in relation to the previous forecast (see Figure 1:7). However, energy prices are instead rising somewhat faster than expected, and the forecasts for the CPI and the CPIF are therefore close to the Riksbank's earlier assessment.

**Global and Swedish economic activity**

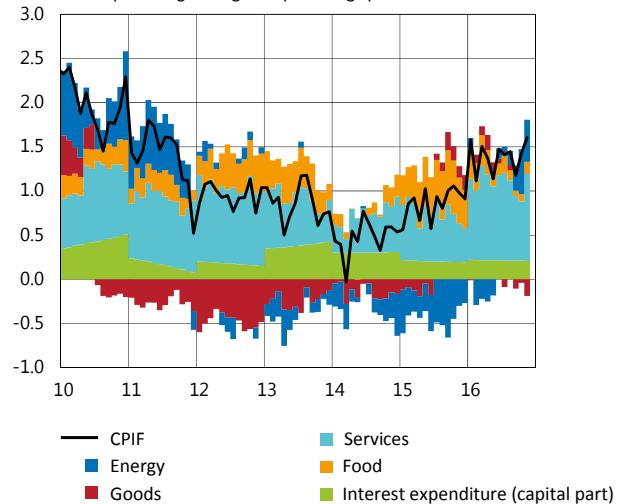
**Stronger international growth than expected**

World trade in goods recovered somewhat in the third quarter of this year after having fallen for two quarters in a row prior to this. Indicators such as global export orders point to the recovery having continued at the end of the year. Growth prospects are also looking slightly brighter.

Initially, the Riksbank was assuming in the previous forecast that there would be a slowdown in the euro area's GDP growth at the end of the year, but this does not appear to have materialised. GDP continued to grow at roughly the same moderate pace in the third quarter as in the previous quarter. But indicators of growth for the fourth quarter, such as confidence in the corporate and household sectors, point to some acceleration (see Figure 3:4).

Further, the slowdown in UK growth was less than expected in the third quarter. GDP has so far not been significantly affected by the British vote in favour of leaving the EU. For instance, business sector investment continued to increase during the third quarter, although this could be due to investment decisions made prior to the referendum. Moreover, households and companies are still relatively optimistic. For instance, confidence indicators such as the European Commission's indicator and

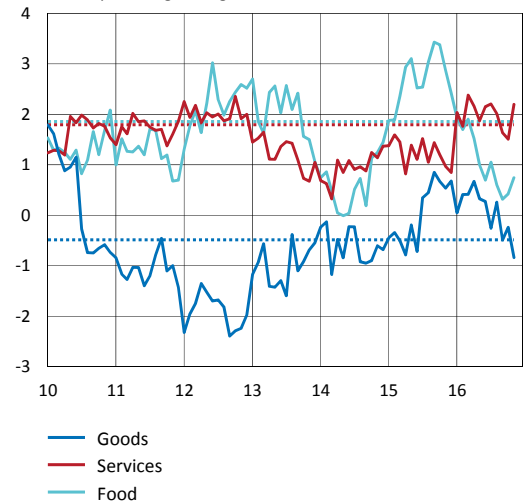
**Figure 3:2. The CPIF and contributions to CPIF inflation**  
Annual percentage change and percentage points



Note. The CPIF is the CPI with a fixed mortgage rate. Energy constitutes 8 per cent, goods 26 per cent, services 45 per cent, food 18 per cent and interest expenditure 4 per cent of the total CPI basket.

Sources: Statistics Sweden and the Riksbank

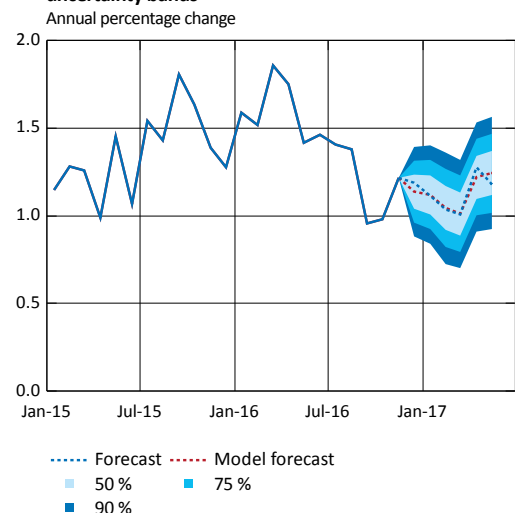
**Figure 3:3. Goods, services and food in the CPI**  
Annual percentage change



Note. Broken lines refer to average rate of increase since the year 2000.

Sources: Statistics Sweden and the Riksbank

**Figure 3:4. Model forecast CPIF excluding energy with uncertainty bands**  
Annual percentage change



Note. The uncertainty bands are based on the standard error in the model estimate. The CPIF is the CPI with a fixed mortgage rate.

Sources: Statistics Sweden and the Riksbank

Purchasing Managers' Index are now at higher levels than prior to the referendum in June. Compared with the previous forecast, GDP growth in the UK has been revised up somewhat, but a slowdown is still expected in the coming period.

Finally, growth in the United States picked up again in the third quarter, after a weak first six months of the year. Consumption increased at a good pace, but investment, which had been restrained for a large part of this economic upturn, continued to fall. On the other hand, confidence in both household and corporate sectors has risen further during the autumn.

All in all, indicators and statistics point to GDP continuing to grow at roughly the same pace as the third quarter in the short run in those economies important to Sweden's foreign trade. Compared with the previous forecast, a somewhat more optimistic view is taken with regard to short-term developments.

**International inflation low, but rising**

International inflation is rising, but at present this is largely due to the fact that energy prices have begun rising (see Figure 4:4). In the United Kingdom, inflation has moreover accelerated extra quickly due to the severe weakening of sterling, following on from the result of the EU referendum. In the United States, on the other hand, inflation has approached the 2 per cent that is the Federal Reserve's target. This is because underlying inflation, measured for instance by excluding prices of energy and other volatile products, is also rising (see Figure 3:6). However, this tendency does not exist in the euro area, where underlying inflation has been below 1 per cent for several years.

**Rising optimism indicates higher growth**

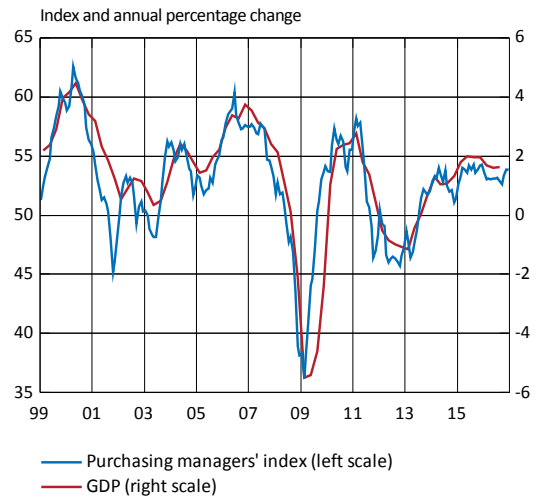
Swedish GDP grew by 2 per cent in the third quarter, compared with the second quarter and calculated as an annual rate. So far this year, GDP growth has been just below or at its historical average. After a period of tentative development in many economic indicators, the situation has brightened somewhat in recent months. For instance, confidence has strengthened in both the business sector and the household sector, and this indicates that an acceleration in growth has taken place during the fourth quarter (see Figure 3:7).

The rapid rise in confidence in the household sector in recent months is due not least to households' views of their own finances now being the most optimistic they have been since the financial crisis in 2008. Retail trade turnover also increased in October, following a couple of months of weak growth and all in all the indicators point to a strong growth in consumption going forward.

Exports increased again in the third quarter, after a weak first six months of the year. Companies are now reporting that orders from the export markets have risen to historically normal levels, which indicates continued export growth in the near term.

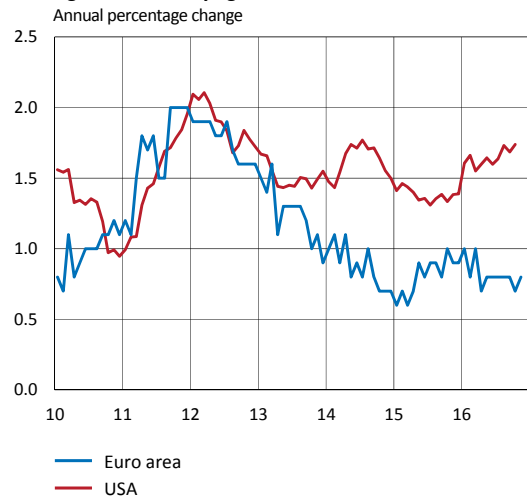
The rapid increase in housing construction has contributed strongly to growth in recent years. According to Boverket (the

**Figure 3:5. Purchasing managers' index and GDP for the euro area**



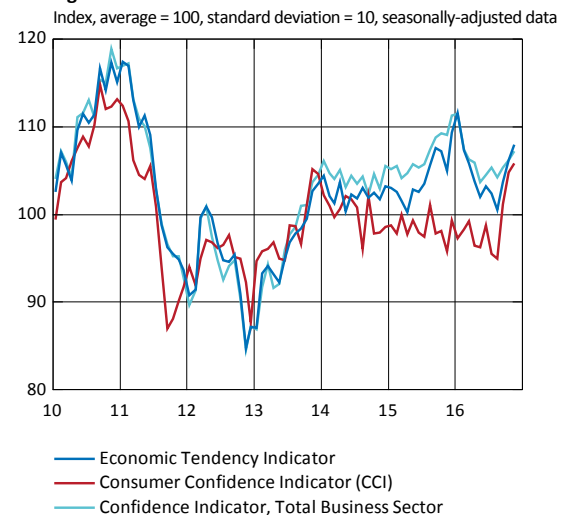
Sources: Markit and Eurostat

**Figure 3:6. Underlying inflation abroad**



Note. HICP excluding energy and unprocessed food is shown for the euro area and PCE excluding energy and food is shown for the United States.  
Sources: Bureau of Economic Analysis and Eurostat

**Figure 3:7. Confidence indicators**



Source: National Institute of Economic Research

Swedish National Board of Housing, Building and Planning), the number of new build homes will amount to around 65,000 apartments this year and next year. This is the highest level for more than 20 years, which supports growth in investment.

The Riksbank uses statistical models to summarise the information in a large number of GDP growth indicators from the most recent quarters. The model forecasts for the fourth quarter indicate that GDP will increase in line with the historical average. The Riksbank's forecast is marginally higher than the model forecast (see Figure 3:8).<sup>8</sup> On average, Swedish GDP is expected to grow by 2.8 per cent per quarter over the next two quarters, compared with the immediately preceding quarter and calculated as an annual rate.

**Demand for labour continues to rise**

The labour market situation has continued to improve, given the stronger economic activity. During the fourth quarter, both the number of employed and the number of people in the labour force have increased strongly so far, but this should be regarded in the light of the very weak development last summer. As a result of the rapid increase in the labour force, however, unemployment has only fallen marginally, despite the high growth in employment (see Figure 4:8).

Short-term indicators for labour force demand are still positive. For instance, the number of job vacancies is at a high level and recruitment plans in the business sector are much more ambitious than the historical average (see Figure 3:9).

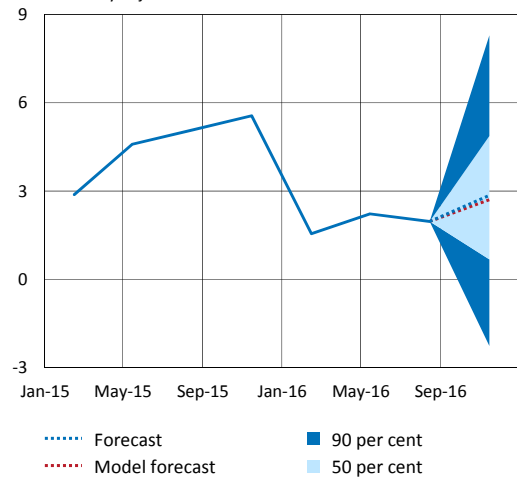
All in all, the indicators point to the number of employed increasing relatively strongly during the start of 2017. However, employment growth is not enough to push down unemployment, as the number of people in the labour force is increasing. Like the labour force, the population is increasing, which means that the employment rate looks to remain more or less unchanged in the first quarter (see Figure 4:9).

**Resource utilisation in the economy somewhat higher than normal**

The amount of spare capacity in the economy affects the forecast for GDP growth, as well as the forecasts for wages and inflation. In the assessment of resource utilisation, the Riksbank uses a number of indicators such as the proportion of companies in the industrial sector reporting shortages of labour and capacity utilisation according to the Economic Tendency Survey.

The labour shortage continued to rise during the third quarter and is now at the highest level since 2007. Shortages have risen in all sectors, but especially in construction and the private service industries. According to Arbetsförmedlingen (the Swedish public employment service), the proportion of public

**Figure 3:8. Model forecast GDP with uncertainty bands**  
Quarterly change in per cent, calculated as an annual percentage change, seasonally-adjusted data



Note. The model forecast is an average forecasts from different statistical models. The uncertainty bands are based on the models' historical forecasting errors.

Sources: Statistics Sweden and the Riksbank

**Figure 3:9. Vacancies and recruitment plans**

Per cent of the labour force and net figures, respectively, seasonally-adjusted data



Note. Recruitment plans refer to expectations of the number of employed in the business sector three months ahead. The broken line represents the mean value since 2003.

Sources: The National Institute of Economic Research and Statistics Sweden

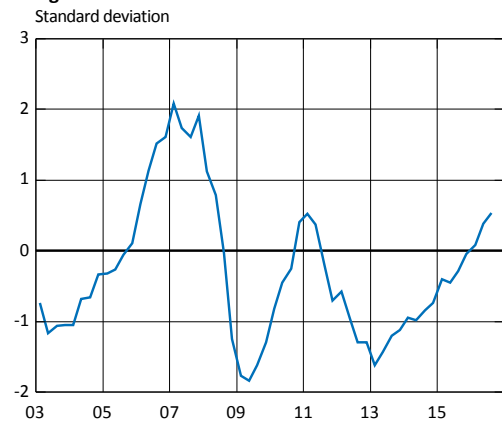
<sup>8</sup> Over the past two years, investment and trade in R&D has increased substantially in the fourth quarter and then fallen during the following quarter. If this pattern is repeated this year, GDP growth may be higher than the Riksbank's forecast for the fourth quarter of 2016, but consequently also lower for the first quarter of 2017. One way of adjusting for this present-day pattern is to look at the average growth for the fourth quarter of this year and the first quarter of next year.



employers with recruitment problems is also at a very high level. The large shortages indicate that prices and wages will increase at a faster pace going forward. Capacity utilisation in the manufacturing industry is at a roughly average level, however, and indicates that resource utilisation in the economy is somewhat lower than the shortages imply.

The Riksbank's RU indicator summarises the information in a set of survey and labour market data to estimate the amount of spare capacity. According to the RU indicator, resource utilisation increased somewhat further during the third quarter (see Figure 3:10).<sup>9</sup> The Riksbank's overall assessment is that resource utilisation is now somewhat higher than normal.

**Figure 3:10. RU indicator**



Note. The RU indicator is a measure of resource utilisation. It is normalised so that the mean value is 0 and the standard deviation is 1.

Source: The Riksbank

<sup>9</sup> The RU indicator is a statistical measure with a mean value of 0 and a standard deviation of 1 that provides an estimate of how far resource utilisation has deviated from its mean value since 1996.

## CHAPTER 4 – The economic outlook and inflation prospects

The moderate recovery abroad is continuing and global inflation is rising. The Swedish economy is strong even though growth will be somewhat subdued in the years ahead as domestic demand slows. The labour market is still developing favourably and employment is rising, albeit at a slower pace due to increasing recruitment problems. Resource utilisation also continues to rise, which is expected to help inflation reach 2 per cent in mid-2018. Overall, the revisions in this forecast are minor compared with the forecast in October.

### International developments

#### Gradual increase in growth abroad

Recovery in the global economy is expected to continue at a moderate pace in the years ahead. In developed countries, the recovery is mainly being driven by domestic demand. Investment is expected to increase at a faster rate and growth in these countries is being underpinned by continued expansionary monetary policy and, to a certain extent, more expansionary fiscal policy. However, long-term challenges, such as high sovereign debt, weak productivity growth and unfavourable demographic development, are still holding back growth in several countries. Global GDP growth is expected to rise gradually and reach 3.7 per cent in 2019.

Growth in KIX-weighted GDP, which reflects developments in the countries that are included in the measure based on their significance to the Swedish economy, is expected to rise from 2 per cent in 2016 to 2.3 per cent in 2019 (see Figure 4:1). Growth in 2017 will be slightly higher compared with the assessment made in October. This slightly faster growth is a result of positive surprises for both outcomes and indicators. Thereafter, growth will basically be unchanged compared with the forecast in October.

#### Growth in the United States strengthening

After a weak first half of the year, growth in the US economy increased during the third quarter. The stronger development is expected to continue in coming years (see Figure 4:1). Growth is primarily driven by continued growth in consumption, backed up by positive developments in the labour market. Business sector investment has been weak over the past year, mostly as a result of the energy sector being hard-pressed by the earlier fall in oil prices (see Figure 4:2). Going forward, they are expected to gradually contribute to an increasing degree to domestic demand.

President-elect Donald Trump has announced fiscal policy stimulation measures for the US economy. However, it is very unclear what the final proposals will be and to what extent these will be passed in Congress. It is also unclear to what extent other

Table 4:1.

| The forecast in brief   |
|---|
| The global recovery is expected to continue at a moderate pace in the years ahead.  |
| Increasing resource utilisation is causing inflation abroad to rise, although the upturn is slow, particularly in the euro area.  |
| The Swedish economy is strong and will continue to strengthen in the years ahead. Both domestic and international demand are contributing to this.  |
| Unemployment will remain relatively unchanged in the years ahead. A changed composition of the labour force together with lower GDP growth will contribute to a slowdown in employment growth and a slight fall in the employment rate. |
| Resource utilisation is presently slightly higher than normal. It is expected to rise in the years ahead helping inflation reach 2 per cent in mid-2018.  |

#### New president in the United States

The US presidential election on 8 November was won by the Republican candidate Donald Trump. At the same time, the Republicans retained control of both houses of Congress, which increases the possibility of implementing the election promises made during his campaign. However, it is uncertain which measures the President intends to implement when he takes over in January 2017. Several of the promises have been changed or toned down since the election. The Riksbank's assessment is that some of the fiscal policy measures proposed will probably be implemented. The proposals involve tax cuts for wage-earners and companies, combined with infrastructure investments. Lower taxes are expected to lead to increased private consumption and investment. Public sector investment in improved infrastructure could lead to higher employment and also increase productivity. The positive effects on growth of a more expansionary fiscal policy will be partly counteracted by a more protectionist trade policy and stricter immigration laws. If the trade policy proposals put forward during the election campaign are implemented in full, there is reason to expect very negative effects on both the United States and the global economy in general. Almost all of the proposals, whether they are positive or negative for growth, will contribute to higher inflation. At the same time, the expansionary fiscal policy is expected to mean that the sovereign debt is allowed to grow to levels that could entail problems for growth further ahead.

proposals that may potentially subdue growth, such as a more protectionist trade policy and stricter immigration laws, will be passed. At the same time, the expansionary fiscal policy may also lead to weaker public finances and higher interest rates in the long term, which may in turn hamper growth.

Overall, GDP is expected to grow slightly faster in 2017 and 2018 compared with the forecast in October. Growth is therefore expected to be 2.5 per cent in 2017 and then to slow to 2.1 per cent in 2019. Resource utilisation will also be high then, providing a slightly faster rate of price increase. A higher policy rate is expected to dampen the effects on growth and to counteract excessively high inflation.

**Continued slow recovery in the euro area**

The recovery in the euro area is expected to continue at approximately the same rate as previously. Sustained expansionary monetary policy is contributing to the recovery as are continued improvements on the labour market. Some fiscal policy stimulus in the form of a lesser degree of consolidation in certain countries is also contributing.

An improved labour market with rising employment, lower unemployment and subsequent higher wage increases are expected to boost consumption. Investment is benefitting from rising capacity utilisation and a more stable housing market. It is not a homogenous recovery across the entire euro area, however, as there are significant differences in economic development and the state of the labour market, among countries. Among the larger countries, Spain and Germany are seeing better growth while the recovery in Italy and France is more sluggish. The euro area is still facing major structural challenges, not least in the banking sector, large parts of which are grappling with poor profitability and a large volume of non-performing loans. There is also political uncertainty, especially in Italy.

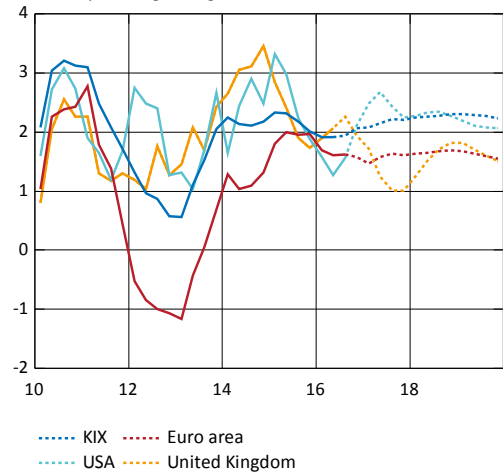
GDP is expected to grow by 1.6 per cent in 2017 and to remain basically unchanged thereafter.

**Some economic resilience in the United Kingdom**

The latest statistics on economic development in the United Kingdom have been relatively positive. Growth slowed less than expected during the third quarter and the British decision to leave the EU has not had any significantly negative effects so far.

Growth is expected to slow in the coming year, when some of the negative economic effects of Brexit start to appear. The increased uncertainty will lead to lower investment and less new recruitment. The weaker growth on the labour market is one of the factors reducing household disposable income and thereby subduing household consumption. Investment is also expected to increase more slowly as a result of uncertainty surrounding the UK's future relationship with the EU and other countries. However, a new draft budget indicates looser fiscal policy, which will help to counteract weaker growth. GDP is expected to grow by just over 1 per cent in 2017, rising to 1.7 per cent in 2019. The

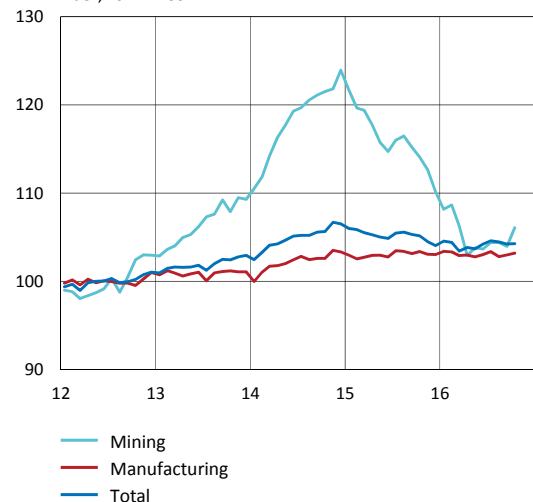
**Figure 4.1. Growth in various countries and regions**  
Annual percentage change



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

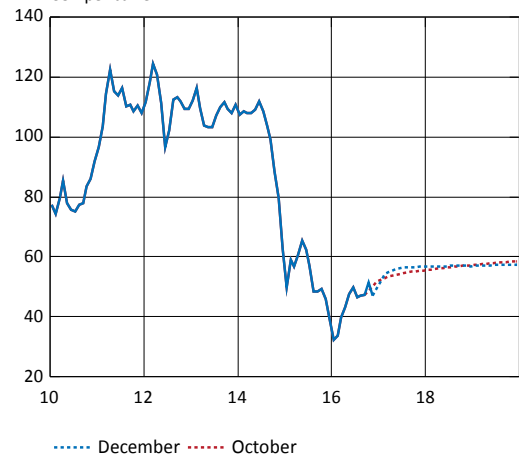
Sources: Bureau of Economic Analysis, Eurostat, national sources, Office for National Statistics and the Riksbank

**Figure 4.2. Industrial production in USA**  
Index, 2012 = 100



Source: Federal Reserve

**Figure 4.3. Crude oil price**  
USD per barrel



Note. Brent oil, futures are calculated as a 8-day average. Outcomes represent monthly averages of the spot price.

Sources: Macrobond and the Riksbank

forecast is very uncertain, however, as it is difficult to know how economic agents will react to a prolonged period of uncertainty.

**Inflation abroad still low but set to rise next year**

Inflation is still low in many parts of the world, but is on the way up. A gradual rise in resource utilisation will contribute to a gradual increase in inflation. The upturn so far this year is mostly due to the effect of earlier oil price falls having waned and to a rise in the oil price during the year. Going forward, a relatively moderate increase in oil prices means that energy prices are expected to contribute less and less to inflation in the coming years (see Figure 4.3).

Resource utilisation in the United States continues to increase and unemployment is assessed to be close to its long-term sustainable level. There are also indications that wage growth is now following a weakly rising trend. Together with higher energy prices, this means that inflation will rise to 2.7 per cent in 2017 and then begins to decline slightly. Inflationary pressure in the euro area is still low. GDP growth that continues above trend is also contributing to a further fall in unemployment and a rise in resource utilisation. This will contribute to a slow rise in the rate of wage increases and in inflation. In the United Kingdom, inflation is expected to rise to around 3 per cent at the end of 2017, as a result of the significantly weaker pound, and then fall back gradually towards the inflation target of 2 per cent.

Overall, inflation abroad is expected to rise from 1.1 per cent in 2016 to 2.1 per cent in 2019 (see Figure 4:4). The forecast remains largely unchanged since October.

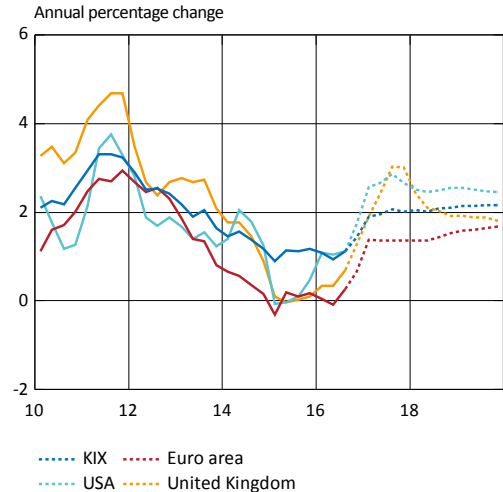
**Sweden**

**Ever-stronger economic activity**

Although growth has slowed compared with 2015, the Swedish economy is still strong and resource utilisation will rise in the period ahead. High public consumption and expansionary monetary policy are among the important explanations for the high domestic demand of recent years, but the recovery abroad will also play an important role in underpinning growth in the years ahead.

The recovery in the wake of the prolonged recession is continuing in many of Sweden’s most important export markets, albeit slowly in an historical perspective (see Figure 4:5). Slightly faster industrial production in these countries will contribute to slightly higher growth in exports of Swedish goods and services compared to 2016. As Swedish export goods contain a relatively large proportion of imported input goods, this development will also lead to somewhat faster growth in Swedish imports. An increasingly high resource utilisation will contribute to investment growth, at the same time as housing investment is expected to grow at a more moderate pace going forward. This is partly due to capacity limitations. Housing investment will then

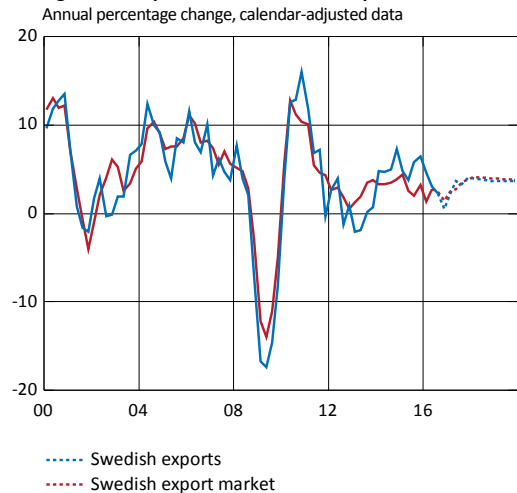
**Figure 4:4. Inflation in various countries and regions**



Note. KIX is an aggregate of the countries that are important to Sweden’s international transactions. When calculating KIX-weighted inflation, the HICP is used for the euro area and the CPI for other countries. Inflation for the euro area is shown measured using the HICP and for the United States and the United Kingdom measured using the CPI.

Sources: The Bureau of Labor Statistics, Eurostat, national sources, Office for National Statistics and the Riksbank

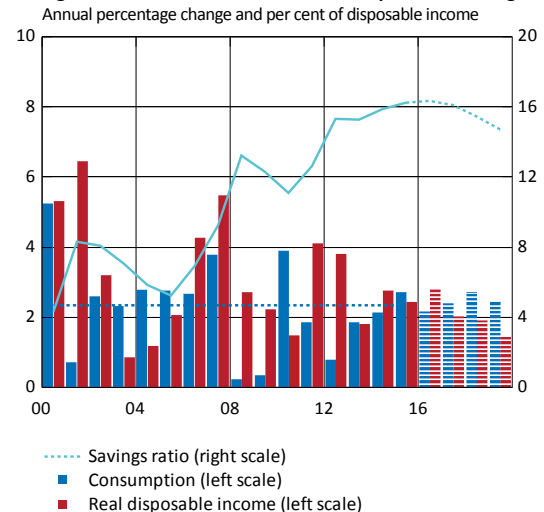
**Figure 4:5. Exports and the Swedish export market**



Note. The Swedish export market index measure import demand in the countries to which Sweden exports. This is calculated by aggregating 32 countries and covers around 85 per cent of the Swedish export market.

Sources: Statistics Sweden and the Riksbank

**Figure 4:6. Households’ income, consumption and savings**



Note. The savings ratio includes collective insurance schemes. Disposable income has been deflated using the household consumption deflator. Broken line is the average of consumption between 1994 and 2015.

Sources: Statistics Sweden and the Riksbank

contribute less to investment growth, despite it also still being on a very high level, historically speaking.

Real household income is growing relatively fast this year but will rise more slowly in the years to come as employment growth slows and interest expenditure gradually increases once the repo rate starts to be raised. At the same time, a high saving rate among households and the increases in the value of their assets in recent years suggest there is still scope for them to increase their consumption slightly faster than their income (see Figure 4:6).

Public consumption will increase rapidly in an historical perspective 2016 and 2017. The main explanation for this is an increase in the demographic dependency burden as a result of a fall in the number of 20-64 year-olds in the population, at the same time as last year's large influx of asylum seekers is increasing the resource needs of Swedish municipalities and authorities.

Growth for the third quarter was higher than forecast in October. Confidence indicators point to rising optimism both in the business sector and among households and growth for 2017 is therefore expected to be slightly stronger compared to the assessment in October. Overall, GDP is expected to grow by 3.4 per cent this year and then by an average of 2.2 per cent in 2017–2019 (see Figure 4:7). The very rapid growth in population means that GDP growth per capita will on average be about one percentage point lower.

### Some slowdown on the housing market

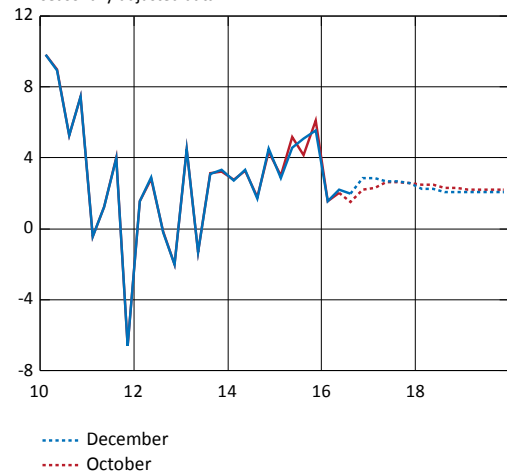
Housing prices are continuing to rise but in 2016, measured as an annual percentage change, they have increased slightly more slowly than in previous years. Feasible explanations for this development include the effect of the amortisation requirement on the willingness of households to pay and the fact that mortgage rates are no longer falling. The trend of a slower rate of increase in housing prices is expected to continue when real household income rises more slowly in the coming years and mortgage rates gradually start to increase. As a large share of household debt is made up of mortgages, the slowdown on the housing market is also expected to subdue the rate at which debt increases. The slowdown will not, however, have such a significant effect on households' debt-to-income ratio, which is set to rise to 194 per cent in 2019 (see Figure 1:14).

### Growing imbalances on the labour market

The demand for labour is high. Unemployment, which fell at a rapid rate during the summer and autumn of 2015, has levelled off and is expected to be 6.9 per cent for 2016 as a whole. In the coming years, unemployment is expected to fall somewhat further (see Figure 4:8). But although demand is relatively high, the composition of the labour force is expected to change in the coming years. The working-age population will increase as a result of immigration, above all by persons born outside Europe who have applied for asylum. Unemployment is significantly

**Figure 4:7. GDP in Sweden**

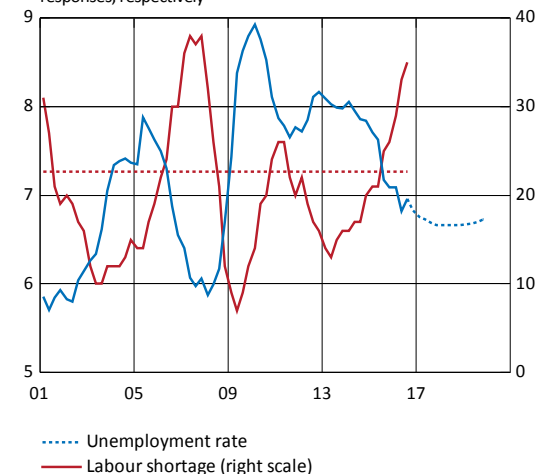
Quarterly change in per cent, calculated as an annual percentage change, seasonally-adjusted data



Sources: Statistics Sweden and the Riksbank

**Figure 4:8. Unemployment and labour shortage**

Per cent of labour force, 15-74 years, and percentage of positive responses, respectively



Note. Red broken lines refer to average labour shortage between 1996 and the latest outcome.

Sources: The National Institute of Economic Research, Statistics Sweden and the Riksbank

**Figure 4:9. Employment rate and labour force participation**

Employment and labour force as percentage of the population, aged 15–74, seasonally-adjusted data



Sources: Statistics Sweden and the Riksbank

higher among foreign-born individuals than among Swedish-born persons, in particular among those born outside Europe and those who have no upper-secondary education. This will cause unemployment to rise slightly at the end of the forecast period.

Good level of demand in the Swedish economy has led to a further rise in the percentage of companies reporting a shortage of labour, according to the Economic Tendency Survey, and the figure is now on approximately the same level as in 2007 (see Figure 4:8). The large shortages are a sign of imbalances on the labour market since companies are not finding the staff they are looking for, despite a high number of unemployed persons. The changed composition of the labour force in the period ahead will contribute to continued increase in employment, albeit at a slower rate. The working-age population will also increase relatively strongly causing the employment rate to fall slightly in the period ahead (see Figure 4:9). The employment rate is expected to be slightly higher than in the October forecast, however, due to a minor downward revision in the population forecast from Statistics Sweden.

#### Resource utilisation set to increase in the years ahead

The Riksbank considers resource utilisation in the economy to be slightly higher than normal at present. In the years ahead, both GDP and the number of hours worked are expected to increase so rapidly that resource utilisation will rise and be higher than normal (see Figure 4:10). The employment rate is already very high in certain groups, making it more and more difficult for companies to increase the number of people they employ. The number of hours worked will therefore increase slightly faster than the number of employed persons in the years to come.

#### Wages to increase as resource utilisation rises

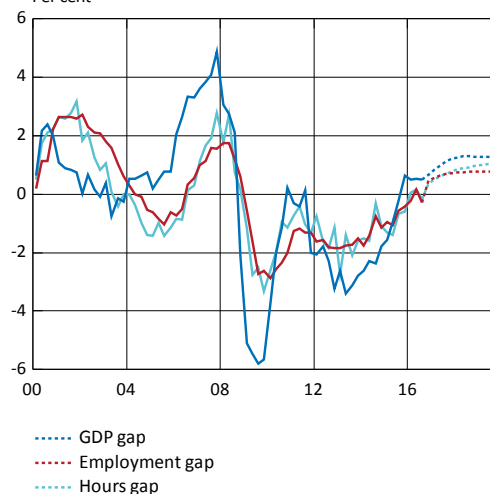
The 2017 wage bargaining round has begun with the Swedish Trade Union Confederation (LO-unions) having coordinated its demands and with the Swedish unions within industry (Facken inom industrin) having presented their claims regarding the new collective agreements.

According to the Economic Tendency Survey, there are labour shortages in several industries within the business sector. There are also labour shortages within several professional groups in the public sector.

The Riksbank considers resource utilisation to be slightly higher than normal at present and expects employment to increase further. A gradually improving situation on the labour market is expected to lead to an increase in the wage rate in the period ahead.

Implementation of the second phase of the increase in social security contributions for persons under the age of 26 and the introduction of special wage tax for the over-65s will cause labour costs, comprising both wages and social security contributions, to rise more than hourly wages this year. Thereafter, labour costs are expected to develop in line with hourly wages. The Riksbank expects labour costs to rise more than productivity and unit

Figure 4:10. GDP gap, employment gap and hours gap  
Per cent



Note. The gaps refer to the deviation in GDP, the number of hours worked and the number of those employed from the Riksbank's assessed trends.

Sources: Statistics Sweden and the Riksbank

#### Collective bargaining in 2017 – so far

The Riksbank's forecasts refer to total wage increases, which is to say collectively-agreed wages and increases over and above these. As both the level of the collective agreements and the way they are constructed are significant in terms of how wages develop, the Riksbank follows the collective bargaining discussions carefully. The collective agreements for around 2.4 million employees expire in 2017. Kommunal (Swedish Municipal Workers' Union) and SKL (Swedish Association of Local Authorities and Regions) concluded a three-year collective wage agreement this year, which means that the 2017 wage bargaining rounds will be somewhat smaller in scale than this year's.

On 28 October, the Swedish Trade Union Confederation announced that it had agreed on coordinating the collective demands, which it had not succeeded in doing during the previous wage bargaining round. The collective demands entail an investment to improve low wages with level increases for those earning less than SEK 24,000 a month and percentage increases for salaries above this level. Trade unions in the manufacturing industry have presented their claim which is on a level with the wage bargaining rounds of the past two years, that is, an annual wage increase of 2.8 per cent. The Confederation of Swedish Enterprise considers in its report prior to the wage bargaining rounds that the rate of wage increase must be slowed down in relation to previous years so that Swedish companies can compete with international ones. The industrial sector's new collective wage agreement is expected to once again play a normative role with regard to the rest of the labour market. On 21 December, the industrial sector's social partners plan to exchange sector-specific demands and negotiations can then begin after this. The negotiations are expected to be completed by the end of March 2017 at the latest, when the industrial sector's current agreement expires.

labour costs will therefore increase slightly faster than their historical average in the coming years.

#### Slow appreciation of the Swedish krona in the period ahead

Since the forecast in October, the krona has depreciated, leading to a slightly weaker exchange rate forecast compared with the assessment in October (see Figure 4:11). The krona's development is uncertain and depends on factors such as how competitive the Swedish economy is and how monetary policy is formulated in Sweden and abroad. In the years to come, a gradual and slow appreciation of the krona is expected while the surplus in the trade and current account balance continues to decrease.

#### Conditions for continued increase in inflation

CPIF inflation has shown a rising trend since 2014. Two important explanations for this are that resource utilisation in the economy has risen and that the krona has weakened. The Riksbank considers that the conditions are in place for the upturn in inflation to continue. But the development has been restrained during 2016, especially regarding the underlying inflation measured in terms of the CPIF excluding energy.

One factor that suggests gradually higher inflation is the continued high level of resource utilisation in the economy. One effect of the stronger economic activity will be to make it easier for companies to raise the prices of their products, after a certain time lag. A longer-than-normal time-lag means that today's healthy economic situation has not yet had a full impact on inflation. Furthermore, economic activity is also expected to be even stronger in the period ahead.

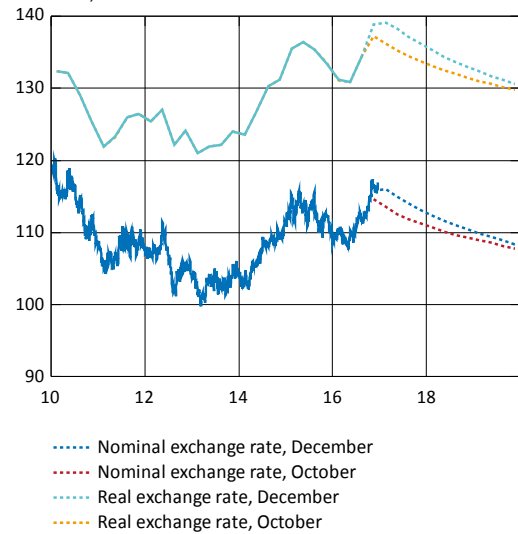
Another factor that affects inflation is the krona exchange rate, which has depreciated considerably during 2016, but is expected to slowly appreciate in the period ahead (see Figure 4:11). Neither has the recent depreciation had a full impact on inflation. Due to the prevailing time-lag, inflation has instead been held back slightly by the appreciation in the krona that occurred between 2015 and early 2016. In 2017, the exchange rate is expected once again to make a positive contribution to inflation and thereby help to perpetuate the trend increase in the CPIF. In the coming years, the krona is expected to strengthen at a moderate rate. Inflation will instead be boosted by the expected increase in international price pressure.

#### Inflation to reach 2 per cent in mid-2018

The forecast for inflation, measured as CPIF excluding energy, has been marginally revised down in the coming year. But as in the previous forecast, inflation measured in terms of both the CPIF and CPIF excluding energy is expected to reach 2 per cent in mid-2018 (see Figure 4:12). Going forward, however, energy prices will continue to increase and the CPIF will therefore rise more rapidly than the CPIF excluding energy in 2017.

CPI inflation is expected to reach 2 per cent slightly earlier than CPIF inflation. When mortgage rates gradually start to rise

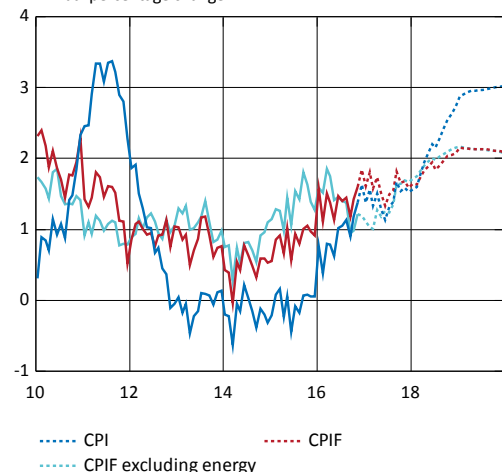
**Figure 4:11. Real and nominal exchange rate, KIX**  
Index, 18 November 1992 = 100



Note. The real exchange rate has been deflated with the CPIF for Sweden and the CPI for the rest of the world. The CPIF is the CPI with a fixed mortgage rate. Outcomes are daily data for the nominal exchange rate, outcomes for the real exchange rate and forecasts refer to quarterly averages. The KIX is an aggregate of countries that are important for Sweden's international transactions.

Sources: National sources, Statistics Sweden and the Riksbank

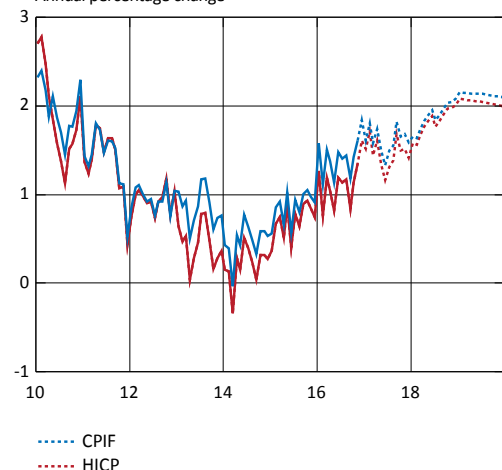
**Figure 4:12. CPI, CPIF and CPIF excluding energy**  
Annual percentage change



Note. The CPIF is the CPI with a fixed mortgage rate.

Sources: Statistics Sweden and the Riksbank

**Figure 4:13. CPIF and HICP**  
Annual percentage change



Note. The CPIF is the CPI with a fixed mortgage rate.

Sources: Statistics Sweden and the Riksbank

again in 2018, household interest expenditure will increase and the CPI will increase faster than the CPIF. The EU-harmonised inflation measure, the HICP, will also rise (see Figure 4:13).

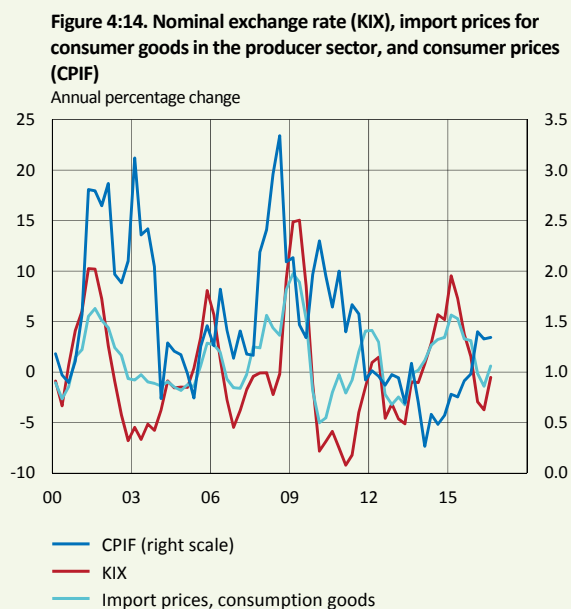


## ARTICLE – The impact of the exchange rate on inflation

The exchange rate is one of several factors that influences inflation and is therefore important from the perspective of monetary policy. Since 2014, inflation has shown a rising trend in Sweden and the depreciation of the krona that has taken place over this period is deemed to have contributed to this development. Results of time series models show that there is a relationship between exchange rate fluctuations and inflation. But the effect on inflation depends on what the causes of exchange rate movements are and the inflation effects can be both greater and smaller than what has been the case on average. The Riksbank's inflation forecast is based on the slow appreciation of the krona as international economic activity strengthens. If the krona should appreciate more rapidly, inflation could become lower than in the Riksbank's forecast.

### A weaker krona has contributed towards higher inflation

The exchange rate has varied heavily in recent years, and this has impacted the development of inflation. Since the start of 2014, the krona has depreciated by just over 10 per cent overall, due to the more expansionary monetary policy and other factors. This has led to rising import prices in the producer sector, which covary clearly with the exchange rate (see Figure 4:14).<sup>10</sup>



Note. The import prices refer to goods consumed by the producer sector. The CPIF is the CPI with a fixed interest rate.

Sources: Statistics Sweden and the Riksbank

The weaker krona has also contributed towards a higher rate of increase in consumer prices. Like many other countries, Sweden has had very low inflation for a number of

years. However, since 2014, inflation has risen in Sweden and the depreciation of the krona has been significant for this development. For example, prices for the product groups in the CPI that are most affected by the exchange rate, goods and foodstuffs, rose clearly last year. Over the course of 2016, the rate of price increase for goods and foodstuffs has fallen, which is deemed to be due to the appreciation of the krona that took place until last spring (see Figure 4:15). The depreciation of the krona since 2014 has also entailed a strengthening of economic activity in Sweden. Stronger economic activity usually leads to inflation rising, after a certain delay.<sup>11</sup> The krona thereby also contributes indirectly, via higher resource utilisation, to a continued rise in inflation in the period ahead.

**Figure 4:15. Nominal exchange rate (KIX) and goods and foodstuffs in the CPI**  
Annual percentage change



Note. Goods and foodstuffs is a combination of the aggregate goods and foodstuffs in the CPI. Together, these account for 43 per cent of the CPI.

Sources: Statistics Sweden and the Riksbank

<sup>10</sup> Import prices in the producer channel are measured at the Swedish border. Some of the goods are priced in foreign currency, in which case the price is translated to kronor using the current exchange rate.

<sup>11</sup> See the article "The relationship between resource utilisation and inflation" in the Monetary Policy Report, October 2016.

### Difficult to assess the impact of the exchange rate

The development of the exchange rate is an important factor for the Riksbank's inflation forecast. One difficulty in this context is that the relationship between exchange rate and prices can look different in different situations, depending, for instance, on why the exchange rate has changed. Companies also adjust their prices in different ways, depending on how persistent a change in the exchange rate is expected to be. If the change is assumed to be temporary, companies may be less inclined to adjust their prices. The variations in the exchange rate therefore mostly affect the profit margin. This relationship can also vary over time as the behaviour of various participants in the economy changes.<sup>12</sup>

A weakening of the exchange rate may affect consumer prices in Sweden via several different channels. One of these is that finished products that are imported become more expensive. A few examples are prices of fruit, vegetables, and fuel. However, all goods, irrespective of the degree of their imported content, are sold on the Swedish market and are hence affected by Swedish salaries, transport costs, and so on. Consequently, a 'one-for-one' relationship cannot be expected to prevail between changes in the exchange rate and consumer prices for mainly imported goods. A weakening of the exchange rate can also affect consumer prices relatively quickly via increasing prices for imported input goods and thereby increasing production costs for domestically-produced goods and services. These more direct effects can arise following both temporary and more permanent exchange rate fluctuations.

It can also be expected that more expensive imported goods will lead to demand and prices rising for domestically-produced articles, to the extent that these form a substitute. Another channel involves exports. If the exchange rate is weakened, scope will be created for Swedish companies to cut prices for their goods and services on the export market. Increased demand may then lead to higher wages and rising production costs, which will ultimately also entail higher consumer prices. It is more likely that such indirect effects will arise if exchange rate changes are seen as persistent.

A weaker exchange rate may also lead to rising inflation expectations, which, in itself, may make it easier for companies to raise prices. Rising inflation expectations may also lead to upward pressure on prices and other production costs, which, in turn, will be passed on to consumers in the form of higher prices.

### The reason that exchange rate fluctuations determine the impact of inflation

The magnitude of the effect on inflation will also depend on the reason that the exchange rate has weakened. If international demand is low during periods of uncertainty, the krona may depreciate as investors prefer to choose assets in historically safer currencies. Ultimately, the weaker krona may have less of an effect on inflation in Sweden in such a situation, as international inflation will probably be restrained and, at the same time, exports will be unable to increase in the same way. And, if the krona is weakening because growth is deteriorating in Sweden, a krona depreciation may even coincide with a lower rate of inflation if resource utilisation decreases enough.

Other situations may result in clearer positive effects on inflation. For example, a more expansionary monetary policy often entails both a weaker exchange rate and higher demand, which both suggest higher inflation. Even fluctuations in the exchange rate that cannot clearly be linked to other events in the economy can have larger effects on inflation. The Riksbank has previously published scenarios that have pointed to exchange rate fluctuations having clear effects. These estimates have usually been based on a direct shock to the exchange rate.<sup>13</sup> Different causes for exchange rate fluctuations can thus explain why the impact can vary over time, which is also supported by empirical analyses that the Riksbank and others have made.<sup>14</sup>

However, it is often difficult to understand the causes of an exchange rate fluctuation. In the context of forecasting, it is thus common to rely on estimated average effects of exchange rate fluctuations and the influence of these, together with other factors, on the development of inflation over the forecast period.

### Estimated inflationary effects of exchange rate fluctuations

On average, a depreciation of the krona will lead to rising inflation. The more direct channels usually lead to inflationary effects of a more transitory nature, while other channels influence inflation over a longer period.

One way of analysing the relationship between the exchange rate and inflation is by using time series models. Such estimates cannot determine why the exchange rate has changed, but can, nevertheless, give an indication of how inflation is typically affected by an exchange rate fluctuation. Such results are shown in Figure 4:16.<sup>15</sup> The estimates show how CPIF inflation is affected by a lasting weakening of the

<sup>12</sup> Among other things, the academic literature suggests that the low-inflation regime may have reduced the impact of the exchange rate. For a discussion, see Taylor (2000), "Low Inflation, Pass-through, and the Pricing Power of Firms", *European Economic Review*, 44(7), pp. 1389-1408.

<sup>13</sup> See, for instance, the article "Rapid strengthening of the krona" in the Monetary Policy Report, April 2015, and the scenario "Risks inherent in a rapid appreciation of the krona in a low inflation environment" in Monetary Policy Report, February 2016.

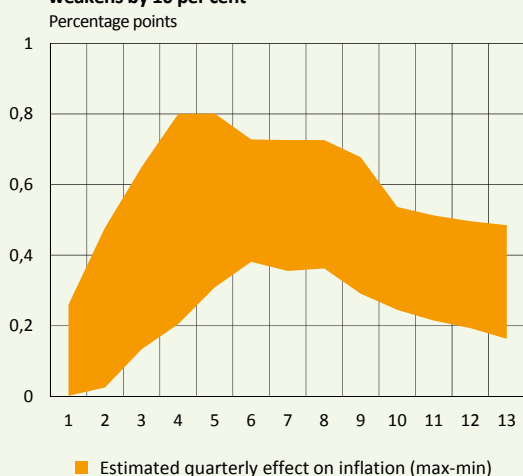
<sup>14</sup> See Forbes, Hjortsoe and Nenova (2015), "The shocks matter: Improving our estimates of exchange rate pass-through", External MPC Unit Discussion Paper No. 43, Bank of England. Similar analyses have been made by the Riksbank using both structural time series models and dynamic general equilibrium models.

<sup>15</sup> In the various estimated models, the development of inflation is explained by exchange rates, inflation expectations, unit labour costs, resource utilisation and other factors.

competitiveness-weighted exchange rate, measured in terms of the krona index (KIX).

The price effects shown are based on a weakening of the exchange rate by 10 per cent in the first period, after which it remains at the new level. The yellow field in the chart shows the effect on the rate of inflation according to various models. The various models show relatively consistent results, indicating that the effect in the first quarter amounts to between zero and about 0.25 percentage points. The effect of inflation then increases to an average of about 0.5 percentage points after about one year before gradually subsiding.

**Figure 4:16. Effect on CPI inflation when the exchange rate weakens by 10 per cent**



Note. The figure does not consider uncertainty around the estimated parameters.  
Sources: Statistics Sweden and the Riksbank

It takes a variable amount of time for exchange rate fluctuations to impact various consumer prices. Prices are also affected to varying degrees. For example, the winter clothes sold at the end of the year may have been purchased at least six months prior. In contrast, petrol prices, prices for foreign travel and prices for many perishable goods tend to be affected quickly by exchange rate fluctuations.

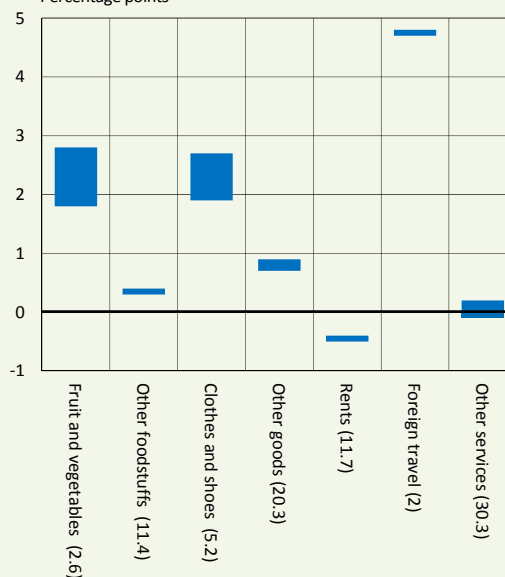
Figure 4:17 shows the maximum effect of the rate of price increase for various components of the CPI when the exchange rate is weakened by 10 per cent. The effect is greatest for foreign travel. The rate of price increase becomes almost 5 percentage points higher after an exchange rate weakening of this magnitude. Prices for clothes and shoes, as well as fruit and vegetables, are also clearly impacted. For other components, the effect is significantly weaker and, in some cases, the result is difficult to interpret.<sup>16</sup>

**Exchange rate and inflation over the forecast years**

So far this year, the development of the krona has been weaker than expected and, at the same time, inflation has been lower than the Riksbank’s assessment. The results presented in this article show that the impact is normally positive and that changes of the exchange rate influence inflation after some delay. If historical correlations also continue to apply in the future, the depreciation of the krona since the spring will lead to a higher rate of price increase in the months ahead, particularly among goods and foodstuffs. The result obtained from time series models indicates that inflation will rise by about 0.5 percentage points after one year when there is an exchange rate change of 10 per cent. However, other results, from more advanced macroeconomic models, show that the effect depends on the type of shock that caused the exchange rate movement.

When the Riksbank makes inflation forecasts, an overall assessment is made of the effects of exchange rate change and how these, together with other factors, affect the development of inflation over the forecast period. The current forecast expects the krona to appreciate as international economic activity improves. As resource utilisation will thereby strengthen further and become higher than normal, the moderate appreciation of the krona in the forecast is deemed to be compatible with a rise of inflation to 2 per cent. On the other hand, if the krona should, instead, appreciate more rapidly, inflation could become lower than in the Riksbank’s forecast.

**Figure 4:17. Maximum effect on the rate of price increase when the exchange rate weakens by 10 per cent**



Note. The figures in brackets refer to the weight in the CPI.  
Sources: Statistics Sweden and the Riksbank

<sup>16</sup> The effects have been worked out with the models the Riksbank uses as a support for its short-term forecasts for various sub-indices in the CPI. As two different procedures are used for each component, an interval is shown for maximum effect.

Other foodstuffs refers to foodstuffs excluding fruit, vegetables, tobacco and alcohol. Other services refers to services excluding property taxes, rents and overseas travel. Forecasts for the energy price are not generated using models of this type.

## Tables

The forecast in the previous Monetary Policy Report is shown in brackets unless otherwise stated.

**Table 1. Repo rate forecast**

Per cent, quarterly averages

|           | Q3 2016 | Q4 2016     | Q1 2017     | Q4 2017     | Q4 2018     | Q4 2019   |
|-----------|---------|-------------|-------------|-------------|-------------|-----------|
| Repo rate | -0.5    | -0.5 (-0.5) | -0.5 (-0.6) | -0.6 (-0.6) | -0.1 (-0.1) | 0.4 (0.4) |

Source: The Riksbank

**Table 2. Inflation**

Annual percentage change, annual average

|                   | 2015 | 2016      | 2017      | 2018      | 2019      |
|-------------------|------|-----------|-----------|-----------|-----------|
| CPI               | 0.0  | 1.0 (1.0) | 1.4 (1.4) | 2.2 (2.2) | 3.0 (2.9) |
| CPIF              | 0.9  | 1.4 (1.4) | 1.6 (1.6) | 1.9 (1.9) | 2.1 (2.1) |
| CPIF excl. energy | 1.4  | 1.4 (1.4) | 1.3 (1.4) | 2.0 (2.0) | 2.1 (2.1) |
| HICP              | 0.7  | 1.1 (1.1) | 1.5 (1.5) | 1.8 (1.9) | 2.0 (2.1) |

Note. The CPIF is the CPI with a fixed mortgage rate. HICP is an EU harmonised index of consumer prices.

Sources: Statistics Sweden and the Riksbank

**Table 3. Summary of financial forecasts**

Per cent, unless otherwise stated, annual average

|  | 2015  | 2016          | 2017          | 2018          | 2019          |
|--|-------|---------------|---------------|---------------|---------------|
| Repo rate                                  | -0.3  | -0.5 (-0.5)   | -0.6 (-0.6)   | -0.3 (-0.3)   | 0.2 (0.2)     |
| 10-year rate                               | 0.8   | 0.5 (0.5)     | 1.1 (0.7)     | 2.0 (1.7)     | 2.8 (2.5)     |
| Exchange rate, KIX, 18 November 1992 = 100 | 112.6 | 111.7 (111.4) | 114.5 (112.3) | 111.3 (109.9) | 109.2 (108.3) |
| General government net lending*            | 0.2   | 0.4 (0.1)     | 0.1 (0.0)     | 0.3 (0.2)     | 0.6 (0.6)     |

\* Per cent of GDP

Sources: Statistics Sweden and the Riksbank

**Table 4. International conditions**

Annual percentage change, unless otherwise stated

| GDP                  | PPP-weights | KIX-weights | 2015 | 2016      | 2017      | 2018      | 2019      |
|----------------------|-------------|-------------|------|-----------|-----------|-----------|-----------|
| Euro area            | 0.14        | 0.46        | 1.9  | 1.6 (1.6) | 1.6 (1.4) | 1.7 (1.7) | 1.6 (1.6) |
| USA                  | 0.16        | 0.09        | 2.6  | 1.6 (1.6) | 2.5 (2.4) | 2.3 (2.1) | 2.1 (2.0) |
| Japan                | 0.05        | 0.03        | 1.2  | 1.0 (0.6) | 1.0 (0.9) | 0.8 (0.9) | 0.8 (0.8) |
| China                | 0.15        | 0.08        | 6.9  | 6.7 (6.7) | 6.2 (6.2) | 5.8 (5.9) | 5.7 (5.7) |
| KIX-weighted         | 0.75        | 1.00        | 2.2  | 2.0 (2.0) | 2.2 (2.1) | 2.3 (2.3) | 2.3 (2.3) |
| World (PPP-weighted) | 1.00        | —           | 3.2  | 3.2 (3.1) | 3.5 (3.5) | 3.6 (3.6) | 3.7 (3.7) |

Note. Calendar-adjusted growth rates. The PPP-weights refer to the global purchasing-power adjusted GDP-weights, according to the IMF. The Riksbank updates the weights for the KIX krona index at the start of every year with a time lag of three years. The figures in the table are based on the new KIX weights for 2012 that are used for 2015, and on an assumption that the weights will develop according to the trend of the past five years in the coming forecast years.

| CPI              | 2015 | 2016        | 2017      | 2018      | 2019      |
|------------------|------|-------------|-----------|-----------|-----------|
| Euro area (HICP) | 0.0  | 0.2 (0.2)   | 1.4 (1.3) | 1.4 (1.5) | 1.6 (1.7) |
| USA              | 0.1  | 1.2 (1.2)   | 2.7 (2.5) | 2.5 (2.4) | 2.5 (2.3) |
| Japan            | 0.8  | -0.1 (-0.1) | 0.7 (0.8) | 1.5 (1.6) | 1.8 (1.9) |
| KIX-weighted     | 1.1  | 1.1 (1.1)   | 2.0 (2.0) | 2.1 (2.1) | 2.1 (2.2) |

|   | 2015 | 2016        | 2017        | 2018        | 2019        |
|---|------|-------------|-------------|-------------|-------------|
| Policy rates in the rest of the world, per cent | 0.1  | -0.1 (-0.1) | -0.1 (-0.2) | 0.0 (-0.2)  | 0.2 (0.1)   |
| Crude oil price, USD/barrel Brent               | 53.5 | 44.6 (44.9) | 55.7 (54.3) | 56.9 (56.5) | 57.3 (57.9) |
| Swedish export market                           | 3.1  | 2.0 (1.9)   | 3.2 (3.1)   | 4.0 (4.0)   | 3.9 (3.8)   |

Note. Policy rates in the rest of the world refer to a weighted average of USA, the euro area, Norway and the United Kingdom.

Sources: Eurostat, IMF, Intercontinental Exchange, national sources, OECD and the Riksbank

**Table 5. GDP by expenditure**

Annual percentage change, unless otherwise stated

|                                       | 2015 | 2016        | 2017        | 2018       | 2019       |
|---------------------------------------|------|-------------|-------------|------------|------------|
| Private consumption                   | 2.7  | 2.2 (2.4)   | 2.4 (2.3)   | 2.7 (2.7)  | 2.4 (2.4)  |
| Public consumption                    | 2.5  | 3.6 (3.8)   | 2.0 (2.3)   | 1.4 (1.4)  | 1.2 (1.2)  |
| Gross fixed capital formation         | 7.0  | 7.1 (7.4)   | 3.5 (3.2)   | 2.8 (4.1)  | 2.8 (4.2)  |
| Inventory investment*                 | 0.3  | 0.3 (0.2)   | 0.0 (-0.1)  | 0.0 (0.0)  | 0.0 (0.0)  |
| Exports                               | 5.6  | 2.9 (2.3)   | 2.9 (2.2)   | 3.6 (3.6)  | 3.6 (3.6)  |
| Imports                               | 5.5  | 4.4 (4.4)   | 3.5 (3.3)   | 4.0 (4.4)  | 4.0 (4.5)  |
| GDP                                   | 4.1  | 3.4 (3.3)   | 2.4 (2.0)   | 2.2 (2.4)  | 2.1 (2.2)  |
| GDP, calendar-adjusted                | 3.8  | 3.2 (3.0)   | 2.6 (2.3)   | 2.4 (2.5)  | 2.1 (2.2)  |
| Final figure for domestic demand*     | 3.5  | 3.6 (3.8)   | 2.4 (2.4)   | 2.3 (2.6)  | 2.1 (2.5)  |
| Net exports*                          | 0.3  | -0.5 (-0.7) | -0.1 (-0.4) | 0.0 (-0.2) | 0.0 (-0.2) |
| Current account (NA), per cent of GDP | 4.7  | 4.2 (4.6)   | 3.9 (4.0)   | 3.7 (3.7)  | 3.5 (3.3)  |

\*Contribution to GDP growth, percentage points

Note. The figures show actual growth rates that have not been calendar-adjusted, unless otherwise stated. NA is the National Accounts.

Sources: Statistics Sweden and the Riksbank

**Table 6. Production and employment**

Annual percentage change, unless otherwise stated

|   | 2015 | 2016      | 2017      | 2018      | 2019      |
|---|------|-----------|-----------|-----------|-----------|
| Population, aged 15–74                    | 0.7  | 0.9 (0.9) | 1.0 (1.1) | 0.7 (0.9) | 0.6 (0.6) |
| Potential hours worked                    | 0.8  | 0.7 (0.8) | 0.6 (0.7) | 0.5 (0.6) | 0.5 (0.5) |
| GDP, calendar-adjusted                    | 3.8  | 3.2 (3.0) | 2.6 (2.3) | 2.4 (2.5) | 2.1 (2.2) |
| Number of hours worked, calendar-adjusted | 1.0  | 1.9 (2.0) | 1.2 (1.1) | 0.8 (0.8) | 0.6 (0.7) |
| Employed, aged 15–74                      | 1.4  | 1.5 (1.4) | 1.3 (1.1) | 0.7 (0.8) | 0.5 (0.6) |
| Labour force, aged 15–74                  | 0.8  | 1.0 (0.9) | 1.0 (0.9) | 0.6 (0.8) | 0.6 (0.7) |
| Unemployment, aged 15–74 *                | 7.4  | 6.9 (6.9) | 6.7 (6.7) | 6.7 (6.7) | 6.7 (6.7) |

\* Per cent of the labour force

Note. Potential hours refer to the long-term sustainable level for the number of hours worked according to the Riksbank's assessment.

Sources: Statistics Sweden and the Riksbank

**Table 7. Wages and labour costs for the economy as a whole**

Annual percentage change, calendar-adjusted data unless otherwise stated

|                          | 2015 | 2016      | 2017      | 2018       | 2019       |
|--------------------------|------|-----------|-----------|------------|------------|
| Hourly wage, NMO         | 2.4  | 2.5 (2.6) | 3.1 (3.2) | 3.4 (3.5)  | 3.6 (3.6)  |
| Hourly wage, NA          | 3.5  | 2.8 (2.7) | 3.4 (3.5) | 3.6 (3.8)  | 3.7 (3.8)  |
| Employers' contribution* | 0.9  | 0.6 (0.6) | 0.0 (0.0) | 0.0 (-0.1) | 0.0 (-0.1) |
| Hourly labour cost, NA   | 4.4  | 3.4 (3.3) | 3.4 (3.5) | 3.6 (3.7)  | 3.7 (3.7)  |
| Productivity             | 2.8  | 1.3 (1.0) | 1.4 (1.2) | 1.5 (1.6)  | 1.4 (1.6)  |
| Unit labour cost         | 1.5  | 2.0 (2.3) | 1.9 (2.3) | 2.0 (2.0)  | 2.3 (2.1)  |

\* Contribution to the increase in labour costs, percentage points

Note. NMO is the National Mediation Office's short-term wage statistics and NA is the National Accounts. Labour cost per hour is defined as the sum of actual wages, social-security charges and wage taxes divided by the seasonally adjusted total number of hours worked. Unit labour cost is defined as labour cost divided by seasonally-adjusted value added at constant prices.

Sources: National Mediation Office, Statistics Sweden and the Riksbank



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