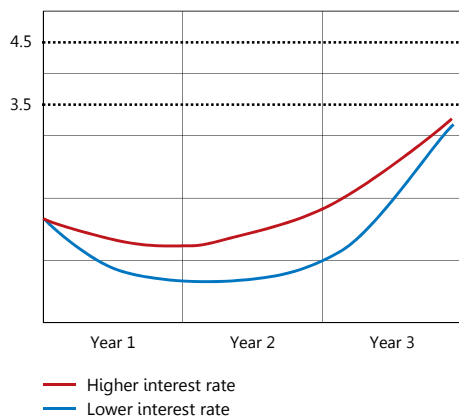


Financial imbalances in the monetary policy assessment

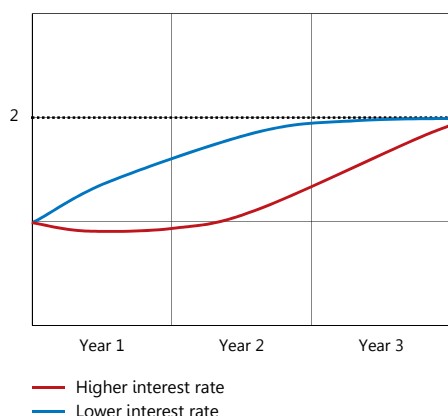
Figure A1. Two repo-rate paths: higher and lower
Per cent



Note. The broken lines show an interval for the long-term level of the repo rate.

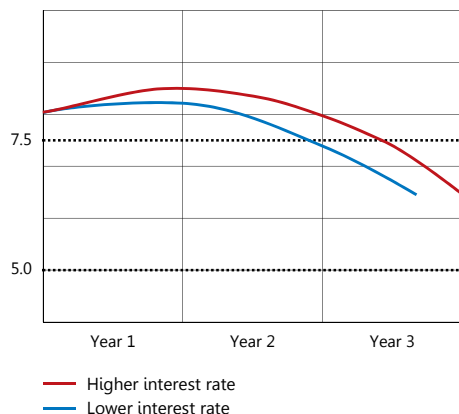
Source: The Riksbank

Figure A2. Inflation in connection with two repo-rate paths: higher and lower
Per cent



Source: The Riksbank

Figure A3. Unemployment in connection with two repo-rate paths: higher and lower
Per cent



Note. The broken lines show an interval for the long-term sustainable unemployment rate of 5 to 7.5 per cent.

Source: The Riksbank

One question that has been much discussed in connection with the monetary policy decisions is how to take the risks associated with household indebtedness into account. International experience shows that a high level of indebtedness can pose major risks to the economy. This article describes principles for how monetary policy can take household indebtedness into account within the framework of flexible inflation targeting.

The starting point is to adopt a more long-term focus and look beyond the three-year horizon that normally forms the basis of the Riksbank's forecasts. This means that when considering monetary policy we not only need to take a stance on how the repo rate will affect the outlook for inflation and economic activity over the next few years. We also need to form a view of the repo rate's effects on indebtedness and the build-up of financial imbalances – factors that can pose risks to the outlook for inflation and economic activity in the longer term. Hence, the monetary policy decision entails a trade-off between short-term effects and long-term risks, and there is ample scope for different assessments.

Monetary policy deliberations that do not take financial imbalances into account – an outline

The Riksbank conducts what is usually referred to as flexible inflation targeting. Apart from stabilising inflation around the target of 2 per cent, the Riksbank strives to stabilise production and employment around sustainable levels – this is usually called stabilising resource utilisation in the economy.¹⁰

The Riksbank has chosen to make forecasts for the three years immediately ahead, which is normally sufficient to expect inflation to be back on target and resource utilisation to return to a normal level. In monetary policy deliberations that do not take financial imbalances into account, the path that best stabilises inflation around 2 per cent and resource utilisation around a normal level over the three-year forecast period is chosen. This is illustrated in Figure A1. For the sake of simplicity, two repo-rate paths are shown: a higher and a lower. With the lower repo-rate path, inflation measured in terms of the CPIF comes closer to the target of 2 per cent (see Figure A2). Resource utilisation – here illustrated in terms of unemployment – is also normalised more quickly (see Figure A3).¹¹ According to this simple outline, the lower repo-rate path thus appears to be most appropriate.¹²

¹⁰ See *Monetary Policy in Sweden*, 2010. Sveriges riksbank.

¹¹ How resource utilisation should be measured is in itself a difficult question and the Riksbank uses several different measures. For the sake of simplicity, unemployment's deviation from a long-run sustainable rate is used as a measure of resource utilisation below, but the reasoning here is also valid for other measures of resource utilisation, for example the deviation of production from a long-run sustainable level.

¹² Beyond the forecast horizon it is assumed that the repo rate will approach a long-term level of between 3.5 and 4.5 per cent at the same time as inflation approaches 2 per cent and unemployment approaches a long-run sustainable rate of between 5 and 7.5 per cent.

New monetary policy experience after the financial crisis

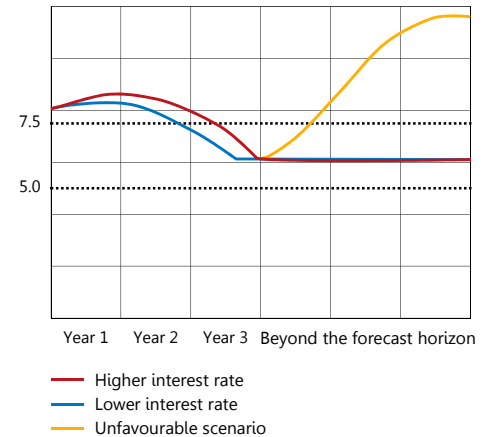
As a result of the financial crisis, the question of whether monetary policy should take the build-up of financial imbalances into account has come to the fore both in Sweden and abroad. Flexible inflation targeting is compatible with taking financial imbalances into account in the monetary policy decisions, as such imbalances ultimately threaten both the stability of the real economy and the stability of inflation.¹³ In a really negative scenario, financial imbalances may not only lead to unfavourable macroeconomic outcomes, they can also pose risks to financial stability. The Riksbank not only has the task of promoting price stability but also of promoting "a safe and efficient payment system", which is usually interpreted as promoting financial stability.¹⁴

Monetary policy deliberations that take household indebtedness and the risk of poor target attainment in the longer term into account

One problem with not taking financial imbalances into account when considering monetary policy is that target attainment may appear to be good in the short term, at the same time as one misses the fact that financial imbalances are building up that increase the risk of poor target attainment in the longer term. In monetary policy deliberations that take the risks associated with household indebtedness into account it is therefore a natural starting point to look beyond the normal forecast horizon of three years. Of course it is not possible to make "forecasts" so far forward in the sense of a certain course of economic development. A gross simplification would be to say that, looking so far ahead, the economy could be in one of two different situations. There is some likelihood that the economy would be in a state of long-term equilibrium, with an inflation rate of 2 per cent and a normal level of resource utilisation, but also some likelihood that the economy has been hit by an unfavourable scenario associated with household indebtedness, which is here illustrated using the development of unemployment (see Figure A4).¹⁵ A lower repo rate could contribute to increasing the risks, that is the likelihood of the unfavourable scenario materialising, and possibly to the extent of the effects on unemployment and inflation if such a scenario does materialise.

In the overall monetary-policy deliberations, the short-term effects of a certain repo-rate path are set against the long-term effects. In order to get a concrete example of how this trade-off works we need to answer the following questions. First: What kind of unfavourable economic scenario relating to household indebtedness risks occurring?

Figure A4. Unemployment with a higher and lower repo-rate path and the risk of an unfavourable scenario beyond the forecast horizon
Per cent



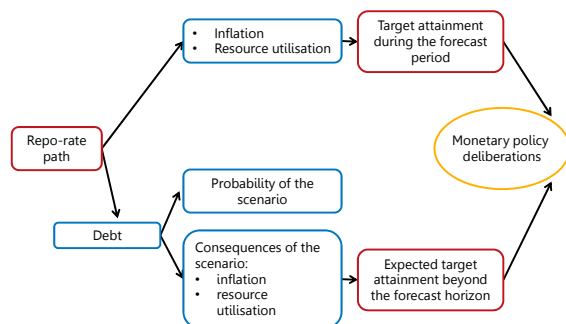
Source: The Riksbank

¹³ See for example *Monetary Policy in Sweden*, 2010. Sveriges riksbank, which says, among other things: "Monetary policy with an inflation target, where the emphasis is at the same time on stabilising developments in the real economy, also contributes to a balance on the financial markets. However, experience shows that even with such a policy, asset prices and indebtedness can sometimes develop in a manner that is untenable in the long run. This can entail risks of large price adjustments in the future, which can in turn have unfavourable and serious repercussions on the real economy and inflation. From experience, it appears to be primarily fluctuations in property prices and credit volumes that create problems. This type of risk cannot always be easily quantified or captured in the normal analysis and forecasting work, but may nevertheless need to be taken into account in the monetary policy decisions."

¹⁴ See *The Riksbank and financial stability*, 2013. Sveriges riksbank.

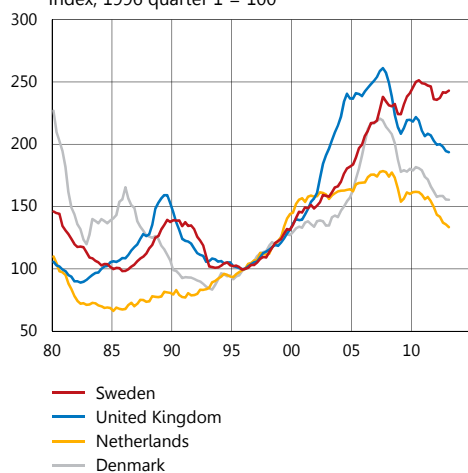
¹⁵ Actually, an unfavourable scenario could also occur within the normal forecast period, that is within the next three years. In this case, the state of the economy at the outset will have an impact on how much inflation deviates from the inflation target and how much resource utilisation deviates from a normal level. However, the difference between the two repo-rate paths above all has an impact on the risks in the longer term. As a simplifying assumption, we therefore analyse the risk of an unfavourable course of events *beyond* the forecast horizon.

Figure A5. Schematic outline of a monetary policy decision-making process that takes household debt into account



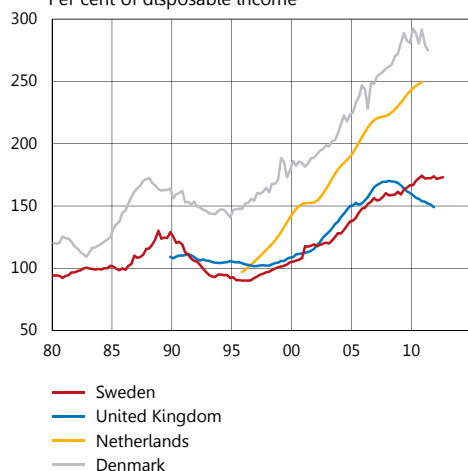
Source: The Riksbank

Figure A6. Real housing prices in various countries
Index, 1996 quarter 1 = 100



Sources: Nationwide Building Society, NVM, Statistics Sweden, Statistics Denmark, Statistics Netherlands and Office for National Statistics

Figure A7. Household debt ratio
Per cent of disposable income



Sources: Bank of England, Danmarks Nationalbank, Eurostat and the Riksbank

Second: How can monetary policy affect the risk of the scenario occurring? Finally – for the different repo-rate paths – the assessed effects beyond the forecast horizon need to be weighed against the effects during the normal forecast period. Figure A5 summarises the various assessments that need to be made in monetary policy deliberations that take financial imbalances into account.

The first question that needs to be answered is thus what scenario risks occurring in the event of a high level of household indebtedness.

Scenario based on international experience

In Sweden, housing prices and household indebtedness have increased sharply since the mid-1990s, and more than in several of the countries that have experienced serious problems in recent years in connection with a substantial fall in housing prices (see Figures A6 and A7).

The Riksbank's inquiry into risks on the Swedish housing market, which was published in the spring of 2011, showed that the increase in Swedish housing prices can be explained in terms of a low level of housing construction, falling real interest rates and rising incomes.¹⁶ The inquiry also noted that prices were above a long-term trend and that future price falls could not be ruled out. One explanation for this was that several of the factors behind the increase in housing prices were at historically abnormal levels.

The inquiry also pointed out that a fall in prices on the Swedish housing market could, in certain circumstances, have a relatively limited impact on the macroeconomy. However, this is based on the average links between housing prices and the macroeconomy in Sweden. One factor that was underlined was the difficulty of taking into account the fact that household indebtedness has shown an increasing trend since the mid-1990s. The consequences of a fall in housing prices would probably be worse in the case of a high level of household indebtedness.

In recent years, several studies have shown that a high level of indebtedness gives rise to major negative effects on the economy in the event of a fall in housing prices.¹⁷

One way of estimating the consequences that a fall in housing prices could have for the Swedish economy is to produce a *scenario* based on international experience. The scenario is based on the average macroeconomic effects of a number of episodes in OECD countries where house prices have fallen and indebtedness has been high. As additional comparisons, the average course of development in Denmark, the Netherlands and the United Kingdom during the latest financial crisis is also illustrated, as well as the course of development during the Swedish crisis of the 1990s.

Apart from a dramatic fall in housing prices, the scenario based on the average course of development is characterised by falls in household consumption, investment and GDP; and by increasing unemployment.

¹⁶ See *The Riksbank's commission of inquiry into risks on the Swedish housing market*, 2011. Sveriges riksbank.

¹⁷ See "The household balance sheet and the macroeconomic assessment". *Monetary Policy Report*, February 2013. Sveriges riksbank, and, for example, IMF World Economic Outlook, April 2012, A. R. Mian, K. Rao and A. Sufi (2011), "Household Balance Sheets, Consumption, and the Economic Slump", Chicago Booth Working paper, November 2011 and K. Dynan (2012) "Is A Household Debt Overhang Holding Back Consumption?", Brookings Papers on Economic Activity, spring issue.

Nominal housing prices fall by an average of approximately 10 per cent, while real housing prices fall more. The fall in household consumption is relatively substantial (see Figure A8). The fall in housing prices also leads to a fall in investment. The general weakening of demand leads to a fall in GDP (see Figure A9). The impact on the labour market is considerable and there is a clear rise in unemployment, at most by approximately 5 percentage points (see Figure A10).

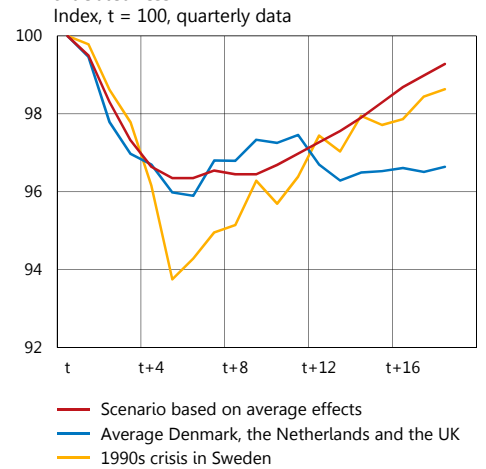
Inflation falls somewhat in the scenario (see Figure A11). However, the effect on inflation partly relates to the development of the exchange rate. The historical episodes that form the basis for the scenario cover countries and periods with fixed and floating exchange rates and there is a high degree of uncertainty about what would happen with inflation.¹⁸

The effects could be different in Sweden

International experience, illustrated in a scenario with an average course of events, thus shows that the consequences of a fall in house prices in connection with a high level of household indebtedness may be serious. The effects are greater than the effects of a fall in housing prices in Sweden that were identified in the Riksbank's inquiry into the housing market.¹⁹ How applicable the international experience is to the Swedish economy depends on several factors. As mentioned above, the international experience covers both fixed and floating exchange rate regimes and a floating exchange rate of course increases the ability of monetary policy to parry the negative effects on the economy by cutting interest rates. Historically, the Swedish krona has weakened substantially in periods of financial unease, which may have considerable effects on inflation. However, irrespective of whether inflation ultimately falls or rises as an effect of the fall in housing prices, uncertainty about the future development of inflation would increase, which would make it more difficult to attain the inflation target.

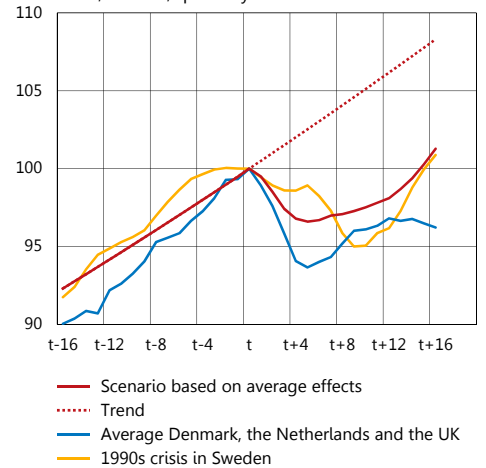
Another important question is how financial stability would be affected by a fall in housing prices. International experience also includes outright banking crises, which means that the effects on the economy may be exaggerated. In Sweden's case, there are many indications that the direct loan losses that the banks would make on mortgages may actually be limited.²⁰ On the other hand, the weak development of the macroeconomy will probably give rise to loans losses from corporate lending due to declining demand for the companies' goods and services. Swedish banks are also highly dependent on foreign market funding. There is a risk that a fall in housing prices will undermine the confidence of foreign investors and that the banks' access to funding will become more difficult and more expensive. This in turn may lead to more

Figure A8. Household consumption in a scenario with a fall in housing prices in connection with high indebtedness



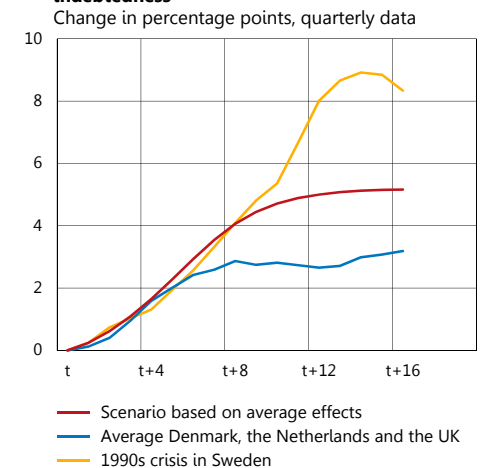
Note. Denmark 2008 Q2 = t, Netherlands 2008 Q1 = t, United Kingdom 2008 Q1 = t and Sweden 1991 Q3 = t. Sources: IMF and the Riksbank

Figure A9. GDP in a scenario with a fall in housing prices in connection with high indebtedness



Note. Denmark 2008 Q2 = t, Netherlands 2008 Q1 = t, United Kingdom 2008 Q1 = t and Sweden 1990 Q3 = t. Sources: IMF and the Riksbank

Figure A10. Unemployment in a scenario with a fall in housing prices in connection with high indebtedness

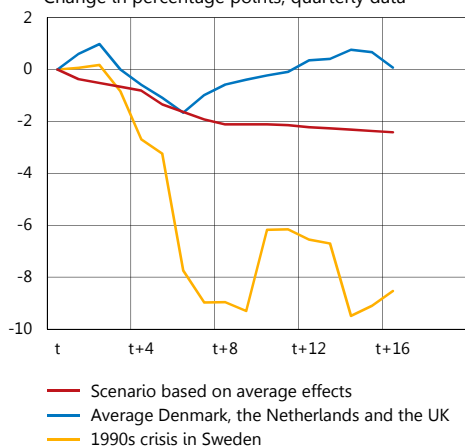


Note. Denmark 2008 Q2 = t, Netherlands 2008 Q1 = t, United Kingdom 2008 Q1 = t and Sweden 1990 Q3 = t. Sources: IMF and the Riksbank

¹⁸ The figure shows the dramatic downturn in inflation that took place in connection with the Swedish crisis of the 1990s. The crisis was preceded by a period with very high rates of inflation of over 10 per cent.
¹⁹ See *The Riksbank's commission of inquiry into risks on the Swedish housing market*, 2011. Sveriges riksbank, which analyses the consequences of a 20 per cent fall in real housing prices.
²⁰ See also the article *The Riksbank's commission of inquiry into risks on the Swedish housing market*, 2011, Sveriges Riksbank, and "Higher risk weights for Swedish mortgages promote financial stability", *Financial Stability Report 2012:2*. Sveriges riksbank.

Figure A11. Development of inflation in a scenario with a fall in housing prices in connection with high indebtedness

Change in percentage points, quarterly data



Note. Denmark 2008 Q2 = t, Netherlands 2008 Q1 = t, United Kingdom 2008 Q1 = t and Sweden 1990 Q3 = t.

Sources: IMF and the Riksbank

expensive mortgages for Swedish consumers, which will further aggravate the downturn in economic activity.²¹

In the case of Sweden, there are also a number of other factors that could both reduce the risk of a fall in housing prices and mitigate the consequences of such a fall. In several of the countries where prices have first increased dramatically and then fallen dramatically, development has been characterised by the fact that the current account as a percentage of GDP has decreased during the period with rising housing prices as a result of a low level of household saving and a substantial increase in housing investment.²² The opposite has occurred in connection with the fall in prices: There has been a clear increase in household saving and a housing surplus has arisen, which has limited housing investment. However, this is not something that characterises the situation in Sweden where the current account has shown a considerable surplus, which in turn reflects the fact that housing construction has been low at the same time as household saving has been high for several years. It is of course difficult to estimate how much these factors reduce the risk of, as well as the consequences of, a fall in housing prices.²³

Monetary policy's effects on the risks

We will now analyse the second question: how does monetary policy affect the risk of an unfavourable scenario materialising? To facilitate the discussion we divide the question into two parts. First: How are the probability and the effects of the scenario affected by changes in household indebtedness? Second: How is household indebtedness affected by monetary policy?

The risk of the scenario materialising is affected by indebtedness

There are several international studies of the first part of the question that relate increases in housing prices and household indebtedness to the probability of financial crises. These studies have shown that a higher level of household and corporate indebtedness in relation to the "trend", or a higher rate of increase than normal, can increase the probability of a financial crisis occurring.²⁴ However, it is of course difficult to quantify the size of the effects. It has also been shown that the consequences of a fall in housing prices are worse if the level of household indebtedness is high.

²¹ In addition, a large proportion of Swedish mortgages have been taken at variable interest rates, which increases the households' exposure to changes in interest rates. See for example "Higher risk weights for Swedish mortgages promote financial stability", *Financial Stability Report 2012:2*. Sveriges riksbank.

²² The Netherlands are an exception in that the current account was in surplus and the level of housing construction was relatively low in the years before the major adjustment of housing prices.

²³ See for example IMF, *World Economic Outlook*, October 2009 and Armelius, Hanna and Dillén, Hans, "The relation between household saving and falls in housing prices". *Economic Commentary* no. 4, 2011. Sveriges riksbank.

²⁴ See M. Schularick and A.M. Taylor (2012), "Credit Booms Gone Bust: Monetary Policy, Leverage Cycles, and Financial Crises, 1870-2008", *American Economic Review* 102, pp. 1029-61. This article shows that a one percentage point higher rate of increase in lending to households and companies over a period of five years increases the probability of a financial crisis by almost 0.5 of a percentage point.

The effect of the repo rate on household indebtedness is an important part the assessment

When it comes to the second part of the question – that is how large an impact monetary policy has on household indebtedness – model estimates of the short-term relation between the repo rate and household indebtedness indicate that the effects may, on average, be relatively small.²⁵ However, there is a risk that estimates of short-term relations underestimate the overall effects of the repo rate on indebtedness.

One example of when these model estimates may underestimate the effects of monetary policy is if the households' expectations of future monetary policy are affected so that they overestimate how long the repo rate will be low. Calculations indicate that if the *real* mortgage rate were to become *permanently* lower, then the effects on indebtedness could be significant.²⁶

Expectations of the repo rate and the mortgage rate tend to be dictated by the prevailing interest rate situation, which indicates that the perception is that the current low level of interest rates will persist for some time (see Figures A12 and A13). The main risks associated with a low repo rate could thus be that the households expect these low rates to persist and therefore increase their indebtedness in an unsustainable way.²⁷ However, the downturn in long-term repo-rate expectations has coincided with a certain downturn in long-term inflation expectations (see Figure 3:30) and the expected real repo rate has therefore decreased somewhat less.

It is important to point out that the repo rate is not the only conceivable or the necessarily most effective tool for influencing household indebtedness. Measures in other policy areas must also be considered in situations in which household indebtedness risks becoming too high.

The risk of an unfavourable scenario in the future must be weighed against target attainment during the forecast period

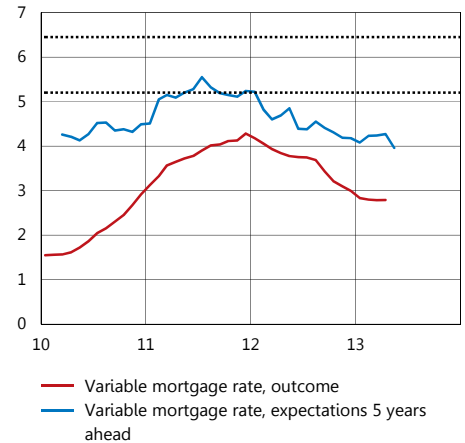
Two monetary policy alternatives have been illustrated in this article: a higher and a lower repo-rate path. During the usual three-year forecast period, the lower repo-rate path provides better expected target attainment in terms of inflation and resource utilisation. However, as a lower repo-rate path can contribute to increased indebtedness, it also increases the risk of an unfavourable scenario beyond the forecast horizon, for example in the form of a fall in housing prices in connection with a high level of household indebtedness. This scenario entails major losses, for example in terms of higher unemployment, which in itself can also be aggravated by a high level of indebtedness at the outset.

²⁵ Such estimates indicate that a 1 per cent lower repo rate over a period of one year, and which gradually reverts, will give rise to an approximately 4 percentage points higher level of indebtedness as a percentage of disposable income. Similar estimates of the relation between housing prices and the repo rate also show small effects; see Chapter 2.1 of "The Riksbank's inquiry into risks on the Swedish housing market".

²⁶ The example calculations show that if the real mortgage rate were to become 1 per cent lower permanently, then household indebtedness as a percentage of disposable income could be up to 25 percentage points higher; in other words a considerable effect. This is calculated using a general equilibrium model for the Swedish housing market; see Walentin, Karl and Sellin, Peter (2010), "Housing Collateral and the Monetary Transmission Mechanism", *Working Paper* no. 239. Sveriges riksbank.

²⁷ Studies indicate that expectations of housing prices are also dictated by recent price movements; see for example K. Case, R.J. Shiller and A. Thomson (2012), "What Have They Been Thinking? Home Buyer Behavior in Hot and Cold Markets", NBER Working Paper No. 18400.

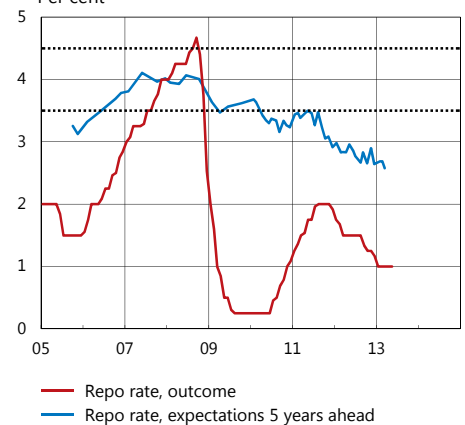
Figure A12. Interest-rate expectations among households regarding variable mortgage rates 5 years ahead
Per cent



Note. The broken lines show an interval for the long-term level of the variable mortgage rate. The interval is based partly on an interval for the long-term repo rate of 3.5-4.5 per cent and partly on an interval for the difference between a three-month mortgage rate and the repo rate of 1.7-2 percentage points.

Sources: National Institute of Economic Research and Statistics Sweden

Figure A13. Expectations of money market participants regarding the repo rate 5 years ahead
Per cent



Note. The broken lines show an interval for the long-term level of the repo rate of 3.5 to 4.5 per cent.

Sources: TNS SIFO Prospera and the Riksbank

A monetary policy that takes into account financial imbalances therefore means that the choice between the two repo-rate paths in this case becomes a trade-off between attaining the target in the short and long term: inflation's deviation from 2 per cent and unemployment's deviation from a normal level during the normal three-year period are weighed against the expected course of development beyond the forecast horizon (see Figure A5).

Difficult monetary policy deliberations without easy answers

The monetary policy assessment thus entails analysing several difficult questions. What type of unfavourable scenario could high indebtedness lead to? How much would a reduction in household indebtedness contribute to reducing the risk of the unfavourable scenario materialising, and how much smaller would the effects on the economy be with a lower level of indebtedness if the scenario nevertheless does materialise? What effects does monetary policy have on household indebtedness? Finally: How should benefits in the short term be weighed against risks in the longer term?

Another question is how long-term inflation expectations will be affected. One of the aims of taking the longer term into account is that target attainment for inflation should be good in the long term too. This should lead to long-term inflation expectations continuing to be well-anchored around the inflation target.

In the final monetary policy deliberations all of these questions must be analysed in context, and the choice between different repo-rate paths is not obvious or easy.

Measures in other policy areas can facilitate the monetary policy deliberations

To the extent that monetary policy can influence household indebtedness it can also help to reduce the long-term risks to the economy. But monetary policy cannot manage these risks alone. Measures must also be considered in other policy areas. Macroprudential policy offers several tailor-made tools that could be more effective than the repo rate for managing risks associated with household indebtedness, for example a mortgage cap, sectoral capital requirements, amortisation requirements and higher risk weights for mortgages. Several external observers have pointed to the need for such measures in Sweden.²⁸ It is therefore very important that a framework for macroprudential policy is put in place in Sweden as soon as possible. Measures in other policy areas could reduce the need to take household indebtedness into account in the monetary policy decisions and facilitate the monetary policy deliberations.

²⁸ "Sweden – 2013 Article IV Consultation: Concluding Statement of the Mission", IMF, 31 May, 2013.
 "Council Recommendation (COM(2013) 377 final)", European Commission, 29 May, 2013.
 "Recommendation of the ESRB of 4 April 2013 on intermediate objectives and instruments of macroprudential policy (ESRB/2013/1)", ESRB, 20 June, 2013.
 "Economic Survey of Sweden", OECD, 2012.