



SPEECH

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Correction: On page 16, some slight amendments have been made regarding the loan-to-income ratio in the UK and Ireland.

■ The housing market and household indebtedness from a central bank perspective

Why are the housing market and household indebtedness important to the Riksbank?

As you have no doubt noticed, the Swedish housing market and Swedish household indebtedness are being widely discussed. In my speech today, I intend to discuss this matter from a central bank perspective. Why is it so important for us at the Riksbank?

In this context, it is important to remind ourselves of our role in the Swedish economy. Under the law, the Riksbank has two main tasks: price stability and financial stability.¹ My opinion is that the housing market and household indebtedness may have great significance for our chances of performing both of these tasks. And consequently, as I see it, it is self-evident that the Riksbank should be interested in these issues.

In my speech today, I would particularly like to point out two important conditions for Sweden regarding monetary policy, price stability and financial stability.

As regards *monetary policy*, we need to take account of monetary policy abroad. If monetary policy abroad becomes more expansionary and Swedish monetary policy is passive, the exchange rate will strengthen and inflation in Sweden will fall. As international monetary policy is presently very expansionary, we also need to conduct an expansionary monetary in Sweden so that inflation does not become too low. However, a more expansionary monetary policy contributes towards households' debts increasing, and this increases the risks for the Swedish economy as a whole and the risks for financial stability.

Financial stability in Sweden is affected by the banks, to a large extent, obtaining funding for households' mortgages on the market, largely in the form of what are known as covered bonds. These bonds have come to form the linchpin of the

¹ According to the Sveriges Riksbank Act, the Riksbank must maintain price stability. The Riksbank has defined a target for inflation: the annual change in the Consumer Price Index (CPI) should be 2 per cent. According to the preparatory materials for the Act, the Riksbank's monetary policy is also aimed at attaining the inflation target, and at the same time it is to support the objectives of general economic policy with a view to achieving sustainable growth and high employment. The Riksbank also has a mandate from the Riksdag (the Swedish parliament) to promote a safe and efficient payment system. The Riksbank has interpreted this as meaning that it shall act to promote stability in the Swedish financial system as a whole.

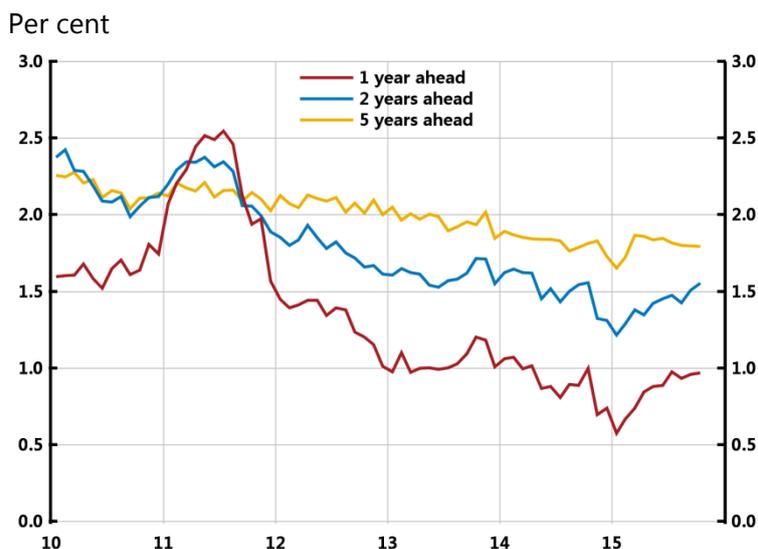
- Swedish financial system: the value of the bonds corresponds to over half of Sweden's GDP. Foreign investors own a large proportion of these bonds. Swedish banks' funding is therefore dependent upon both Swedish and foreign investors having confidence in the Swedish housing market.

Let me now go on to talk first about our monetary policy and the significance of the housing market and household indebtedness for interest rate decisions, then describe the risks and finally discuss the tools for managing these risks.

Why is monetary policy so expansionary?

Sweden is a small, open economy that is affected to a large extent by events abroad. The euro area, which represents about half of our foreign trade, is particularly significant.² As you know, the global financial crisis of 2008 was followed by a sovereign debt crisis in the euro area a few years later. Developments in recent years have therefore entailed an unexpectedly weak level of economic activity abroad, and this has had consequences for Swedish inflation and the real economy. In conjunction with this, inflation also became surprisingly low both in Sweden and abroad. Long-term inflation expectations in Sweden started to fall – the credibility of the inflation target thereby risked being undermined (see Figure 1).

Figure 1. Inflation expectations among money market participants



Source: TNS Sifo Prospera.

Monetary policy abroad affects the conditions for Sweden

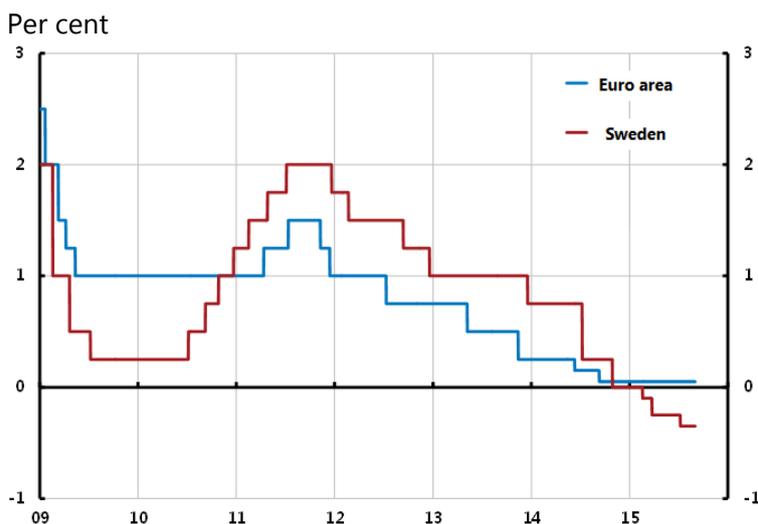
Sweden is a small, open economy, which is reflected, not least, by its monetary policy. Interest rates abroad are an important condition for Swedish monetary policy. As I have pointed out on previous occasions, there is a very high correlation between Sweden and the rest of the world regarding inflation, GDP and interest rates.³ When the euro area conducts a highly expansionary monetary policy, this affects us. I am

² In the so-called KIX index, which measures the importance of various regions and countries for Sweden's foreign trade, the euro area has a weight of about 50 per cent.

³ See my speech to the Swedish Economics Association, 2015.

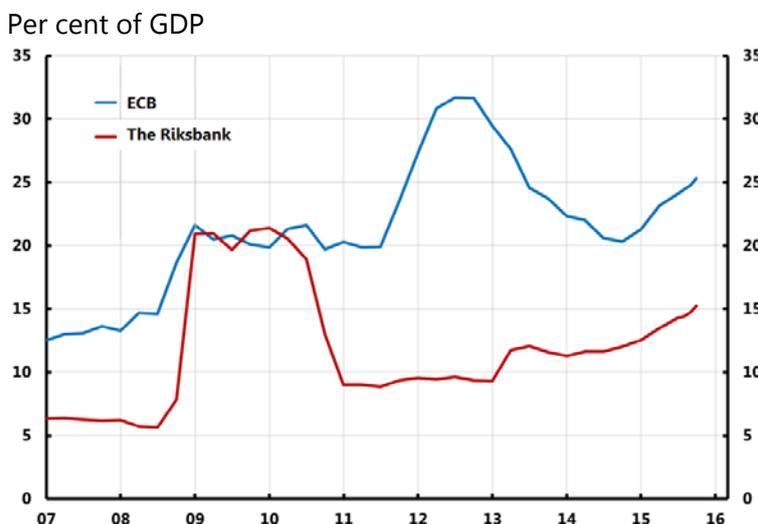
- thinking not just of the level of the policy rate but also of the ECB's comprehensive asset purchases, which are also intended to push down the interest rate level in the euro area (see Figures 2 and 3). Everything else being equal, lower interest rates abroad lead to a stronger krona and lower inflation in Sweden via lower import prices.

Figure 2. Policy rates in Sweden and the euro area



Sources: ECB and the Riksbank.

Figure 3. Central banks' balance sheet totals



Sources: ECB, Eurostat, Statistics Sweden and the Riksbank

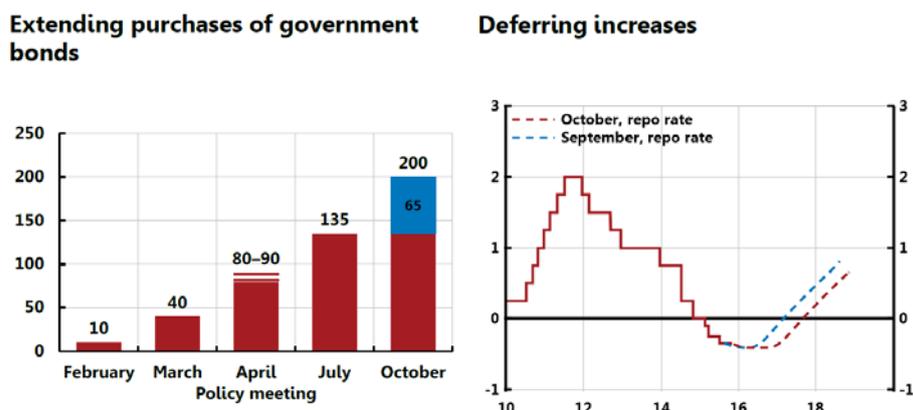
Several other small, open economies, such as Switzerland, the Czech Republic and Denmark, have also been affected by the ECB's expansionary monetary policy, even though their conditions are slightly different from those in Sweden, not least as regards their monetary policy regimes. However, the problem is fundamentally the same, namely that the expansionary monetary policy in the euro area is creating pressure on these countries' own currencies to appreciate.

■ Monetary policy is a matter of trade-offs

Last year, we cut the repo rate to zero in Sweden, and we have continued to lower it below zero at the same time as we have purchased government bonds (see Figure 4). We did this to safeguard confidence in the inflation target. If we can get inflation to rise, this will reduce the risk of the inflation target's role as nominal anchor being undermined.

Figure 4. The Riksbank's purchases of government bonds and the repo rate

SEK billion and per cent

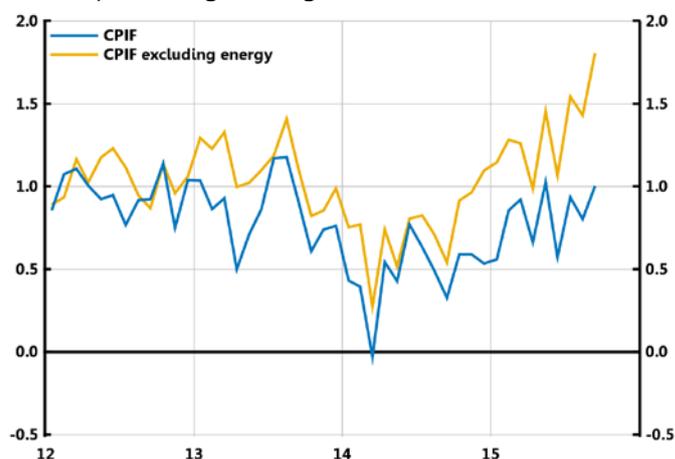


Source: The Riksbank

According to our analysis, the purchases of government bonds have contributed to interest rates in Sweden being lower and the krona being weaker than would otherwise have been the case without the purchases.⁴ We are now also seeing that inflation is moving in the right direction (see Figure 5).

Figure 5. Inflation in Sweden

Annual percentage change



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

Source: Statistics Sweden

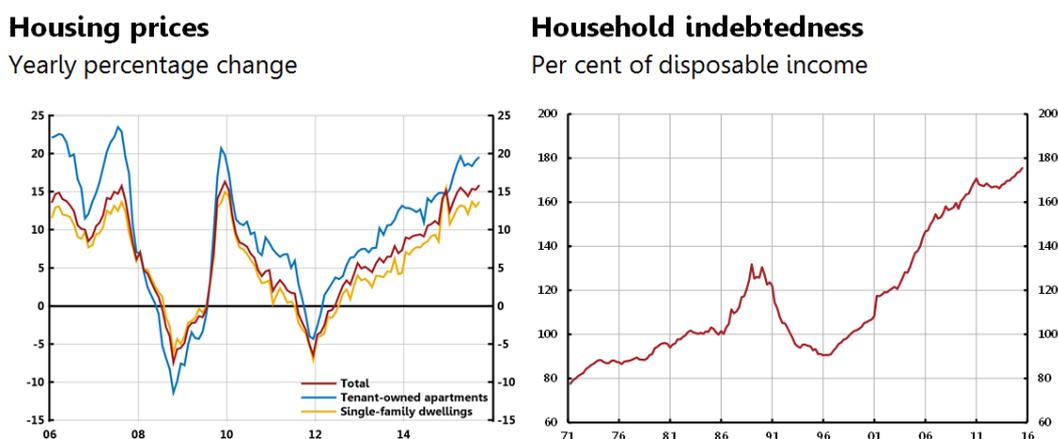
⁴ See De Rezende, R.B., Kjellberg, D and Tysklind, O., "Effects of the Riksbank's purchases of government bonds on financial prices", Economic Commentary no. 13, 2015, Sveriges Riksbank.

■ However, we are very much aware that the low interest rate level is also increasing the risks linked to households' already-high indebtedness. We are now seeing annual rates of increase in housing prices of between 15 and 20 per cent, at the same time as household indebtedness has started to accelerate upwards again (see Figure 6).⁵ There is a connection between the development of housing prices and household indebtedness because housing purchases are largely funded by loans and large parts of households' debts are made up of mortgages.

Monetary policy faces a choice between, on one hand, the development of the exchange rate, inflation and inflation expectations and, on the other, the development of household indebtedness.

My assessment is that, at present, it would be difficult to maintain a higher repo rate to manage the risks linked with household indebtedness. The krona would then risk appreciating and demand in Sweden could become too low – inflation may not reach the target as planned and inflation expectations may not become anchored around the target.

Figure 6. Housing prices and household indebtedness in Sweden



Sources: Statistics Sweden and Valueguard

The expansionary monetary policy is contributing to stable inflation...

Our assessment is that the monetary policy being conducted will allow us to safeguard the credibility of the inflation target, which is vital for achieving price stability. However, household indebtedness risks threatening both price stability and financial stability.

You could put it like this: Monetary policy is the policy area that has the best conditions for influencing the exchange rate and inflation. But to restrain household indebtedness, we would actually need an "extra policy rate", aimed at households and able to be set at a higher level than the usual policy rate. However, as the Riksbank can only steer the general level of interest rates and a part of the transmission is that households borrow more when interest rates are low, we now have to turn to other policy areas to manage household indebtedness.

⁵ For a more in-depth description of the development of housing prices in Sweden, see, for example, Financial Stability Report 2015:1, pp. 11-12.

■ ... but assumes measures will be taken on the housing market for success in the longer term

One condition for our monetary policy trade-offs to be successful is for measures against indebtedness to be taken elsewhere. If this does not happen, we may encounter major problems later on, both for the economy in general and for monetary policy.

Let us assume that no measures are taken. The housing rally could then potentially continue. In the worst case, international confidence in the Swedish housing market would start to collapse. As covered bonds are largely held by foreign investors, we would risk having these investors remove a large part of the banks' funding, which could have effects not only on financial stability but also on inflation.

In that case we could describe a very bad scenario: The banks would encounter funding problems, which in turn would lead to higher lending rates and lower demand. Foreign investors' reduced confidence in the Swedish housing market would lead to a weakening of the krona, which could then drive up inflation. Bond yields would rise, and the Riksbank would likely be forced to raise the policy rate to get inflation down, which would have even more consequences on household demand, and so on.

We can therefore see that merely the fact that no measures have been adopted could affect the Riksbank's chances of achieving price stability and financial stability. And this is without me even mentioning what could happen if households find it difficult to pay their mortgages and housing prices go into a steep decline.⁶

A fall in housing prices could snowball, with a number of interacting effects...

A fall in prices on the housing market could threaten both real economic and financial stability via both direct and indirect effects.

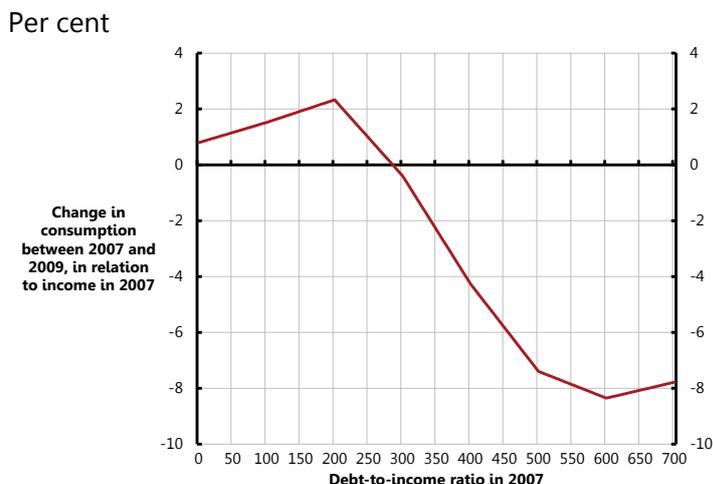
The direct effects on the macroeconomy are linked to reduced consumer demand

High indebtedness makes households sensitive to shocks (such as falls in housing prices and interest rate increases). Several empirical studies indicate that households with higher levels of indebtedness reduced their consumption significantly more than less indebted households during the financial crisis, when housing prices fell substantially in several countries (see Figure 7).⁷ Let me explain why this could be the case.

⁶ This is an issue that the Riksbank has analysed on several occasions in the past. Also see "The Riksbank's inquiry into risks on the Swedish housing market," 2011, and "Financial imbalances in the monetary policy assessment", article in the Monetary Policy Report, July 2013.

⁷ See Andersen, A.L, Duus C. and Lærkholm Jensen T., "Household debt and consumption during the financial crisis: Evidence from Danish micro data", Working Papers 89, 2014, Danmarks Nationalbank, Dynan, K., "Is Household Debt Overhang Holding Back Consumption?", Brookings Papers on Economic Activity, 2012, and Mian, A. Rao, K. and Sufi, A., "Household Balance Sheets, Consumption, and the Economic Slump", Quarterly Journal of Economics 128(4), pp. 1687-1726, 2013.

Figure 7. The relationship between indebtedness and the development of consumption among Danish households during the financial crisis

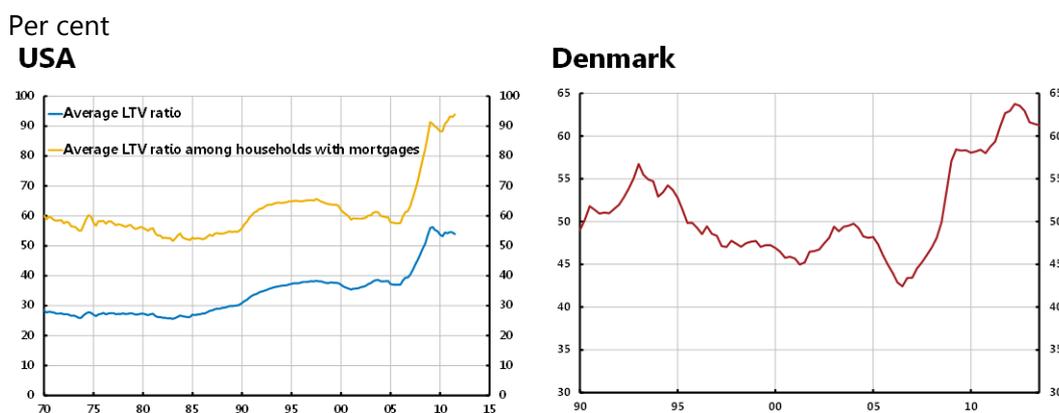


Source: Andersen, A.L, Duus C. and Lærkholm Jensen T., "Household debt and consumption during the financial crisis: Evidence from Danish micro data", Working Paper, Danmarks Nationalbank.

One hypothesis argues that highly indebted households particularly *increased* their indebtedness before the crisis with the aim of increasing consumption, based on, for example, optimistic expectations. When the crisis hit and the mood changed, these households radically reduced their consumption back to a more normal level. This has been highlighted as an explanation for the negative link between indebtedness and consumption developments among Danish households (see Figure 7).⁸

Substantial falls in housing prices impact households' balance sheets, in that the relationship between assets and debts rapidly deteriorates. There were clear signs of this in the countries in which housing prices fell heavily in conjunction with the financial crisis. For example, over a short time, the average loan-to-value ratio among US households with mortgages increased from under 60 per cent to over 90 per cent, while the average loan-to-value ratio among households in Denmark increased from under 45 per cent to over 60 per cent (see Figure 8).

Figure 8. Households' loan-to-value ratios in the United States and Denmark



Sources: Gelain, P, Lansing, K.J., and Mendicino, C., "House Prices, Credit Growth, and Excess Volatility: Implications for Monetary and Macroprudential Policy", International Journal of Central Banking, 2013, and Andersen, A.L, Duus C. and Lærkholm Jensen T., "Household debt and consumption during the financial crisis: Evidence from Danish micro data", Working Paper, Danmarks Nationalbank.

⁸ See Andersen, A.L, Duus C. and Lærkholm Jensen T., "Household debt and consumption during the financial crisis: Evidence from Danish micro data", Working Paper, Copenhagen University, 2015.

■ When debts take up a larger share of the value of housing, consumer demand decreases. The most obvious channel is that it will be more difficult to borrow for consumption when the value of collateral (housing) declines.⁹ Other channels can also be considered, however, such as increased saving to restore balance sheets, so that debts decrease in relation to assets and return to the same proportion as before the fall in prices.

Another channel can be added to this, namely in the form of a fall in housing prices reducing confidence among households and companies across the board, with a negative impact on demand in general.

Apart from the consequences for the economy as a whole, we risk seeing many personal tragedies in connection with individual households running into problems.

The direct effects on financial stability are connected with banks' funding

Perhaps the first aspect to consider regarding the link between financial stability and falling housing prices is that the banks make loan losses on households' mortgages if housing prices fall. However, in light both of our experiences from the crisis of the 1990s and the fact that Swedish mortgage holders have comprehensive obligations to make payments on their loans (*full recourse*), this must be considered less likely.¹⁰

It is in fact more likely that financial stability risks will arise as a result of the banks' funding being impaired. Swedish banks have a large share of wholesale funding, with one important element being covered bonds with mortgages as collateral. These bonds fund lending for housing purposes and are also reported on the banks' asset side, as the Swedish banks largely own one another's covered bonds. The banks utilise the bonds in their liquidity portfolios, in their role as market makers, as collateral in repos, and so on.

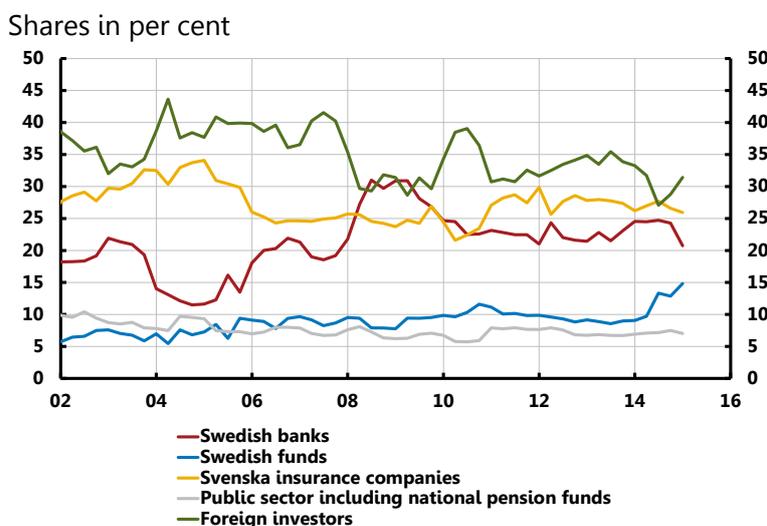
In Sweden, the market for covered bonds with mortgages as collateral is currently larger than the market for Swedish government bonds. The outstanding stock corresponds to over half of Sweden's GDP. In other words, covered bonds are one of the central linchpins of the Swedish financial sector.

A large proportion of the covered bonds are held by foreign investors (see Figure 9). The Swedish banks are therefore dependent on foreign investors' confidence in the Swedish mortgage market. A fall in housing prices makes it more difficult for the banks to obtain funding – foreign investors have turned out to be volatile, for example in conjunction with the last financial crisis (see Figure 9). Sweden has a large banking system, in which the banks' assets correspond to almost 4 times GDP. The potential effects on the economy are thus also magnified.

⁹ See Iacoviello, M., "Housing Wealth and Consumption", Board of Governors of the Federal Reserve System International Finance Discussion Papers 1027, 2011.

¹⁰ See, for example, "The Riksbank's inquiry into risks on the Swedish housing market", 2011.

Figure 9. Ownership of Swedish covered bonds by type of investor



Source: Statistics Sweden

Indirect risks for financial stability and the macro economy

An indirect risk, going from the macro economy to financial stability, is that reduced demand from over-indebted households will push the general level of demand in the economy down. This will weaken economic activity, in turn increasing the risks that the banks will incur loan losses in the corporate sector.¹¹

Earlier, I mentioned that the banks may have problems obtaining funding in the event of a fall in prices on the housing market in Sweden. In such a scenario, it is also conceivable that the banks' funding problems will lead to higher lending rates to households – and thereby to lower consumer demand.

In practice, it is likely that all of these direct and indirect factors will interact so that the consequences of a decline on the housing market may be serious and also difficult to gain an overview of in advance.

... making it difficult to maintain price stability and financial stability

It is very clear that it will be more difficult for the Riksbank to carry out its main tasks of price stability and financial stability in the event of a substantial fall in prices on the housing market.

I shall begin with price stability. If demand grows weakly as a result of a fall in housing prices, we would normally end up with lower inflation. However, if decreasing confidence in the Swedish housing market among foreign investors leads to a general fall in interest in investing in Sweden, we would presumably see a substantial depreciation of the krona, which could strongly push up inflation. It is very likely that uncertainty over the development of inflation would increase.

If we go over to financial stability, I can repeat what I have said many times before, which is that financial stability and price stability are interconnected. One reason for this is that if it becomes more difficult for the banks to obtain funding, it will also become more difficult to 'reach out' with repo rate changes. We usually describe this

¹¹ See Financial Stability Report 2015:1, pp. 13.

■ as a weakening of the monetary policy transmission mechanism. And this, naturally, makes it more difficult to stabilise inflation around the target. The Riksbank would also have to use its various tools to manage liquidity problems in the banks. We saw this clearly during the acute financial crisis of 2008–2009.

I shall now summarise my comments so far. Our monetary policy strategy is based on using a highly expansionary monetary policy to safeguard confidence in the inflation target, which has provided a nominal anchor for the Swedish economy for over 20 years. However, we are well aware that the low interest rate level increases the risk of problems arising on the housing market later on and that measures *need* to be taken elsewhere to make our strategy successful in the longer term.

Consequently, when we discuss possible measures for the housing market and household indebtedness, this is a matter of risk management: of adopting measures today to prevent the risk of unfavourable events later on. When it comes to the exact design of measures, to some extent it is, therefore, a matter of subjective opinions and not an exact science.

The mandate for macroprudential policy in Sweden must be clarified

Macroprudential policy is the policy area which has come to dominate the international discussion about reducing risks linked to household indebtedness.¹² Several targeted tools are offered within macroprudential policy which could be used for this purpose. For example, requirements could be placed on banks' equity by introducing countercyclical capital buffers and risk-weight floors on mortgages, and limits could be placed on how much households can borrow by way of loan-to-value limits and an amortisation requirement. It is therefore obviously very concerning that the previously adopted macroprudential policy framework in Sweden has encountered legal problems.

We now have a situation whereby a proposal for an amortisation requirement from the Government has been sent out for consultation after some unclear legal points arose concerning Finansinspektionen's previous proposal.¹³ Naturally, it is thus even more regrettable that uncertainties have arisen surrounding the legal aspects of the Government's proposal. The current proposal also only deals with the amortisation requirement - uncertainties remain regarding other loan limitation tools which I consider to be entirely necessary. More on this in a moment.

The European Systemic Risk Board (ESRB) issued a recommendation in January 2012 concerning the national mandate for macroprudential policy. In this, the importance is highlighted of the responsible authority having access to appropriate tools to meet its targets. I can only observe that this recommendation has not been implemented in Sweden.

We propose measures

We at the Riksbank must obviously make a contribution, given our task, and analyse the risks before issuing a proposal for how they should be managed, not least because financial stability is a precondition for price stability. Let me begin by

¹² A more detailed discussion about the growth and development of macroprudential policy in Sweden can be found in my speeches held at the Swedish Economics Association in 2014 and 2015.

¹³ See "Remissyttrande om Promemorior kring amorteringskrav" (Consultation response to the memo regarding the amortisation requirement), Sveriges Riksbank, published 29 October 2015.

■ discussing different types of measure more generally, and then I will say a few words on the quantitative effects of household indebtedness.

Put simply, we can say that there are two different ways to manage the problems on the housing market: either attempt to increase the housing supply in order to dampen housing prices, or dampen demand for housing and mortgages by making it more expensive to borrow, or simply limit how much households can borrow. In terms of measures which subdue demand, it is important to differentiate between measures which affect all loans, or the whole stock of credit, and measures which only affect new loans, or the flow of credit. But let us begin with measures which affect the supply of housing.

An increased supply of housing could dampen price increases - but it would take time!

Structural problems on the Swedish housing market are the main reason why housing construction has been unable to meet rising demand. An increased supply of housing is a central piece of the puzzle, as it can subdue the increase in housing prices, which would also help to limit household indebtedness.

However, the quantity of housing is not the only significant factor in terms of household indebtedness. It is also necessary to review how we can exploit the current housing stock more effectively. The distribution between purchased and rented housing is significant. Changes in the regulation of the rental market or increased subsidies for rented housing would increase the share of accommodation to rent, thereby dampening demand for cooperative housing and thus housing prices.

However, increasing the number of cooperative houses and changing the structure of the Swedish housing market can take a long time to implement. Over that time we will be obliged to look at different measures which could dampen demand for housing and mortgages.

Measures which can dampen household demand for mortgages

Raising capital requirements important to reinforce the resilience of banks, although the effects on household indebtedness are limited

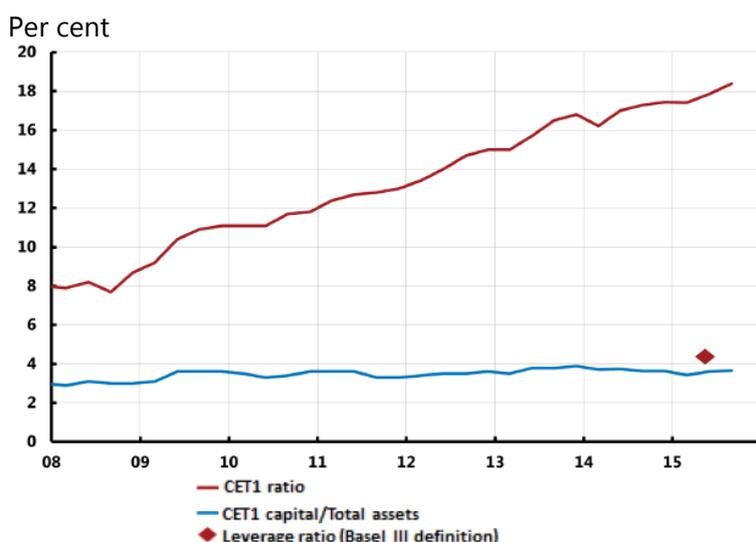
One option is to focus on the banks and raise capital requirements, which I think we should do. If the banks were forced to change the funding mix on their balance sheets towards a higher share of equity, lending rates could then increase which would mean lending volumes would decrease. However, our own analysis suggests that the effects on banks' lending rates and lending to households would be limited.¹⁴ The main effect is in fact that the resilience of banks is strengthened. But this is a central point seen against the background of financial stability risks I described earlier.

A large part of the improvement of banks' risk-weighted capital ratios over the last few years has taken place as a result of banks using internal models to a greater degree to calculate lending risks, and not by building up more capital. The use of these internal models has meant that the risk weights on banks' lending have fallen, which has contributed to a rise in equity in relation to risk-weighted assets. Our

¹⁴ See the article "Stricter capital requirements for banks – effects on the macro economy", Monetary Policy Report, July 2014.

- analysis shows that without this transition to internal models, the major banks' core tier one capital ratios would only have increased by a few percentage points over the period 2006 to 2013. The banks' equity as a proportion of total assets, or the leverage ratio, has been largely unchanged over the last few years (see Figure 10).¹⁵

Figure 10. The major Swedish banks' core tier one capital ratio and leverage ratio



Note. The blue line indicates CET 1 in relation to total assets and thus differs from the Basel Committee's definition of leverage ratio

Sources: Banks' annual reports and the Riksbank

Even though measures have been taken to reinforce banks' capital levels, more is needed. One important measure for which the Riksbank has argued for a long time is the introduction of a leverage ratio requirement. But we have also argued in favour of raising the countercyclical capital buffer to 2.5 per cent along with raising the risk-weight floor for mortgages to 35 per cent. Although the effects are minor, a raised risk-weight floor for mortgages has the advantage that it can contribute to higher mortgage rates for households, and that banks are forced to retain more capital in order to cover their mortgage lending.

Direct loan limitations for households reduce the risks - but only affect new borrowers.

One alternative is to focus on households and limit the amount they are able to borrow. Examples of such measures include debt-to-income limits, loan-to-value limits, an amortisation requirement and minimum levels for banks' discretionary income calculations. This affects the flow of credit, or new loans in other words. The effect on the stock of debt therefore takes time.

It is possible to understand the effects of different types of loan-limiting measures by using a simple equation which describes the development of the stock of debt over time:

$$D_t = (1 - \alpha) * D_{t-1} + L_t,$$

¹⁵ See Financial Stability Report 2015:1, pp. 5-6.

where D_t is the level of debt stock on date t , α is the rate of amortisation in the loan stock and L_t are new loans on date t . The development of the debt stock is therefore determined by the rate of amortisation on existing loans and by how many new loans are taken out.

All types of loan limitation discussed so far concern *new loans*. As loans in the stock are typically amortised very slowly - by a few per cent each year - the development of the debt stock will principally be determined by the previous debt stock in the short term. Limiting the amount of new loans therefore has a relatively slow impact on the debt stock.

A reduction in tax relief on mortgage interest can affect all borrowers - and could have potentially major effects on indebtedness

To influence the development of household debt we should also consider fiscal policy measures, which in this context means changes to various housing-related taxes. One example is changes to tax relief on mortgage interest. The advantage of this kind of measures is that it has the potential to influence the entire debt stock. The incentive to take out new loans decreases, and the costs linked to existing loans are also affected. In terms of the simple debt equation above, the amortisation rate could therefore rise on existing loans (the incentive to amortise increases if future borrowing costs rise) while new borrowing would be subdued.

The debt-to-income limit is an effective complement to the loan-to-value limit.

There are many indications that the distribution of debt is also significant in terms of risks. As I mentioned earlier, several international studies show that highly-indebted households reduce their consumption more than households with lower debts when there is a fall in housing prices, for example. Measures which set an upper limit for individual household indebtedness can therefore be effective in terms of reducing the risk of weak macroeconomic growth, even though the effects of the total debt-to-income ratio would be limited.

The Riksbank's previous analysis has also shown that a debt-to-income limit (that is to say a limit for how large debt can be in relation to disposable income) could be an effective complement to the current loan-to-value limit.¹⁶ This is due to the fact that incomes grow in a more stable way than housing prices. Whenever housing prices increase sharply, there is a risk that debts will continue to increase in relation to incomes if the only limitation is a loan-to-value limit. A debt-to-income limit is also more effective in terms of preventing interest payments taking up too large a share of incomes in the future.

So those are the measures we could take. But what would happen to household indebtedness if no further measures were taken?

A few different scenarios for household indebtedness

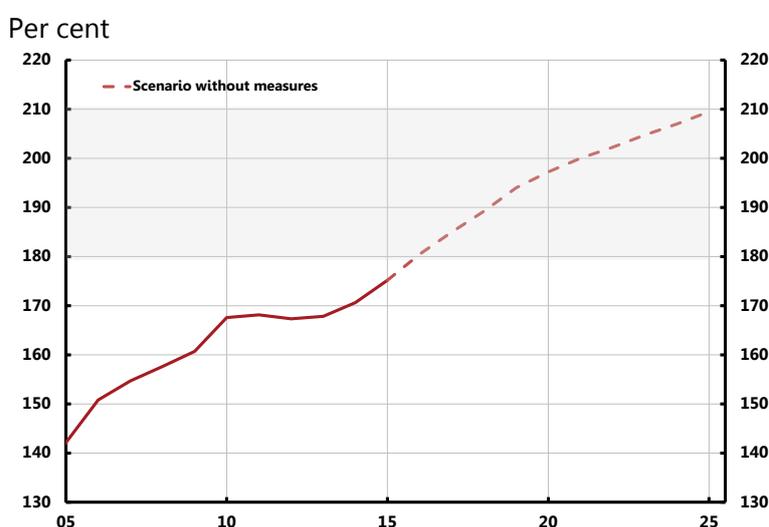
Normally, the Riksbank creates forecasts regarding household indebtedness three years ahead. Making an assessment any further ahead than this would involve considerable uncertainty. However, in order to give us an idea about what could happen to household indebtedness beyond the forecast horizon three years ahead,

¹⁶ See the article "Debt-to-income limit as a policy measure" in the Financial Stability Report 2015:1, and Alfelt, G., Lagerwall, B. and Ölcer, D. (2015) "An analysis of the debt ratio ceiling as a policy measure", Economic Commentary no. 8, 2015. Sveriges Riksbank.

we have made a rough estimate of developments over the coming 10 years, which uses our forecast for the coming three years as a starting point. We assess that the rate of increase of indebtedness will slow somewhat when the repo rate gradually begins to be raised (according to our forecast for the first six months of 2017) and slowly rises to a normal level.¹⁷

In the Financial Stability Report from the spring, we published an extensive analysis of Swedish household indebtedness. One conclusion drawn from this was that international studies and experiences from the Swedish 1990s crisis indicate that if indebtedness approaches 180-210 per cent, measured as a proportion of disposable income, risks in the Swedish economy are heightened. This is due to households' interest expenditure – at a high rate of interest than today's – becoming so high that it could lead to a major fall in demand and ultimately a crisis.¹⁸ It is clear that we are approaching a critical level with leaps and bounds (see Figure 11).

Figure 11. Household debt as a percentage of disposable income



Note. Broken red line shows an estimate of developments over the next 10 years without further measures. Shaded area indicates a feasible lower limit for when the risks are elevated in the economy.

Sources: Statistics Sweden and the Riksbank

We have also developed examples to broadly assess how different measures influence the development of household indebtedness, which can then illustrate what is required to help this indebtedness level out.

Finansinspektionen's proposal in the spring of an amortisation requirement means that new mortgage borrowers with loan-to-value ratios above 50 per cent must amortise 2 per cent of the loan per year down to 70 per cent, and then 1 per cent per year down to 50 per cent. However, we should be clear that this requirement looks mild by international standards. In most countries, the loan has a clear maturity date, which specifies when the debt is to be repaid, often between 20 and 40 years, and

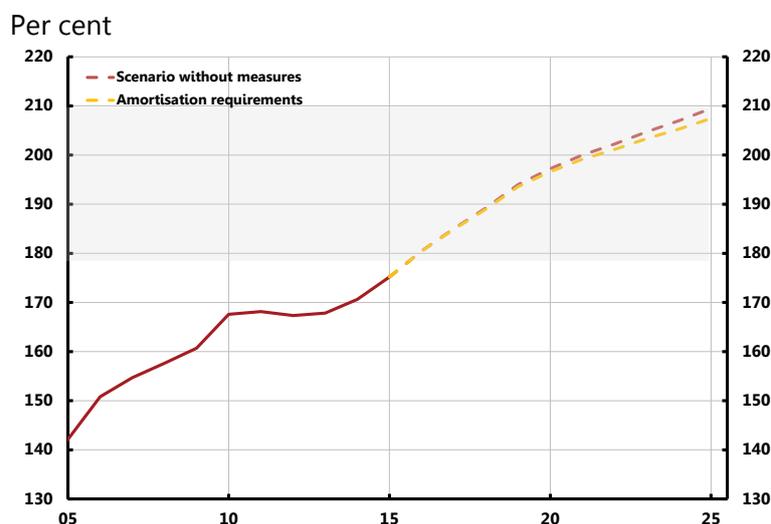
¹⁷ It is assumed in the debt forecast that rising interest rates between 2018-2025 will contribute to housing prices rising at a slower pace than the period 2005-2015. The development of housing prices is determined by a model in which price developments are determined in the long term by developments in households' financial assets, disposable income and mortgage rates after tax. Debts are assumed to follow housing prices.

¹⁸ See Emanuelsson, R., Melander, O. and Molin, J. (2015), "Financial risks in the household sector", Economic Commentaries no. 6, 2015, Sveriges Riksbank.

- the proportion of interest-only loans is often low.¹⁹ If the home is not revalued, the Finansinspektionen proposal for an amortisation requirement means that households with a loan-to-value ratio of 85 per cent would need to amortise down to a loan-to-value ratio of 50 per cent within 32 years.

We see in Figure 12 that the amortisation requirement, in its present draft form, will have little impact when it comes to slowing down total indebtedness in the coming years. As I mentioned, it is the case for all loan-limiting macroprudential policy measures (for example loan-to-value limits, amortisation requirements and debt-to-income limits) which only affect new borrowers that they are relatively slow to have an effect on the debt stock. For this reason, such measures have a minor effect in many cases on total indebtedness over a 10-year period, although the scope of the measure itself (that is to say *how many fewer* new loans can be taken out) obviously also plays a part.

Figure 12. The effect of an amortisation requirement on household indebtedness according to current proposals



Note. Broken red line shows an estimate of developments over the next 10 years without further measures. Shaded area indicates a feasible lower limit for when the risks are elevated in the economy. Broken yellow line shows an estimate of the effect of an amortisation requirement according to current proposals.

Sources: Statistics Sweden and the Riksbank

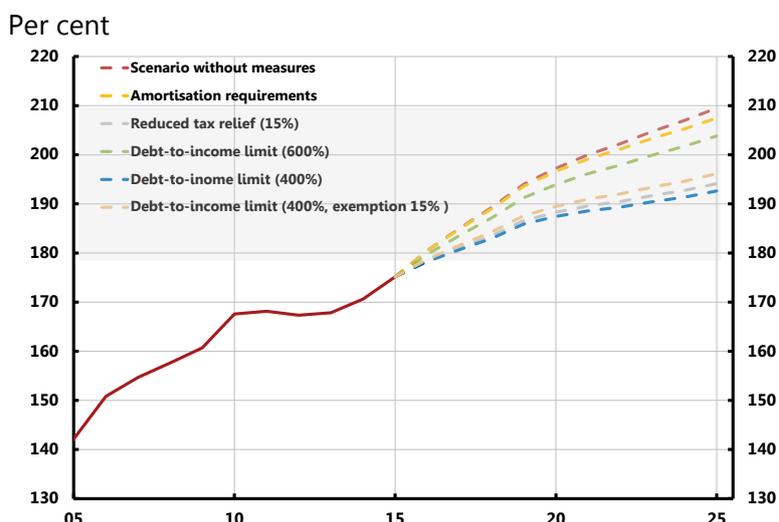
A change to tax relief on mortgage interest could lead to a faster and more direct effect on household indebtedness, as it affects all borrowers. However, as a reduction in tax relief initially raises mortgage costs, it is likely that existing mortgage borrowers do not pay down their loans immediately. The effect on the total debt-to-income ratio therefore occurs gradually, even in the case of changes to tax relief. According to these calculations, it is only when tax relief is halved that we will see a clear slowdown of household indebtedness over the coming 10 years (see Figure 13).

Halving tax relief on mortgage interest may sound dramatic, but at the current low mortgage rates of approximately 2 per cent, this represents an upturn in the mortgage rate of around 0.30 percentage points ($0.15 \times 2 = 0.30$), so about the same as

¹⁹ A borrower with medium indebtedness in Sweden taking out a new mortgage, or increasing existing loans, only amortises at a rate which leads to the new loan being repaid in 56 years. The rate of amortisation varies considerably between different households, however; 25 per cent of the new mortgage borrowers amortise the new loans at a rate of 85 years or longer. See "Amortisation requirements - a step towards a more sustainable debt situation", Financial Stability Council memorandum, November 2014, Sveriges Riksbank.

- a "normal" repo rate increase of 0.25 percentage points. When interest rates are higher, the effect of lowered tax relief on households' mortgage rates is naturally greater.

Figure 13. Effects on household indebtedness: a comparison of the effects of an amortisation requirement, halved tax relief and different debt-to-income limits



Note. Broken red line shows an estimate of developments over the next 10 years without further measures. Shaded area indicates a feasible lower limit for when the risks are elevated in the economy. Broken lines show an estimate of the effects of different measures. "Debt-to-income limit (400%, exemption 15%)" means that 15 per cent of the volume of new loans may have a loan-to-income ratio exceeding 400 per cent.

Sources: Statistics Sweden and the Riksbank

I mentioned the debt-to-income limit earlier. A limit of 600 per cent in relation to disposable income would affect around 12 per cent of new mortgage borrowers. In Figure 13 we can see that the effect is considerably greater than it would be with the amortisation requirement, but also considerably smaller than with halved tax relief. If a debt-to-income limit of 400 per cent of income were introduced, for example, this would currently affect nearly 40 per cent of new mortgage borrowers. Indebtedness would thereby be dampened considerably in the long term, and we would also see a large amount of the effect within 10 years (see Figure 13). Our calculations indicate that the extent of the effect would be as great as if tax relief were halved.²⁰

Debt-to-income limits have already been introduced in the United Kingdom and Ireland. In the UK, it has been stated that a maximum of 15 per cent of the banks' new mortgages may have a loan-to-income ratio exceeding 450 per cent, while in Ireland it has been stated that a maximum of 20 per cent of the banks' new mortgages may have a loan-to-income ratio exceeding 350 per cent.²¹ In the UK, the exempted share is expressed in terms of the number of new mortgages, while in Ireland it is expressed in terms of the volume of new mortgages. It is not easy to calculate the effects of exempting, for instance, 15 per cent from a rule, but in Figure 13 we have tried to make such an estimate. We can see that the effect is somewhat smaller than if there is no exemption, but the difference is not major.

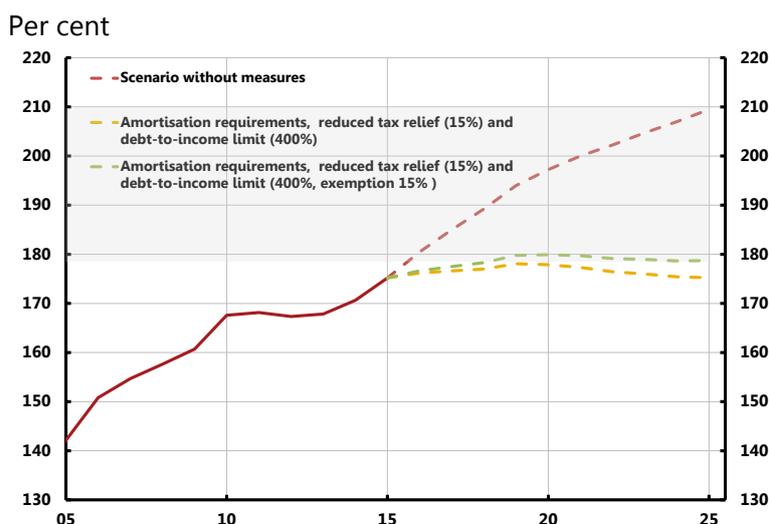
²⁰ Our updated calculations indicate that the effect of debt-to-income limits would be slightly greater than those presented previously in the Financial Stability Report 2015:1, for example.

²¹ In both cases, mortgages have been related to gross income instead of relating total loans to disposable income. In practice, this leads to the requirement being less binding (the mortgages are lower than total loans, and gross income is higher than disposable income). We have however, based the calculation on requirements for total loans in relation to disposable income.

- There is already a loan-to-value limit in Sweden. One alternative could be to lower this from the current level of 85 per cent. But as I mentioned, there is a clear point to complementing the loan-to-value limit with a debt-to-income limit. Our calculations also indicate that a reduction in the loan-to-value limit would lead to relatively minor effects on total household indebtedness. Lowering the limit to 80 per cent would lead, over a 10-year period, to about the same effect as the proposed amortisation requirement, and even lowering it to 75 per cent would result in a smaller effect looking 10 years ahead than a debt-to-income limit of 600 per cent.

It is clear from what I have said so far that it is hard to find an individual measure which could prevent indebtedness from increasing from a 10-year perspective. A combination of measures may therefore be needed. One example of a "package of measures", which I have discussed on previous occasions, includes an amortisation requirement, halved tax relief and a debt-to-income limit of 400 per cent. A summary of the effects of these measures offers a very rough estimate of the total effect, and indicates in this case that indebtedness would level out to around the level seen today (see Figure 14).

Figure 14. Households' debt as proportion of disposable income: the overall effect of an amortisation requirement, halved tax relief and debt-to-income limit of 400 per cent



Note. Broken red line shows an estimate of developments over the next 10 years without further measures. Shaded area indicates a feasible lower limit for when the risks are elevated in the economy. Broken lines show an estimated total effect of several measures. "Debt-to-income limit (400%, exemption 15%)" means that 15 per cent of the volume of new loans may have a loan-to-income ratio exceeding 400 per cent.

Sources: Statistics Sweden and the Riksbank

The revenue and costs of different measures should be weighed against each other

I mentioned previously that the exact implementation of different measures must largely be based on value judgements. The purpose of the measures, that is to say the outcome, is to reduce the risk of unfavourable developments further ahead. However, costs also occur in the short term when opportunities to borrow are limited, as this subdues consumption and thereby also GDP growth. When deciding whether to introduce a measure, it is thus necessary to weigh the gains, in the form of

■ reduced risks in the longer run, against the costs, in the form of lower demand and GDP in the short run.²²

In this context another aspect of tax relief on mortgage interest can be mentioned, namely that it currently represents a cost for the state. According to an analysis carried out in June this year by the National Institute of Economic Research, the costs to the state of tax relief will increase considerably when interest rates rise: from around SEK 23 billion to 60 billion (1 per cent of GDP) in 10 years. Reduced tax relief could therefore improve the state's finances quite substantially in the future, which would create space for reform to compensate for many of the short-term macroeconomic costs which would otherwise occur.

Conclusion

It is important for the Riksbank to analyse the housing market and household indebtedness, not least because they can have an impact on our ability to perform our tasks relating to price stability and financial stability.

Our expansionary monetary policy aims to maintain confidence in the inflation target. Today I have pointed out that international monetary policy establishes a framework for Swedish monetary policy. Inflation is now moving in the right direction.

However, one precondition for the success of our monetary policy strategy from a longer-term perspective is that we take measures elsewhere to reduce risks linked to the housing market and household indebtedness. Developments are definitely moving in the wrong direction! There are several potential risks for the real economy, financial stability and price stability, which are connected to household indebtedness and the housing market. I have attempted to shed some light on several of them today.

The Swedish housing market could be likened to a "blind spot" in terms of economic policy. In its latest statement on Sweden's economy, the IMF described the situation on the Swedish housing market as self-inflicted.²³ It is essentially each individual bank's responsibility to ensure sound long-term credit lending. This is a central principle in a market-based system, and something which we should not forget in the debate about the housing market and household indebtedness. However, the authorities are responsible for taking action if developments threaten macroeconomic and financial stability. Sweden is lagging behind in this regard.

There are several potential measures which could dampen overall indebtedness in the economy, and prevent certain household groups from getting further into debt, for example in the form of changes to mortgage tax relief and loan-limiting measures. I have described several of them today. But also allow me to point out once again that it is vitally important that the mandate for macroprudential policy be clarified. This is a precondition for being able to introduce to the loan-limiting measures.

It is essential for the Riksbank to reduce these risks in order to fulfil its main tasks in terms of price stability and financial stability. However, avoiding problems on the housing market and a future economic crisis is something which concerns us all.

²² See Guibourg, G. and Lagerwall, B., "How is the economy affected by macroprudential policy measures?", Economic Commentary no. 9, 2015, Sveriges Riksbank.

²³ See <http://www.riksbank.se/en/Press-and-published/Notices/2015/The-Riksbank-publishes-the-IMFs-statement-on-Swedens-economy/>