Monetary Policy Report

February 2015

SVERIGES RIKSBANK

Correction 2015-02-13

Two figures on page 34 were switched around in the previous version of the report. This meant that references to Figures 3:18 and 3:19 were incorrect. This has been amended in this version.

Monetary Policy Report

The Riksbank's Monetary Policy Report is published three times per year. The report describes the deliberations made by the Riksbank when deciding what would be an appropriate monetary policy.[1] The report contains a description of the future prospects for inflation and economic activity based on the interest rate path that the Riksbank currently considers will provide a well-balanced monetary policy. Each report also contains a description of the new information received since the previous report and an assessment of how the Riksbank views the current economic situation.

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)). In the spring this takes the form of a report entitled "Account of Monetary Policy". In the autumn it takes the form of the Monetary Policy Report.

The Executive Board decided to adopt the Monetary Policy Report at its meeting on 11 February 2015. The Report is available on the Riksbank's website, www.riksbank.se. From this address a printed version of the report can be ordered free of charge or the report can be downloaded as a PDF file.

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Further information on the Riksbank can be found at: www.riksbank.se

[1] See *Monetary policy in Sweden* on the following page for a review of monetary policy strategy and of what can be regarded as an appropriate monetary policy.

Monetary Policy in Sweden

MONETARY POLICY STRATEGY[2]

- 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 with a view to achieving sustainable growth and high employment. This is achieved through the Riksbank, in addition to stabilising inflation around the inflation target, also striving to stabilise production and employment around long-term sustainable paths. 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, among other things, its own assessment of the future path for the repo rate. The interest rate path is a forecast, not a promise.
- In connection with every monetary policy decision, the Executive Board makes an assessment of the repo-rate path needed for monetary policy to be well-balanced. A well-balanced monetary policy is normally a question of finding an appropriate balance between stabilising inflation around the inflation target and stabilising the real economy.
- There is no general answer to the question of how quickly the Riksbank aims to bring the inflation rate back to 2 per cent if it deviates from the target. A rapid return may in some situations have undesirable effects on production and employment, while a slow return may have a negative effect on confidence in the inflation target. The Riksbank's ambition has generally been to adjust the repo rate and the repo rate path so that inflation is expected to be fairly close to the target in two years' time.
- According to the Sveriges Riksbank Act, the Riksbank's tasks also include promoting a safe and efficient payment system. Risks linked to developments in the financial markets are taken into account in the repo rate decisions. With regard to preventing an imbalance in asset prices and indebtedness, the most important factors, however, are effective regulation and supervision. Monetary policy only acts as a complement to these.
- In some situations, as in the financial crisis 2008-2009, the repo rate and the repo rate path may need to be supplemented with other measures to promote financial stability and ensure that monetary policy is effective.
- The Riksbank endeavours to ensure that its communication is open, factual, comprehensible and up-to-date. This makes it easier for economic agents to make good economic decisions. It also makes it easier to evaluate monetary policy.

DECISION-MAKING PROCESS

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

PRESENTATION OF THE INTEREST RATE DECISION

The interest rate decision is presented in a press release at 9.30 a.m. on the day following the monetary policy meeting. The press release also states how the individual members of the Executive Board 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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[2] A detailed description of the monetary policy strategy is given in the document *Monetary Policy in Sweden*. This document is available as a PDF file on the Riksbank's website www.riksbank.se.

Contents

CHAPTER 1 – The economic outlook and inflation prospects

The recovery in the world as a whole is expected to continue in the years immediately ahead, although at a slow rate. The international risk outlook has changed since December, with increased uncertainty about the development of economic activity and increased volatility on the financial markets. Oil prices have fallen, which is positive for global growth but has also led to low global inflation. The economic outlook differs from country to country and region to region. This is reflected in increased differences in monetary policy between, for example, the United States and the euro area, and in significant fluctuations on the foreign-exchange markets.

Economic activity in Sweden continues to improve in line with the forecast in December. Weak developments abroad are slowing down growth, but are counteracted somewhat by the fall in the oil price and a weaker krona. Following a slowdown at the end of last year, the labour market is expected to strengthen. Inflation is still low, although it was somewhat higher than expected in December. There are now signs that underlying inflation, illustrated by CPIF inflation excluding energy, has bottomed out and is rising. The krona is weaker than anticipated, which will also contribute to somewhat higher underlying inflation going forward. However, low energy prices are expected to hold back CPIF inflation in the year ahead and the assessment is that it will reach 2 per cent in mid-2016. The lower oil prices and the uncertain outlook abroad increase the risk that inflation will not rise rapidly enough.

In order to support the upturn in underlying inflation so that CPIF inflation approaches 2 per cent and to ensure that long-term inflation expectations are compatible with the inflation target, a more expansionary monetary policy is needed. The Executive Board of the Riksbank has therefore decided to cut the repo rate by 0.1 percentage points to −0.10 and to restore the interest rates for fine-tuning transactions to the repo rate +/− 0.1 percentage points. In addition, the repo-rate path has been adjusted downwards somewhat. The Executive Board has also decided to purchase government bonds to an amount of SEK 10 billion. If this proves insufficient to get inflation to rise towards the target, the Riksbank can quickly make monetary policy even more expansionary. The measures taken and the readiness to do more underline the Riksbank's aim to safeguard the role of the inflation target as a nominal anchor for price setting and wage formation.

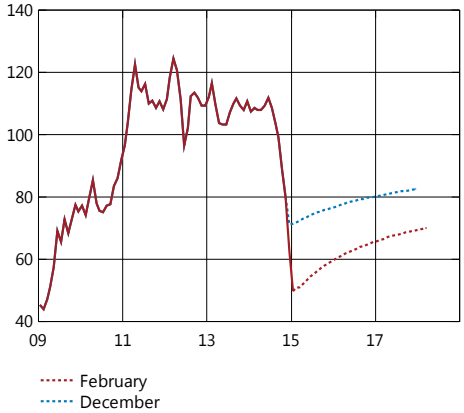
Summary

Sluggish recovery abroad

The global economy continues to be marked by increasing differences in growth rates among both the major and the emerging economies. In particular, the US economy is growing at a solid pace while growth in the euro area remains subdued. Uncertainty abroad has increased further since December. Several factors have contributed to this. The increased differences between growth rates and diverging policy-rate expectations of the ECB and the Federal Reserve, have given rise to substantial exchange-rate fluctuations, with a significant strengthening of the US dollar. Another uncertainty factor is the fall in oil prices and its consequences for oil-producing companies and countries, above all Russia. Renewed economic unease in Greece is also adding to the uncertainty.

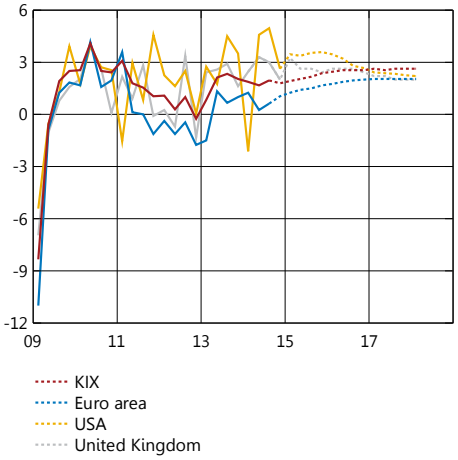
In 2014, the global economy grew by just over 3 per cent. Growth is hampered by the fact that domestic demand is still weak in many countries despite a highly-expansionary monetary policy. Given this background, the substantial fall in oil prices over the last six months is providing a welcome boost to the global economy. For oil importers,

Figure 1:1. Oil price and futures prices
USD per barrel



Note. Brent oil, futures are calculated as a 15-day average. Outcomes represents monthly averages of spot prices.
Sources: Macrobond and the Riksbank

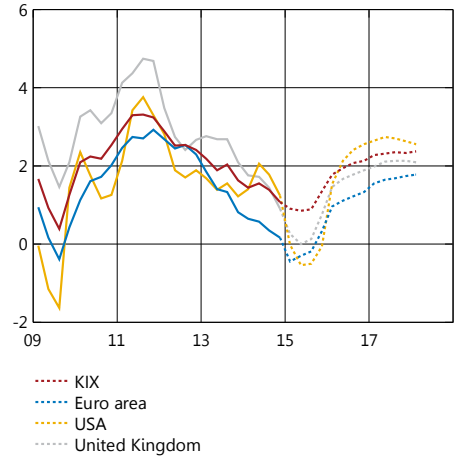
Figure 1:2. Growth in various countries and regions
Quarterly change in per cent, calculated as an annual percentage change, seasonally-adjusted data



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 1:3. Inflation in various countries and regions
Annual percentage change



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

which most of the major developed economies are, the fall in prices is expected to provide a positive stimulus. However, major oil exporters, such as Russia and Norway, are suffering negative effects (for a more detailed discussion see the article "Effects of the falling oil price on the global economy").

In the Monetary Policy Update published in December, it was assumed that the fall in oil prices since the summer would have positive effects on global GDP growth. Oil prices have fallen further since then (see Figure 1:1), which is expected to have further positive effects on the global economy. However, it is very difficult to say how great the effects on growth may be. Estimates based on historical links between the price of oil and growth often fall within a relatively wide interval. At the same time, there are reasons to believe that the impact of oil prices has weakened over time , partly as a result of reduced energy use in relation to GDP. In the main scenario it is assumed that the effects will be moderate both globally and in Sweden (for a discussion of the potential effects that a greater impact would have, see Chapter 2 "Alternative scenarios and risks").

However, in many parts of the world, for example in Russia, Asia and Latin America, the economic outlook have weakened since December. The oil-dependent Russian economy has been hit hard by the combination of the fall in oil prices and the European Union's and the United States' economic and political sanctions and is experiencing an economic crisis that is expected to continue for some time. This is expected to dampen growth somewhat in certain countries in the euro area and eastern Europe that trade extensively with Russia. In the euro area this will be counteracted by the ECB conducting a more expansionary monetary policy, including large-scale purchases of securities. The United States represents the clearest bright spot in the global economy at present, supported by a strong development of the labour market and optimistic households.

All in all, the assessment is that growth in KIX-weighted GDP, which covers the countries that are most important to the Swedish economy, will be marginally weaker in the years ahead than was assumed in December. This year, GDP growth is expected to remain at 2 per cent and thereafter to increase at a somewhat faster rate in the years ahead (see Figure 1:2).

Substantial spare resources, weak demand and stagnating wage growth are, as previously, contributing to a downward trend in KIX-weighted inflation. The substantial fall in oil prices has reinforced this trend. In December, the forecast for KIX inflation in 2015 was revised downwards significantly. Since then, oil prices have fallen even more. However, in some of the commodity-exporting countries included in the KIX index, such as Russia, inflation will be higher than previously estimated as exchange rates have weakened. The assessment for this year is that KIX inflation will slacken to 1 per cent, with negative inflation in both the United States and the euro area, and that it will thereafter rise and stabilise at just over 2 per cent at the end of the forecast period (see Figure 1:3).

■ Gradual strengthening of economic activity in Sweden

The slow recovery abroad is reflected in the fact that Swedish exports have been subdued for some time. The assessment is that the weak growth in consumption in the third quarter was temporary and that consumption will grow more rapidly in the years ahead. International demand is expected to gradually increase and thus lead to a more rapid increase in exports and corporate investment and to contribute to growth in 2016 and 2017 to a greater extent. The Riksbank's overall assessment is that growth is normal at present and that GDP will grow by 2.7 per cent this year, 3.3 per cent in 2016 and 2.2 per cent in 2017 (see Figure 1:4).

The rate of increase in employment and the labour force slowed down during the fourth quarter of last year and unemployment remained unchanged at 7.8 per cent. However, this slowdown is expected to be temporary. The labour market will strengthen further as economic activity gradually strengthens. Forward-looking indicators of the demand for labour, for example the number of job vacancies, indicate that the labour market will continue to strengthen going forward. Unemployment is expected to fall in the years ahead and to be at 6.7 per cent at the end of the forecast period.

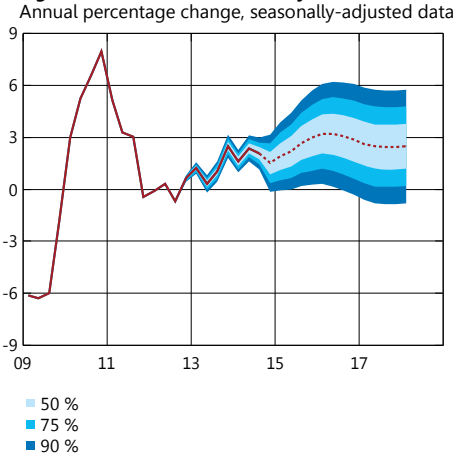
Inflation is very low and lower energy prices are expected to lead to low inflation over the next 12 months. However, this effect will be partly counteracted by the weakening of the krona (see also the article "Effects of the falling oil price on the global economy"). The current assessment is that the krona will remain at a weaker level for slightly longer than assessed in the previous forecast, which will help to keep inflation up.

Underlying inflation, for example the CPIF excluding energy, appears to have bottomed out and to be increasing. Wages and prices are expected to rise at a faster pace as resource utilisation increases. Import prices are also expected to rise as a result of the international recovery and to contribute to higher inflation. It is therefore expected that inflation measured in terms of the CPIF excluding energy is already rising more quickly than CPIF inflation but that the two measures will coincide later in the forecast period and reach 2 per cent in early 2016 (see Figures 1:5 and 1:27). Households' mortgage-interest expenditure will rise when the increases in the repo rate begin. This will in turn lead to CPI inflation increasing faster than CPIF inflation from the end of 2016 (see Figures 1:5 and 1:6).

■ More expansionary monetary policy and readiness to do more

Although the recent development of inflation has been roughly as expected, there is a risk that lower oil prices will dampen inflation expectations, and thus inflation, more than is assumed in the forecast. To this can be added the increased uncertainty about developments abroad and on the financial markets.

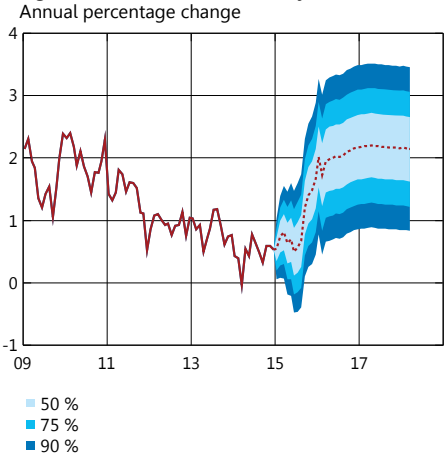
Figure 1:4. GDP with uncertainty bands
Annual percentage change, seasonally-adjusted data



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

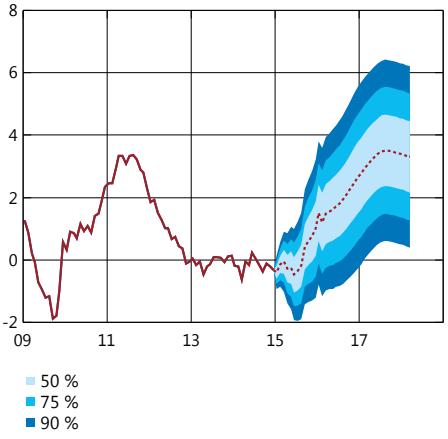
Figure 1:5. CPIF with uncertainty bands
Annual percentage change



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

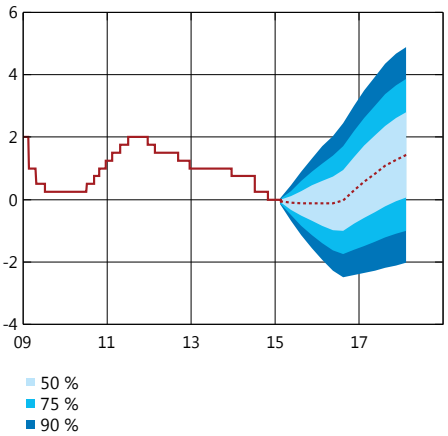
Figure 1:6. CPI with uncertainty bands
Annual percentage change



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

Sources: Statistics Sweden and the Riksbank

Figure 1:7. 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

In order to support the upturn in underlying inflation so that CPIF inflation approaches 2 per cent and to ensure that long-term inflation expectations are compatible with the inflation target, a more expansionary monetary policy is needed. The Executive Board of the Riksbank has therefore decided to cut the repo rate by 0.1 percentage points to −0.10 per cent (see Figure 1:7). In addition, the repo-rate path has been adjusted downwards somewhat. At the same time, interest rates for fine-tuning transactions will be restored to the repo rate +/−0.1 percentage points. The Executive Board has also decided to purchase government bonds to an amount of SEK 10 billion with a maturity of up to 5 years. If this proves insufficient to get inflation to rise towards the target, the Riksbank can quickly make monetary policy even more expansionary, even between the ordinary monetary policy meetings (see the article "The Riksbank's complementary monetary policy measures"). The measures taken and the readiness to do more underline the Riksbank's aim to safeguard the role of the inflation target as a nominal anchor for price setting and wage formation.

Divergent outlook abroad

■ Many uncertain factors affecting the financial markets

Since December, the financial markets have been marked by a higher degree of uncertainty than previously. Several different factors have contributed to this increase in uncertainty. For example, it is unclear how persistent the fall in oil prices will be, and although it is expected to have positive net effects on global growth it risks creating significant negative effects for oil-exporting companies and countries. The new election in Greece in January has led to renewed economic unease in the country linked to ongoing discussions with the international lenders (the EU, ECB and IMF), ahead of the expiry of the previous programme on 28 February. The Greek government needs external funding to pay interest rates and to refinance the existing debt to the international lenders. The Greek banks are also dependent on a financial lifeline. However, compared to the situation in 2012, international financial links with the Greek economy are limited in that the claims of foreign banks and other capital managers have largely been taken over by public lenders abroad.

The differences between the monetary policies conducted in the major currency areas have become increasingly clear in that the ECB and the Bank of Japan are making their policies more expansionary while the Federal Reserve has concluded its quantitative easing programme and is approaching its first policy-rate increase. This follows a long period in which all of the major central banks simultaneously conducted expansionary monetary policies. The fact that it is difficult to assess the effects on capital flows, asset prices and exchange rates in this new monetary policy landscape is creating uncertainty on the markets and giving rise to increased volatility. Even before the ECB announced its asset-purchase programme, the Swiss National Bank surprisingly chose to abolish the currency floor against the euro that had been held since

2011, after which the franc strengthened considerably. The National Bank of Denmark has taken several measures alongside its policy-rate cuts to defend its fixed exchange rate against the euro. Many other central banks around the world have also chosen to cut their policy rates against the background of the increased uncertainty.

■ Lower oil prices and the ECB boosting the euro area

The fall in oil prices, together with the asset-purchase programme announced by the ECB, provide a much-needed stimulus to growth in the euro area, where the recovery lost impetus during the course of 2014. However, the positive effects of lower oil prices on consumption and investment are undermined by the need for households, companies and the public sector to reduce their high debts. The asset-purchase programme announced by the ECB will initially run until at least September 2016 and will correspond to approximately 10 per cent of the euro area's total GDP during this period, but it may be extended depending on how inflation develops. The asset purchases aim to anchor inflation expectations and to improve funding conditions for companies and households, which will strengthen domestic demand. It is also assumed that this clear signal of a continued expansionary monetary policy will continue to hold down the value of the euro and thereby stimulate exports. However, the upturn in exports will be held back by weaker development in oil-exporting countries, including Russia, and in Asia and Latin America. The renewed unease about the Greek economy has not had any contagion effects on other countries in the euro area as yet. In the main scenario, it is assumed that Greece will reach agreement with its international lenders and that the unease will not spread to other euro countries.

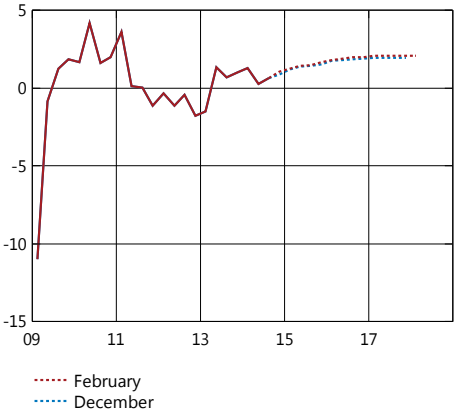
All in all, growth in the euro area is expected to be 1.2 per cent in 2015 and to gradually rise to 2.0 per cent in 2017 (see Figure 1:8). This represents a marginal upward revision for 2015 compared with the assessment in December.

The figure for inflation in 2015 has been significantly revised downwards as a result of the fall in oil prices, and inflation is expected to be negative for most of the year (see Figure 1:9). Inflation will then increase gradually to over 1 per cent in 2016 when the negative effect of the fall in energy prices disappears. As the economy strengthens and wages increase more rapidly, inflation is also expected to rise. Higher import prices as a result of the weaker euro will also contribute to an upturn in inflation, which is expected to approach 1.8 per cent at the start of 2018.

■ Optimistic households a driving force in the United States and the United Kingdom

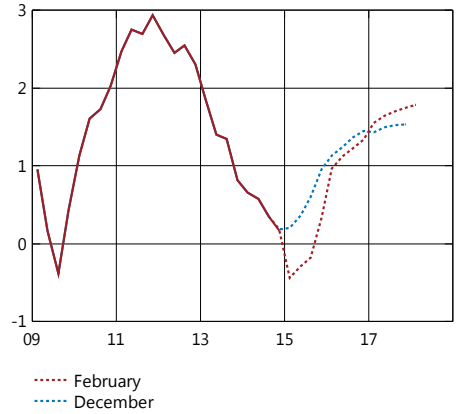
The US economy is continuing to perform strongly. In the quarters ahead, the already high level of consumption will be further boosted by falling petrol prices and a continued rapid improvement on the labour market. Going forward, stronger employment growth is also expected to

Figure 1:8. GDP in the euro area
Quarterly change in per cent, calculated as an annual percentage change, seasonally-adjusted data



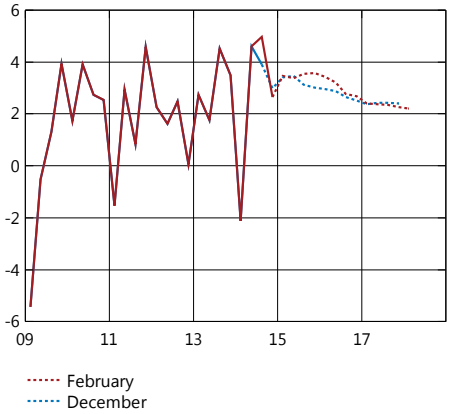
Sources: Eurostat and the Riksbank

Figure 1:9. Inflation in the euro area
Annual percentage change



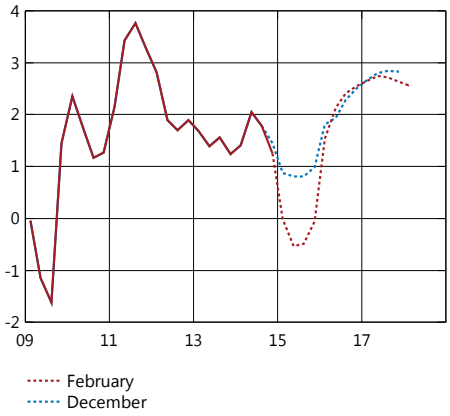
Note. Inflation measured using the HICP.
Sources: Eurostat and the Riksbank

Figure 1:10. GDP in USA
Quarterly change in per cent, calculated as an annual percentage change, seasonally-adjusted data



Sources: Bureau of Labor Statistics and the Riksbank

Figure 1:11. Inflation in USA
Annual percentage change



Sources: Bureau of Labor Statistics and the Riksbank

lead to a higher rate of wage increases that will stimulate consumption. The housing market has also showed signs of further improvements. Corporate profits are high and corporate confidence is higher than normal, although this has weakened slightly in the manufacturing industry in recent months, probably driven by a strengthening of the dollar and a slackening of activity in the oil-producing sector. The forecast for investment in the quarters immediately ahead has therefore been revised downwards. As inflation is low, the assessment is that monetary policy will continue to be expansionary a while longer. However, it is expected to be less expansionary further ahead when resource utilisation increases. Fiscal policy is expected to be less tight over the coming years. The budget deficit may nevertheless continue to fall thanks to the strong economic growth.

All in all, the assessment is that GDP growth in the United States will be approximately 3.5 per cent in the years ahead and that it will then fall to just over 2.5 per cent in 2017. This represents and upward revision of the forecast in the Monetary Policy Update that was published in December (see Figure 1:10). The upward revision is mainly due to the continued fall in oil and petrol prices and the strong development of the labour market. The forecast for CPI inflation in 2015 has been revised downwards due to the substantial fall in oil prices. When the dampening effects of the fall in oil prices disappear in 2016, inflation will return to just over 2 per cent again (see Figure 1:11).

GDP growth in the United Kingdom is expected to gradually decline in the years ahead from almost 3 per cent this year to just over 2 per cent in 2017. Here too, the already robust consumption is expected to be further boosted by falling oil prices. Rising rates of wage increases and reduced saving will stimulate consumption in the period ahead, but this will be partly counteracted by a gradual tightening of fiscal policy. The fall in oil prices will lead to low inflation this year. Inflation is expected to return to 2 per cent at the end of the forecast period when lower unemployment will lead wages and unit labour costs to rise more rapidly.

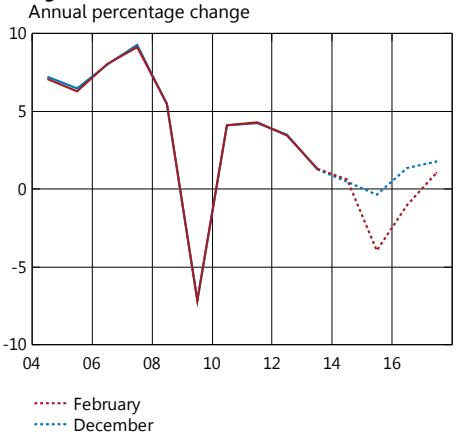
■ Weaker economic outlook in Asia

Economic activity in China continues to be marked by a slow transition of the economy from export- and investment-led growth to more consumption-driven growth. This has contributed to a fall in the previously high growth figures. Last year was the first year since the Asian crisis of 1998 that GDP growth did not reach the official growth target. However, the low oil prices are expected to ease the transition of the economy. China is a major net importer of oil and the low prices are helping to improve public finances and strengthen consumption. The authorities have previously reacted by introducing stimulus measures when the economy has appeared to be slowing down too quickly, but they are now expected to attach more importance to reducing the risks associated with the strong growth of credit and investment in recent years. The fall in investment is therefore now expected to be greater than was previously assumed, which will outweigh the positive effects of oil prices on growth. GDP growth is expected to fall to 6.8 per cent this year

and to approach 6 per cent in 2017. During the year immediately ahead, CPI inflation will be held back by lower oil prices and by a fall in property prices. CPI inflation is then expected to rise once again to 3 per cent in 2017.

It is expected that Japan emerged from the recession in the fourth quarter of 2014. However, the underlying development of the economy is weak, as reflected in the difficult in boosting consumption following the VAT increase at the start of the year. The Japanese economy is also burdened by the slowdown in China. This overshadows the positive effects of a weaker yen and lower oil prices on growth. It is assumed that GDP growth will rise from 0.6 per cent this year to 0.8 per cent in 2016, and then fall back to 0.4 per cent in 2017 when growth will be dampened by a new VAT increase. Inflation is expected to fall back to approximately 1 per cent and then to slowly rise during the forecast period to 2 per cent, which is the Bank of Japan's inflation target.

Figure 1:12. GDP in Russia
Annual percentage change



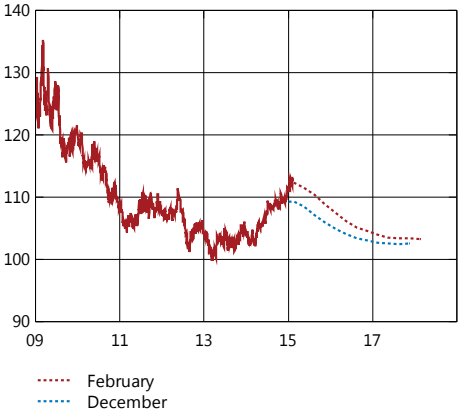
Sources: State Committee of the Russian Federation on Statistics and the Riksbank

■ Oil exporters hit by the fall in oil prices

The oil-dependent Russian economy is being hit hard by the fall in oil prices and by the political and economic sanctions imposed on the country by the European Union and the United States in connection with the conflict in Ukraine. Russia is expected to enter a lasting recession this year (see Figure 1:12). The substantial weakening of the rouble and higher food prices have driven up inflation to higher levels. Import prices are rising and this will restrict domestic consumption at the same time as the sanctions have already had severe negative effects on corporate confidence and investment. The higher interest rates and the ongoing substantial capital outflows will also have a negative impact on the economy. The growth forecast for Russia has therefore been revised downwards significantly since the previous forecast. Although the assessment is that the downturn in Russia will not have any significant direct effects on the Swedish economy, Sweden may be indirectly affected via other countries that trade extensively with Russia, such as Finland and Germany.

The Norwegian economy is also suffering very negative effects from the fall in oil prices, mainly in the form of reduced investment. However, the substantial oil fund and the possibility to use four per cent of it to cover expenditure in the central-government budget acts as a buffer. GDP is expected to increase at a moderate rate during the forecast period. The significant weakening of the Norwegian krone will help to stimulate exports and hold up inflation. Development in the period ahead will probably also be supported by an expansionary monetary policy. In December, Norges Bank cut its policy rate to 1.25 per cent, a level that provides scope for further cuts in the future should the need arise. The weakening of the krone and the high rate of underlying inflation will help to hold up inflation despite the fall in oil prices. Inflation is expected to rise to just over the target of 2.5 per cent in the years ahead.

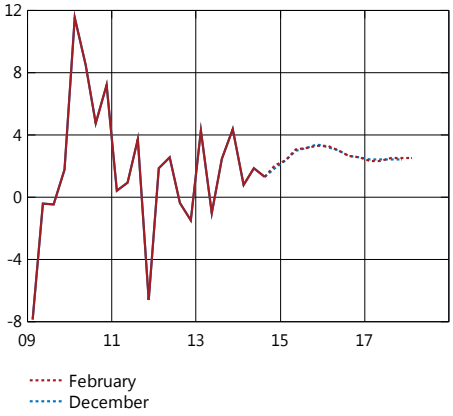
Figure 1:13. KIX-weighted nominal exchange rate
Index, 18 November 1992 = 100



Note. Outcomes are daily rates and forecasts refer to quarterly averages. KIX is an aggregate of the countries that are important to Sweden's international transactions.

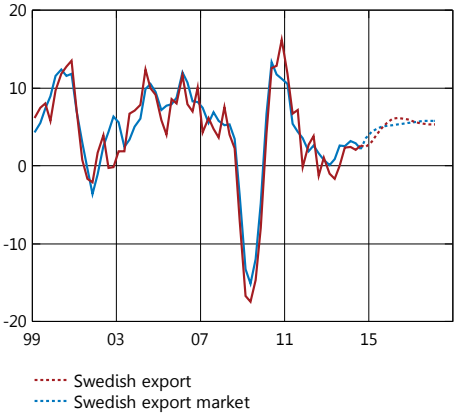
Source: The Riksbank

Figure 1:14. GDP
Quarterly change in per cent, calculated as an annual percentage change, seasonally-adjusted data



Sources: Statistics Sweden and the Riksbank

Figure 1:15. Exports and the Swedish export market
Annual percentage change, calendar-adjusted data



Note. The Swedish export market index aims to 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 total Swedish export market.

Sources: Statistics Sweden and the Riksbank

■ Weak krona will strengthen going forward

The Swedish krona has weakened since the Monetary Policy Update in December, in both nominal and real terms. The krona has not been at these weak levels since 2010 (see Figure 1:13). It is primarily against the US dollar, sterling and the Swiss franc that the krona has weakened. Several other currencies have also weakened against the dollar in recent months.

The assessment is that the dollar will remain strong in the quarters ahead and that this will contribute to the krona remaining at weaker levels in trade-weighted terms compared with the forecast in December. However, the krona will gradually strengthen during the forecast period in both real and nominal terms. The real exchange rate is assessed to be weaker than its long-term level at present due to underlying factors, such as Sweden's growth potential in relation to the rest of the world. However, there is considerable uncertainty concerning the development of the krona, not least given the ECB's announced asset-purchase programme, which will begin in March.

Gradual strengthening of economic activity in Sweden

■ Economic activity in Sweden continues to improve

GDP growth is benefiting from the fall in oil prices, the weakening of the krona over the last 12 months and the very low repo rate. At the same time, however, the global recovery is marginally weaker, which is dampening GDP growth. All in all, the forecast is largely unchanged in relation to the forecast in December. Domestic demand is still important. The assessment is that the weak consumption growth in the third quarter of 2014 was temporary and that consumption will grow more rapidly going forward. In 2016 and 2017, gradually increasing international demand is expected to lead to a more rapid increase in exports and corporate investment and to contribute to growth to a greater extent.

The Riksbank's overall assessment is that growth is normal at present. GDP will grow by 2.7 per cent this year and then by 3.3 per cent in 2016 and 2.2 per cent in 2017 (see Figure 1:14).

■ Gradual recovery in export demand

The development of Swedish exports has been weak in recent years. This is mainly because economic development has been weak on many important export markets. However, sentiment in the manufacturing industry is positive and in the latest Business Tendency Survey the confidence indicator for the manufacturing industry increased and is above an historical average. Exports are expected to increase at a faster rate as economic activity improves in many European countries (see Figure 1:15). This will be supported by the weakening of the krona over the last 12 months. The assessment is that imports grew faster than exports in 2014, which means that net exports provided a negative

contribution to growth. As exports recover, the contribution to growth from foreign trade is expected to average approximately zero in the years ahead.

■ Investment growth will increase in the years ahead

Housing investment is estimated to have increased by almost 20 per cent in 2014. This is in stark contrast to the weak growth in other business-sector investment, a situation that can largely be explained in terms of weak economic activity abroad. However, the financial situation is good and the companies are meeting favourable credit conditions. Corporate investment excluding housing is therefore expected to increase more rapidly when demand abroad rises and to contribute to more rapid growth in production and capacity utilisation at the companies. At the same time, housing construction is expected to level out at a high level, which means that the substantial growth in housing investment will gradually slacken and be of less significance to investment growth.

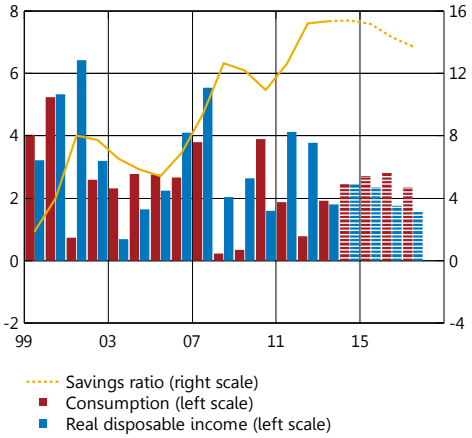
■ Consumption growth will remain high

Although the development of household consumption was weak in the third quarter of 2014, it is expected to continue to be an important driving force for GDP growth in the years ahead. Several factors point to this. Household saving as a percentage of household income has risen in recent years and there is therefore considerable scope for increased consumption (see Figure 1:16). A gradual improvement on the labour market and a stabilisation of economic activity abroad are also expected to increase household confidence and contribute to the continued robust development of household consumption. However, the rate of increase in household disposable incomes will be dampened somewhat in the years ahead as fiscal policy becomes less expansionary. The new amortisation requirements are also expected to dampen consumption to some extent.

■ Rising housing prices contributing to increased indebtedness

Housing prices, particularly the prices of single-family dwellings, increased rapidly towards the end of 2014. This is expected to continue in the years ahead due, for example, to a limited supply of housing, rising incomes and the very low interest rates. Although higher housing prices entail an increase in household wealth, the fact that housing purchases are largely financed by loans means that household indebtedness also increases. The assessment is that debts will increase more rapidly than household incomes over the next few years. Debt as a percentage of disposable income, the so-called debt ratio, will therefore also increase to 186 per cent in early 2018 (see Figures 1:17 and 1:18).

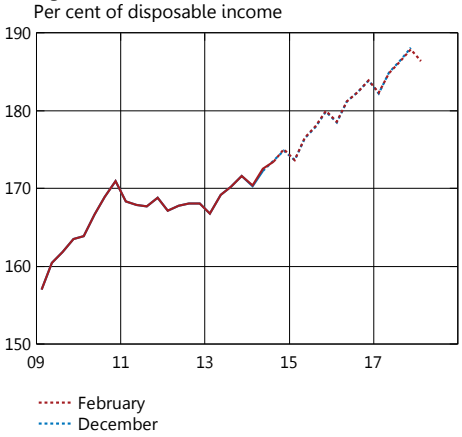
Figure 1:16. Households' real disposable incomes, consumption and saving ratio
Annual percentage change and per cent of disposable income



Note. The savings ratio includes collective insurance schemes. Disposable income has been deflated using the household consumption deflator.

Sources: Statistics Sweden and the Riksbank

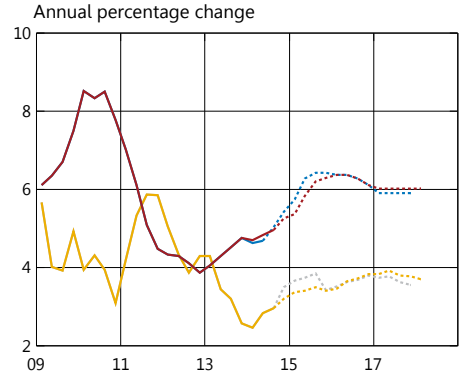
Figure 1:17. Household debt ratio
Per cent of disposable income



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

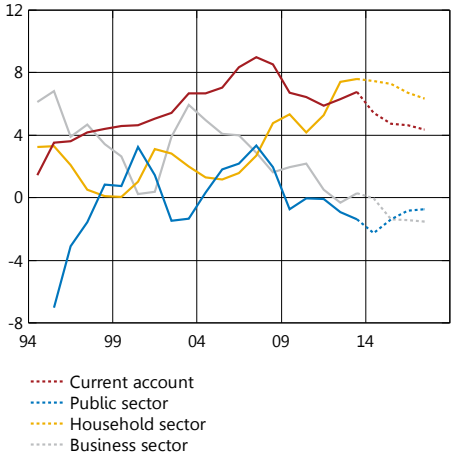
Sources: Statistics Sweden and the Riksbank

Figure 1:18. Household debts and disposable incomes
Annual percentage change



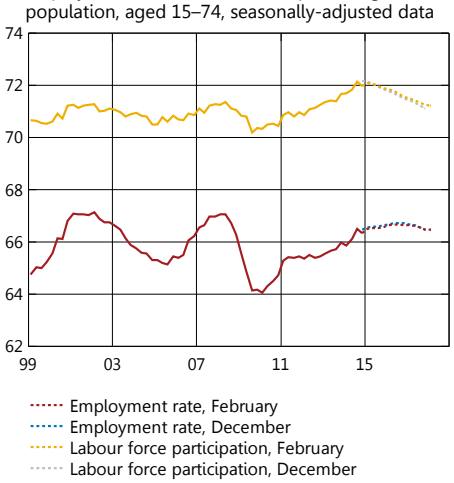
Sources: Statistics Sweden and the Riksbank

Figure 1:19. Current account and net lending in different sectors
Per cent of GDP



Sources: Statistics Sweden and the Riksbank

Figure 1:20. 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

■ Public finances to strengthen slowly

The deficit in public finances is expected to fall as fiscal policy becomes less expansionary and economic activity strengthens, but the assessment is that the surplus target of 1 per cent will not be met during the forecast period. Public sector net lending in 2014 is expected to have amounted to −2.2 per cent. The Riksbank's forecast for public sector net lending is based on announced measures and an assessment based on how fiscal policy is normally adjusted to the state of the economy and the policy objectives set by the fiscal-policy framework. The Riksbank's forecast is therefore affected by the framework decisions made by the Riksdag in December. The Riksbank assumes that any budget changes in the spring budget will be fully financed and that they will therefore not have any substantial effects on the forecasts for public sector net lending.

■ Fall in private saving and the current account surplus

The surplus on the current account, which Sweden has had for almost 20 years, is matched by the high level of total financial saving (see Figure 1:19). Saving has been high in recent years in the household sector, while it has been weak in the business sector and negative in the public sector. The households are expected to reduce their saving in the years ahead, at the same time as increasing investment means that the business sector will do the same. However, public saving will move in the opposite direction and will gradually increase. All in all, the current account surplus is expected to fall in the years ahead, from 5.4 per cent in 2014 to 4.4 per cent in 2017.

■ Temporary slowdown on the labour market

Growth in employment and the labour force slowed down in the final quarter of 2014 and unemployment was unchanged at 7.8 per cent. However, this slowdown is expected to be temporary. Forward-looking indicators of the demand for labour, for example the number of job vacancies, indicate that the labour market will continue to strengthen going forward. As economic activity improves, the demand for labour will continue to rise. Employment is thus expected to rise and unemployment to fall. The population of working age (15–74) is expected to grow more towards the end of the forecast period than was previously expected as the Swedish Migration Board has upwardly revised its forecast for the number of refugees coming to Sweden. The Riksbank's assessment of the supply of labour has therefore been revised upwards somewhat too. All in all, the new assessment of the development of the population has led to the slight upward revision of the Riksbank's forecasts for both employment and unemployment. The employment rate for the 15–74 age group, that is the number of those employed as a percentage of the population in this age group, is expected to remain at the current level of 66.5 per cent (see Figure 1:20). At the same time, labour force participation is expected to fall as the result of demographic developments. At the end of the forecast period, unemployment is

expected to be 6.7 per cent, which is somewhat higher than the Riksbank's previous assessment (see Figure 1:21).

■ Resource utilisation will rise going forward

The Riksbank's overall assessment is that resource utilisation in the economy rose somewhat over the last 12 months, but that it is still lower than normal. The number of job vacancies, that is vacancies that could be filled immediately, has increased, at the same time as recruitment periods have become longer. Indicators of labour shortages have increased recently, above all in the construction industry. The Riksbank's indicator for resource utilisation has risen over the last two years, but also indicates that resource utilisation is still lower than normal (see Figure 1:22). Capacity utilisation in the manufacturing industry, which is lower than an historical average according to the Business Tendency Survey, indicates the same thing.

The very low interest rates together with increasing global and domestic demand are expected to lead to an increase in resource utilisation in the period ahead, and the assessment is that it will be more or less normal in 2016 (see Figure 1:23).

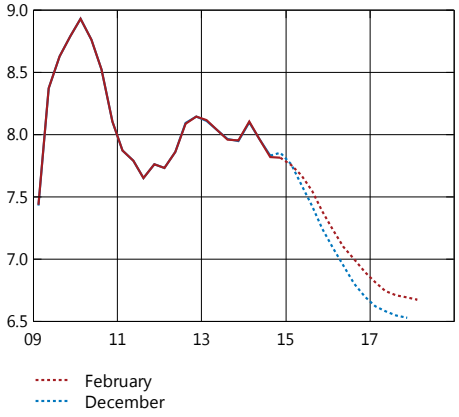
■ Rate of wage increases will rise gradually

According to the National Mediation Office's compilation, agreed wage increase for 2015 amount to 2.3 per cent. Local wage formation normally leads to final wage levels being higher than indicated by the collective agreements. However, the Riksbank's assessment is that the difference between actual wage outcomes and the levels in agreements will be moderate in 2015 and that wages according to the short-term wage statistics will increase by 2.9 per cent in 2015, which is a somewhat slower rate than in 2014. As economic activity improves, wages according to the short-term wage statistics are expected to increase by approximately 3.5 per cent per year in 2016 and 2017.

The next large-scale wage bargaining rounds will take place in 2016, when wage agreements covering around 3 million employees in the private and public sectors will expire. A large proportion of the collective agreements will expire at the end of March that year. Apart from the assessments of future wage agreements, developments in economic activity and on the labour market are important factors for the Riksbank's forecasts of wage developments in the period ahead.

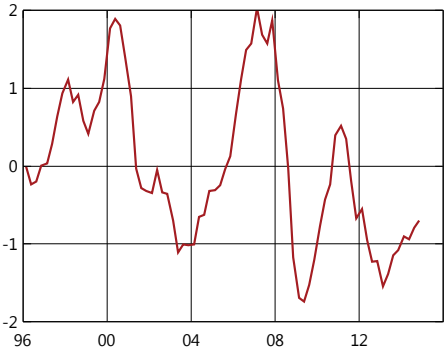
Productivity growth in the Swedish economy will be weak this year, but the assessment is that it will be stronger next year. Towards the end of the forecast period, productivity is expected to grow by approximately 1.7 per cent, which is close to the historical average since 1994. All in all, this means that growth in unit labour costs will reach 2 per cent in 2017 (see Figure 1:24). This is in line with an historical average from 1994. The forecast for cost pressures in the Swedish economy is largely unchanged compared with the assessment in December.

Figure 1:21. Unemployment
Per cent of the labour force, 15–74 years, seasonally-adjusted data



Sources: Statistics Sweden and the Riksbank

Figure 1:22. RU indicator
Standard deviation



Note. The RU indicator is normalised so that the mean value is 0 and the standard deviation is 1.

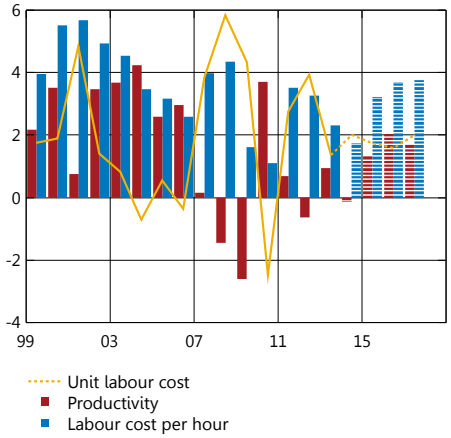
Sources: National Institute of Economic Research, Statistics Sweden and the Riksbank

Figure 1:23. GDP gap, employment gap and hours gap
Per cent

Note. The GDP gap refers to the GDP deviation from trend, calculated using a production function. The hours gap and the employment gap refer to the deviation of the number of hours worked and the number of those employed from the Riksbank's assessed trends.

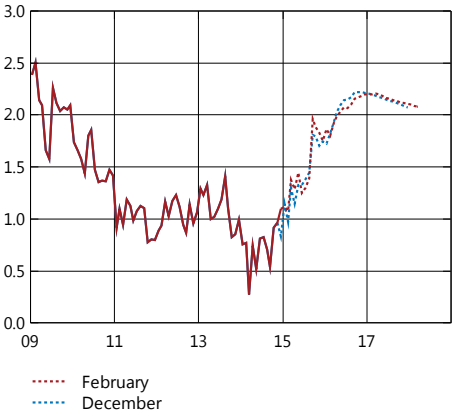
Sources: Statistics Sweden and the Riksbank

Figure 1:24. Cost pressures in the economy as a whole
Annual percentage change



Sources: Statistics Sweden and the Riksbank

Figure 1:25. CPIF excluding energy
Annual percentage change



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

■ Inflation is very low

CPI inflation is negative at present and is not expected to be positive before mid-2015. The fact that inflation is so low is partly due to the fall in household mortgage expenditure, which in turn is due to the gradual lowering of the repo rate. However, even if one disregards this effect inflation is much lower than the Riksbank's target. In December, the annual rate of increase in the CPIF was 0.5 per cent. To a certain extent, the low level of inflation is due to lower energy prices. Inflation measured in terms of the CPIF excluding energy appears to have bottomed out and was 1.1 per cent in December.

Seen in a longer-term perspective, there are several explanations for the low rate of inflation. For example, weak demand has contributed to a slow rate of increase in international prices. There has been spare capacity on the labour market and the companies have found it difficult to pass on their cost increases to the consumers. There are indications in the business survey conducted by the Riksbank in January that inflation has also been held back by structural factors, such as increased competition (see also the article "Digitalisation and inflation").

However, the low rate of inflation is not only a Swedish phenomenon. Over the past year there has been a similar pattern in several countries, with a decline in the rate of increase for many subgroups of the consumer price index. Prices for services, in particular, have increased slowly in both Sweden and the euro area over the last 12 months (see the article "Low inflation – not just a Swedish phenomenon").

■ Fall in oil prices will reduce inflation in the year ahead

One explanation for the low level of inflation recently is the substantial fall in oil prices. During February oil prices have been higher than the lowest listing in January, however, all in all the oil price is at a lower level than was forecast earlier. Forward pricing on the crude-oil market indicates that prices will rise faster going forward than was previously expected (see Figure 1:1). The direct effect of the fall in oil prices is expected to dampen inflation to a slightly greater degree in 2015, but on the other hand to contribute to higher inflation in 2016. Apart from the direct effects on fuel prices, delayed effects will also arise when the low oil prices dampen other costs and prices, for example transport costs (see also the article "Effects of the falling oil price on the global economy").

The exchange rate forecast has also been revised since the forecast in December. The krona is now expected to remain weak for a longer period, which will dampen the effects of the falling energy prices and help to keep inflation up. CPIF inflation excluding energy has also been a surprise on the upside in recent months and there are signs that it has bottomed out. For example, prices in both the producer and import channels have continued to rise (see Figure 3:26). All in all, the forecast for the CPIF inflation excluding energy has been revised upwards somewhat for the year ahead, despite the fact that the indirect effects of the fall in oil prices are expected to dampen inflation (see Figure 1:25).

■ Inflation will rise in the period ahead

As economic activity abroad gradually improves, the demand for Swedish goods and services will increase. Together with a steady increase in domestic demand, this means that resource utilisation in the Swedish economy will gradually rise. The low repo rate will contribute to this. During the latter part of the forecast period, wage increases are expected to become gradually higher and there should be greater scope for companies to raise their prices.

All in all, there is good potential for inflation to rise in the coming years. CPIF inflation is expected to rise during the second half of 2015 and to reach just over 1.5 per cent at the end of the year (see Figure 1:26). Inflation in terms of the CPIF excluding energy will initially rise more rapidly but will coincide with CPIF inflation later in the forecast period and reach 2 per cent in early 2016. Households' mortgage-interest expenditure will rise when the increases in the repo rate begin. This will in turn lead to CPI inflation increasing faster than CPIF inflation in 2016 and 2017 (see Figure 1:27). The rate of increase in the CPI is expected to peak at 3.5 per cent during the second half of 2017 (see Figure 1:28). During periods with large interest rate adjustments, CPIF inflation, which does not include the direct effects of interest rate adjustments, provides a better picture of underlying inflationary pressures than the CPI. However, in the long run, CPI and CPIF inflation will coincide.

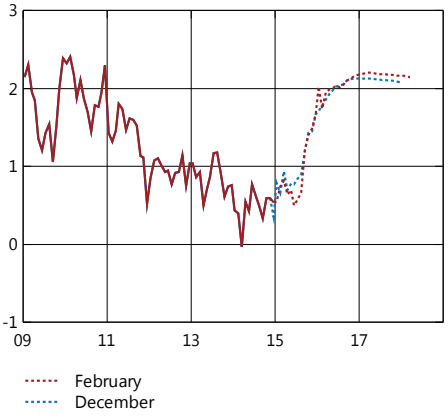
Monetary policy considerations

The Executive Board of the Riksbank has decided to cut the repo rate by 0.1 percentage points to −0.10 per cent and to restore the interest rates for fine-tuning transactions to the repo rate +/− 0.1 percentage points. In addition, the repo-rate path has been adjusted downwards somewhat. The Executive Board has also decided to purchase nominal government bonds to a value of SEK 10 billion. If this proves insufficient to get inflation to rise towards the target, the Riksbank can quickly make monetary policy even more expansionary. The measures taken and the readiness to do more underline the Riksbank's aim to safeguard the role of the inflation target as a nominal anchor for price setting and wage formation.

■ Economic activity in Sweden strengthening but inflation is too low

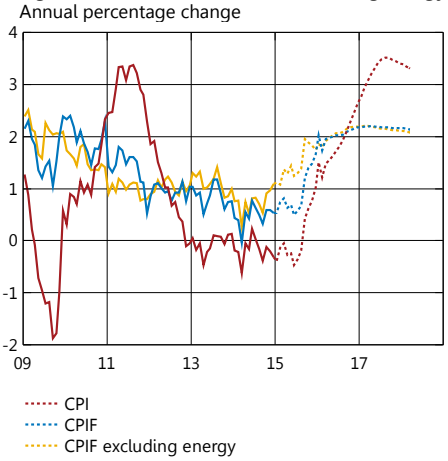
The recovery in the world as a whole is expected to continue in the years immediately ahead, although at a slow rate. However, the international risk outlook has changed since December, with increased uncertainty about the development of economic activity and increased volatility on the financial markets. Oil prices have fallen, which is positive for global growth but has also led to low global inflation. Apart from the movements in oil prices, the increased uncertainty is also partly due to recent developments in Greece and Russia. The economic outlook differs from country to country and region to region. This is reflected in

Figure 1:26. CPIF
Annual percentage change



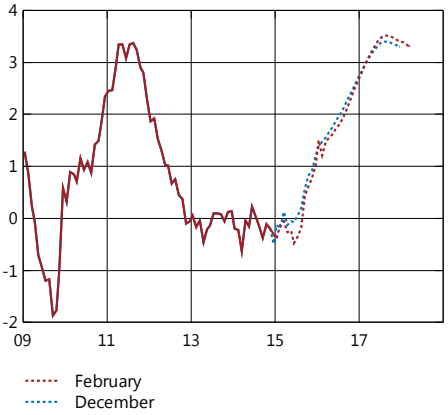
Note. The CPIF is the CPI with a fixed mortgage rate.
Sources: Statistics Sweden and the Riksbank

Figure 1:27. 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 1:28. CPI
Annual percentage change



Sources: Statistics Sweden and the Riksbank

increasing differences in monetary policy. The central banks in the United States and the United Kingdom are expected to raise their policy rates this year, while the ECB and several other central banks have made monetary policy more expansionary. These differences have contributed to substantial fluctuations on the foreign-exchange markets.

Economic activity in Sweden continues to improve in line with the forecast in December. Weak development abroad is dampening growth but is counteracted somewhat by the fall in oil prices and the weak krona. Following a slowdown at the end of last year, the labour market is expected to strengthen.

Inflation is still low, although it was somewhat higher than expected in December. There are now signs that underlying inflation, illustrated by CPIF inflation excluding energy, has bottomed out and is rising. The krona is weaker than anticipated, which will also contribute to somewhat higher underlying inflation going forward. However, low energy prices are expected to hold down CPIF inflation in the year immediately ahead. Wages are expected to increase more rapidly as resource utilisation rises and it will be easier for the companies to pass on their cost increases. CPIF inflation is thus expected to rise and reach 2 per cent in mid-2016.

■ Lower interest rates support upturn in inflation

The recent development of inflation has been roughly as expected, but there is a risk that lower oil prices will dampen inflation expectations, and thus inflation, more than is assumed in the forecast. To this can be added the increased uncertainty about developments abroad and on the financial markets. In order to support the upturn in underlying inflation so that CPIF inflation approaches 2 per cent and to ensure that long-term inflation expectations are compatible with the inflation target, a more expansionary monetary policy is needed.

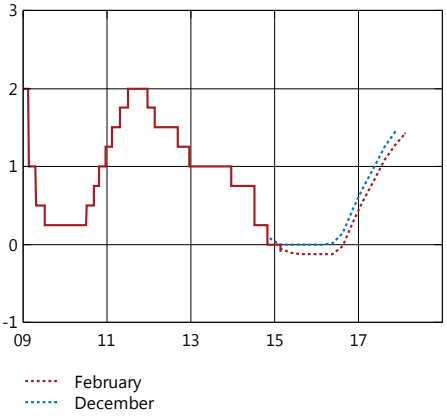
The repo rate is now being cut to −0.10 per cent and the repo-rate path is being revised downwards. At the same time, interest rates for fine-tuning transactions will be restored. Shorter market rates are thereby expected to fall which will lead to lower funding costs for the banks and lower interest rates for households and companies. Lower interest rates in the economy stimulate consumption and investment, which is expected to lead to rising demand and increasing inflationary pressures. A lower repo rate is also expected to lead to a somewhat weaker exchange rate and thus to higher prices for imported goods and higher inflation.

The repo-rate path entails the repo rate remaining at −0.10 per cent until CPIF inflation is close to 2 per cent. The assessment is that it will not be appropriate to begin increasing the repo rate until the second half of 2016. CPIF inflation will then be close to 2 per cent, GDP growth will have been relatively high for just over a year and unemployment will have been falling for some time. The repo rate will thereafter increase gradually and reach 1.4 per cent at the start of 2018. This is a very low repo rate at a time when economic activity is good, resource utilisation is close to its normal level and CPIF inflation is in line with the inflation target. Both the nominal and the real repo rate are lower than was

forecast in the December Monetary Policy Update (see Figures 1:29 and 1:30).

When the repo rate is close to its lower bound, monetary policy can be made more expansionary by purchasing government bonds. The Riksbank will soon make such purchases to a value of SEK 10 billion. This measure also contributes to making monetary policy more expansionary. If the need arises, the Riksbank is prepared to quickly purchase government bonds on a much larger scale.

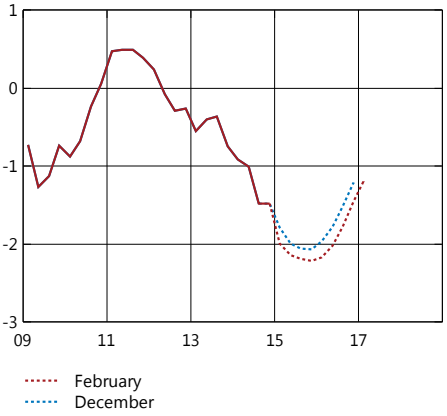
Figure 1:29. Repo rate
Per cent



Note. Outcomes are daily rates and the forecasts refer to quarterly averages.

Source: The Riksbank

Figure 1:30. Real repo rate
Per cent, quarterly averages



Note. The real repo rate is calculated as 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

■ More expansionary monetary policy and readiness to do more

The measures that the Riksbank is now taking in the form of a repo-rate cut, restored interest rates for fine-tuning transactions and the purchase of government bonds underlines the Riksbank's determination to safeguard the role of the inflation target as a nominal anchor for price setting and wage formation. In order to ensure that inflation rises towards the target, the Riksbank is prepared, should the need arise, to quickly make monetary policy more expansionary, even between the ordinary monetary policy meetings. This will primarily entail making further repo-rate cuts, postponing the first repo-rate increase and increasing the purchases of government bonds. A programme for lending to companies through the banks may also be considered (see the article "The Riksbank's complementary monetary policy measures").

■ Measures needed to dampen the risks linked to household indebtedness

The expansionary monetary policy will continue to stimulate economic activity but also contribute to the continuation of the trends with rising housing prices and household indebtedness. This will increase the vulnerability of the Swedish economy. Finansinspektionen's proposal for an amortisation requirement is a step in the right direction, but is expected to only have marginal effects on household indebtedness. Further measures are therefore required to reduce the risks. It will be necessary to introduce such measures gradually and over a long period of time. The responsibility for this lies with other policy areas than monetary policy. Conceivable measures include tightening the cap on loan-to-value ratios, restricting the percentage of mortgages at variable interest rates, adjusting tax relief, introducing minimum levels in the banks' discretionary income calculations and extending taxation of housing. In addition, measures that increase the supply of housing and lead to a more effective housing market are necessary.

■ Uncertainty over economic outlook and inflation prospects

The international risk outlook has changed since December, with increased uncertainty about the development of economic activity and increased volatility on the financial markets. If the situation deteriorates in, for example, Greece, Russia or Ukraine, the contagion effects in the euro area and, ultimately, Sweden, may be greater than assumed in the main scenario.

The krona exchange rate has continued to weaken since December. It is above all the US dollar that has strengthened against many currencies. The krona is expected to remain at roughly its current level in the period immediately ahead and then to slowly strengthen in trade-weighted terms. However, the differences between the monetary policies conducted in different countries and regions and the ECB's extensive asset purchases make it unusually difficult to assess the exchange rate, and it cannot be ruled out that the krona will strengthen earlier and more rapidly than in the forecast. If so, this could mean that it will take longer before inflation rises towards the target.

Inflation is expected to rise gradually as economic activity strengthens in Sweden and abroad. The measures now taken will contribute to this by stimulating demand. However, several factors are creating uncertainty about how rapidly inflation will rise going forward. World-market prices for oil have fallen substantially over the last six months, which has led to lower energy prices. This will dampen inflation both directly via lower fuel and electricity prices and indirectly via lower price increases for other goods and services. It is difficult to determine the magnitude of these indirect effects and there is a risk that inflation will be lower than in the main scenario. It will be particularly serious if the low energy prices lead to a clear fall in inflation expectations among companies, households and the social partners. Such a scenario is discussed in Chapter 2 of this report, in which lower long-term inflation expectations lead to inflation rising at a significantly slower rate than in the main scenario and monetary policy therefore needs to be made even more expansionary.

Housing prices are rising rapidly. Although in the forecast the rate of price increases slows down somewhat in the forecast, housing prices are nevertheless expected to increase much more rapidly than household disposable incomes in the years immediately ahead. The ratio between household debts and disposable incomes is also increasing. A continuing upward trend in the debt ratio entails a risk that the economy will develop in a way that is not sustainable in the long run. If households were to rapidly reduce their debts for one reason or another, this could have a substantial impact on demand and unemployment. This could also give rise to persistent difficulties in stabilising inflation around the inflation target.

The measures taken show that the Riksbank is ready to act quickly when necessary, even between the ordinary monetary policy meetings, to make monetary policy even more expansionary and ensure that inflation rises towards the target (see the article "The Riksbank's complementary monetary policy measures").

CHAPTER 2 – Alternative scenarios and risks

This chapter presents two alternative scenarios for the development of the economy, and the possible direction for monetary policy if they were to become a reality.

The price of oil on the world market has roughly halved since June 2014. The price fall is judged to be mainly due to an increased supply of oil and is therefore expected to contribute towards boosting the recovery in Sweden and abroad. However, the effects will be uncertain and Sweden's GDP is deemed to be moderately affected in the main scenario. In a more favourable scenario, the fall in the oil price has greater positive effects on GDP growth. Inflation will then also be slightly higher than in the main scenario but, as inflation is low to start with, there is still scope for monetary policy to defer interest rate increases.

The fall in the price of oil is having a dampening effect on inflation in Sweden. How much inflation will be dampened depends, among other things, on how inflation expectations are affected. When inflation is already low to start with, and has been so for a long period, there is a risk that the low oil price will spill over into even lower inflation expectations. In such a scenario, it will take a longer time for CPIF inflation to reach 2 per cent and monetary policy will then have to be even more expansionary.

The price of oil has fallen by approximately 50 per cent since June 2014. The main scenario assumes that the fall in prices over the last six months is largely due to an increase in the supply of oil. In addition, weaker global growth has contributed towards the global demand for oil successively being revised downwards. All else being equal, the fall in prices is contributing to a lower inflation forecast. And, as an increase in the supply of oil is considered to be the most important cause of the fall in prices, it is also contributing towards a positive effect on GDP growth.

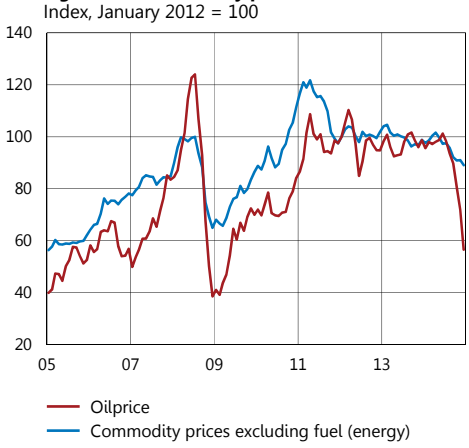
Uncertainty over the development of the oil price in the period ahead is considerable. For example, if the price of oil rises rapidly again, the effects on inflation will be temporary. If, on the other hand, oil prices fall further from their current level, this will contribute to even lower inflation. Here, however, we disregard this uncertainty over the development of oil prices. Instead, we focus on the difficulties involved in assessing how a certain fall in oil prices affects the Swedish economy.

One difficulty lies in estimating the relative significance of the various driving forces behind the fall in the price of oil. How large a part of this fall in prices is due to an increased supply of oil and how much is due to worsened global growth prospects? Another difficulty lies in determining the scale of the effects that an increased supply of oil, for example, has on GDP growth and inflation. A comparison of a number of different studies of these effects reveals a relatively wide range of results.[3]

The first alternative scenario illustrates that the real economic effects of a fall in oil prices caused by an increase in the supply of oil are uncertain.[4] The main scenario assumes that the scale of these effects is fairly moderate. A long-lasting price fall of 10 per cent is judged to imply that the GDP level in the long term will be about 0.1 percentage points higher. The alternative scenario instead assumes a greater positive effect

[3] See Table A1 in the article "Effects of the falling oil price on the global economy" in this Monetary Policy Report.
[4] The scenarios in this chapter are constructed using the Riksbank's general equilibrium model, Ramses. For a description of the model, see Adolfson, M., Laséen, S., Christiano, L., Trabandt M. and Walentin, K., , "Ramses II: Model description", Occasional Paper no. 12, 2013.

Figure 2:1. Commodity prices
Index, January 2012 = 100



Note. The IMF's oil price index is an unweighted average of Brent, WTI and Dubai Fateh. Commodities excluding fuel (energy) consist of food, agricultural products and metals. Monthly data up to the end of December 2014.

Source: IMF

on GDP. However, inflation is affected to a fairly small extent in the scenario and monetary policy therefore needs not react.

The second alternative scenario illustrates that the effects on inflation expectations and inflation are uncertain. Inflation in Sweden is low and has been low for a long time. At the same time, inflation expectations have gradually fallen in recent years (see Figure 3:27). In this situation there is a risk that the fall in oil prices will have a further impact on inflation expectations. This will reinforce the effects on inflation and it will then take longer for inflation to get back to 2 per cent. In such a scenario, monetary policy would therefore need to be more expansionary.

The fall in oil prices is largely due to an increase in the supply of oil[5]

The price of oil in dollars has fallen by approximately 50 per cent since June 2014. Price fluctuations for various commodities co-vary but, over the last six months, the fall in oil prices has been considerably larger than the fall in prices for many other commodities (see Figure 2:1). This indicates that factors specific to the production of oil lie behind the fall in prices to a great extent. According to Arezki and Blanchard (2014), 65–80 per cent of the fall in oil prices until December last year can be explained by the supply having increased.[6]

However, the relative significance of these underlying factors for the development of oil prices is uncertain. During the 2000s, the upward trend in commodity prices was mainly due to an increased demand for commodities in emerging markets, primarily China. This rising international demand has, at the same time, had a positive effect on Sweden's international trade. High commodity prices have thus coincided with the relatively strong development of the economy in Sweden.

Recently, however, supply has affected prices more than demand. For example, the production of shale oil has increased substantially in the United States in recent years, which has had more long-lasting effects on supply. Oil production has also increased in Russia, Iraq and Libya since summer 2014. The fall in oil prices was strengthened further in the late autumn when the oil cartel OPEC decided not to reduce its production of oil. With an oil price of about 60 dollars, calculations suggest that about one-third of oil production in the world is unprofitable.[7] In the longer term, therefore, the price of oil will probably lead to a dampening of supply and a rise in the oil price, which is reflected by the future prices for crude oil (see Figure 1:1).

Changes in energy prices have a relatively rapid impact on the inflation rate. The effects can be divided into direct and indirect effects. The direct effect is due to the inclusion of oil-related products such as fuel and heating oil in the usual measure of inflation. The size of this direct effect can be calculated from changes in the price of oil and it is

[5] The article "Effects of the falling oil price on the global economy" in this Monetary Policy Report makes a broader analysis of the causes underlying the fall in the price of oil and its effects on the global economy.
[6] Arezki and Blanchard (2014), "Seven questions about the recent oil price slump", IMFdirect blog, 22 December 2014. See also World Bank (2015), "Global economic prospects", which makes a similar assessment.
[7] Bank of Canada, *Monetary Policy Report*, January 2015.

less dependent on the causes of the fall in prices. The indirect effects arise when the prices of other goods and services are affected. One example is that the costs for transporting goods by lorry fall when petrol becomes less expensive.[8]

The driving forces behind the downturn in the price of oil become more decisive when the real economic effects are estimated. If oil prices fall due to a greater supply of oil, households' scope for consumption will increase at the same time as companies' costs will decrease. The fall in oil prices will then have effects resembling those of a tax cut. If the fall in oil prices has instead been caused by weaker economic activity abroad, the positive effects will be overshadowed by decreased demand for Swedish exports, in addition to which confidence will decrease among households. An example of this is the fall in oil prices in conjunction with the financial crisis of 2008–2009.

Scenario: greater effects on GDP of an increase in the supply of oil

The main scenario assumes moderate positive effects of a lower oil price on Sweden's GDP. The assessment is that a ten per cent fall in oil prices due to an increase in the supply of oil will lead to GDP, all else being equal, being 0.1 per cent higher at the end of the forecast period. In this scenario, this effect is instead assumed to be 0.3 per cent. The effects on GDP abroad are also assumed to be greater than in the main scenario.

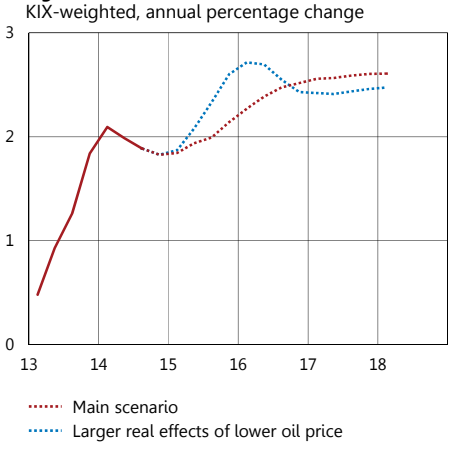
The effects of falls in oil prices can be calculated using an econometric model. A number of assumptions must then be made and there is a high degree of uncertainty in such estimates. The estimated effects partly depend on how the model concerned is designed and the period of time studied. One way of illustrating this uncertainty is to compile the results from a number of different studies.[9]

It may also be difficult to determine with any great precision to what extent a fall in oil prices is due to different factors. Both an increase in the oil supply and weaker international demand normally lead to lower oil prices, but the effects on GDP are different. For example, if increased supply is assigned greater significance for explaining the fall in oil prices than in the main scenario, the positive effects on GDP growth will be greater.

An increased supply of oil influences the Swedish economy via two direct effects. The households' scope for consumption increases as a smaller proportion of their incomes is spent on oil-related goods, for example petrol (a positive demand effect). At the same time, the companies' energy costs fall, which means they can increase their production without increasing their total costs (a positive supply effect).

[8] M. Bjellerup and M. Löf, "The effects of the oil price on inflation in Sweden", *Economic Commentary* no. 4, 2008, Sveriges Riksbank.
[9] See Table A1 in the article "Effects of the falling oil price on the global economy" in this Monetary Policy Report.

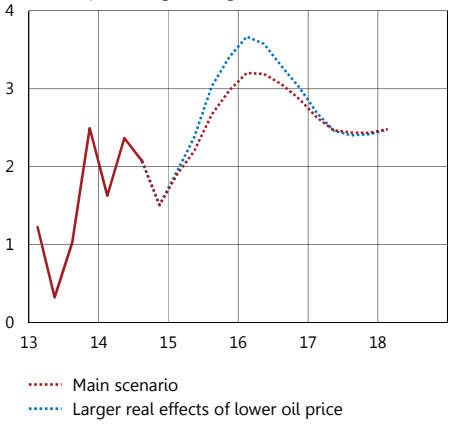
Figure 2:2. GDP abroad
KIX-weighted, annual percentage change



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

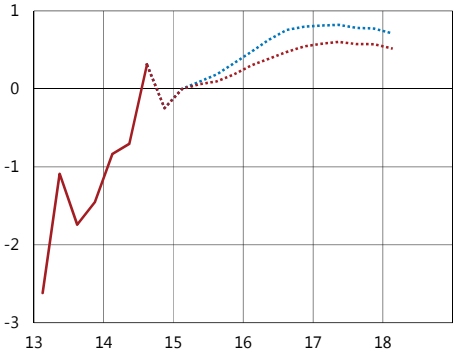
Sources: National sources and the Riksbank

Figure 2:3. GDP
Annual percentage change



Sources: Statistics Sweden and the Riksbank

Figure 2:4. Hours gap
Per cent



Sources: Statistics Sweden and the Riksbank

In the scenario, GDP in the KIX-weighted countries increases more rapidly (see Figure 2:2). Demand for Swedish export goods will then increase more rapidly. This, together with the direct effects, contributes to Swedish GDP growing more rapidly than in the main scenario (see Figure 2:3). Higher growth also means that demand for labour will increase slightly faster, which is illustrated here by a higher hours worked gap (see Figure 2:4). Increased recruitment among companies contributes toward wage increases that are slightly higher than in the main scenario and towards costs rising slightly faster. In this way, the higher resource utilisation also leads to inflation becoming slightly higher than in the main scenario (see Figure 2:5).

The slightly higher levels of inflation and resource utilisation compared to the main scenario could argue for a slightly higher interest rate. But, as the effects on inflation are relatively minor, the effects on the repo rate, according to a simple monetary policy rule, will also be fairly minor. [10] In addition, towards the end of the forecast period, resource utilisation will return to normal at the same time as CPIF inflation approaches 2 per cent. The need for a more restrictive monetary policy thereby appears to be limited and the repo-rate path is therefore assumed to remain unchanged.

In summary, the scenario assumes that the positive effects of a lower oil price on the real economy will be greater than in the main scenario. Such a scenario would be favourable for the Swedish economy. At the same time, inflation and inflation expectations are low at present. There therefore exists scope for the Riksbank to defer any repo-rate increases, even if inflation were to rise somewhat faster than in the main scenario.

Scenario: the fall in oil prices affects inflation expectations

This scenario assumes that the fall in the oil price, due to its influence on inflation expectations, will have greater effects on inflation than is the case in the main scenario. In an empirical study, Ehrmann (2014) shows that, in countries with inflation targeting in which inflation has been low for a longer period of time, inflation expectations are usually affected in several ways. Among other things, expectations often become more backward-looking, meaning that they are steered more by actual inflation and less by the central bank's inflation target. Furthermore, expectations are differently affected by inflation outcomes. Inflation that is lower than expected has a greater impact on expectations than inflation that is higher than expected. In addition, inflation forecasts differ more from forecaster to forecaster. To sum up, this means that inflation expectations are less firmly anchored in the central bank's inflation target in countries that have experienced low inflation for a longer period.[11]

[10] In Ramses, monetary policy is described by a policy rule in which the repo rate depends positively on inflation and resource utilisation, measured as the hours gap.
[11] Ehrmann, Michael (2014), "Targeting inflation from below – how do inflation expectations behave?", Working Paper 2014-52, Bank of Canada.

Inflation in Sweden has been low for some time and inflation expectations over the longer term have gradually fallen (see Figure 3:27). Taking this as a starting point, there thus exists a risk that the fall in oil prices may have a greater effect than normal on inflation expectations.

In the scenario, the recent development of inflation, and the fall in oil prices in particular, is assumed to have a greater effect on pricing by Swedish companies. This means that inflation expectations will become lower than in the main scenario. The effects of the fall in oil prices on inflation will thereby be increased. The scenario assumes that inflation expectations one year ahead will be about 0.4 percentage points lower than in the main scenario. At the same time, it is assumed that wage expectations among social partners will also be affected to a greater extent by the low inflation.

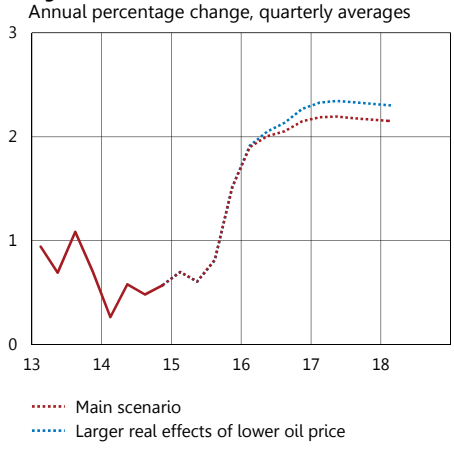
Inflation expectations influence the economy through various channels and the final effects on the Swedish economy will depend on how monetary policy is formulated. The scenario assumes that monetary policy will follow a simple rule of action in which the repo rate is the available monetary policy instrument.

Low inflation expectations affect companies' pricing and thereby have a direct effect on inflation. As the social partners also expect lower inflation in the scenario, wage development can be expected to be weaker than in the main scenario (see Figure 2:6). The fact that real wages have been higher than expected due to the low inflation in recent years may also restrain agreements and wage drift. This would mean that companies would expect lower cost increases in the period ahead, which would lead companies to raise their prices at a lower rate. Inflation would thus be lower, not reaching 2 per cent until the start of 2017 (see Figure 2:7). As inflation is lower than in the main scenario, the repo rate will also be lower (see Figure 2:8).

Inflation expectations will also affect the expected real interest rate. If monetary policy is held unchanged, the real interest rate will be higher when inflation expectations fall. Households and companies will then defer consumption and investments. Together with a slower rate of wage increase, this would contribute towards a dampening of demand against the main scenario.

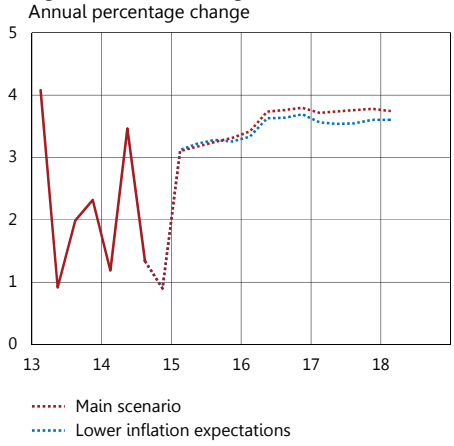
However, as monetary policy becomes more expansionary in the scenario, the real interest rate is affected to a lesser extent than in the main scenario and the negative effects on the economy are mitigated. The differences in the development of the real economy are minor compared with the main scenario (see Figure 2:9). The rate of wage increases and inflation are also higher than would have been the case with an unchanged monetary policy. Apart from the effects of a more expansionary monetary policy, the lower overall rate of wage increases against the main scenario will contribute towards increased demand for labour. This is illustrated by the hours worked gap being slightly higher than in the main scenario (see Figure 2:10).

Figure 2:5. CPIF
Annual percentage change, quarterly averages



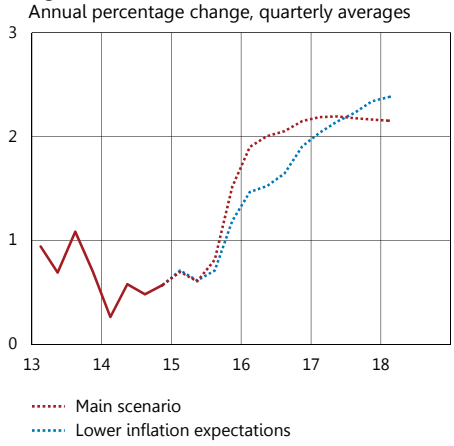
Note. The CPIF is the CPI with a fixed mortgage rate.
Sources: Statistics Sweden and the Riksbank

Figure 2:6. Nominal wages
Annual percentage change



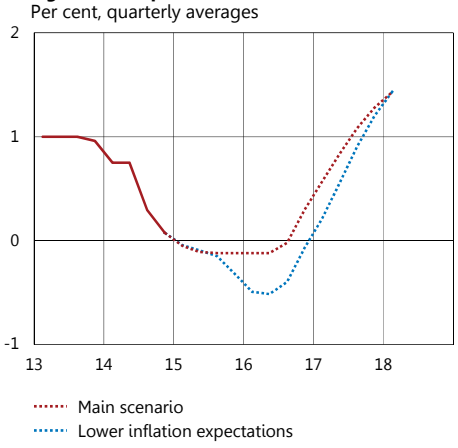
Sources: Statistics Sweden and the Riksbank

Figure 2:7. CPIF
Annual percentage change, quarterly averages



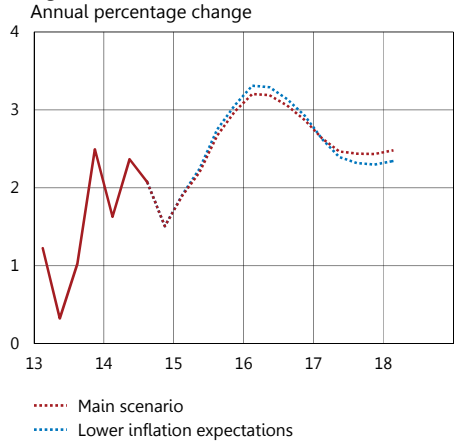
Note. The CPIF is the CPI with a fixed mortgage rate.
Sources: Statistics Sweden and the Riksbank

Figure 2:8. Repo rate
Per cent, quarterly averages



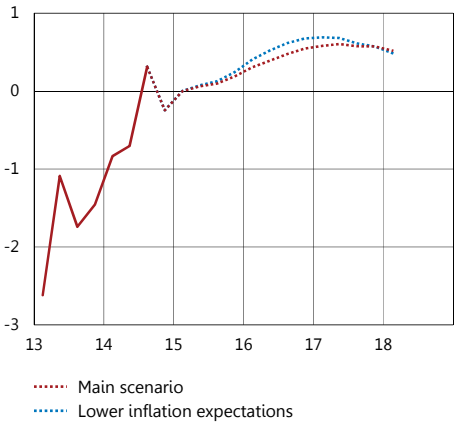
Source: The Riksbank

Figure 2:9. GDP
Annual percentage change



Sources: Statistics Sweden and the Riksbank

Figure 2:10. Hours gap
Per cent



Sources: Statistics Sweden and the Riksbank

In summary, the scenario involves the fall in the price of oil having a greater impact on inflation due to lower inflation expectations. Inflation is lower than in the main scenario, and thereby the repo rate will be lower. This should be interpreted more generally as meaning that monetary policy need to be more expansionary. But it need not necessarily mean that the repo rate will be lower, as similar effects can be obtained with other monetary policy measures (see the article "The Riksbank's complementary monetary policy measures").

CHAPTER 3 – The current state of the economy

This chapter presents new information received since the Monetary Policy Update was published in December and an assessment of economic prospects in the coming quarters.

Global economic activity is still weak, but there are considerable variations in developments between several of the major economies. Economic growth in the euro area is expected to have been slow at the end of last year and the beginning of 2015. The US economy, on the other hand, is expected to show much stronger growth during the same period. It is assumed that the lower oil prices will have strengthened global growth and subdued inflation, which was already low in many areas. Developments on the financial markets are marked by uncertainty regarding how the changes in monetary policy and the lower oil prices will together affect the global economy.

In Sweden, household consumption and housing investment are continuing to hold up GDP growth. Growth in the third quarter was somewhat weaker than normal. However, the published statistics indicate a somewhat stronger development during the fourth quarter, and growth is expected to increase somewhat further in the first quarter of this year. Growth in employment and labour force participation slowed down and unemployment was largely unchanged during the fourth quarter. However, unemployment is expected to decline slowly in the coming period.

Inflation in Sweden remains low, although it was somewhat higher than expected in December. Falling electricity and fuel prices contributed to the low inflation. In January, these prices continued to fall, at the same time as the price of crude oil on the spot and futures markets were low, which contributes to the downward revision in the forecast for CPIF inflation in the coming months. CPIF inflation excluding energy prices, which amounted to 1.1 per cent in December, has been revised up somewhat for the coming months.

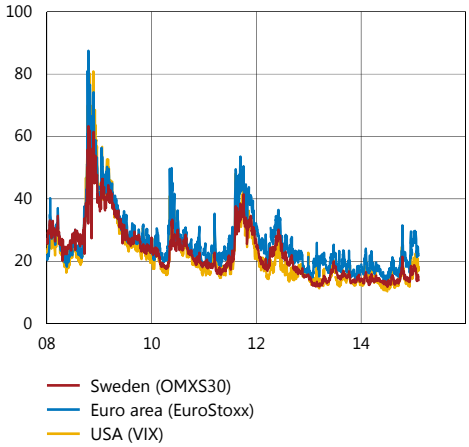
Financial markets

Uncertain oil-price effects causing unease on the financial markets

The international financial markets have been marked since December by the continued fall in the oil price, and by uncertainty over what consequences this might have for the global economy. There is also uncertainty among market participants regarding when the Federal Reserve will begin to raise its policy rate, as well as what consequences this will have in a situation where, for instance, the ECB and the Bank of Japan are continuing to conduct even more expansionary monetary policy. The financial markets were also affected by the Swiss National Bank (SNB) abandoning its minimum exchange rate. The increased concern over economic developments in Greece and the continued turbulence regarding Russia have also had an impact on the financial markets.

Volatility on the equity and foreign exchange markets has increased to levels that have been unusual in recent years (see Figure 3:1). Stock markets have shown fairly large fluctuations, swinging both up and down, but since the Monetary Policy Update was published in December they have risen somewhat (see Figure 3:2). The high volatility has entailed increased demand for safer assets, such as debt-bearing securities, which has in turn led to a fall in the yield on these assets.

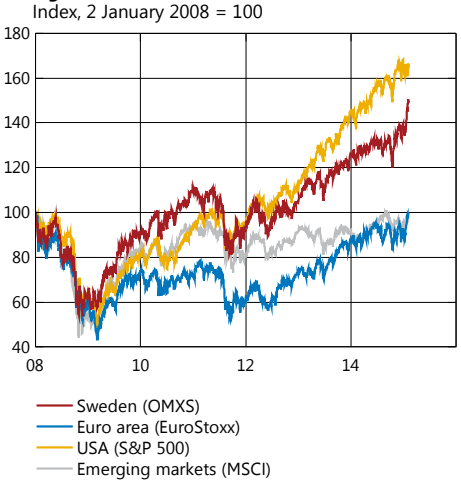
Figure 3:1. Stock market volatility
Per cent



Note. Implicit volatility calculated on the basis of index option prices.

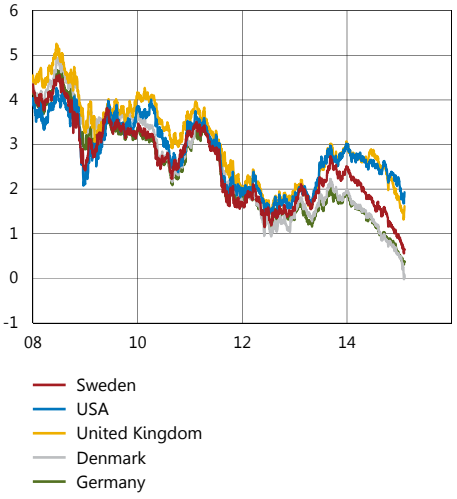
Sources: Reuters EcoWin, STOXX Limited och Chicago Board Operations Exchange

Figure 3:2. Stock market movements
Index, 2 January 2008 = 100



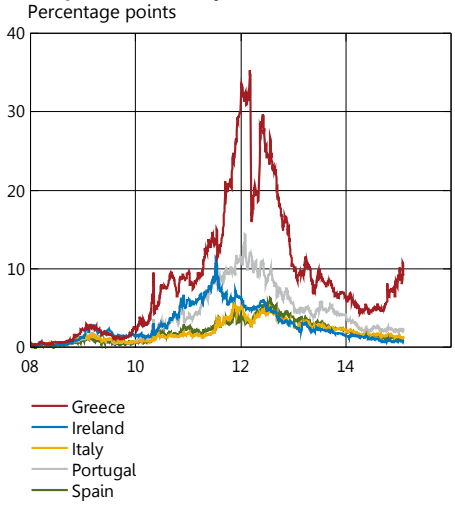
Sources: Macrobond, Morgan Stanley Capital International, Standard & Poor's and STOXX Limited

Figure 3:3. Government bond rates with 10 years left to maturity
Per cent



Source: Macrobond

Figure 3:4. Differences in government bond yields compared to Germany
Percentage points



Note. Government bonds with approximately 10 years left to maturity.

Source: Macrobond

The US dollar has developed strong, which is probably a consequence of the US economy being relatively strong and the assumption that US monetary policy will become less expansionary than that in many other countries.

■ Government bond rates at record low levels

Long-term government bond rates in, for instance, Germany, the United Kingdom and Sweden are now lower than when the Monetary Policy Update was published in December. In several countries, such as Germany, Denmark and Sweden, the yields on 10-year government bonds are at record low levels (see Figure 3:3). This could be partly due to the ECB making its monetary policy even more expansionary by purchasing long-term government bonds. And this is in a situation where policy rates are already at historically-low levels.

■ Debt problems for Greece in focus again

In Greece, the new election on 25 January led to a change of government. This has increased uncertainty on the financial markets regarding the new Greek government's ability to reach an agreement with the international lenders (the EU, the ECB and the IMF) regarding the loan terms. Although Greece's bailout programme of aid from the other euro-area countries and the IMF comes to an end on 28 February, the country is still in need of external funding to pay interest and refinance its existing debt to the ECB and the IMF. Greek banks, which have had substantial outflows from deposit accounts recently, are also dependent on a financial lifeline. There has also been a substantial rise in yields on Greek government bonds recently. On 4 February the ECB announced that with effect from 11 February, they will no longer be accepting Greek government securities as collateral for loans. From this date, the Greek banks will have to turn to the Greek central bank.

Other countries in the euro area with debt problems have not yet been affected by developments in Greece. Government bonds in, for instance, Spain and Italy, have followed the corresponding yields in the other large euro-area countries (see Figure 3:4).

■ The oil price has fallen heavily

The oil price continued to fall in December and at the beginning of January. The price of Brent crude has fallen by almost 10 per cent since the Monetary Policy Report was published in December, and by almost 50 per cent since June (see Figure 1:1). The price fall has led to lower share prices for companies with links to the oil industry, which has also had a negative impact on the broader stock exchange. At the same time, a lower oil price is positive for consumers and oil-dependent production, which benefits growth, see the article "Effects of the falling oil price on the global economy". The uncertainty over the duration and consequences of the fall in the oil price over the past six months has, however, made it more difficult for investors to assess how global growth

will develop, and this has contributed to increased volatility on the financial markets.

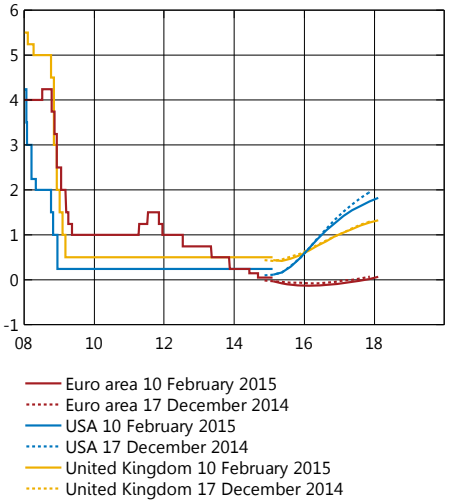
■ The ECB has decided on asset purchases and the Fed is considering raising its policy rate

The monetary policy conducted in the euro area and the United States continues to differ substantially. The ECB decided in January to make extensive purchases of assets to make its monetary policy more expansionary, while the Federal Reserve ceased expanding its balance sheet in the autumn and has begun signalling a need to raise its policy rate.

The continued low inflation and the low inflation expectations were important factors behind the ECB's decision to begin quantitative easing in the form of asset purchases, with the focus on government bonds. The ECB announced that with effect from March, they will purchase bonds to a value of EUR 60 billion per month until the end of September 2016, or until they see a lasting improvement in inflation in the euro area.[12] The asset purchases will be distributed between the various countries according to the national central banks' capital key in the ECB. In addition to the asset purchases announced, the ECB decided to cut the interest rate on the outstanding TLTRO loans announced in 2014.[13] According to forward pricing, market agents believe the policy rate in the euro area will remain unchanged for a long time to come (see Figure 3:5).

The US labour market is continuing to develop in a positive manner, but the uncertainty on the financial markets, for instance, has meant that market expectations of the future policy rate have remained largely unchanged since December. According to forward pricing, market agents are now expecting a first increase at the end of the year (see Figure 3:5). This picture is supported by the expectations indicated in survey responses.

Figure 3:5. Policy rates and rate expectations according to forward rates
Per cent



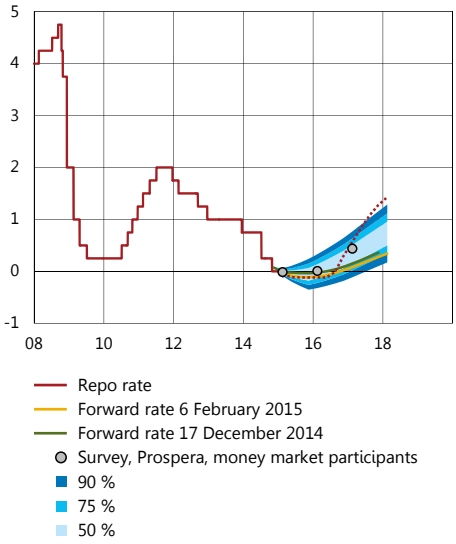
Note. Forward rates describe the expected overnight rate, which does not always correspond to the official policy rate.
Sources: Macrobond and the Riksbank

■ Expansionary monetary policy in the euro area has influenced other central banks

Expectations of the consequences of the ECB's asset purchases have also had effects on other countries' central banks. In January, the SNB discontinued its minimum exchange rate for the Swiss franc against the euro and instead lowered its target rate to −0.75 per cent from an earlier −0.25 per cent. This led to the Swiss franc rocketing. Since the minimum exchange rate was introduced in 2011, it has prevented the Swiss franc from appreciating against the euro, but has also contributed to the central bank's balance sheet increasing substantially in that the foreign exchange reserve was built up when the bank purchased foreign currency. This could increase the risk that the central bank will make losses. The SNB abandoned the minimum exchange rate to avoid its balance sheet increasing further in a situation where the ECB's monetary policy is becoming more expansionary.

[12] A smaller share of these monthly purchases of covered bonds and asset-backed securities (ABS) were decided on as early as September last year.
[13] For an explanation of the TLTRO loans, see the glossary at the back of this report.

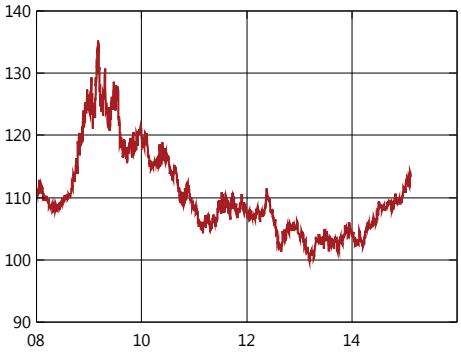
Figure 3:6. Repo-rate expectations in Sweden measured in terms of forward rates and surveys
Per cent



Note. Note. Forward rates describe the expected overnight rate. Surveys and forward rates are different measures of monetary policy expectations. The interval illustrates the historical difference between the Prospera survey and the forward-rate curve.

Sources: Macrobond, TNS Sifo Prospera and the Riksbank

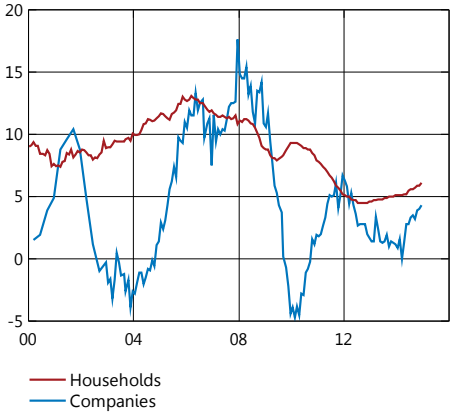
Figure 3:7. KIX-weighted nominal exchange rate
Index, 18 November 1992 = 100



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

Source: The Riksbank

Figure 3:8. Bank lending to households and companies
Annual percentage change



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

After the SNB abandoned its minimum exchange rate, the Danish krona, which is pegged to the euro, came under some pressure. To avoid an appreciation of the Danish krona, Danmarks Nationalbank has cut its policy rate in four stages to −0.75 per cent. In addition, it has made powerful interventions on the foreign exchange market and during the month of January alone its foreign currency reserves increased by DKK 106.3 billion, corresponding to around 5 per cent of GDP. Moreover, the Danish government has postponed until further notice planned issues of government bonds, to bring down the yield on bonds with longer maturities.

■ Swedish forward rates have fallen

Swedish forward rates have fallen since the Monetary Policy Update was published in December, which can be interpreted to mean that expectations of the repo rate have become lower (see Figure 3:6). Forward rates for 2015 and most of 2016 are negative, which can also mean that market participants see some probability that the Riksbank may allow the repo rate to become negative. According to forward pricing, market participants are expecting a first increase in the repo rate during 2017, but according to Prospera's survey the first increase is expected during the second half of 2016.

■ Krona weaker since December

The krona has weakened in trade-weighted terms (see Figure 3:7). However, this development has varied in relation to different currencies. The dollar has been strong against many currencies and the krona has weakened by around 10 per cent against the dollar. The krona has also weakened against sterling. In total, the krona has strengthened somewhat against the euro since the Monetary Policy Update was published in December, but there has periodically been substantial volatility between the currencies. One reason for the relatively small change in relation to the euro is that market participants are expecting both the ECB and the Riksbank to move towards even more expansionary monetary policy.

■ Favourable financial conditions for households and companies

The average interest rates on new loans from MFIs to households and companies remained largely unchanged in December, in relation to the month before, which means they are still at historically-low levels. Yields on Swedish corporate bonds are also low, which should benefit the larger and medium-sized companies that have access to these markets.

Both companies' and households' growth in credit is continuing to increase at roughly the same pace as before (see Figure 3:8). Lending to companies grew by 4.3 per cent in December, calculated as an annual percentage change. Several factors indicate that credit and funding terms for companies are favourable in general. Unsecured loans to companies are increasing, which shows that the banks are increasingly prepared to lend to companies without collateral. Surveys made by the National

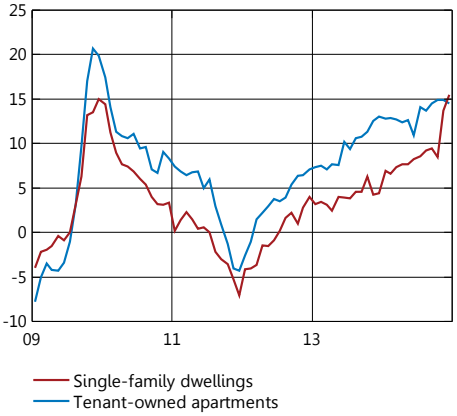
Institute of Economic Research and Almi also indicate that companies in general are not experiencing problems obtaining funding. This, together with low interest rates, has created favourable financial conditions for Swedish companies.

■ House prices increasing more rapidly

Growth in household sector credit was 6.1 per cent in December, when calculated as an annual percentage change, which is an increase of 0.2 percentage points from November. Mortgages comprise around 80 per cent of total lending to Swedish households and it is the increase in these loans that mainly explains the growth in credit.

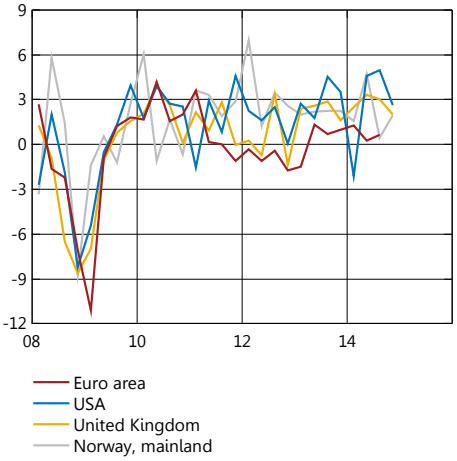
Housing prices are continuing to increase steadily (see Figure 3:9). According to statistics from Valueguard, house prices rose by 15.5 per cent in December, when calculated as an annual percentage change, while prices of tenant-owned apartments rose by 14.6 per cent. Statistics Sweden's property-price index indicates higher housing prices and the prices of detached houses increased by an annual rate of 8.6 per cent during the fourth quarter. Households are also expecting prices to continue rising.

Figure 3:9. Prices for single-family dwellings and tenant-owned apartments
Annual percentage change



Source: Valueguard

Figure 3:10. GDP abroad
Quarterly change in per cent, calculated as an annual percentage change, seasonally-adjusted data



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

International outlook

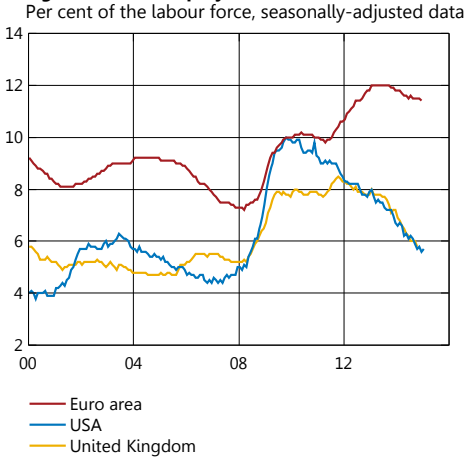
■ Uneven recovery abroad

The economic recovery abroad is proceeding slowly, although the low oil price is probably providing a positive contribution to global growth. Developments in the large economies differ from one another. In the United States and the United Kingdom GDP is growing relatively rapidly, while growth in the euro area is weaker (see Figure 3:10). Developments in GDP in several emerging markets also show a picture of more subdued growth in the coming period. The Russian economy is very weak and the country is expected to go into recession this year. The Chinese economy is growing rapidly in relation to several other economies, but growth slowed down in 2014 and is expected to be weaker than before this year.

■ Mixed signals from the euro area

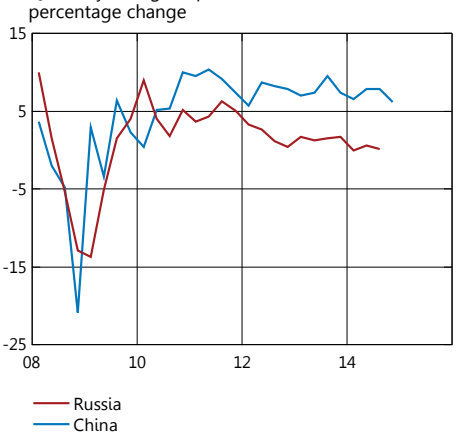
The statistics for the euro area give a fragmented picture of developments during the fourth quarter of last year. Turnover in the retail trade continued to rise in December, and for the quarter as a whole there was a clear upturn compared with the previous quarter. Industrial production rose in November, particularly in the smaller countries. The larger countries, such as Germany, France and Spain, had weaker outcomes for industrial output. Confidence indicators for January point to a weakly positive development with a rise in consumer confidence and the purchasing managers' index. The severe deterioration in the prospects for the Russian economy has had some negative impact on growth in Germany, for instance. The low oil price is expected to stimulate household consumption and contribute to higher GDP growth in the coming quarters.

Figure 3:11. Unemployment
Per cent of the labour force, seasonally-adjusted data



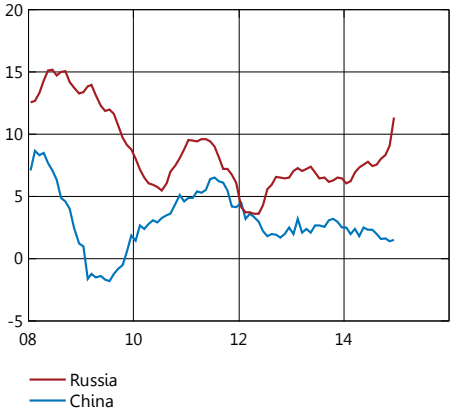
Sources: Bureau of Labor Statistics, Eurostat and Office for National Statistics

Figure 3:12. GDP in Russia and China
Quarterly change in per cent, calculated as an annual percentage change



Sources: State Committee of the Russian Federation on Statistics and Macrobond

Figure 3:13. CPI in Russia and China
Annual percentage change



Sources: State Committee of the Russian Federation on Statistics and State National Bureau of Statistics

According to the ECB's most recent Bank Lending Survey, the banks' credit terms for lending continued to improve during the fourth quarter of 2014. At the same time, the banks reported a continued increase in net demand for loans. For the first time since the middle of 2011 it was also possible to note a net increase in demand for loans for investment.

■ Positive household sector motor for US economy

The US economy is continuing to perform well. GDP increased by 5 per cent in the third quarter and 3 per cent in the fourth quarter, compared with the previous quarters and calculated as an annual rate (see Figure 3:10). The main contribution to GDP growth in both quarters was from household consumption.

The lower oil price entails important stimulation for households and this also means lower production costs for companies. Households, not least those with low incomes, benefit from the rapid fall in petrol prices. However, the lower oil price has negative effects for the oil-producing sector, and investment is thus expected to be lower than was forecast in December. The total effect on US GDP growth is expected to be positive, however.

Household sector confidence has continued to strengthen and in January was at its highest level in more than 10 years, according to the University of Michigan Index. Companies' confidence has declined from a high level, according to the purchasing managers' index. The appreciation of the dollar and the negative effects for the oil-producing sector have probably contributed to subduing companies' confidence.

The labour market is continuing to develop positively. Employment increased by 329,000 jobs in December and by 257,000 in January. Unemployment rose marginally in January to 5.7 per cent (see Figure 3:11), but this was mainly because of a large increase in labour force participation. All in all, new statistics point to GPD growth in the first quarter of 2015 being just over 3 per cent, compared with the previous quarter and calculated as an annual rate.

■ Weak growth in Russia

Growth in Russia is weak and has been negatively impacted by the Ukraine conflict and ensuing sanctions, mainly in the form of lower investment (see Figure 3:12). The fall in the oil price has subdued growth further, while it has contributed to a severe weakening of the rouble, which has in turn led to higher inflation (see Figure 3:13). In mid-December, unease on the Russian financial markets increase, which led to considerable volatility on both the equity and foreign exchange markets. This led the Russian central bank to raise its policy rate from 10.5 per cent to 17 per cent to stabilise the fall in the rouble and slow down inflation. However, the policy rate was cut to 15 per cent at the end of January. GDP is expected to have fallen at the end of last year and the beginning of 2015.

■ British economy growing relatively rapidly

The British economy has grown at a rapid pace since the beginning of 2013, thanks to rising domestic demand. GDP rose by 3.0 per cent between the second and third quarters, when calculated as an annual rate (see Figure 3:10).

Indicators point to continued strong growth in the coming quarters. Retail trade sales have risen rapidly in recent months, and in November were a good six per cent higher than one year ago. Industrial production also shows a rising trend from a low level. Both households and companies have been slightly less optimistic recently, but confidence remains at a high level. The positive development in the labour market has continued during the fourth quarter. Employment has risen and unemployment has fallen below six per cent (see Figure 3:11).

■ Poorer growth prospects in Norway due to oil price fall

The Norwegian economy is clearly affected by the development in the oil price, which is expected to lead to lower investment and weaker GDP growth. Capacity utilisation in the manufacturing industry continued to fall during the fourth quarter, while the purchasing managers' index for the sector rose to over 50 in January. However, Norway has good capacity to counteract the poorer growth prospects with stimulating fiscal and monetary policies. The Norwegian krona strengthened against the euro in January after weakening in connection with Norges bank's policy-rate cut in December.

■ Growth slowing down in China

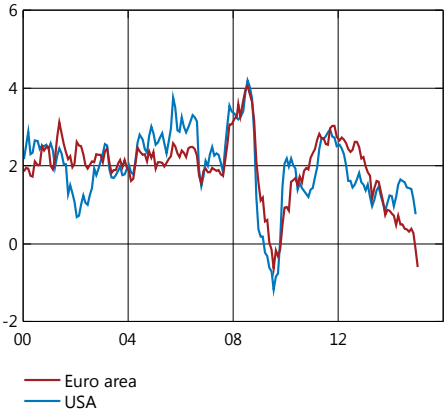
China's GDP grew by 7.4 per cent in 2014, which was the lowest growth rate since 1990. GDP growth in the fourth quarter of 2014 amounted to 6.1 per cent, compared with the third quarter and calculated as an annual rate (see Figure 3:12). Most indicators point to growth having slowed down in recent months. Investment growth has slowed down, particularly in the manufacturing industry and the property sector, and imports have fallen. Confidence in the manufacturing industry remains weak. On the other hand, exports have been relatively strong and indicators point to stronger consumption.

■ Falling oil price subdues inflation

The heavy fall in the oil price over the past six months has led to lower inflation in most countries (see Figures 3:14 and 3:15). Inflation excluding energy prices has remained relatively unchanged, however, in recent months (see Figure 3:16). There are preliminary statistics for the euro area in January indicating that inflation fell further to −0.6 per cent. It is still energy prices that account for the largest decline, but inflation excluding energy prices also fell, amounting to 0.4 per cent according to preliminary figures.

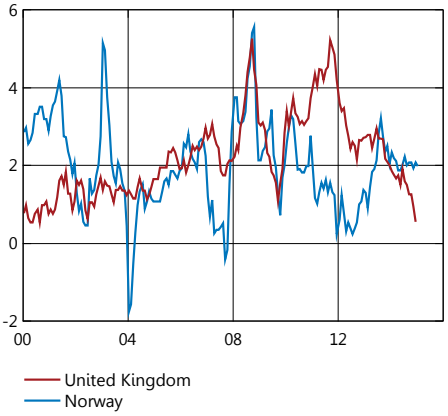
However, the lower oil prices have been counteracted by other factors in several countries. In Norway, where inflation was 2.1 per cent in December, a weak krona has probably contributed to keeping inflation

Figure 3:14. Consumer prices in the Euro area and the United States
Annual percentage change



Note. Euro Area refers to HICP, USA refers to the PCE deflator.
Sources: Bureau of Labour Statistics och Eurostat

Figure 3:15. Consumer prices in the United Kingdom and Norway
Annual percentage change

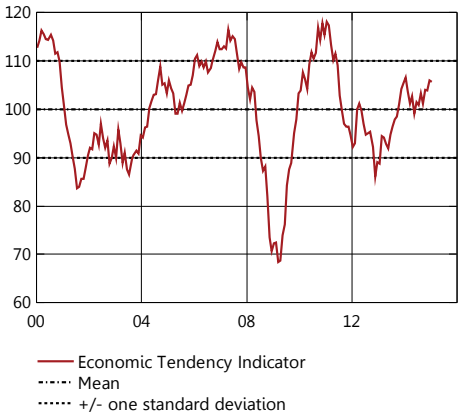


Sources: Office for National Statistics and Statistics Norway

Figure 3:16. Inflation excluding energy
Annual percentage change

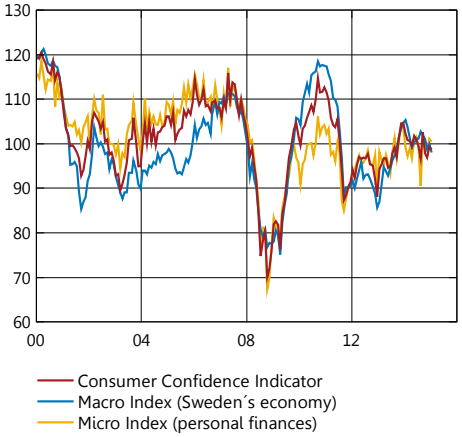
Note. Euroarea refers to HICP excluding energy and USA refers to CPI excluding energy.
Source: Macrobond

Figure 3:17. The Economic Tendency Indicator
Index, mean = 100, standard deviation = 10



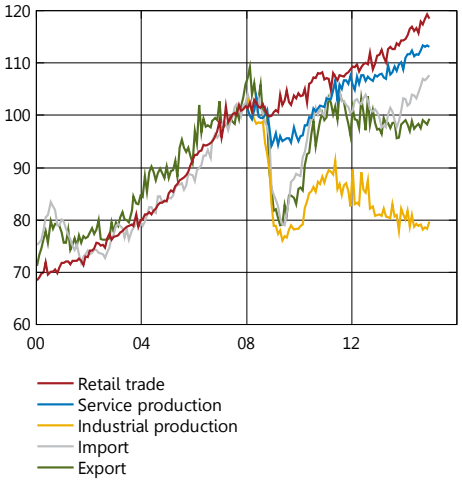
Source: National Institute of Economic Research

Figure 3:18. Confidence indicators for households
Index, mean = 100, standard deviation = 10



Source: National Institute of Economic Research

Figure 3:19. Monthly statistics for production and demand
Index, 2007=100, Seasonally-adjusted data



Source: Statistics Sweden

up (see Figure 3:15). Thus, the inflation rate is close to the inflation target of 2.5 per cent. In China, the impact on inflation has been counteracted by tax increases on oil and higher food prices. Inflation amounted to 1.5 per cent in December (see Figure 3:13).

In Russia, on the other hand, inflation has risen rapidly and is now at a high level. This is because the Russian rouble has weakened substantially, at the same time as food sanctions have contributed to higher prices for these goods. Other countries are also experiencing high inflation. In Brazil, for instance, inflation is high as a result of high transport costs and rising food prices.

The Swedish economy

■ Swedish economy improving

Confidence in both the household and corporate sectors has strengthened during the autumn. The Economic Tendency Indicator, which summarises expectations in the Swedish household and corporate sectors, fell marginally in January but is still stronger than normal (see Figure 3:17). The purchasing managers index for manufacturing has also risen and is close to its historical average. The Riksbank's Business Survey, which was carried out in January, also points to continued growth in the fourth quarter. Companies' views of future economic activity are somewhat more optimistic than before and uncertainty has declined somewhat since the survey in September, although it is still high.

Over the past year, household consumption and housing investment have been important driving forces behind growth in GDP, while exports have been weak. Monthly data for the retail trade and foreign trade indicate that this development continued in the fourth quarter. All in all, GDP is expected to increase by just over 2 per cent during the fourth quarter of 2014 in relation to the third quarter, when calculated as an annual rate. Growth is expected to increase a little further in the first quarter of this year.

■ Household consumption still an important driving force behind growth

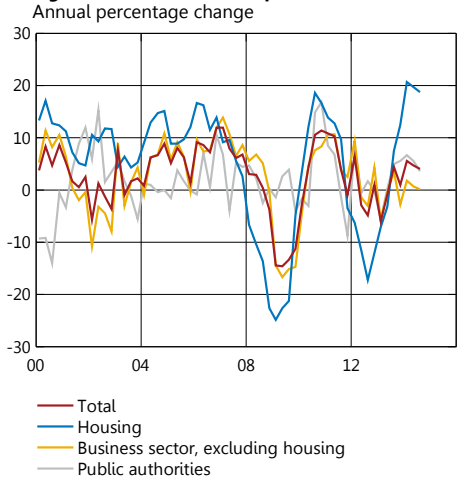
During the fourth quarter of 2014, turnover in the retail sector increased by 1.6 per cent, compared with the third quarter. Household sector confidence, as measured by the National Institute of Economic Research's confidence indicator, was close to its historical average in January (see Figure 3:18). However, Statistics Sweden's broader monthly indicator for household consumption indicates slower growth in consumption in the fourth quarter. All in all, household sector consumption is expected to increase at a faster pace than normal during both the fourth quarter of 2014 and the first quarter of 2015.

■ Continued slow export growth

The low international demand has slowed down exports and industrial production in recent years (see Figure 3:19). Exports of goods in

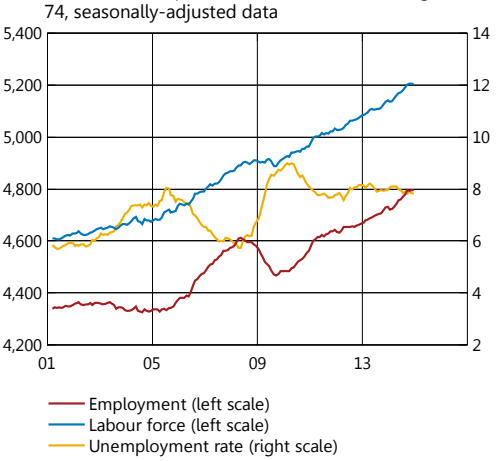
particular have been weak. The monthly statistics for foreign trade indicate that the weak trend in exports of goods has continued during the fourth quarter of 2014. At the same time, export orders are close to their historical average. Together with a gradual improvement in demand abroad, this indicates a somewhat higher growth in exports this year. Over the past year, exports have increased more slowly than imports, which has contributed to lower GDP growth. This development is expected to continue in the coming quarters, but to a lesser extent as growth in exports increases.

Figure 3:20. Gross fixed capital formation
Annual percentage change



Source: Statistics Sweden

Figure 3:21. Employment, labour force and unemployment
Thousands and per cent of the labour force, aged 15-74, seasonally-adjusted data



Note. Three-month moving average.
Sources: Statistics Sweden and the Riksbank

■ Weak investment resulting from weak demand abroad

Housing investment has increased rapidly over the past year (see Figure 3:20). At the same time, the subdued growth in exports has contributed to weak outcomes for industrial production and investment in machinery. There are few indications of a rapid turnaround. According to the Economic Tendency Survey, capacity utilisation in the manufacturing industry was lower than normal during the fourth quarter. Statistics Sweden's survey of investment plans in the business sector in October indicates weak growth in investment in both 2014 and 2015. According to the Riksbank's Business Survey carried out in January, few companies in the manufacturing industry say they are planning to increase their investment during the coming six-month period. However, a gradually stronger demand is expected to contribute to investment growth broadening to include further sectors than housing in the coming quarters.

■ Unemployment is unchanged in the short term

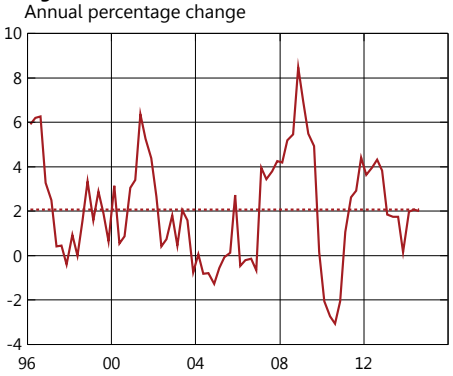
Growth in employment and the labour force slowed down during the fourth quarter and also developed somewhat weaker than the Riksbank's forecast in December. Unemployment was unchanged and amounted to 7.8 per cent (see Figure 3:21).

However, indicators of demand for labour still look positive. The number of new vacancies registered with the Swedish employment service is rising, at the same time as the number of redundancy notices is at a low level. The recruitment plans reported in the Economic Tendency Survey also indicate that the number of job vacancies will increase in the coming period. According to the Riksbank's Business Survey carried out in January, slightly more companies now say they are planning to employ in the short term than said so in September. At the same time, many companies say they have now completed the rationalisations they need to make with regard to personnel.

All in all, new information indicates a somewhat stronger growth in employment and the labour force in the coming period. However, unemployment is expected to fall more slowly during the first half of this year, and to become somewhat higher than the Riksbank's most recent assessment.

The number of hours worked according to the National Accounts figures was unexpectedly strong in the third quarter. This outcome is

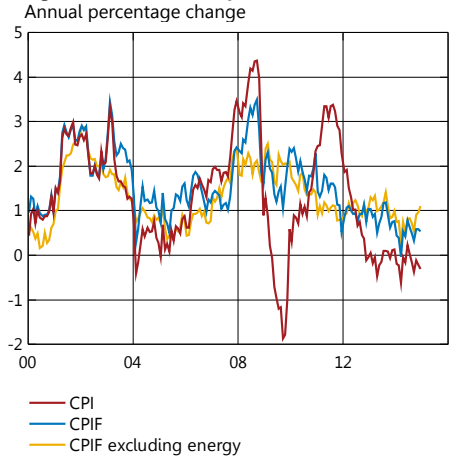
Figure 3:22. Unit Labour cost
Annual percentage change



Note. Broken line refer to the average for the period from 1996 to the most recent outcome.

Sources: Statistics Sweden and the Riksbank

Figure 3:23. Consumer prices
Annual percentage change



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

Source: Statistics Sweden

judged to be partly of a temporary nature and the number of hours worked is expected to have fallen somewhat during the fourth quarter. New information from the labour force surveys for the fourth quarter indicates that the number of hours worked will be somewhat stronger at the start of 2015 than was assessed in December.

■ Large differences in wage developments depending on measure used

According to the National Mediation Office's short-term wage statistics, wages in the entire economy rose by an average of 2.8 per cent, calculated as an annual percentage change, during the first eleven months of this year. The statistics are still preliminary and are usually revised up when retroactive payments are entered. The forecasts for the coming months and for revisions to the statistics received so far mean that wages in the entire economy are expected to increase by 3.0 per cent this year.

According to the National Accounts, hourly wages in the entire economy increased much more slowly than is indicated by the short-term wage statistics measure.[14] Labour costs per hour are expected to have increased by around 1.7 per cent last year, when expressed as an annual percentage change. Growth in productivity, measured as an annual percentage change, is expected to be negative during the fourth quarter, which means that the growth rate will also be negative for the year as a whole. Unit labour costs increased by around 1.8 per cent last year, when expressed as an annual percentage change, which is somewhat lower than the average since 1994 (see Figure 3:22). Despite a higher rate of growth in productivity, cost pressures are expected to rise during the first quarter of this year.

■ Somewhat higher inflation than expected in December

The rate of inflation according to the consumer price index, CPI, was −0.3 per cent in December (see Figure 3:23). The low CPI inflation rate is partly connected with household mortgage expenditure having fallen, which in turn is due to a gradually lower repo rate.

However, inflation is low even if one disregards the effects of decreasing interest expenses. The CPI inflation rate with a fixed interest rate (CPIF) was 0.5 per cent in December. One reason for CPIF inflation also being low is the recent fall in electricity and fuel prices. However, when adjusted for energy prices, the annual rate of increase in the CPIF was 1.1 per cent.

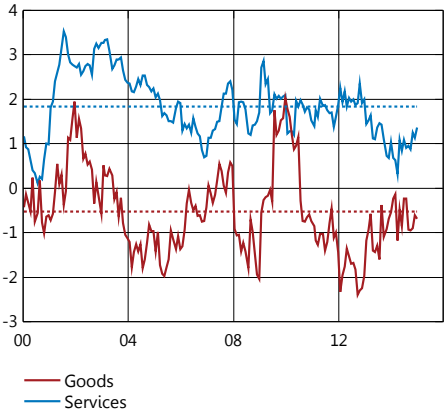
For all three measures of inflation, the December outcome was somewhat higher than the assessment in December. This was mainly due

[14] There are several factors that could contribute to the difference in results from different measures of wages in 2014. One factor that is more temporary is the unusually large positive effect from the sample rotation in the short-term wage statistics survey of the business sector. The level of the agreed wage increases in the economy as a whole is marginally lower in 2014 than in 2013, which means there is reason to believe that the rate of increase in the short-term wage statistics for 2014 will be more in line with the rate of increase in 2013, that is, around 2.5 per cent. One should also bear in mind that the wage measure in the National Accounts is based on two different statistical sources, which means it is uncertain and also that the statistics may be revised several years back in time. The number of hours worked is also a more uncertain measures than, for instance, the number of persons employed. If the payroll expense is divided by the number of employees, the rate of increase comes closer to the short-term wage statistics' measure for wage developments instead. For further information on the differences between the different measures of wages, see the National Mediation Office's annual report "Collective bargaining and wage formation 2010".

to service prices rising faster than expected. It was prices of trips abroad that was surprisingly high and some rebound is therefore expected when the January outcomes are published. The rate of price increase on services increased at the end of 2014, but is still lower than its historical average (see Figure 3:24).

The rate of price increase on goods, which became less negative in 2013, has been close to a historical average throughout 2014. This development is partly linked to the weakening of the krona exchange rate. The annual percentage change in prices of goods (excluding energy and food) fell back somewhat, compared with November, amounting to −0.7 per cent in December (see Figure 3:24).

Figure 3:24. Goods and services prices
Annual percentage change



Note. The broken lines represent the average for the period 2000 to the latest outcome.

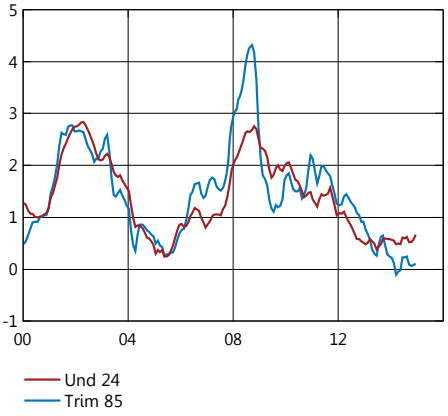
Sources: Statistics Sweden and the Riksbank

■ Continuing low inflation in the short term

Inflation is expected to be low in the coming period. Various measures of underlying inflation imply that the downturn in inflation has come to a halt, however (see Figure 3:25). The krona is weak and with regard to imported consumer goods, the price index in the producer channel has continued to rise (see Figure 3:26). Moreover, the National Institute of Economic Research's Economic Tendency Survey for the first quarter shows that more companies than before are now intending to raise their prices. This applies, for instance, to the retail trade, where a higher percentage of companies than the historical average are planning to raise their prices. On the other hand, the Riksbank's most recent Business Survey shows that the level of planned price increases has slowed down, particularly with regard to consumer-related companies. All in all, CPIF inflation excluding energy prices is expected to be higher in the coming months than was assessed in December.

If the volatile energy prices are included, CPIF inflation has instead been revised down somewhat. This is because fuel prices continued to fall substantially at the end of December and in January. Although fuel prices, like the crude oil price on both the spot and futures markets showed an initial upturn at the beginning of February, fuel prices are expected to remain lower than was forecast in December for a further period of time. Electricity prices will also contribute to the forecast for CPIF inflation being revised down for the coming months. The CPI and CPIF inflation rates are expected to be on average −0.2 and 0.7 per cent respectively during the first quarter of this year.

Figure 3:25. Measures of underlying inflation
Annual percentage change, three months moving average



Note. Und 24 and Trim 85 are statistical measures calculated on the basis of the CPI divided into approximately 70 subgroups. Und 24 is weighted and adjusted for the historical standard deviation. In Trim 85, the 7.5 per cent highest and the 7.5 lowest yearly price changes have been excluded.

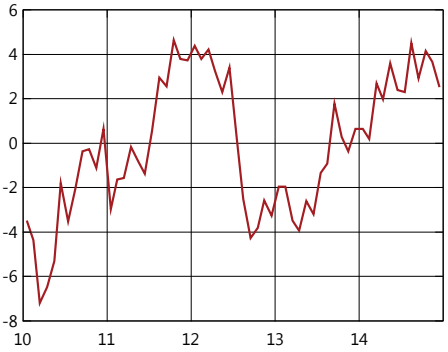
Sources: Statistics Sweden and the Riksbank

■ Inflation expectations have fallen at all horizons

According to surveys by the National Institute of Economic Research and TNS Sifo Prospera, inflation expectations have fallen in recent years. One should bear in mind that inflation expectations have historically covaried well with actual inflation. This applies to expectations at all time horizons, but in particular to the short-term expectations. According to statistical analysis, the prevailing inflation expectations can be explained by the current inflation outcomes.

Deviations between inflation expectations in the long run and the Riksbank's inflation target can have effects when, for instance, companies

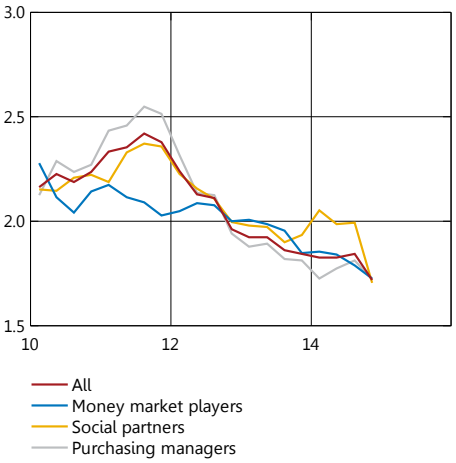
Figure 3:26. Producer price index, import market
Annual percentage change



Note. Refers to consumer goods.

Source: Statistics Sweden

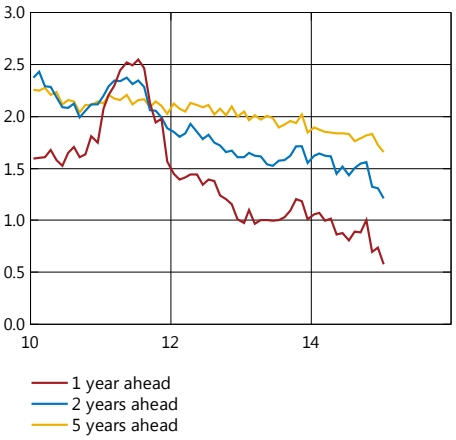
Figure 3:27. Inflation expectations five years ahead
Per cent



Note. Social partners refers to average for employer and employee organisations. Purchasing managers refers to average for purchasing managers in the retail trade and manufacturing industry.

Source: TNS Sifo Prospera

Figure 3:28. Money market players' expectations of inflation
Per cent



Source: TNS Sifo Prospera

are setting their prices and when the social partners are negotiating wages. If, for instance, the social partners believe that inflation will in the long run be lower than the inflation target, this may affect the level of the agreed wage increases in the coming period. According to TNS Sifo Prospera's most recent quarterly survey, which was published in December, inflation expectations among all agents were 1.7 per cent for five years ahead (see Figure 3:27). Inflation expectations fell for all subgroups and most for the social partners.

TNS Sifo Prospera also makes a smaller-scale survey once a month where only money market agents are questioned. In January, inflation expectations were 0.6 per cent one year ahead and 1.2 per cent two years ahead. Inflation expectations five years ahead were 1.7 per cent (see Figure 3:28). According to the Economic Tendency Survey for January, households perceive the inflation rate to be 0 per cent, and the same applies to inflation one year ahead. Companies' inflation expectations one year ahead were 0.6 per cent in the fourth quarter of 2014.

The Riksbank's complementary monetary policy measures

The Executive Board of the Riksbank has decided to conduct a more expansionary monetary policy. If this proves insufficient to get inflation to rise towards the target, the Riksbank can quickly make monetary policy even more expansionary. This article describes in greater depth the various measures that are most likely to be used. These consist of an even more negative repo rate, additional purchases of nominal government bonds and lending to companies via banks.

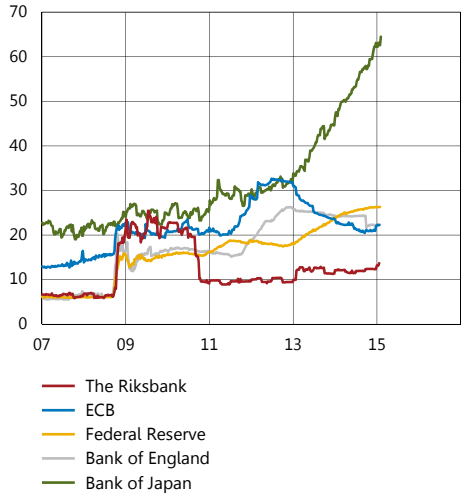
Many other central banks have used different types of measure to make their monetary policy more expansionary, after cutting their policy rate to levels that have usually been regarded as a lower bound. At the end of January, for instance, the ECB decided to extend its asset purchase programme to include purchases of government bonds corresponding to an amount of approximately 10 per cent of the euro area's GDP. In Denmark and Switzerland, the lower bound for the policy rate has been assessed to be a negative rate and these central banks have cut their rates below zero. Other central banks have thus tried various measures to make their monetary policy more expansionary.[15]

Exactly which measures have been taken depends on the specific problems the country concerned has tried to remedy. The measures that a central bank has at its disposal to conduct monetary policy when the policy rate is close to its lower bound essentially concern increasing the monetary base, increase liquidity, and in various ways exchanging risky assets for safe central bank assets. Measures of this type therefore always entail an increase in the central bank's balance sheet total (see Figure A1).

As Sweden is a small, open economy, it will benefit in some respects from a more expansionary monetary policy being conducted in other countries. For instance, stronger growth abroad benefits Swedish exports. On the other hand, a more expansionary monetary policy abroad can lead to the krona strengthening in a way that dampens the economic recovery and increase the risk that the already low inflation in Sweden will become even lower for some time.

The Riksbank has cut the repo rate to −0.10 per cent and decided to restore the interest rates for fine-tuning transactions to the repo rate +/−0.1 percentage points, so that the low inflation will rise towards the target. The Executive Board of the Riksbank has also decided to adjust the repo-rate path down somewhat and to purchase nominal government bonds to an amount of SEK 10 billion and with a maturity of up to five years. If monetary policy needs to become even more expansionary, the repo rate and the repo-rate path can be cut further. In addition, the Riksbank can extend its purchases of government bonds and also introduce a programme of loans to companies via the banks. All

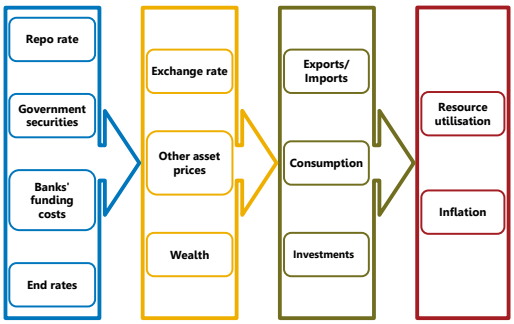
Figure A1. Central banks' balance sheet totals
Per cent of GDP



Sources: National central banks, Reuters EcoWin and the Riksbank

[15] For a description of what other banks have done, see the article "Monetary policy when the policy rate is close to zero" in the Monetary Policy Report published in October 2014. Söderström, U. and Westermark, A. ("Monetary policy with a zero interest rate" *Economic Review,* 2009 Sveriges Riksbank) describes in more general terms the different monetary policy measures that can be implemented when the policy rate is at its lower bound.

Figure A2. The monetary policy transmission mechanism



Source: The Riksbank

of these measures can be implemented quickly, even between the ordinary monetary policy meetings. However, when these measures should be implemented, and how forceful they should be, will depend on how inflation, in particular, develops. This article describes the measures the Riksbank is beginning to implement and which can be extended if monetary policy needs to become more expansionary.

How do complementary monetary policy measures differ from normal monetary policy?

The monetary policy transmission mechanism describes how a change in monetary policy affects inflation and the economy as a whole. Somewhat simplified, one can divide the transmission mechanism up as shown in Figure A2.[16]

The Riksbank steers the shortest market rate, the overnight rate, with the aid of the operational framework for implementing monetary policy. Longer-term market interest rates depend to a large extent on expectations of future short-term rates, that is, expectations of future monetary policy. If cutting the repo rate is supplemented with a downward revision of the repo-rate path, the longer market rates usually fall, too, which is illustrated by the blue field in Figure A2. Lower market rates also mean that the exchange rate weakens for a period of time and that wealth increases (the yellow field), as equity prices and bond prices rise. This affects demand in the economy and leads to an increase in exports, as well as consumption and investment (the green field). All in all, resource utilisation in the economy thus increases and wages and other costs gradually rise. To compensate for the higher costs, companies need to raise their prices at a faster pace, which gives higher inflation. The weaker exchange rate also leads directly to higher inflation, as prices of imported consumer goods rise faster.

When the repo rate is cut to its lower bound, further complementary monetary policy measures will be needed if monetary policy is to become more expansionary. These measures work through the transmission mechanism in Figure A2, but have their respective starting points in different places.

The size of the impact of the various measures will depend on which parts of the usual transmission mechanism are active when the measure is implemented. Another common purpose of complementary measures is to clearly signal that the central bank is taking sufficient measures to ensure that inflation expectations are compatible with the inflation target in the long run. This also contributes to inflation rising towards the inflation target.

Cutting the repo-rate further

The Riksbank has now decided to cut the repo rate to −0.10 per cent. Few central banks have previously had negative policy rates and it is therefore difficult to know how the transmission mechanism functions with negative interest rates. Cutting the repo rate below zero, at least if the cuts are in total not very large, is expected to have similar effects to

[16] See also Hopkins et al. ("The Monetary Policy Transmission Mechanism", *Economic Review* 2009, Sveriges Riksbank) for a more detailed description of the monetary policy transmission mechanism.

repo-rate cuts when the repo rate is positive, as all channels in the transmission mechanism can be expected to be active. On the other hand, there is uncertainty as to how negative the repo rate can be before the transmission mechanism weakens. But ***the Riksbank assesses that the repo rate can be cut further from the current level of −0.10 per cent. The effects of the current repo-rate cut will influence the Riksbank's assessment of how far the repo rate can be cut.***

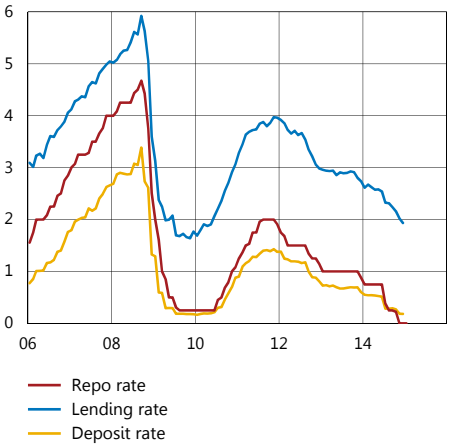
In simple theoretical models the interest rate cannot be negative, as if it were, households and companies would then invest their savings in cash, which does not give a negative return.[17] In practice, however, holding cash entails a cost. For instance, cash must be stored in a safe place and its physical handling also entails costs. It is therefore very likely that zero is not a lower bound in practice.

In theory, there is nothing to prevent market rates from following the repo rate and becoming negative. The Swedish payment system is a closed one, where banks either deposit a liquidity surplus in the Riksbank or borrow liquidity from the Riksbank. However, most of the liquidity management between the banks involves banks with a deficit borrowing from banks with a surplus. If interest rates on these transactions deviate too far from the Riksbank's repo rate, it will become more profitable for a bank to instead borrow from or deposit with the Riksbank. The very short market rates therefore tend to be close to the repo rate. Normally, the banks' deposit and lending rates therefore follow changes in the repo rate, although this can be with some time lag (see Figure A3). Now that the repo rate is being cut to −0.10 per cent, the banks can of course choose not to introduce negative deposit rates. The banks can then instead retain their earnings by not cutting lending rates to the same extent as usual when the repo rate is cut. This could mean that the monetary policy transmission mechanism may become somewhat weaker than normal, when the repo rate is cut below zero.

The transmission mechanism can also to some extent be affected by the fact that there has been a liquidity surplus for some years now which the banks have deposited with the Riksbank at the end of the day. When the repo rate is negative, the banks have to pay the Riksbank to make these deposits. However, one should remember that at the beginning of the 2000s, there was a liquidity deficit in the Swedish payment system, so in practice it is not unusual for the banks to pay the Riksbank for liquidity (see Figure A4). With the surpluses and with interest rate levels we have today, the amounts involved are small, particularly when one takes into account the profit situation in the banking sector. However, the larger the liquidity surplus, or the more negative the repo rate, the greater the cost for the banks.

All in all, the reasoning above indicates that the repo rate can be cut further below zero before the costs to the banking system become too great and comprise any major problem for the monetary policy transmission mechanism. Although the impact on households' deposit

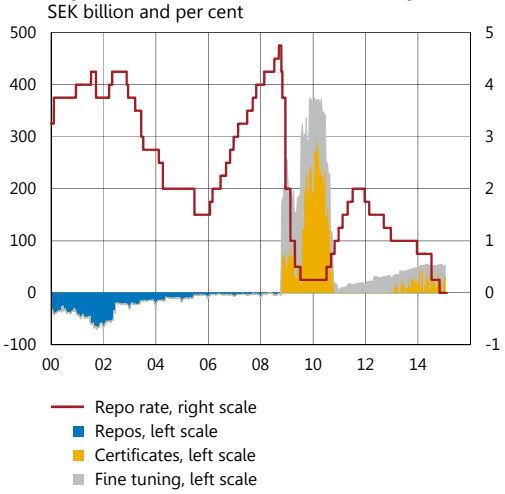
Figure A3. The repo rate and bank rates
Per cent



Note. Lending and deposit rates refer to new loan agreements. The deposit rate is calculated as the banks' average deposit rate, while the lending rate refers to MFIs' average lending rate.

Sources: Statistics Sweden and the Riksbank

Figure A4. The banks' deposits and lending requirements at the Riksbank, and the repo rate
SEK billion and per cent



Note: Negative figures mean that the banks borrow liquidity from the Riksbank, positive figures that the banks make deposits.

Source: The Riksbank

[17] See Söderström, U. and Westermark, A. "Monetary Policy with a Zero Interest Rate", *Economic Review*, 2009, Sveriges Riksbank.

rates could be somewhat less than normal, the repo-rate cuts below zero are expected to have a sufficiently large effect via the other channels in the transmission mechanism, for instance, as the krona exchange rate is expected to weaken.

Purchases of nominal government bonds

The Executive Board of the Riksbank has decided to buy nominal government bonds on the secondary market to the amount of SEK 10 billion for monetary policy purposes, and is prepared to continue buying government bonds if monetary policy needs to become more expansionary. The Riksbank will pay for the bonds by increasing the amount of liquid funds in the economy. The purpose of these purchases is to reduce general interest rates in the economy, partly through the so-called portfolio channel.[18] When the yield on safe assets falls as a result of the central bank's purchases of government bonds, it becomes more attractive for investors to seek other, more risky assets such as equity and corporate bonds. The purchases will increase liquidity in the economy and in this way the lower yields on government bonds will spread to other parts of the financial markets. The lower interest rates will in turn contribute to allowing the banks to cut their lending and deposit rates, which increases companies' propensity to invest, at the same time as households have greater incentive to consume. Both households' and companies' wealth increase as a result of the higher asset prices that arise through the portfolio channel.

All in all, aggregate demand and the credit supply in the economy will increase. When the economy is stimulated through an increase in aggregate demand, inflation gradually rises, as companies can charge higher prices and the lower unemployment pushes up wages. There are many studies of international experiences from purchasing government bonds. These studies indicate that the measure may have relatively large effects on both the real economy and inflation, but that there is at the same time considerable uncertainty over the effects.[19]

The Riksbank may, if necessary, purchase further nominal Swedish government bonds for monetary policy purposes. These purchases would primarily be over maturities of up to 10 years. The Swedish National Debt Office's issues of nominal bonds are expected to amount to SEK 77 billion a year in 2015 and 2016. Net borrowing, that is, the difference between issues and maturities of bonds, is expected to be SEK 5 billion in 2015. The aim is that the Riksbank's purchases will be significant in relation to the size of the market.

The Riksbank's purchases will take place by means of auctions in which the Riksbank's monetary policy counterparties and the Swedish National Debt Office's primary dealers have the opportunity to participate. In this way, the pricing and allocation of the Riksbank's

[18] See, for instance, the discussion in Bowdler, C. and Radia, A. "Unconventional monetary policy: the assessment", *Oxford Review of Economic Policy*, 2012 or Chen, H, Cúrdia, V. och Ferrero, A. "The Macroeconomic Effects of Large-Scale Asset Purchase Programs", *Federal Reserve Bank of New York Staff Reports*, 2011.

[19] See, for instance, Weale, M. and Wieladek, T. "What are the macroeconomic effects of asset Purchases", *External MPC Unit Discussion Paper* No. 42, Bank of England, Gertler, M. and Karadi, P. "QE 1 vs. 2 vs. 3. . . : A Framework for Analyzing Large-Scale Asset Purchases as a Monetary Policy Tool", *International Journal of Central Banking*, 2012 and Christensen, J. H. E. and Krogstrup, S. "Swiss Unconventional Monetary Policy: Lessons for the Transmission of Quantitative Easing", Federal Reserve Bank of San Francisco WP 2014-18.

transactions are transparent to the market. These purchases are expected, in line with the experiences of other countries, to affect prices of mortgage bonds and corporate bonds, as well as other assets.[20] The measures will be evaluated along the way.

Lending to companies via banks

Other central banks around the world have also worked with complementary monetary policy measures where the central bank lends to banks or in other ways provides support to ensure liquidity comes into the financial system. Sometimes, this type of lending has been targeted at certain sectors of the economy, which have needed special stimulus.[21] Direct loans outside the banking sector are often difficult for a central bank to manage, from a legal point of view. A number of central banks have therefore introduced programmes aimed at lending to, for instance, companies indirectly, via the banks. When measures are targeted in this way, only the parts of the transmission mechanism that go via the companies in Figure A2 are active. This means that the measures can be expected to have less effect on inflation than via the usual transmission mechanism. While purchases of government securities, via the portfolio channel, primarily benefit larger companies that have access to market funding, targeted loans to companies via the banks may be more beneficial to small and medium-sized companies, which are more dependent on the banks for their funding. Strengthening the incentives for the banks to increase their lending to companies can therefore be said to supplement the purchases of government bonds and the repo-rate cut.

The Riksbank considers that a programme for lending to companies via the banks can be used as an additional measure. This measure could entail the Riksbank initially lending, for instance, SEK 100 billion to the banks with a loan maturity of four years. In this way, the Riksbank could contribute to more favourable long-term lending to companies. Like other central banks that have implemented similar measures, the Riksbank will, if such a loan programme is adopted, follow up to ensure that loans to companies actually increase.[22] Exactly how the Riksbank designs such a programme will be notified if and when it becomes appropriate.

Costs and risks linked to complementary monetary policy measures

The Riksbank normally makes a profit that is paid into the Swedish Treasury every year. Over the past 25 years, the Riksbank has paid in more than SEK 210 billion to the Treasury.

The Riksbank and the banking system comprise a closed system, which means that the money the Riksbank creates to buy government bonds must automatically return to the Riksbank as deposits. These deposits will be at interest rates the same as, or very close to, the repo rate. When the Riksbank buys government bonds and increases its

[20] For instance, equity prices or even housing prices can rise.
[21] The ECB, for instance, has introduced lending that excludes mortgage loans to households and the Bank of England is now targeting its "Funding for Lending Scheme" at small and medium-sized companies.
[22] The Bank of England has this kind of follow-up in its "Funding for Lending Scheme" and the ECB has something similar in its TLTRP programme.

balance sheet, however, losses will arise if interest rates begin to rise more than was expected when the purchases were made.[23] The larger the purchases made, the greater the losses will be.

However, the Riksbank making a loss need not entail any problem to society, even if it means that the payments to the Treasury decline. This is because the improved economic situation, which follows from a more stimulating monetary policy, will at the same time lead to increased tax revenue and reduced expenditure for unemployment benefit, for instance. The total benefit of the purchases, including meeting the inflation target, will thus in total be greater than the cost.

Although one purpose of the measures discussed here is to attain an increased risk taking, it is important to remember that they can at the same time lead to excessive risk taking by financial agents, non-financial companies and households.[24] There is thus a risk that the financial system's resilience to shocks will decline, which has also been taken into account when formulating the measures. This emphasises the importance of evaluating the various measures along the way.

The Riksbank is prepared to increase stimulus if necessary

In addition to the measures described in this article, there are a number of further measures the Riksbank can use to bring inflation back to the target of 2 per cent.[25] This could entail, for instance, purchases of different types of securities and interventions on the foreign exchange market. Exactly which further measures may be used will depend on the situation, however. The measures discussed in this article can be implemented quickly, or increased in scope, if necessary. Experiences from other countries show that circumstances can change rapidly. Ultimately, it is the conditions for inflation that will determine if these measures are implemented and how forceful they will be.

[23] For a more detailed discussion of the Riksbank's profits and balance sheet, see af Jochnick, K. "Does the Riksbank have to make a profit? Challenges for the funding of the Riksbank", speech January 2015, Sveriges Riksbank.
[24] For a more detailed discussion of these effects of expansionary measures by central banks, see the Financial Stability Report 2014:2.
[25] See the discussion in the article "Monetary policy when the policy rate is close to zero", Monetary Policy Report, October 2014.

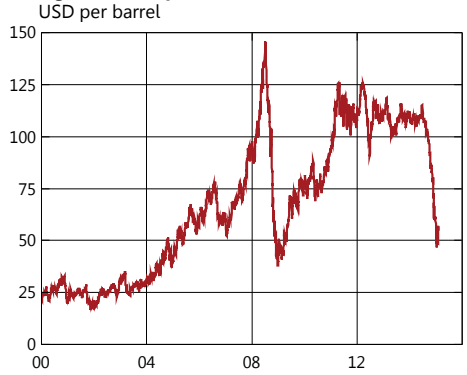
Effects of the falling oil price on the global economy

Prices on the world market for oil have fallen rapidly since the summer of 2014. Measured in US dollars, the price has fallen by approximately 50 per cent since June. The falling oil prices are largely deemed to be an effect of the increased supply of oil, but slightly worsened global growth prospects are also deemed to have played a part. Forward pricing indicates that prices in the years ahead will not return to recent years' levels. This article discusses how the falling oil prices may affect the development of the global economy and inflation. Lower oil prices dampen inflation both directly when the price of oil-related products falls and indirectly when production costs for other goods fall. The effects are different for oil-producing countries and oil-importing countries. A fall in oil prices will have a greater effect if the lower prices are permanent, as companies and consumers will then change their behaviour more than they would if the fall in the prices was only temporary. The reaction of central banks' monetary policy to a fall in oil prices depends greatly on how inflation and inflation expectations are affected.

Falling oil prices since the summer

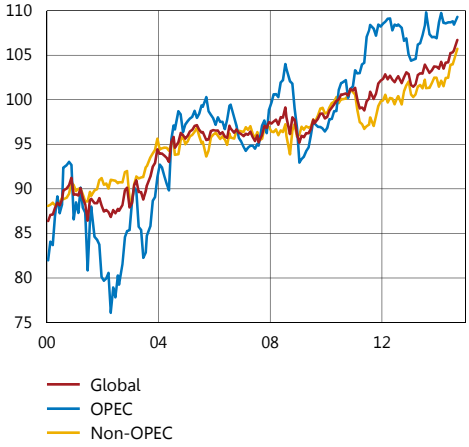
Prices on the world market for crude oil, using the Brent benchmark, had been around 115 US dollars per barrel for several years prior to mid-June, but have, since then, rapidly fallen and oil is now traded at levels just under 60 dollars per barrel (see Figure A5). The price of oil has thus fallen by approximately 50 per cent. Expressed as the number of dollars per barrel, this is the second largest fall over a twelve-month period in the last 50 years. The largest fall occurred in conjunction with the financial crisis of 2008–2009, when demand in the global economy fell rapidly. This time, the price decrease is largely deemed to be an effect of the increased global supply of oil (see Figure A6). The production of North American shale oil has increased sharply in recent years. This lies behind the heavy increase of total oil production in the United States and Canada. Russia, Iraq and Libya have also increased production since the summer (see Figure A7 and A8). Unlike in previous price falls, the oil cartel OPEC has not decreased production to maintain prices. Instead, OPEC has also increased production. An expected decrease in demand for oil due to lowered expectations for global GDP growth has also contributed to the price fall. GDP growth in China has fallen and is weak in Europe. Nevertheless, the increase in supply is deemed to explain the greater part of the price fall, and this conclusion is shared by most studies. According to Arezki and Blanchard (2014)[26], 65–80 per cent of the fall in oil prices until December last year can be explained by increased supply.

Figure A5. Oil price
USD per barrel



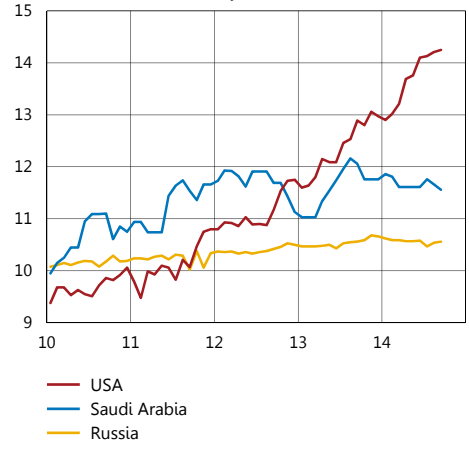
Note. Brent oil.
Source: Macrobond

Figure A6. Oil production
Index, 2010 = 100



Sources: U.S. Energy Information Administration and the Riksbank

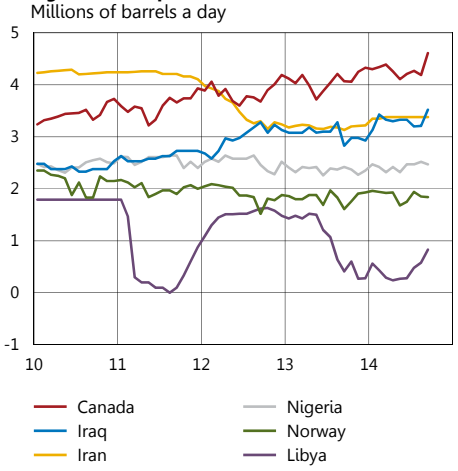
Figure A7. Oil production
Millions of barrels a day



Source: U.S. Energy Information Administration

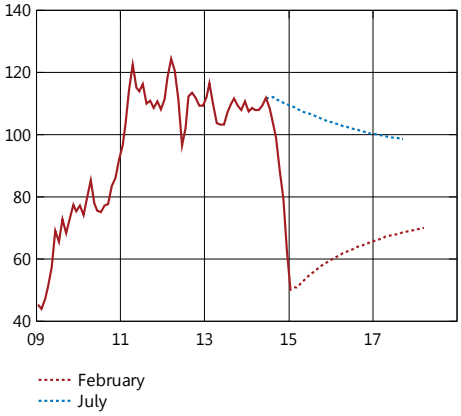
[26] Arezki, R. and O. Blanchard (2014), "Seven Questions about the Recent Oil Price Slump." *IMFdirect Blog*, 22 December 2014.

Figure A8. Oil production
Millions of barrels a day



Source: U.S. Energy Information Administration

Figure A9. Oil price and futures prices
USD per barrel



Note. Brent oil. Futures are calculated as a 15-day average. Outcomes represent monthly averages of spot prices.

Sources: Macrobond and the Riksbank

Is the low oil price here to stay?

Whether the low oil price will be permanent or not is a decisive factor for the effects the fall in oil prices may have on the development of the global economy. The Riksbank's forecasts of the oil price are based on forward pricing of Brent crude oil. According to the oil forwards, a cautious increase in oil prices from the current level of just over 50 dollars per barrel to about 70 dollars per barrel can be predicted for the start of 2018 (see Figure A9). The forward pricing thus indicates that the price of oil will rise, but to a level significantly lower than has been experienced in recent years. Naturally, there is considerable uncertainty about this forecast. How permanent the low oil price will be largely depends on how OPEC's production is affected. If OPEC reduces oil production, the price of oil will probably rise. A low oil price would probably also lead to lower investments in oil production, including North American shale oil production, which would, in turn, reduce production capacity and thus the supply of oil. Other factors that could influence the price of oil via reduced supply are the geopolitical turbulence in Libya and Iraq, for example, and uncertainty linked to the conflict between Russia and Ukraine.

Effects of the lower oil price on the global economy

If the low oil price is expected to be long-lasting, the economy will be affected more strongly than if the price decrease is expected to be temporary, as companies and consumers react more strongly to a permanently lower oil price. But the effect of the lower oil price on the development of the global economy depends not only on whether the low price is expected to be temporary or persistent but also on the causes of the oil price fall. A price fall due to reduced demand for oil will not have the same positive effects on the global economy as a price fall due to an increased supply of oil. This is because a demand-driven price fall is symptomatic of worsened growth prospects. Various studies clearly show this (see Table A1). The extent of the effects also depends on how countries adjust their fiscal and monetary policies in response to the fall in prices.

Table A1. Effects on the level of GDP and inflation of an oil price fall of 10 per cent
Per cent

	USA	Euro area
GDP		
Barell and Pomerantz (2004)	0.16	0.13
Carabenciov et al (2008)	0.20	0.06
Cashin et al (2014)*	0.08	0.08
Cashin et al (2014)**	−0.08	−0.05
EC (2008)		0.06
Hervé et al (2010)	0.31	0.20
Jimenez-Rodriguez and Sanchez (2004)	0.40	0.01
Kilian and Vigfusson (2014)	0.20	
Peersman and Van Robays (2011)*	0.44	0.08
Peersman and Van Robays (2011)**	−0.50	−0.54
Inflation		
Barell and Pomerantz (2004)	−0.17	−0.10
Carabenciov et al (2008)	−0.27	−0.16
Cashin et al (2014)*	−0.01	−0.04
Cashin et al (2014)**	−0.03	−0.06
EC (2008)		−0.13
Hervé et al (2010)	−0.41	−0.31

Note. Effects are scaled to correspond to an oil price fall of 10 per cent. *Refers to supply shock. **Refers to demand shock.

Sources: See footnote 27.

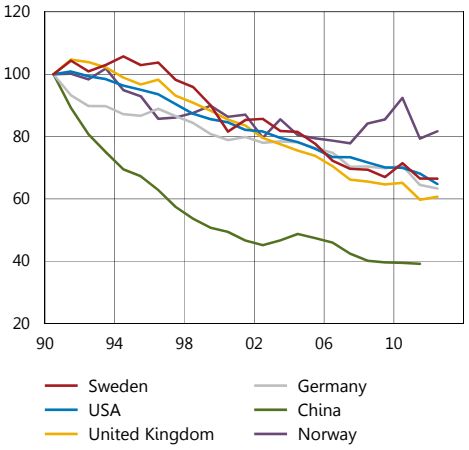
GDP effects

As the fall in oil prices since the summer is deemed largely to be due to an increased supply of oil, it is assumed it will have positive effects on the development of the global economy as a whole. However, the effects will vary greatly from country to country, depending on whether these are net importers or net exporters of oil. Historical correlations indicate that the fall in oil prices since the summer would increase the global level of GDP by almost 1 per cent in a few years' time, assuming that the price remains on today's level. [28] However, several studies indicate that the effects of oil price fluctuations on the development of the economy have

[27] Barrell, R. and O. Pomerantz (2004): "Oil prices and the world economy", NIESR Discussion Paper, no. 242. Carabenciov, I., I. Ermolaev, C. Freedman, M. Juillard, O. Kamenik, D. Korshunov, D. Laxton and J. Laxton (2008): "A Small Quarterly Multi-country projection Model with Financial-real Linkage and Oil Prices", IMF Working Papers 08/280. Cashin, P., K. Mohaddes, M. Raissi and M. Raissi, (2014): "The differential effects of oil demand and supply shocks on the global economy", Energy Economics, vol. 44, no. 1, pp. 113–34. European Commission (2008): "Recent economic developments and short-term prospects", Quarterly Report on the Euro Area, no. 7. Hervé, K., N. Pain, P. Richardson, F. Sédillot, and P. Beffy (2010): "The OECD's new global model", Economic Modelling, vol. 28, pp. 589–601. Jiménez-Rodriguez, R. and M. Sánchez (2004): "Oil price shocks and real GDP growth: Empirical evidence for some OECD countries", European Central Bank Working Papers, no. 362. Kilian, L. and R.J. Vigfusson (2011): "Are the responses of the U.S. economy asymmetric in energy price increases and decreases?", Quantitative Economics, vol. 2, no. 3, pp. 419–53. Peersman, G. and I. Van Robays, (2012): "Cross-country differences in the effects of oil shocks", Energy Economics, vol. 34, no. 5, pp. 1532–47.

[28] Based on calculations in World Bank (2015), "Global Economic Perspectives – Having Fiscal Space and Using It". *A World Bank Group Flagship Report*, January 2015.

Figure A10. Energy Intensity
Index, 1990 = 100



Note. Energy intensity is calculated as use of energy in relation to GDP.

Sources: The World Bank and the Riksbank

decreased over time.[29] For example, the energy intensity of the global economy has decreased significantly in recent decades (see Figure A10). This means that earlier estimates of the effects of oil price fluctuations on growth should be interpreted with caution.

The great majority of countries, including Sweden, are net importers of oil (see Table A2). In oil-importing countries, the effect of falling oil prices on GDP growth is overwhelmingly positive. Households' scope for consumption increases and companies' production and transportation costs decrease, which normally leads to higher profits, investments and new recruitments. The assessment of this Monetary Policy Report is that a long-lasting decline of 10 per cent in the price of oil will make Sweden's GDP level at the end of the forecast period 0.1 per cent higher (see chapter 2, "Alternative scenarios and risks"). This assessment is in line with regression results for the euro area (see Table A1). The effects on household consumption and on profits and investments partly depend on how energy-intensive the economies are. China, India and Indonesia have more energy-intensive economies than developed economies and therefore gain greater benefits from lower oil prices. Some countries, such as India and China, have already taken advantage of the lower oil prices to reduce their domestic oil subsidies and increase oil-related taxes to improve their public finances.

In contrast, among the net exporters such as Saudi Arabia, Russia and Norway, GDP growth is dampening as export revenues are falling. The tendency among certain oil-producing countries to compensate for the decreased prices by producing and exporting more so as not to lose too much export revenue has probably contributed towards further price decreases in recent months. Countries exporting oil are generally more dependent on the price of oil than countries importing oil. The negative effects on the economy may thus be significant for several oil-exporting countries.

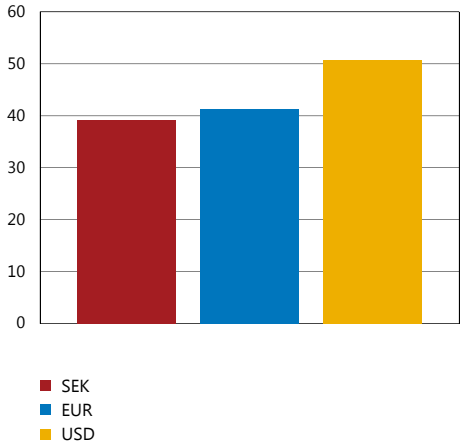
[29] See, for example Blanchard, O. and J. Gali (2008): "The Macroeconomic Effects of Oil Shocks: Why are the 2000s so Different from the 1970s?," *CEPR Discussion Papers 6631*, Hamilton, D. (2005): "Oil and the Macroeconomy." in *The New Palgrave Dictionary of Economics*, eds. Durlauf, S. and L. Blume, (London: MacMillan, 2006, 2nd ed), and Killian, L. (2014): "Oil Price Shocks: Causes and Consequences." *Annual Review of Resource Economics, Annual Reviews, vol. 6(1): 133-154.*

Table A2. Net exports of oil 2014
Per cent of GDP

Country	Net exports	Country	Net exports
Russia	12.91	Sweden	−1.99
Norway	9.45	Italy	−2.04
Canada	3.52	Germany	−2.15
Mexico	0.57	China	−2.19
Denmark	0.38	Spain	−3.74
United Kingdom	−1.00	Poland	−4.09
France	−1.50	Japan	−4.19
Brazil	−1.56	Czech Republic	−4.86
USA	−1.68	India	−4.99
Finland	−1.85		

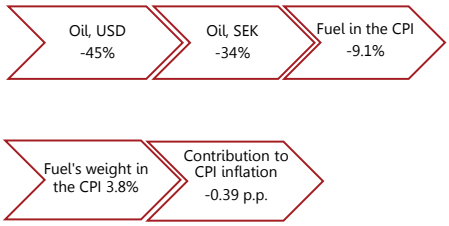
Note. Based on estimates from IMF World Economic Outlook, October 2014.
Sources: The IMF and the Riksbank.

Figure A11. Oil price fall in different currencies
Per cent



Note. The change refers to the difference between the end of June 2014 and the start of February 2015.
Sources: Macrobond and the Riksbank

Figure A12. Oil price path to consumer prices in Sweden from 2014 to 2015, direct effects
Annual percentage change and percentage points



Note. Alongside fuel such as petrol and diesel, the price of oil also has a certain effect on domestic heating oil. However, this product has a very marginal weight in the CPI.
Sources: Macrobond, Statistics Sweden and the Riksbank

Effects on inflation

Lower oil prices lead to lower global inflation. In the assessment of the World Bank (2015), global inflation would fall by 0.4–0.9 percentage points over 2015 as a result of a fall in oil prices of 30 per cent. However, the effects vary from country to country depending on factors such as the weight oil products have in the CPI basket, the effects of the oil price on wages and other prices, exchange rate developments, how much freedom of action monetary policy has and the structure of oil-related taxes and subsidies.

The fall in the price of oil will have a greater direct effect on inflation in countries in which oil-related products form a large part of the CPI basket. The size of the indirect effects, which is to say how much other prices and wages are affected by a fall in the price of oil, also varies from country to country. The level of oil-related taxes also affects how great the impact will be on consumer prices. For example, the impact on petrol prices is significantly greater in the United States than in the euro area and Sweden, due to the United States' lower volume-based specific taxes on petrol which are independent of the price. Expressed in a common currency, for example, Swedish krona per litre, the difference is large.[30] This means that the part of the petrol price affected by market prices for oil is significantly greater in the United States than in Europe. In the euro area, Japan and Sweden, the fall in oil prices measured in dollars has also been counteracted by a currency depreciation against the US dollar, which has dampened the price fall in domestic currency (see Figure A11). For Sweden, the direct effects of the fall in the price of oil are assessed to contribute towards lowering CPI inflation by 0.4 percentage points in 2015 (see Figure A12). This calculation is based on an average fall of 45 per cent in the future price of oil expressed in dollars this year against 2014. This is equivalent to 34 per cent expressed in Swedish krona. The

[30] In the United States, the volume-based specific tax on petrol corresponds to just less than one krona per litre. In Europe, it is about six Swedish krona per litre.

weight of fuels in the CPI at almost 4 per cent, the effect on the total CPI will be −0.4 percentage points.

Effects on monetary policy

In normal cases, a fall in oil prices mostly due to increased supply should not lead to any long-lasting effects on inflation. In such a scenario, the monetary policy response should be fairly cautious in many cases. This is partly because the decrease in inflation is strongly expected to be temporary and partly because the effects on the real economy are positive, which could increase inflationary pressures. However, at present, the situation is complicated in many economies by the fact that inflation is already very low to start with. When inflation is far below target, central banks' tolerance for further negative inflation impulses can be low. In addition, there may be an elevated risk for household and corporate inflation expectations to fall as a result of the fall in oil prices. Such a scenario may give monetary policy reason to react more forcefully (see the analysis in chapter 2 "Alternative scenarios and risks").

Low inflation – not just a Swedish phenomenon

Inflation is currently low in Sweden and many other European countries. To gain some perspective on developments in inflation in Sweden, this article compares developments in Sweden with developments in the euro area and some other countries. Over the past year there has been a similar pattern in several countries, with a decline in the rate of increase for many subgroups of the consumer price index. Service prices in particular have increased at a slow rate over the past year, both in Sweden and the euro area.

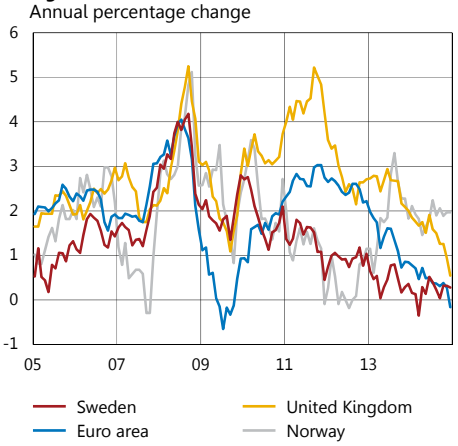
Inflation has fallen in many countries.

Many European countries have experienced a fall in inflation in recent years. Figures A13 and A14 compare inflation in Sweden with inflation in the euro area, the United Kingdom and Norway. The rate of price increase has been lowest in Sweden and the euro area, and in December amounted to 0.3 and −0.2 per cent respectively, measured according to the EU-harmonised index for consumer prices (HICP).[31] The rate of price increase was close to zero in Norway during 2012, but afterwards increased relatively quickly and was around 2 per cent during 2014.

The Riksbank's assessment is that the weak development in demand is an important explanation for the low inflation in both Sweden and the euro area. This assessment is shared by, for instance, the ECB and the European Commission.[32] And as the Riksbank has earlier pointed out, the low demand has meant that companies have had difficult in raising their prices at the same pace as their costs have increased.[33] Figure A15 shows that a low level of resource utilisation appears to have been linked to low inflation in many countries over the past year. Most countries have experienced low resource utilisation at the same time as inflation has been low. And the lower the level of resource utilisation, the lower the inflation rate in 2014 in general.

However, there are also other important explanatory factors behind the low inflation, such as the direct effects of import prices and exchange rates. The fact that inflation is relatively high in Norway appears to be partly explained by Norway having a higher level of resource utilisation. At the same time, the Norwegian krona has weakened against both the euro and the Swedish krona. Inflation fell somewhat sooner in Sweden than in other countries and was lower than inflation in the euro area during the period 2011 to 2012, despite demand being relatively favourable in Sweden. The fact that the krona appreciated substantially between 2010 and 2012 is probably an important explanation for this.

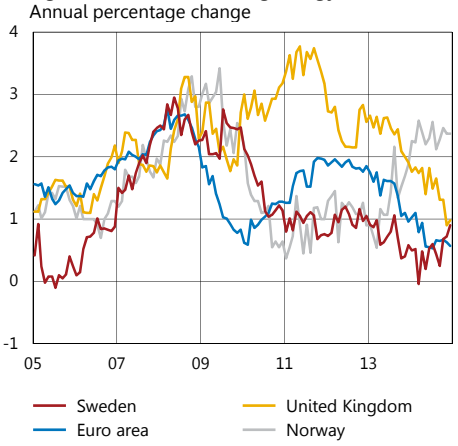
Figure A13. HICP
Annual percentage change



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

Source: Eurostat

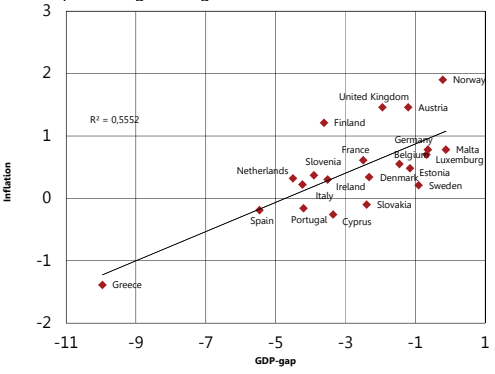
Figure A14. HICP excluding energy
Annual percentage change



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

Source: Eurostat

Figure A15. GDP-gap 2013-2014 and HICP 2014
As a percentage of potential level and as an annual percentage change



Note. The horizontal axis shows the average gap in 2013 and 2014 (IMF estimates) and the vertical axis shows average HICP inflation in 2014. The dots show the countries in the euro area and also Sweden, Norway and the United Kingdom. There are no figures available for Latvia and the Czech Republic. The line shows the regression line for the correlation between the GDP gap and the inflation rate.

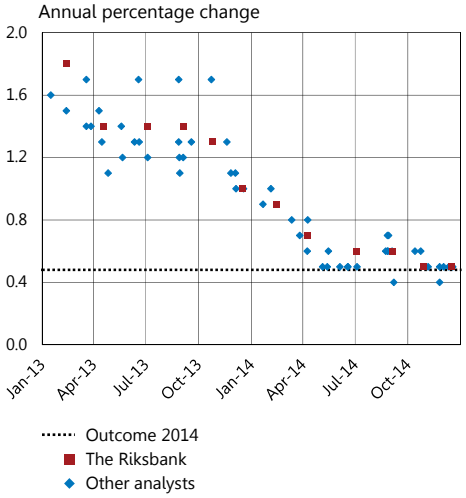
Sources: IMF and Eurostat

[31] The harmonised index for consumer prices (HICP) is an index for comparisons of inflation in Europe. There are HICP indexes for all the EU countries and also Iceland, Norway, Switzerland and the United States, as well as for the EU and the euro area, respectively, as a whole. The HICP is used as a target variable for the ECB's monetary policy. The HICP is calculated according to harmonised regulations for coverage, taking into account new products, updating product samples, adjusting for changes in quality and index formulas for calculations. The HICP differs from the Swedish CPI on a number of points. The items for home-owners are mostly not included in the HICP and the method of calculating index figures and price developments for the HICP differs to some extent from that in the CPI.

[32] See, for instance, "December 2014 Eurosystem Staff Macroeconomic Projections for the Euro Area" from the ECB and "European Economic Forecasts, Autumn 2014" from the European Commission.

[33] See, for instance, the article "Why is inflation low?" in the Monetary Policy Report, July 2014 and Apel, M., E. Frohm, J. Hokkanen, C. Nyman och S. Palmqvist, "Why haven't companies raised their prices?", Economic Commentary No. 4, 2014, Sveriges Riksbank.

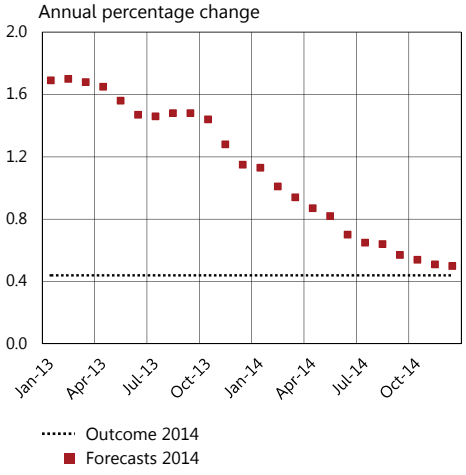
Figure A16. Forecasts and outcome for CPIF inflation in 2014
Annual percentage change



Note. The other forecasters included in the figure are the Ministry of Finance, The National Institute of Economic Research, Nordea, SEB, Handelsbanken, the Confederation of Swedish Enterprise, Swedbank and the Swedish Trade Union Confederation.

Source: Other analysts and the Riksbank

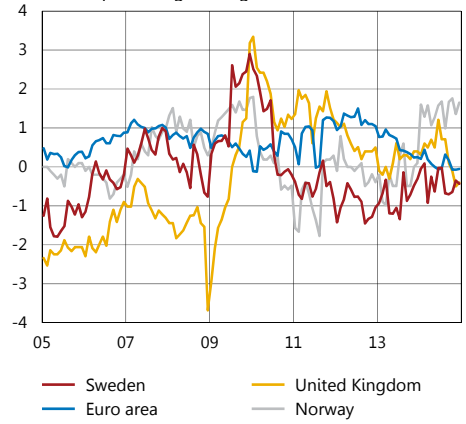
Figure A17. Forecasts and outcomes for HICP inflation in the euro area 2014
Annual percentage change



Note. Refers to average forecasts from more than 20 analysts.

Sources: Consensus Forecasts and the Riskbank

Figure A18. Non-energy industrial goods
Annual percentage change



Note. Makes up around 27 per cent of HICP.

Source: Eurostat

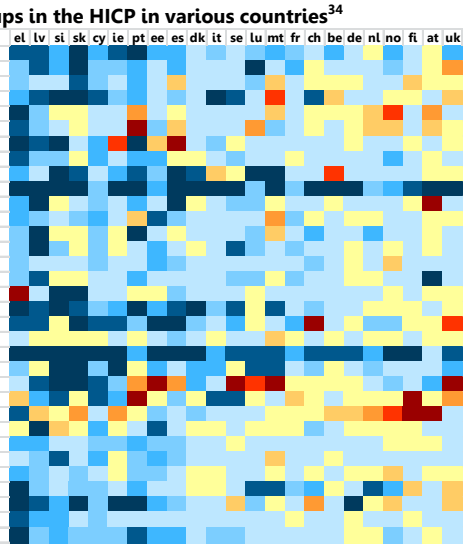
Inflation was surprisingly low last year, both in Sweden and the euro area, in relation to the forecasts by the Riksbank and other analysts. Figure A16 and A17 show that the forecasters have gradually revised down their inflation forecasts over the past two years.

Both the Riksbank's and other analysts' forecasts for CPIF inflation in 2014 were revised down from just over 1.5 per cent at the beginning of 2013 to around 0.5 per cent in the middle of 2014. The forecasts for inflation in the euro area were revised down to around 0.5 per cent at the end of 2014, from around 1.7 per cent on average at the beginning of 2013.

Broad downturn in inflation

Inflation was at around the same low levels in the euro area and Sweden in 2014. The downturn in the rate of price increase was on a broad scale and visible in most countries in the euro area and in most subgroups of the HICP. This is also shown i the heat map shown in Table A3. The columns show the countries in the euro area and also Sweden, Norway, Denmark and the United Kingdom. The rows show 33 subgroups that together make up total HICP. The blue nuances show subgroups that have increased more slowly in 2014 than the average during 2000–2013. Yellow and red nuances show on the contrary that the subgroup has increased unusually rapidly. One can note in general that the colour scale tends more towards blue nuances in most countries, which means that a majority of the subgroups in the HICP have increased unusually slowly in a majority of the countries. There is especially a lot of blue in Greece and Latvia, while the nuances are more yellow-red in, for instance, Norway, Finland, Austria and the United Kingdom.

Table A3: Heat map, subgroups in the HICP in various countries[34]



Note. Blue nuances show that the subgroup has increased more slowly during 2014, measured as an annual percentage change, than the average annual percentage change during the period 2000 to 2013. The darker the blue nuance, the greater the negative deviation, and the darker the red nuance, the larger the positive deviation. The countries are arranged so that the countries with the most blue nuances are on the left. The countries compared are the countries in the euro area and also Sweden, Denmark, Norway and the United Kingdom.

Sources: Eurostat and the Riksbank

[34] The country abbreviations in the column headings are as follows: el=Greece, lv=Latvia, si=Slovenia, sk=Slovakia, cy=Cyprus, ie=Ireland, pt=Portugal, ee=Estonia, es=Spain, dk=Denmark, it=Italy, se=Sweden, lu=Luxembourg, mt=Malta, fr=France, ch=Czech Republic, be=Belgium, de=Germany, nl=Netherlands, no=Norway, fi=Finland, at=Austria, and uk=United Kingdom

It is common to divide the HICP up into main groups consisting of non-energy industrial goods, services, food and energy. Figure A18 shows the annual percentage change in prices for *goods excluding energy and food* in Sweden, together with the corresponding figures for the euro area, Norway and the United Kingdom. In Sweden, prices have fallen since 2010, when measured as an annual percentage change, but the pace of the fall in prices has slowed down since the middle of 2012. In the euro area, the pace of the change in price increase has slowed down since the middle of 2012 to around the same level as in Sweden. Developments in Norway have been similar to those in Sweden over time. However, in 2014 prices have risen much faster in Norway.

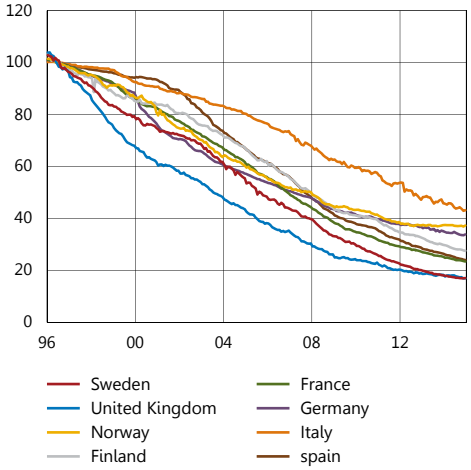
Prices of goods normally tend to increase more slowly than prices of services, as productivity tends to increase faster in goods-producing sectors. The goods price aggregate includes, for instance, prices of Audio-Visual, Photographic & Information Processing Equipment. These usually fall in price as, for instance, TVs and computers tend to become more advanced and cheaper over time (see Figure A19).[35] The price fall has been constant in most countries and has not accentuated recently.

Figure A20 shows the change in prices for *services* in Sweden and other economies. Developments in Sweden in recent years have been fairly similar to those in the euro area as a whole. During the period from the end of 2013 to the end of 2014, however, the rate of price increase was somewhat slower in Sweden. In Norway, the rate of price increase has been more volatile and in recent years it has been possible to note an upward trend. Compared with Sweden, the rate of price increase on services has on the whole been at a higher level in the United Kingdom. As in Sweden and the euro area, price developments have shown a downward trend in recent years, however.

The rate of change in prices for air travel is included in service prices and has been volatile in Sweden in recent years, affecting the development of total HICP inflation, despite only comprising just over 1 per cent.[36] The rate of change in the price of air travel in Sweden amounted to around −20 per cent at the beginning of last year, and in December it was around 7 per cent (see Figure A21). A similar change can be seen in Norway last year. In the United Kingdom and the euro area the rate of change in prices has been less volatile over the past year.

The downturn in the rate of price increases on services is broadly based. Table A4 shows that the colour scale tends more towards blue nuances in most countries, which indicates that a majority of the subgroups in the service price aggregate have increased unusually slowly in a majority of the countries. There is especially a lot of blue in Slovakia and Greece, while the nuances are more yellow-red in, for instance, Denmark and Belgium.

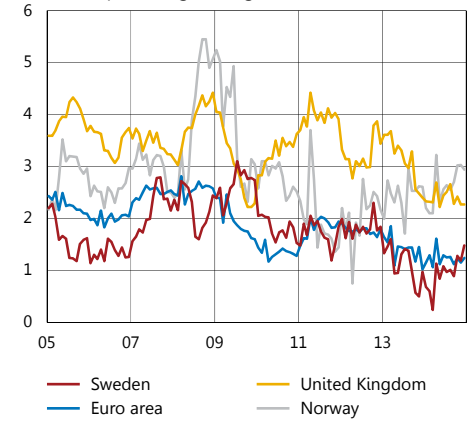
Figure A19. Audio-Visual, Photographic & Information Processing Equipment
Index 1996 = 100



Note. Refers to the index for the subgroup "Audio-Visual, Photographic & Information Processing Equipment" in the HICP. Makes up around 1.5 per cent of HICP.

Source: Eurostat

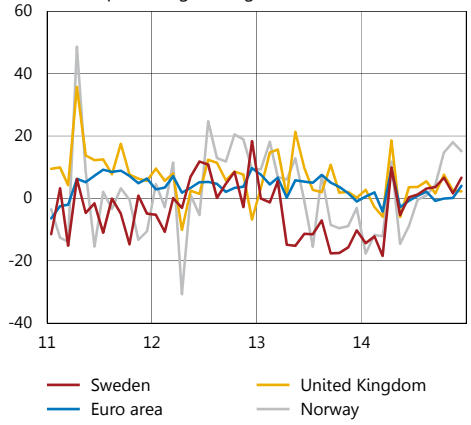
Figure A20. Services
Annual percentage change



Note. Makes up around 42 per cent of HICP.

Source: Eurostat

Figure A21. Passenger Transport by Air
Annual percentage change



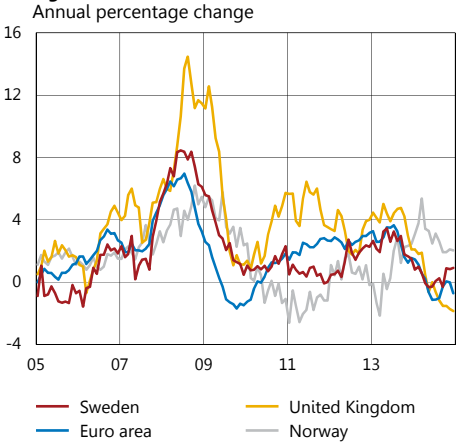
Note. Makes up just over 1 per cent of HICP.

Source: Eurostat

[35] When the statistics authorities measure changes in prices, they often need to deal with changes in quality. New models of TV, computer and other products are constantly coming onto the market. When changing from one model to another, the statistics authorities try to distinguish how much of the change in prices is due to a change in quality. This can mean that the measured price falls when a new, more advanced model of a product comes on the market, even if the price is the same.

[36] In recent years, volatility in the index for travel abroad increased in Sweden, which is linked to Statistics Sweden increasing the sample of trips in 2012 and including more low-cost airline companies in the calculation of its index.

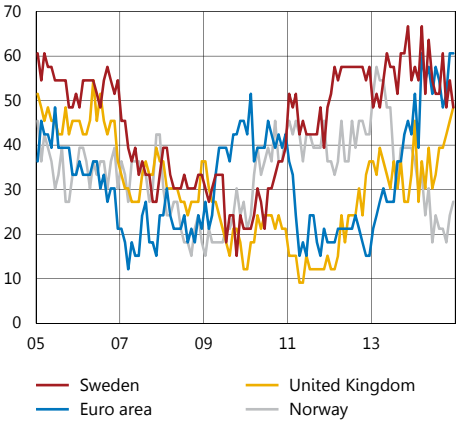
Figure A22. Food
Annual percentage change



Note. Makes up around 20 per cent of HICP.

Source: Eurostat

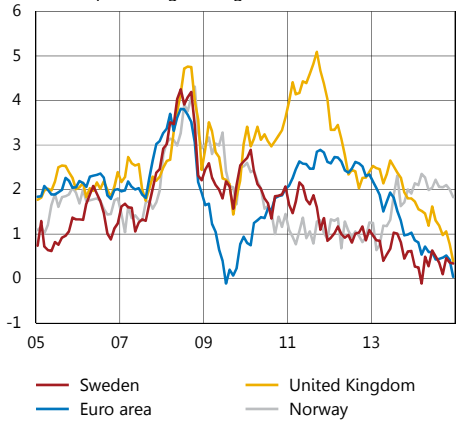
Figure A23. Percentage of prices increasing more slowly than 1 per cent
Per cent



Note. Based on the HICP divided into 33 sub groups.

Sources: Eurostat and the Riksbank

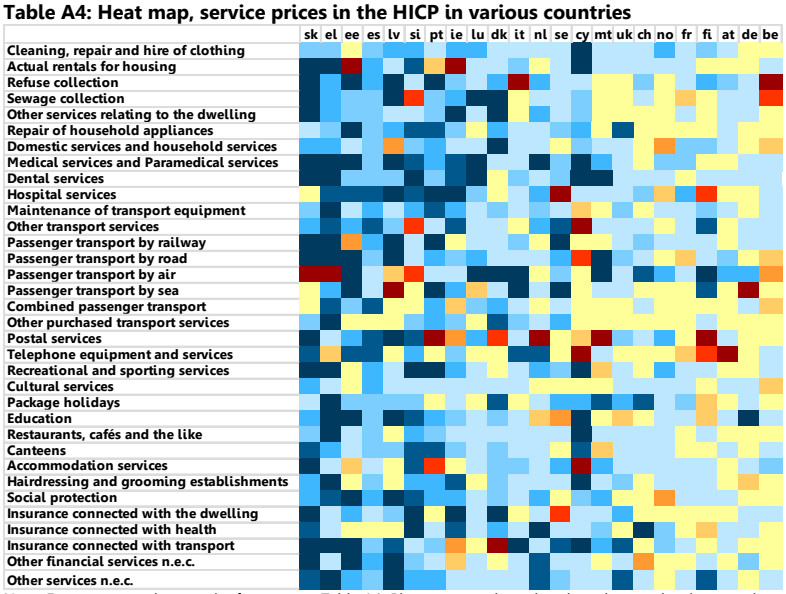
Figure A24. Measure of underlying inflation
Annual percentage change



Note. The figure shows a measure of inflation where the 7.5 per cent highest and the 7.5 per cent lowest price changes have been excluded. The calculations are based on the HICP divided up into 33 subgroups.

Sources: Eurostat and the Riksbank

Table A4: Heat map, service prices in the HICP in various countries



Note. For country codes, see the footnote to Table A1. Blue nuances show that the subgroup has increased more slowly during 2014, measured as an annual percentage change, than the average annual percentage change during the period 2000 to 2013. The darker the blue nuance, the greater the negative deviation, and the darker the red nuance, the larger the positive deviation. The countries are arranged so that the countries with the most blue nuances are on the left. The countries compared are the countries in the euro area and also Sweden, Denmark, Norway and the United Kingdom.
Sources: Eurostat and the Riksbank.

Figure 22 shows the price change for *food*. In recent years, developments in prices have been much slower in Sweden than in Norway. Developments in Sweden have been similar to those in the euro area as a whole. Developments in prices in Sweden have been similar to those in the United Kingdom over the past year, but have been at a different average level over time.

The percentage of prices that are increasing slowly has been larger in most countries, which also illustrates that the downturn is on a broad front (see Figure A23). Sweden, the euro area and the United Kingdom have similar trends, but the price slowdown appears to have started earlier in Sweden. In Norway, one sees instead a downturn in the percentage of prices that have been increasing slowly since 2013. Other types of measure of underlying inflation also indicate that there is no individual subgroup behind the downturn in inflation either in Sweden, the euro area or the United Kingdom (see Figure A24).

Low inflation – not just a Swedish phenomenon

To summarise, inflation is low and has developed in a similar manner in Sweden and the euro area over the past year. The low inflation rate is linked to a relatively low level of resource utilisation, which is reflected in the fact that the downturn has been broad and is visible in many countries and in many subgroups of the HICP. Service prices in particular have increased more slowly than normal in Sweden and in many other European countries over the past year. Inflation in Norway is not as low and has instead risen over the past year, probably as a result of resource utilisation being at a relatively high level and the Norwegian krona having depreciated.

Digitisation and inflation

One of the structural changes that has attracted attention recently is the development of digital technology and its expansion into different areas of application in the economy. This article describes various channels through which this so-called digitisation could influence inflation. However, our knowledge is still incomplete. It seems reasonable that digitisation has a dampening effect on inflation, but exactly how much is difficult to say. The Riksbank's assessment is that the decline in the rate of inflation in recent years is primarily connected with other factors.

Structural changes can influence inflation

Inflation is affected by the business cycle and various types of price and supply changes. For example, the low inflation that can currently be observed in many countries is largely due to demand having recovered more slowly than expected after the financial crisis, and to a surprisingly heavy fall in the oil price.

Inflation can also be influenced by structural changes of a more long-term nature. Examples discussed in recent decades are globalisation and the deregulation of various markets.[37] Stabilisation policy also needs to take structural changes into account. For example, if a structural change can be expected to have a dampening effect on inflation, this can be compensated for by a more expansionary monetary policy.

The effects are basically temporary but can be difficult to predict

However, structural changes and their effects are not always easy to identify, even though they often impact the economy for a long period of time. Even in cases in which the economy is being affected by an underlying structural change, such as globalisation, the effects can vary over time and be so complex and unpredictable that full consideration of them cannot be taken in economic policy. Structural changes can thus contribute towards inflation not developing as expected.

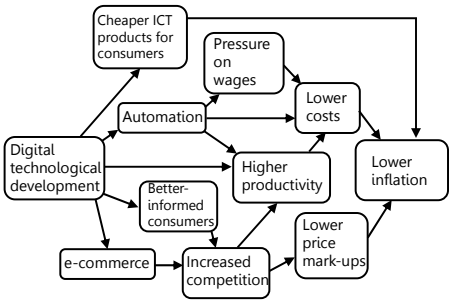
However, it is important to realise that the possible effects on inflation of a structural change will essentially be temporary, even if they may be relatively long-lived. A structural change influences inflation for as long as it lasts, until a new equilibrium is reached in the economy. However, in the really long term, inflation does not depend on structural changes or any other development in the real economy.[38]

An example of a structural change – the development of digital technology

One of the structural changes that has attracted attention recently is the development of digital technology and its expansion into different areas of application in the economy, for the sake of simplicity referred to here as digitisation.[39] The debate on digitisation and its effects on the

[37] The difference between a structural change and a so-called supply shock is not always obvious, and is largely a matter of time perspective. A structural change such as globalisation is a process that stretches over decades, while a supply shock, such as a drastic change in oil prices, will typically affect the economy over a significantly more limited period.
[38] The way this is usually put is that inflation in the long term is a monetary phenomenon, which means that ultimately depends on growth in the amount of money in the economy.
[39] Even though the term digitisation is used relatively widely today, it is not always clear exactly what it means. The traditional meaning of the term refers to the conversion of information from physical to digital form, for example scanning books and images for conversion to data files (series of ones and zeroes) to preserve them

Figure A25. The effects of digitalisation on inflation



Source: The Riksbank

economy is nothing new. Around the turn of the millennium, there was a similar discussion on information and communication technology (ICT) and what was then called "the new economy".[40] That time, developments were expressed by excessive optimism in the stock market and the possibilities of new technology, which eventually ended in what was known as the IT crash. However, even if this had a dampening effect on the discussion of the economic effects of ICT, the digital technological development itself continued. In recent years, the debate has again picked up, albeit in a different form.

In recent years' discussion of digitisation, the possible effects on inflation have so far not been a main topic. Instead, the focus has been on the consequences of digitisation for growth, for welfare and for the gap between those groups and industries that are able to adapt and take advantage of digitisation and those that are not. Recently, however, the effects on inflation have also started to gain some attention, particularly in the debate in Sweden.[41]

The effects of digitisation on inflation – an outline

Figure A25 provides a brief description of the channels through which digitisation may influence inflation. The different parts of the figure are discussed below. The review is principled and qualitative, but not quantitative as we still know too little about the effects of digitisation on inflation. However, in some cases, developments are illustrated with examples.

It is worth emphasising that the description should not be regarded as an exhaustive review. This would require a far more in-depth analysis and considerably greater scope. The channels described are the most intuitive and probably the most important.

Is digitisation a strong enough driving force?

One indication that our knowledge of digitisation is incomplete is the current international debate on the future impact of digital technological developments productivity or GDP growth. Some observers suggest that the rate at which the economy is able to generate important innovations has declined. Technological advances such as electricity and the internal combustion engine, made at the end of the 19th century, together with spin-off effects from these, are assumed to have had considerably greater and more permanent effects on productivity and growth than digital technological developments have had and will have. According to some observers, the world has reached a "technological plateau".[42]

Others are significantly more optimistic and argue that, so far, we have only seen the start of the technological progress and innovations

for prosperity and make them available on the Internet. The debate sometimes refers to social digitisation, which is to say increased usage of IT in a broad sense by society (see "En digital agenda i människans tjänst" (A digital agenda in the service of the people), interim report from the Committee for Digitization, SOU 2014:13). This article uses the term in an even broader sense to cover not just the use but also the development of digital technology.

[40] See, for example, Lindbeck, A. "ICT och den Nya Ekonomin" (ICT and the New Economy), Ekonomisk Debatt, no. 6 2000, for an overview that is also relevant to today's situation. See also Eriksson, J. A. and M. Ådahl, "Is there a "new economy", and is it coming to Europe?", Sveriges Riksbank Economic Review 1/2000, Sveriges Riksbank.

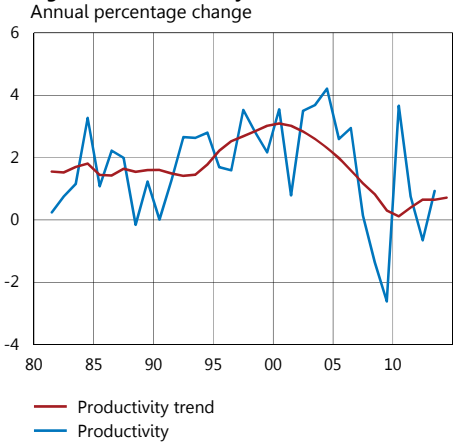
[41] See, for example, Breman, A. and A. Felländer, "Diginomics – nya ekonomiska drivkrafter" (Diginomics – new economic driving forces), Ekonomisk Debatt, no. 6 2014.

[42] See, for example Gordon, R. "Is U.S. Economic Growth Over? Faltering Innovation Confronts the Six Headwinds", NBER Working Paper 18315, 2012 and Cowen, T. *The Great Stagnation: How America Ate All the Low-Hanging Fruit of Modern History, Got Sick, and Will (Eventually) Feel Better*, Dutton, 2011.

that digitisation will generate.[43] Digital technology, it is claimed, is what is known as a General Purpose Technology (GPT) – a technology affecting society as a whole and leading to productivity gains in many parts of the economy – to at least the same degree as previous innovations. The apparent dampening of overall production growth over the last decade is regarded as a temporary phenomenon, partly due to the deep global downturn. In Sweden, trend production growth has decreased after the peak around the turn of the millennium and is presently lower than it was in the 1980s (see Figure A26).

There is thus no definitive answer as to whether the rate of innovations has slowed down permanently and economists' opinions are divided on the issue.[44] Before continuing, it may thus be worthwhile to bear in mind that the actual starting point of Figure A25 is itself a matter of discussion.

Figure A26. Productivity trend
Annual percentage change



Note. The productivity trend is calculated as the GDP trend divided by the trend in hours worked. The GDP trend is calculated with the aid of a production function and the trend for hours worked is assessed by the Riksbank.

Source: Statistics Sweden and the Riksbank

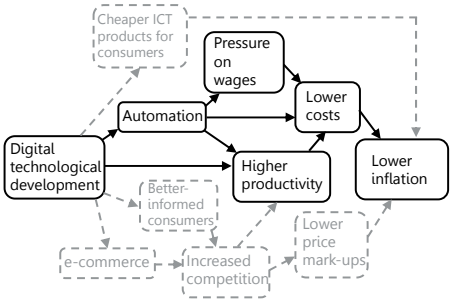
Effects via automation and productivity-enhancing innovations

One type of channel, which is closely related to the question of digitisation as a driving force for GDP growth and productivity, works through the various ways in which digitisation impacts companies' production possibilities in a physical sense (see Figure A27). According to growth theory, technological innovations form the basis for long-term productivity growth, which, in turn, is the reason that countries become prosperous and standards of living increase.

Technological innovations can increase productivity in companies through various channels. This can take place through innovations acting as complements to labour. In the figure, this is represented by the arrow going directly from digital technological development to productivity. It can also take place through innovations acting as substitutes for labour, known as the automation of production. The development of costs is dampened in both cases.

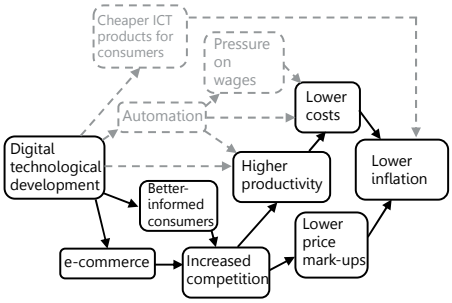
Through these channels, digitisation can lead to inflation temporarily being unexpectedly low if productivity growth is stronger than expected. If policy makers do not realise that the production capacity of the economy has increased, demand will not be stimulated as much as would have been possible, and there will be a downward pressure on inflation.

Figure A27. Effects via technological innovations



Source: The Riksbank

Figure A28. Effects via the internet



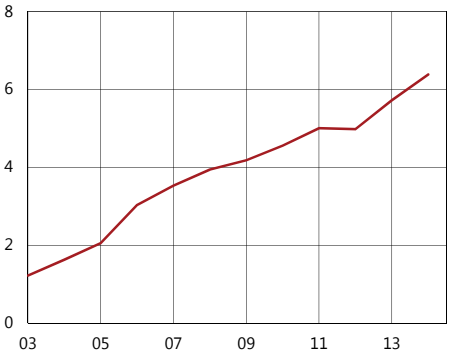
Source: The Riksbank

Does automation create long-term "technological unemployment"?

The replacement of labour by machinery is no new phenomenon. This has been the case ever since the start of the industrial revolution. Until fairly recently, the unemployment created when a new sector or industry was automated was considered to be temporary. As the economy grows, job opportunities will arise in other parts of the economy for those being made redundant. This is how it seems to have worked for about two hundred years. In other words, all in all, technological developments do

[43] See Brynjolfsson, E. and A. McAfee, *The Second Machine Age*, W. W. Norton & Company, 2014.
[44] However, the optimists have a slight majority in one panel of academic economists (IGM Economic Experts Panel). A majority of respondents are uncertain, but those believing that future innovations will be able to generate as much permanent growth in GDP per capita over the coming century as innovations made in the last 150 years outnumber those believing that this will not be the case (http://www.igmchicago.org/igm-economic-experts-panel. See question from 11 February 2014 on "Innovation and Growth").

Figure A29. E-commerce turnover as a percentage of total turnover
Per cent



Source: HUI Research

not seem to have reduced job opportunities faster than they have created them.

However, recently a debate has started on whether this pattern will change in the future and whether this change may possibly already have started. Over the last decades, digital technological development has rapidly made ICT products cheaper and therefore increasingly attractive as a replacement for human labour. From a purely technological point of view, these innovations have also made it possible to replace an increasing number of types of labour. Many people expect this development to continue and even accelerate.[45] And the faster technological progress, the harder it will be for people and institutions to adjust to it. It is therefore not necessarily an iron law that technological developments create at least as many jobs as they destroy. It could instead be that "technological unemployment" due to automation will become a more commonplace phenomenon than it has been so far.

To the extent that this is the case, broader groups in the economy than previously may experience downward pressure on their wages. This may, in turn, have a restraining effect on inflation.

Effects via e-commerce and better-informed consumers

Another type of channel through which digitisation can influence inflation primarily acts through the Internet's effects on interaction and matching between producers and consumers (see Figure A28).

An obvious example is e-commerce. In approximately the same way as globalisation, e-commerce, which in many ways is part of globalisation, has opened up new markets and increased consumer choice. In many cases, companies are no longer competing with companies in their immediate geographical vicinity but with companies from more or less the entire world. In Sweden, e-commerce has increased steadily during the current century, but its share of the total retail trade is still relatively small (see Figure A29).

The Internet also increases the possibilities for customers to compare the price and quality of products. This applies not only to those products purchased over the Internet but also to others, such as many services.

More price- and quality-conscious consumers and more options for consumers mean that companies experience more competition and have less market power. This makes it more difficult for them to raise their prices and encourages them to increase productivity to press costs to maintain or increase their margins.[46]

Neither e-commerce nor the possibility of comparing products over the Internet are particularly new phenomena. In the near future, possible effects through these channels are therefore a matter of producers and consumers increasingly adjusting to already-existing technology, with

[45] According to general calculations for Sweden and the United States, it should be possible to replace about half of today's jobs with robots and computers over the next twenty-year period (see Swedish Foundation for Strategic Research, "Vartannat jobb automatiseras inom 20 år – utmaningar för Sverige" (Every other job will be automated in 20 years – challenges for Sweden), 2014, and Frey, C. B. and M. A. Osborne, "The Future of Employment: How Susceptible are Jobs to Computerisation?", unpublished manuscript, Oxford Martin School, Oxford, respectively).
[46] The Riksbank's Business Survey quotes companies, particularly in the retail sector, stating that they feel competition has increased as a result of e-commerce and price comparison websites.

increasing numbers of companies starting e-commerce and increasing numbers of consumers looking for and comparing products on the Internet. But it is also conceivable that future interaction and matching between producers and consumers will be affected by further advances in digital technology that are difficult to anticipate at present.

Direct effects via components in the CPI

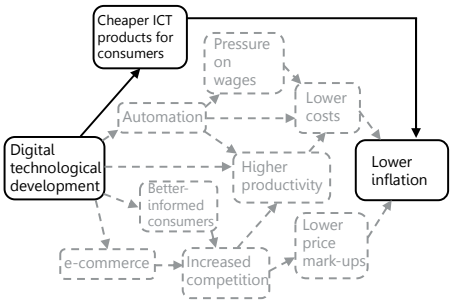
Digitisation's most obvious channel so far is the way that the price development of certain items in the CPI's basket of goods is more or less directly influenced by digitisation (see Figure A30). Firstly, production costs for certain goods are decreased by the trend fall in prices for advanced electronic components such as processors. This category includes mobile telephones, computers and so on. Secondly, the changeover from physical to digital distribution is also leading to falling costs. Goods affected by this include daily newspapers and films. This development has been underway for some time and it is possible that it will continue to press prices and costs for some time to come.

Weighing the prices of products in these two categories reveals that the products related to digitisation have, on average, fallen significantly in price over the last 15 years (see Figure A31) and their contribution to the CPI has been negative (see Figure A32). However, in the years 2013–2014, this contribution has been smaller than before and the dampening of inflation has primarily been caused by the weak development of the rest of the CPI.

Qualitative effects of digitisation are reasonable, but quantitative effects are uncertain

This article has highlighted various channels through which digitisation can influence inflation. Some channels are relatively obvious, while others are more speculative. The review indicates that the effects of digitisation on inflation and the economy as a whole are complex and difficult to assess. It seems reasonable to suppose that digitisation is overall having a dampening effect on inflation, but it is very uncertain how great these effects are. The Riksbank's assessment is that the decline in the rate of inflation in recent years is primarily due to other factors.

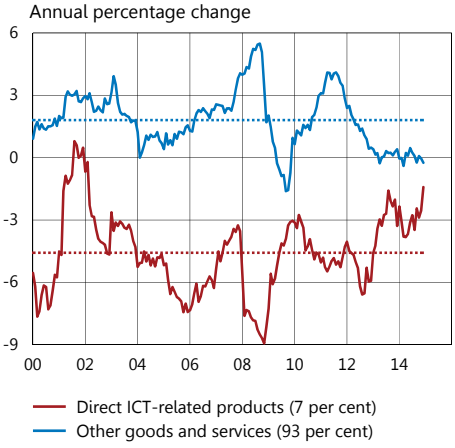
Figure A30. Direct effect of digitisation



Source: The Riksbank

Figure A31. Development of prices of directly digitisation-related products in relation to rest of CPI

Annual percentage change

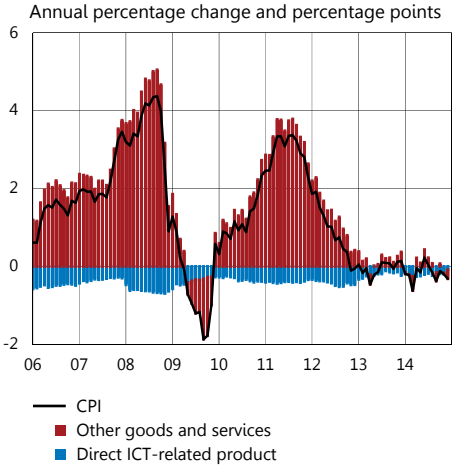


Note. The broken lines refer to the average for the period 2000 to the last outcome. The figures in brackets refer to the weight in the CPI. Direct ICT-related products include household appliances, telephony, TVs, cameras, CDs, DVDs, toys, books and newspapers.

Sources: Statistics Sweden and the Riksbank

Figure A32. Contributions to the rate of increase in the CPI

Annual percentage change and percentage points



Note. The figures in brackets refer to the weight in the CPI. Direct ICT-related products include household appliances, telephony, TVs, cameras, CDs, DVDs, toys, books and newspapers.

Source: Statistics Sweden and the Riksbank.

Appendix

- Tables
- Articles 2011-2014
- Interest rate decisions 2009-2014
- Glossary

Tables

The forecast in the previous Monetary Policy Update is shown in brackets unless otherwise stated.
In the tables, (*) means that the outcome for 2014 is compared with the earlier forecast.

Table 1. Repo rate forecast
Per cent, quarterly averages

	Q4 2014	Q1 2015	Q2 2015	Q1 2016	Q1 2017	Q1 2018
Repo rate	0.1	−0.0 (0.0)	−0.1 (0.0)	−0.1 (0.0)	0.6 (0.7)	1.4 (—)

Source: The Riksbank

Table 2. Inflation
Annual percentage change, annual average

	2013	2014	2015	2016	2017
CPI*	0.0	−0.2 (−0.2)	0.1 (0.3)	1.9 (2.0)	3.3 (3.2)
CPIF*	0.9	0.5 (0.5)	0.9 (1.0)	2.0 (2.0)	2.2 (2.1)
CPIF excl. energy*	1.1	0.7 (0.7)	1.5 (1.4)	2.0 (2.1)	2.2 (2.1)
HICP*	0.4	0.2 (0.2)	0.9 (0.9)	2.0 (2.0)	2.1 (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

	2013	2014	2015	2016	2017
Repo rate*	1.0	0.5 (0.5)	-0.1 (0.0)	0.0 (0.2)	0.9 (1.1)
10-year rate*	2.1	1.8 (1.7)	0.8 (1.2)	1.8 (2.2)	2.8 (3.1)
Exchange rate, KIX, 18 November 1992 = 100*	103.0	106.8 (106.7)	110.7 (107.7)	105.8 (103.9)	103.6 (102.6)
General government net lending**	−1.4	−2.2 (−2.2)	−1.4 (−1.3)	−0.8 (−0.7)	−0.7 (−0.4)

** 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	2013	2014	2015	2016	2017
Euro area	0.14	0.46	−0.4	0.9 (0.9)	1.2 (1.1)	1.7 (1.7)	2.0 (1.9)
USA*	0.17	0.09	2.2	2.4 (2.3)	3.6 (3.4)	3.3 (2.9)	2.5 (2.5)
Japan	0.05	0.03	1.6	0.1 (0.2)	0.6 (0.9)	0.8 (1.1)	0.4 (0.5)
China*	0.15	0.07	7.8	7.5 (7.4)	6.8 (7.0)	6.5 (6.8)	6.3 (6.6)
KIX-weighted	0.76	1.00	1.1	1.9 (1.9)	2.0 (2.1)	2.4 (2.5)	2.6 (2.6)
World (PPP-weighted)	1.00	—	3.3	3.3 (3.2)	3.6 (3.7)	3.9 (3.9)	3.9 (3.8)

Note. Calendar-adjusted growth rates. The PPP-weights refer to the global purchasing-power adjusted GDP-weights, according to the IMF. The National Institute of Economic Research 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	2013	2014	2015	2016	2017
Euro area (HICP)*	1.4	0.4 (0.4)	-0.1 (0.5)	1.2 (1.3)	1.7 (1.5)
USA*	1.5	1.6 (1.7)	-0.3 (0.9)	2.2 (2.1)	2.7 (2.8)
Japan	0.4	2.7 (2.8)	0.9 (1.6)	1.5 (1.5)	2.1 (2.1)
KIX-weighted	1.9	1.4 (1.4)	1.0 (1.5)	2.0 (2.1)	2.3 (2.3)

	2013	2014	2015	2016	2017
Policy rates in the rest of the world, per cent*	0.2	0.2 (0.2)	0.1 (0.1)	0.2 (0.3)	0.5 (0.5)
Crude oil price, USD/barrel Brent*	108.8	99.7 (100.4)	54.7 (74.2)	63.0 (78.7)	67.8 (81.5)
Swedish export market	1.5	3.0 (3.1)	4.8 (5.0)	5.3 (5.5)	5.7 (5.8)

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

	2013	2014	2015	2016	2017
Private consumption	1.9	2.5 (2.4)	2.7 (2.6)	2.8 (2.8)	2.3 (2.3)
Public consumption	0.7	1.5 (1.5)	1.9 (1.9)	1.9 (1.9)	1.3 (1.3)
Gross fixed capital formation	−0.4	4.7 (4.7)	4.7 (4.9)	5.5 (5.6)	3.7 (3.7)
Inventory investment**	0.1	0.2 (0.2)	0.1 (0.1)	0.0 (0.0)	0.0 (0.0)
Exports	−0.2	2.2 (2.2)	4.8 (4.9)	6.5 (6.5)	5.0 (5.0)
Imports	−0.7	5.1 (5.1)	5.8 (5.9)	6.5 (6.6)	5.6 (5.5)
GDP	1.3	1.8 (1.8)	2.7 (2.6)	3.3 (3.3)	2.2 (2.3)
GDP, calendar-adjusted	1.3	1.9 (1.9)	2.4 (2.4)	3.1 (3.1)	2.5 (2.5)
Final figure for domestic demand**	1.0	2.6 (2.5)	2.8 (2.8)	3.1 (3.1)	2.3 (2.3)
Net exports**	0.2	−1.0 (−1.0)	−0.2 (−0.2)	0.2 (0.2)	0.0 (0.0)
Current account (NA), per cent of GDP	6.8	5.4 (5.4)	4.8 (4.7)	4.7 (4.6)	4.4 (4.4)

**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

	2013	2014	2015	2016	2017
Population, aged 15–74	0.6	0.7 (0.7)	0.8 (0.8)	1.0 (1.0)	1.1 (0.9)
Potential hours worked	0.6	0.6 (0.6)	0.6 (0.6)	0.7 (0.7)	0.6 (0.6)
GDP, calendar-adjusted	1.3	1.9 (1.9)	2.4 (2.4)	3.1 (3.1)	2.5 (2.5)
Number of hours worked, calendar-adjusted	0.3	2.0 (2.0)	1.1 (1.0)	1.0 (1.0)	0.8 (0.8)
Employed, aged 15–74*	1.1	1.4 (1.5)	1.3 (1.4)	1.2 (1.1)	0.9 (0.7)
Labour force, aged 15–74*	1.1	1.3 (1.4)	0.9 (0.9)	0.6 (0.5)	0.6 (0.4)
Unemployment, aged 15–74 * **	8.0	7.9 (7.9)	7.6 (7.5)	7.1 (6.9)	6.7 (6.6)

** 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

	2013	2014	2015	2016	2017
Hourly wage, NMO	2.5	3.0 (3.0)	2.9 (3.0)	3.4 (3.4)	3.5 (3.5)
Hourly wage, NA	2.1	1.7 (2.1)	3.2 (3.3)	3.7 (3.7)	3.7 (3.7)
Employers' contribution**	0.2	0.0 (0.1)	0.0 (0.0)	0.0 (0.0)	0.0 (0.0)
Hourly labour cost, NA	2.3	1.7 (2.2)	3.2 (3.3)	3.7 (3.7)	3.7 (3.7)
Productivity	0.9	−0.1 (−0.1)	1.3 (1.4)	2.0 (2.0)	1.7 (1.7)
Unit labour cost	1.4	1.8 (2.3)	1.9 (1.9)	1.6 (1.7)	2.0 (2.0)

** 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

Table 8a. Alternative scenario: greater effects on GDP of an increase in the supply of oil
Annual percentage change unless otherwise stated, annual average. Main scenario in brackets

	2014	2015	2016	2017
GDP abroad, KIX-weighted	1.9 (1.9)	2.2 (2.0)	2.6 (2.4)	2.4 (2.6)
GDP	1.9 (1.9)	2.7 (2.4)	3.4 (3.1)	2.5 (2.5)
Hours gap, per cent	−0.4 (−0.4)	0.2 (0.1)	0.7 (0.4)	0.8 (0.6)
CPIF*	0.5 (0.5)	0.9 (0.9)	2.1 (2.0)	2.3 (2.2)

Note. KIX is an aggregate of the countries that are important to Sweden's international transactions. The CPIF is the CPI with a fixed mortgage rate.
Sources: National sources, Statistics Sweden and the Riksbank

Table 8b. Alternative scenario: the fall in oil prices affects inflation expectations
Annual percentage change unless otherwise stated, annual average. Main scenario in brackets

	2014	2015	2016	2017
Nominal wages	1.7 (1.7)	3.2 (3.2)	3.6 (3.7)	3.6 (3.7)
CPIF*	0.5 (0.5)	0.8 (0.9)	1.6 (2.0)	2.2 (2.2)
Repo rate, per cent*	0.5 (0.5)	-0.2 (-0.1)	−0.4 (0.0)	0.7 (0.9)
GDP	1.9 (1.9)	2.5 (2.4)	3.2 (3.1)	2.4 (2.5)
Hours gap, per cent	−0.4 (−0.4)	0.1 (0.1)	0.6 (0.4)	0.6 (0.6)

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

Articles 2012–2014[47]

2012

2012 February The EMU and the debt crisis
2012 February The emerging economies and Sweden's exports
2012 February The relationship between the repo rate and interest rates for households and companies
2012 July The debt crisis in Europe – developments during the spring
2012 July: Long-run developments in the Swedish labour market
2012 July: Why has inflation been lower in Sweden than in the euro area?
2012 October KIX index better reflects Sweden's international dependence
2012 October New measures to manage the crisis in the euro area
2012 October The economic situation remains uncertain ahead of collective bargaining in 2013
2012 October Has the functioning of the labour market changed?

2013

2013 February Severe fiscal tightening avoided in the United States
2013 February The household balance sheet and the macroeconomic assessment
2013 February Perspectives on monetary policy expectations and forward rates
2013 July Financial imbalances on the monetary policy assessment
2013 July Cost developments and inflation
2013 July A long-term perspective on the krona
2013 October Expected tapering of the Federal Reserve's asset purchases
2013 October Perspectives on labour market developments in Sweden
2013 October Macroprudential policy and monetary policy

2014

2014 February Perspectives on the low rate of inflation
2014 February The effects of monetary policy on household debt
2014 February Adjustments in the euro area: an update
2014 July Why is inflation low?
2014 July The interplay between wage formation, monetary policy and inflation
2014 July Stricter capital requirements for Swedish banks – effects on the macroeconomy
2014 October Monetary policy when the policy rate is close to zero
2014 October Revisions to the National Accounts
2014 October Low global interest rates
2014 October Households' sensitivity to interest rates

[47] A list of the articles published since 1993 can be found on the Riksbank's website www.riksbank.se.

Interest rate decisions 2010–2014[48]

Date of meeting	Decision (percentage points)	Repo rate (per cent)	Monetary Policy Report
2010			
10 February	0	0.25	February 2010
19 April	0	0.25	Monetary Policy Update
30 June	+0.25	0.50	July 2010
1 September	+0.25	0.75	Monetary Policy Update
25 October	+0.25	1.00	October 2010
14 December	+0.25	1.25	Monetary Policy Update
2011			
14 February	+0.25	1.50	February 2011
19 April	+0.25	1.75	Monetary Policy Update
4 July	+0.25	2.00	July 2011
6 September	0	2.00	Monetary Policy Update
26 October	0	2.00	October 2011
19 December	−0.25	1.75	Monetary Policy Update
2012			
15 February	−0.25	1.50	February 2012
17 April	0	1.50	Monetary Policy Update
3 July	0	1.50	July 2012
5 September	−0.25	1.25	Monetary Policy Update
24 October	0	1.25	October 2012
17 December	−0.25	1.00	Monetary Policy Update
2013			
12 February	0	1.00	February 2013
16 April	0	1.00	Monetary Policy Update
2 July	0	1.00	July 2013
4 September	0	1.00	Monetary Policy Update
23 October	0	1.00	October 2013
16 December	−0.25	0.75	Monetary Policy Update
2014			
12 February	0	0.75	February 2014
8 April	0	0.75	Monetary Policy Update
2 July	−0,5	0.25	July 2014
3 September	0	0.25	Monetary Policy Update
27 October	−0.25	0.00	October 2014
15 December	0	0.00	Monetary Policy Update

[48] A list of the historical interest rate decisions with effect from 1999 onwards can be found on the Riksbank's website www.riksbank.se.

Glossary

Annual rate: The annual rate means that the change between two periods following on from one another is converted into the same unit, the corresponding annual change. Recalculation to annual rate makes it easier to compare changes with different frequencies. Assume, for example, that GDP increases by 0.5 per cent between the first and second quarters, when calculated as an annual rate this is around 2 per cent and provides an indication of what the quarterly change may entail in terms of a full year change.

Asset prices: Refers mainly to prices of shares and properties.

Basis spread: Shows the difference between the interbank rate and the expected policy rate with the same maturity.

Bond market: See Fixed-income market.

Business tendency survey: A survey in which firms respond to questions about their sales, output, hiring plans, etc.

Calendar adjustment: Adjustment for variations in the number of working days from one year to the next. Calendar adjustment is usually used to compare developments in production, turnover and employment (number of hours worked) between quarters or months.

Capacity utilisation: The degree to which production capacity is utilised, that is, the maximum output that can be achieved with the existing workforce, machinery and premises.

Confidence indicators: Total measure of the situation within a sector or among households. Confidence indicators are based on an average of the responses to several different questions in a survey.

CPI: The consumer price index is a measure of the price level and is calculated on a monthly basis by Statistics Sweden. The Riksbank's inflation target is expressed in the annual percentage change of the CPI.

CPIF: The CPI with a fixed mortgage interest rate. The CPIF is not directly affected by a change in mortgage interest rates. The entire change in the sub-index for interest rate expenditures comes from the change in the value of the housing stock.

Credit spread: Refers to the difference between a security with credit risk and a risk-free security with the same maturity.

Current prices: The current price expresses the nominal value and is not adjusted for changes in value caused by inflation. See also Fixed prices.

Econometric estimates: Usually a statistical calculation made on the basis of historical data.

ECB: The European Central Bank.

ESM: European Stability Mechanism. A permanent international financial institution founded by the euro-area countries to safeguard stability in the euro area. The ESM replaces the former financing mechanism.

ESRB: European Systemic Risk Board. The European Systemic Risk Board is responsible for the macroprudential supervision of the financial system within the EU.

Executive Board of the Riksbank: The Executive Board governs the Riksbank and takes decisions concerning areas such as monetary policy.

Export market: Intended as a measure of the demand for imports in the countries to which Sweden exports. This is calculated by weighing together imports in 32 countries and covers approximately 85 per cent of Swedish export market. The weights are determined by the respective country's share of Swedish exports of goods.

Federal funds rate: The US Federal Reserve's policy rate.

Federal Reserve: The central bank of the United States.

Financial markets: A generic term for the markets in which financial instruments are traded. The four main financial markets are the foreign exchange market, the fixed-income or bond market, the share or equity market and the derivatives market.

Fixed-income market: The fixed income market is used for trading instruments that yields a specific predetermined return, an interest rate. The fixed income market is often divided into a bond market and a money market. The bond market comprises trade in securities – bonds – generally with maturities of one year and longer. Trading in the money market comprises treasury bills and certificates, usually with maturities of up to one year.

Fixed prices: Valuation at fixed prices means that the flows and stocks during an accounting period are valued at prices from an earlier period. The purpose of valuation at fixed prices is to break down changes in value into both changes in price and changes in volume.

Forward prices: The price for buying or selling an asset for future delivery.

Forward rate: A forward rate agreement entails a liability for the contracting parties to complete the purchase or sale of an interest rate asset at a predetermined rate, the forward rate, and at a predetermined point in time. The forward rate in a contract reflects the market participants' expected interest rates during the time until the contract matures.

FRA: A Forward Rate Agreement, where two parties agree to borrow and lend money respectively within the scope of a three-month interbank loan with effect from a particular date in the future at an interest rate agreed by the parties now. The market rates for these FRAs thus give an indication of market participants' expectations of future interest rates. See also the explanations of Forward rate and Interbank rate.

HICP: Harmonised index for consumer prices developed as a comparable measure of inflation within the EU. The HICP differs from the CPI both with regard to the measure of calculation and what it covers, for instance mortgage rates are not included in HICP.

Hodrick-Prescott filter (HP filter): A statistical method for breaking down the movements of a variable into trend and cyclical components. The method can be described as a weighted double-sided moving average where greater weight is placed on observations close at hand and gradually decreasing weight on observations further ahead.

Implied forward rates: For instance, the rate on two bonds with different maturities can be used to calculate future rates, that is, implied forward rates, during the time to maturity of the bonds. This method is used when there are no market-listed forward rates. See also Forward rate.

Inflation: General price rises that cause a reduction in the value of money. The opposite is known as deflation.

Interbank rate: The interest rate that applies when banks and large financial institutions borrow from one another on the interbank market for terms of up to one year.

KIX: Krona Index. An index for the Swedish krona exchange rate.

KIX-weighted: An aggregate of, for instance, GDP, CPI or the exchange rate in the euro area and 20 countries that are important to Sweden's international transactions. The KIX weights are updated regularly.

Labour costs: The total cost of labour according to the National Accounts, that is, the sum of wages, including for instance bonuses, employers' contributions, agreed collective charges and payroll-based taxes on output.

LFS: Labour Force Surveys. Monthly surveys conducted by Statistics Sweden to measure the size of the labour force, employment and unemployment.

Listed mortgage rates: The rates that are published by Nordea, SBAB, SEB, Swedbank Hypotek and Stadshypotek, for example in the daily press.

MFI: Monetary Financial Institutions. Include banks, mortgage institutions, financial companies, municipal and corporate-financed institutions, monetary securities companies and monetary investment funds (money market funds).

Monetary base: Defined in Sweden as banknotes and coins in circulation, monetary policy counterparties' deposits in the Riksbank and claims on the Riksbank as a result of Riksbank Certificates that have been issued.

Monetary policy: The measures taken by the Riksbank in order to maintain the value of money.

Money market: See Fixed-income market.

Money supply: The general public's holdings of banknotes, coins and their demand deposits. There are different measures of the money supply which include different definitions of the demand deposit.

Money market instruments: See Fixed-income market.

MPR: Monetary Policy Report.

MPU: Monetary Policy Update.

MRO: Main refinancing operation. The ECB's weekly market operations where the central bank manages the supply of liquidity and steers the short-term interest rates. This normally involves the ECB specifying an amount and a lowest interest rate, and the banks then being allocated liquidity via auction proceedings. However, since October 2008, the ECB has applied full allocation at a fixed interest rate, that is, the ECB determines an interest rate and the banks may loan an unlimited amount at this interest rate, given that they have sufficient collateral.

Net figures: The percentage of companies or households in a survey that state a positive development minus the percentage stating a negative development.

Net lending (general government): General government income minus expenditure.

Overnight rate: The interest rate for interbank loans overnight.

Policy rates: The interest rates set by central banks for conducting monetary policy. In Sweden these are the repo rate and the deposit and lending rates.

Productivity: The amount of goods and services produced in relation to the resources utilised in the form of labour and capital. The most common measure is labour productivity, which measures the output per hours worked.

Purchase price coefficient: The purchase price of a property divided by its rateable value.

Real interest rate: In reality the risk free real (that is expressed in purchasing power units) return on a real bond. As liquid real bonds are often not available for relevant maturities, the real interest rate is in practice usually calculated according to the Fisher equation as the nominal interest rate minus expected inflation.

Refi rate: The European Central Bank's policy rate.

Repo rate: The Riksbank's most important policy rate. The interest rate that the banks pay when they borrow money from the Riksbank.

Resource utilisation: The utilisation of the production resources labour and capital.

Risk premium: An extra return that an investor requires as a compensation for the risk.

RU indicator: A summarising measure of resource utilisation from survey data and labour market data. The indicator information is weighed together into an index with the aid of principal component analysis. The index, which is the actual RU indicator, can be regarded as a weighted average of the variables included.

Seasonal adjustment: Adjustment of data to even out regularly occurring variations over the year.

Spot price: The price of a commodity for its immediate delivery.

Statistics Sweden: The Swedish office of national statistics. The central government authority for official statistics.

STIBOR: Stockholm Interbank Offered rate. STIBOR is a reference rate used in many loan contracts.

STINA: Stockholm Tomorrow/next Interbank Average is an interest rate derivative contract where two parties exchange a fixed interest rate flow and a variable interest rate flow respectively with one another. The interest-rate flows are based on the STIBOR rate for the term tomorrow-to-next which is closely-related to the Riksbank's repo rate. The market-listed fixed interest rate in the STINA contracts reflects the average expected overnight rate during the term of the contract.

Sveriges Riksbank Act: The Act stipulating the tasks of the Riksbank.

TCW index: Total competiveness weights index. An index for the Swedish krona's exchange rate.

TED spread: Originally the treasury/euro-dollar spread. Shows the difference between the interbank rate and the rate on a treasury bill with the same maturity.

TLTRO: Targeted longer-term refinancing operations. The ECB is offering loans to the banks linked to how much they lend to non-financial corporations and households, disregarding mortgages. The total amount may not exceed 7 per cent of the banks' current loans to the private sector, excluding mortgages. The loans are to be offered on two occasions during autumn 2014 and then quarterly from March 2015 to June 2016. All of the loans will mature in 2018 and are at a fixed interest rate (the refi rate plus 0.1 percentage point).

Underlying inflation: Measures of inflation that in different ways exclude or attribute a different weighting to the prices of those goods and services included in the CPI. Underlying inflation can be calculated by excluding changes in the prices of certain goods and services for which the price tends to fluctuate sharply. Underlying inflation can also be calculated with the aid of econometric methods.

Yield curve: The yield curve shows the relationship between yield and maturity dates.

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