



SPEECH

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■ Monetary policy and financial stability in a globalised world

Thank you for inviting me. This meeting at the Swedish Economics Association is one of relatively few occasions during the year when I have the opportunity to discuss rather more academic questions that I personally find interesting, but which there may not always be time to consider. At present, however, I am struggling in my day-to-day work with a number of issues where better research support is needed, so today I would like to raise both very concrete issues that are currently on the economic policy agenda, and more theoretical questions about the shaping of the policy.

There is an overall theme in what I intend to say today, and that is "cooperation". I will talk about cooperation between different authorities and policy areas in Sweden as well as cooperation at an international level. One reason why I have chosen to put a certain focus on cooperation is that I perceive that it has become increasingly difficult, or at least more complicated, to conduct a completely independent policy – partly because of the boundaries between the different policy areas having become less clear, and partly because of individual countries being affected perhaps more than ever by international events.

The need for increased cooperation between different policy areas and between countries may make the tasks of central banks around the world more complicated, but it is important that this does not paralyse us. Rapid and concrete measures are required to make the financial system more robust.

The crisis in the early 1990s was a trigger in several respects

Let me start my discussion with a very abridged and selective look back at the past twenty-twenty-five years. At the beginning of the 1990s, Sweden suffered a crisis, or rather a number of linked crises. This entailed a financial and property crisis that rocked the entire Swedish banking system and required government intervention. It also entailed a currency crisis, or rather a crisis for the stabilisation policy regime of the time, where the anchor was the fixed exchange rate. In addition, there was a sovereign debt crisis, with dramatically rising budget deficits and an increasing government debt. All of this is not

■ dissimilar to what a number of other countries have experienced in recent years.

One result of this development was that we were forced to let the krona float and in January 1993 we changed over to the inflation-targeting regime that we have now. Another result was that we began designing the framework for a long-run sustainable fiscal policy that has served us so well. One consequence of the fiscal and property crisis was that we began to build up an apparatus to help us monitor and maintain financial stability. For instance, the Riksbank's analysis of the financial sector became more structured and systematised, and from 1997 we began to present our analysis in the form of Financial Stability Reports. This financial stability work was, however, far from fully-developed when a new financial crisis broke out just over six years ago, this time on a global scale. For instance, we still lacked a system for crisis management. We also failed to prevent a too rapid credit boom in the Baltic region, at the same time as Swedish banks proved to have liquidity problems when the dollar market froze.

As the new crisis was deeper and affected a much larger number of countries than the crisis at the beginning of the 1990s, it also acted as a stronger and more worldwide signal that major efforts were needed to avoid financial imbalances causing problems in the economy as a whole. The most concrete expression of this opinion was the emergence of the policy area that came to be known as macroprudential policy, which aims to take the overall view of the financial system as a whole that was lacking prior to the crisis.

In this context, it is worth pointing out that in Sweden the boundary between macroprudential policy and supervision of individual banks, microprudential policy, is not particularly distinct because of the market structure we have, with four dominant major banks. If the stability of one of these banks is threatened, it also entails a threat to the stability of the financial system as a whole. To this extent, one can say that we in Sweden have actually been dealing with macroprudential analysis for quite a long time. But this does not mean that there has been a ready-developed, fully-functioning framework for macroprudential policy. On the contrary, it is only fairly recently that the allocation of responsibility for macroprudential policy was made clear, and the framework that includes the Financial Stability Council, which had its second meeting a couple of days ago, was established.

"Learning by doing" in macroprudential policy – as when inflation targeting was introduced

The situation with regard to macroprudential policy today is in many ways like the situation when the inflation-targeting policy was introduced just over twenty years ago – a new type of policy is to be launched without really knowing how successful it will be. When we introduced the inflation-targeting policy in Sweden in 1993, there was not much guidance. Some countries, such as New Zealand, Canada and the United Kingdom, had introduced such a policy before us, but they in turn had not really had time to gain much experience. It was quite simply difficult to know how to conduct the new policy, where the interest rate should be used to steer inflation towards a quantified target – and to know how well it would succeed.

■ The situation today is thus similar, with countries around the world contemplating how best to conduct macroprudential policy. In some areas, particularly in some emerging markets, they already have some experience of what could be described as macroprudential policy. However, the results have been somewhat mixed and it is unclear what lessons can be learned. The research on macroprudential policy has now begun in earnest, but it is still quite new and has not yet generated any very clear conclusions on which to base a policy. It is probably unavoidable, therefore, that practical policy-making in coming years will consist to a great extent of "learning by doing" – with the emphasis on both "learning" and "doing".

Stabilisation of the financial cycle

One of the two main tasks of macroprudential policy is to counteract the build-up of financial imbalances in the economy. This task can be described as macroprudential policy trying to stabilise something I here choose to call the financial cycle. The academic literature on this subject contains other similar concepts such as "credit cycle" and "leverage cycle".¹ What this means in simple terms is that the volume of loans, indebtedness, asset prices and attitude to risk in the economy vary over time in a way that is not necessarily linked to the economic cycle. One usually calls this the cyclical dimension, or time series dimension, of macroprudential policy.

The second task of macroprudential policy is to manage structural risks, or cross-section risks, which could for instance mean that close links between different parts of the financial system *at any given time* will affect the risk of a crisis affecting the system as a whole. Here, I will primarily focus on the cyclical dimension of macroprudential policy. However, it is not so easy to draw any clear boundary between structural and cyclical problems on the financial markets, just as in other areas, such as the labour market.

In Figure 1, the red line represents the normal cyclical fluctuations in the economy, the business cycle. The second curve in the figure represents the financial cycle. As I noted, the economic cycle and the financial cycle need not coincide, but can develop differently. Often, the financial cycle is assumed to have a lower frequency, fluctuate more slowly, than the business cycle, as illustrated in the figure.²

Links between the financial cycle and the business cycle can create problems

A situation where both cycles definitely coincide is when the financial cycle shows a rapid downturn, as at the end of the figure. This was what happened in many countries during the financial crisis, and in Sweden during the crisis at the beginning of the 1990s. Exactly how the problems will take shape can vary, but it is almost always a question of some sector having become "over-leveraged", which sooner or later leads to problems. Here I will assume that it is household indebtedness that is the main problem.

At some stage, it becomes evident that the credit boom and the increased indebtedness have been based on too optimistic expectations and calculations.

¹ For a few examples, see Geanakoplos (2009), Aikman, Haldane and Nelson (2010) and Borio (2012).

² See, for example, Borio (2012).

■ A lot more people will want to sell rather than buy the asset that formed the basis for the credit expansion and its price therefore falls. Let us assume that, as with the most recent crisis, it mainly concerns housing. The banks become cautious and reduce their lending, as the value of the collateral declines. Households' assets have now fallen in value substantially, but the size of the loans remains unchanged. To attain a better balance between assets and debts, households reduce their consumption and begin to save. In addition to the fact that the credit supply declines as a result of the banks becoming more cautious, the demand for loans also declines. This adjustment in households' balance sheets gives a fall in demand, which in practice has often proved fairly prolonged.³ This process often leads to a substantial weakening in public finances, too, partly because of the rapid decline in economic activity and partly because the banking system may in a worst case scenario require support.

This development means that the business cycle and the financial cycle take a simultaneous downturn, as in Figure 1. However, the main reason is that the financial cycle has “gone off the rails” – first through a rapid expansion in credit and debt, and then through a sudden contraction when conditions and expectations have changed. If one had been able to prevent or mitigate the upturn, the economic downturn would not have been so deep. Stabilising the financial cycle is therefore an important part of the general stabilisation policy. There is fairly good empirical support for this description. The more households and companies borrow during an economic upturn, the greater the risk appears to be that the upturn will be followed by a deep recession and a slow recovery.⁴ The cost to society when financial imbalances are to be corrected is often very substantial. The cost of the global financial crisis has been estimated at between 1 and 3.5 times the total production of goods and services in the whole world during one year.⁵

One argument put forward after the financial crisis is that it is mainly macroprudential policy that is responsible for stabilising the financial cycle, while monetary policy shall focus on stabilising the economic cycle and inflation. Personally, I am very doubtful as to whether one can make such a division. My doubts are based on both theoretical arguments and assessments of what one can physically achieve with different policy instruments. I will now take up some theoretical arguments, after which I will make the discussion more concrete by giving some examples.

Given the links: How can responsibility be divided between monetary policy and macroprudential policy?

From a strictly theoretical perspective, one may argue that coordination of macroprudential policy and monetary policy is always at least as good as not coordinating them. The following reasoning is a means of showing why this is so.⁶

Let us assume that monetary policy and macroprudential policy can be conducted either coordinated or separately. When both types of policy are

³ See, for instance, Mian and Sufi (2011), Dynan (2012) and Jauch and Watzka (2013).

⁴ See, for example, Schularick and Taylor (2012).

⁵ Haldane (2010).

⁶ The example is taken from Bryant, Henderson and Becker (2012).

coordinated, let us call this alternative A, the interest rate r and macroprudential policy tool c are set at the same time to minimise

$$E \sum_t \beta^t [(\pi_t - \pi^*)^2 + \lambda_1 (y_t - y^*)^2 + \lambda_2 (f_t - f^*)^2],$$

where β is a discounting factor, the first term in the square bracket represents stabilising inflation, the second represents stabilising resource utilisation or the real economy, and the third represents stabilising the financial cycle. The interest rate and the macroprudential policy tool are thus set together so that a weighted sum of the economic cycle, inflation's deviation from target and the financial cycle in the coming period will be as small as possible.⁷

The second possibility, alternative B, is that monetary policy and macroprudential policy are conducted entirely separately. The interest rate r is set to minimise fluctuations in the economic cycle and inflation

$$E \sum_t \beta^t [(\pi_t - \pi^*)^2 + \lambda_1 (y_t - y^*)^2],$$

while c is set to stabilise the financial cycle

$$E \sum_t \beta^t [\lambda_2 (f_t - f^*)^2].$$

A theoretical result is that coordination, that is, alternative A, is in general preferable to separating the two types of policy. The reason is that alternative B is a special case of A. A policy-maker who can choose both r and c to stabilise both economic activity and inflation as well as the financial cycle (or two policy-makers who can fully coordinate their decisions on r and c) always has the possibility to separate the decisions, that is, to go from A to B. A should therefore not reasonably be able to lead to a poorer result than B.

This does not necessarily mean that coordination is always a good idea in practice. It may be the case that, in reality, there are costs linked to coordination that can be reduced or avoided if one separates the decisions on monetary policy and macroprudential policy. For instance, it may be more difficult to evaluate and forecast economic policy if different instruments are used at the same time to try to attain different targets.⁸

A related argument in favour of separating both types of policy concerns the risks of a decline in confidence in monetary policy. Let us assume that alternative A means that it is the central bank that accounts for both monetary policy and macroprudential policy (instead of the central bank and the financial supervisory authority coordinating them). If the central bank fails to stabilise the financial cycle, some argue that this could also jeopardise confidence in the bank's ability to attain its traditional price stability target.⁹ It is therefore better that another authority than the central bank should have responsibility for stabilising the financial cycle.

That coordination is in theory preferable does not say anything about *how great* the benefits may be in practice. To illustrate the quantitative links between monetary policy and macroprudential policy, we need the help of macroeconomic models based on data for the specific country. Such models are currently being developed within several central banks. We at the Riksbank

⁷ Here one should regard the task as being to ensure that the financial cycle does not "go off the rails" rather than keeping it completely stable all of the time. In Figure 1, for instance, measures would need to be taken in connection with the last financial cycle, but not with the first.

⁸ See, for example, Svensson (2011).

⁹ See, for example, Smets (2013).

■ has also used one such model to better understand the interplay between the two policy areas – mainly because macroprudential policy could have effects on economic activity that monetary policy may need to take into account.¹⁰ The conclusion from this exercise so far is that there are no easy answers and that the benefits of coordination may vary, depending on which shocks are driving the economy and making the authorities take action.

How have the roles been allocated in reality?

So how have different countries in reality chosen to organise monetary policy and macroprudential policy? As usual, it is difficult to draw straight lines between theory and reality. One country that comes fairly close to model A with regard to coordination is the United Kingdom, where the Bank of England has been given responsibility for macroprudential policy. The decisions on monetary policy and macroprudential policy are taken by two different committees in the bank, the Monetary Policy Committee and the Financial Policy Committee, which is more in line with model B, but there is nevertheless an explicit aim to coordinate, for instance, in the way the committees are composed.¹¹

In Sweden we have chosen a solution that in institutional terms is closer to B, in the sense that Finansinspektionen has been given the main responsibility for macroprudential policy tools. Now, I do not believe that the differences in the practical solutions chosen in different countries should be exaggerated. An important part of the process regarding macroprudential policy in Sweden is a close cooperation between Finansinspektionen, the Government, the Riksbank and the Swedish National Debt Office, with regard to the analysis of current issues. These four are also represented on the Financial Stability Council, which meets regularly to discuss issues of financial stability and how financial imbalances can be counteracted.

I believe that it is much more important that there is actually *someone* who is responsible for the macroprudential policy tools and prepared to take action, than that this is perfectly coordinated with monetary policy. My hope is that the discussions in the Financial Stability Council will lead to the decision that need to be made actually being made – and being made in time. This will probably at times involve decisions that are politically uncomfortable, and have direct consequences for people's wallets. This makes considerable demands with regard to integrity and independence – not just in the formal sense – of those who are to make the decisions.

Does monetary policy need to help?

There is an intensive international discussion on whether monetary policy can be separated completely from the stabilisation of the financial cycle, or whether it may in certain situations need to provide support to

¹⁰ See Jonsson and Moran (2013)

¹¹ See H M Treasury (2013), which points out, for instance, that "The Government intends that the frameworks for monetary policy and macro-prudential policy, operated by the MPC and FPC of the Bank of England respectively, should be coordinated" (p. 5), and "In order to foster coordination between monetary and macro-prudential policy, there is overlap between the membership of the Monetary Policy Committee and the Financial Policy Committee" (p. 10).

■ macroprudential policy when it comes to counteracting the build-up of financial imbalances.¹²

One argument in favour of monetary policy needing to provide support to macroprudential policy is that there will probably always be incentives to try to circumvent macroprudential policy measures, as it may be profitable for the party that succeeds, in much the same way that there are always incentives to avoid paying taxes. We do not yet know how successful the systems for macroprudential policy now being implemented around the world will be. However, we do know that changes in policy rates are significantly more difficult to circumvent.¹³ It may therefore be necessary to use the policy rate in certain situations, despite a side-effect being that some areas of the economy that do not need a higher interest rate will also be affected. Failure to take macroprudential policy measures, or measures that are too weak, will put more pressure on monetary policy in this respect.

One circumstance that may also play some role in the effectiveness of macroprudential policy is that it may be the case that macroprudential policy measures are perceived as more dramatic, not least for the banks, and as a larger intervention than an increase in the policy rate. The pressure not to act may thus be particularly strong in the field of macroprudential policy, and it may be fairly difficult to resist, particularly if the financial supervisor does not have a high degree of statutory independence. This could lead to an “inaction bias” – that one waits so long before taking measures that it is already too late by the time they are implemented.¹⁴ Hopefully, these are problems that will decline as macroprudential policy becomes more established and perceived as less dramatic – roughly in the same way as inflation-targeting gradually became more established and accepted.

A further reason why macroprudential policy may need support is that monetary policy could *in itself* contribute to the problem. If monetary policy is very expansionary over a long period of time, this could contribute to distorted expectations of how high interest rates will be in the future and how the housing market will develop, and lead to an increase in risk taking in the economy.¹⁵ This could set in motion forces that macroprudential policy may find difficult to counteract on its own.

What I consider to be particularly important to bear in mind from all this is that there is currently a fairly lively discussion internationally among academics and experts, both on the need to coordinate macroprudential policy and monetary policy and on the question of whether monetary policy may need to be used in certain situations to counteract financial imbalances – even when macroprudential policy is in place. For some reason, one does not see much of this discussion in the Swedish debate. Here it seems rather that there is an

¹² See, for example, Bayoumi, et al. (2014), Blanchard, Dell’Ariccia and Mauro (2013), Carney (2013), Smets (2013) and Stein (2013, 2014) for discussions of this.

¹³ This is an argument that I myself and others at the Riksbank have highlighted on various occasions, see for instance, Ingves (2010).

¹⁴ For a discussion of “inaction bias” in macroprudential policy, see Chapter 9 in ESRB (2014).

¹⁵ For instance, Summers (2014) writes: “[A] strategy that relies on interest rates significantly below growth rates for long periods of time virtually guarantees the emergence of substantial bubbles and dangerous build-ups in leverage. The idea that regulation can allow the growth benefits of easy credit to come without the costs is a chimera. It is precisely the increases in asset values and increased ability to borrow that stimulate the economy that are the proper concern of prudential regulation.” The hypothesis that there is a risk-taking channel for monetary policy is not undisputed, but it has become increasingly accepted and the empirical support for it is increasing (see, for instance, Altunbas et al., 2014 and Gungor and Sierra, 2014, for a couple of recent contributions).

■ assumption from the start that macroprudential policy and monetary policy are not related in any critical way and can be conducted more or less independently of one another without problem. But internationally, this is seen as far from obvious.

Let us be more concrete – some simple calculations

So far, I have spoken about monetary policy and macroprudential policy in theoretical terms. Let me now go on to talk about them in more concrete terms with regard to resolute decisions.

An obvious problem we need to deal with immediately is the high and increasing indebtedness in the Swedish household sector. On aggregate, household debt currently amounts to 174 per cent of their total income.¹⁶ However, this figure is based on all households, regardless of whether or not they have any loans. If we only include households that actually have loans, the figure is higher, 263 per cent, which is shown by data from the eight largest banks in Sweden gathered by the Riksbank. The same data show that the figure has risen to 313 per cent, if we only include households with mortgages. These figures give cause for concern, and should not just be allowed to continue growing; we will unfortunately need to deal with this situation in the foreseeable future. The debt ratio has almost doubled in twenty years and this is not a sustainable development. There is a risk that overly optimistic expectations of low interest rates for a long time to come have contributed to increased indebtedness. And a rapid growth in debt, together with optimistic expectations, is a pattern that has often preceded financial crises. Even without a crisis, a large debt overhang will hamper economic developments when conditions change.

If one wants to influence the incentives for households to take on debt, how effective might the potential measures be? And how do measures in the new field of macroprudential policy compare with other possible measures? Here we are still to a large extent on uncharted ground. But even if we cannot base our decisions on extensive theoretical and empirical research, we can at least gain a rough idea of the potential effects to be expected, by using some simple calculations. I would like to emphasise that the figures I will mention refer to partial and statistical calculations that are based on a number of simplifying assumptions and that they must therefore be taken with a pinch of salt. At the same time, the calculations illustrate the conditions for taking practical decisions.

Ordinary households in Luleå, Upplands Väsby and central Stockholm

Let us look at some "typical households", ordinary Swedish households consisting of two adults and two children. Let us say that one of them comes from the municipality of Upplands Väsby outside Stockholm and one from the city of Luleå in Norrbotten. After a quick look at the statistics, we can conclude that an average household of this type in Upplands Väsby has a total income of around SEK 44,000 a month after tax and a first mortgage of around SEK 1.75

¹⁶ According to the Financial Accounts, Swedish households' debt currently amounts to around SEK 3,300 billion, while their disposable income amounts to a total of around SEK 1,900 billion, according to the National Accounts.

million. A corresponding household in Luleå can be assumed to have a total income of approximately SEK 39,000 a month and a mortgage of approximately SEK 1.1 million. I am here talking about two average households without extremely high incomes or loans. The debt ratio, that is, the loan in relation to disposable income, is in this case 331 per cent for the family from Upplands Väsby and 235 per cent for the family in Luleå¹⁷. For the family in Upplands Väsby this is just above the average in the country for households with mortgages, while the family in Luleå is well below average.

At the same time, we know that it is not unusual for households to have debt ratios of 600 per cent, for example in central Stockholm. Let us therefore include one of these households in our comparison. For a similar family with two children in central Stockholm, with a total income after tax of almost SEK 55,000 per month, a loan of almost SEK 4 million entails a debt ratio of around 600 per cent.

How could various measures be expected to influence expenditure – in terms of direct loan costs, such as interest, and other loan-related cash flows, such as amortisation payments – for these households?

We can assume for the sake of simplicity that the interest rate on the mortgage loan is initially 4 per cent for all households. We also assume that our households have a variable interest rate, that they do not amortise their loans at all and that they have no savings.

Capital buffers have limited effects on wallets

One of the more accepted macroprudential policy tools is the so-called countercyclical capital buffers, which are being introduced as a result of the new Basel regulatory framework. This means that it will be possible to make an extra capital adequacy demand of the banks in good (read: overheated) times that can be reduced again in less good times. Say that the banks are now subjected to countercyclical capital buffers and increase their capital adequacy ratio by a total of 2.5 percentage points. Say also that the banks pass on all of the cost for the increased capital adequacy requirement to their mortgage customers. An increase in the capital buffer of 2.5 per cent could then, under slightly simplifying assumptions, be translated into an increase in the banks' lending rate of around 0.2 percentage points at most.¹⁸ Higher capital adequacy thus reduces the risk taken by shareholders and other financiers and should thus lead to a reduction in the banks' yield requirements and borrowing costs. The increase in lending rates could therefore also be lower.

For the family in Upplands Väsby, this means that interest expenditure increases by SEK 204 per month after tax. For the family in Luleå, with a slightly smaller mortgage, the increase is SEK 128 per month after tax. For the family in Stockholm with the larger mortgage, interest expenditure increase by SEK 461 per month after tax. Expressed as a percentage of disposable income, the countercyclical capital buffers entail higher loans costs for our households corresponding to 0.3-0.8 per cent of their disposable incomes.

¹⁷ Here we are referring to total debt as a percentage of annual disposable income.

¹⁸ The calculation is based on assumptions of unchanged yield requirements for the banks of 15 per cent, unchanged borrowing costs for the banks and the allocation of the banks' costs on the basis of risk weights.

■ These relatively marginal effects on the wallet will probably not influence the incentives for debt in our standard households to any great degree. To influence households' indebtedness the capital adequacy requirements made of the banks would need to be raised much more than is now being suggested. On the other hand, the increased capital adequacy requirement means that the banks' resilience is strengthened, which is desirable in itself and an important purpose of the regulation.

Elimination of tax relief would have greater effect

If one wants to influence the incentives, there are other measures that could be much more effective. Kuttner and Shim (2013) have made a panel study covering 57 countries and stretching across more than three decades, which investigates the effect on debt and housing prices of various tools. According to their study, the tools that appear to have the most obvious effect on debt include the elimination of tax relief on interest payments and the introduction of a mortgage cap.

Let us try to estimate what effects these measures would have on our standard households here. Say that the tax relief for mortgages was abolished. Changes to the tax relief are nothing new – at the end of the 1980s, the tax regulations were changed so that tax relief was almost halved for certain groups of households.

For the family in Luleå, with loans worth SEK 1.1 million, the loan costs would rise, if they did not adapt their level of indebtedness, by around SEK 1,100 per month, or almost 3 per cent of their disposable income. And for the family in Upplands Väsby, the abolition of the tax relief would increase their loan costs by SEK 1,750, or around 4 per cent of their disposable income. For our more heavily-indebted family in Stockholm, loan costs would rise by almost SEK 4,000 per month, or just over 7 per cent of their disposable income.

The increased loan cost that the abolition of the tax relief entails in this example corresponds to roughly the increased loan cost that would arise if the mortgage rate instead rose by 1.7 percentage points.¹⁹

We can thus see that abolishing the tax relief would have much greater effect on households' loan expenditure than raising the capital adequacy requirement for banks by the amount currently being discussed. If one wants to influence household indebtedness, changes in the tax relief would have greater potential to directly affect households' incentives.

Uncertain what effect the mortgage cap has

There is also some support for the mortgage cap having an effect on the loan appetite from the preliminary evaluation made by Finansinspektionen after the introduction of its mortgage cap in October 2010.²⁰ The mortgage cap is not a cap in the total sense, but it means that a person who wants to borrow a large amount must take a larger share of unsecured loans, which usually have a

¹⁹ With a tax deduction of 30 per cent, an interest rate increase of 1.7 percentage points means that the interest after tax increases by 1.2 percentage points. This is as much as abolishing the tax relief would increase costs if the interest rate was 4 per cent to start with.

²⁰ http://www.fi.se/upload/43_Utredningar/20_Rapporter/2011/effekt_bolanetak_delstudie.pdf

■ higher interest rate than first loans and moreover have to be amortised at a faster rate. Of course, not all households are affected by changes in the mortgage cap. Say that the mortgage cap is reduced from 85 to 75 per cent. And say that the standard households are affected by this and must therefore take on a larger share of unsecured loans at an interest rate of 6 per cent and moreover pay off the unsecured loan over 10 years. This would entail increased interest expenditure corresponding to between 0.4 and 1 per cent of disposable income, and amortisation corresponding to between 2.8 and 7 per cent of disposable income. The total increase in expenditure in this example thus corresponds to between 3.2 and 8 per cent of disposable income. This is comparable with how much household expenditure would increase if the mortgage rate instead increased by just over 1.9 percentage points.

Amortisation as a form of saving

Many of you will know that regulations of this type have often been circumvented in various ways. One way for the banks to make the mortgage cap less binding for their customers and enable them to take on more loans, for instance, is not to require amortisation on first loans.

When it comes to amortisation culture, we in Sweden differ quite substantially from what seems to be common in many other countries. In Sweden, around 40 per cent do not amortise at all. Of those who do, a good 40 per cent do it in such a way that it will take 50 years or more before they are free of debt.

Let us imagine that our households – which we assumed did not amortise at all to begin with – are forced to amortise their loans over a period of 50 years. If the households began to amortise in this way, it would on the one hand initially mean increased expenditure for the households corresponding to between almost 5 and a good 12 per cent of their disposable income. To achieve the same effect with an interest rate increase, the mortgage rate would need to increase by almost 3 percentage points. On the other hand, the amortisations would mean that interest expenditure fell as the loan was paid off. As amortisation is a form of saving, this measure means in the long run that the loan cost falls and that the household improves its balance sheet or financial position. In this example we have assumed that the households do not have any savings, in practice of course they would also be able to manage changes in amortisation requirements by reducing other saving.

Comparisons with the interest rate

A relevant comparison is what a direct increase in the interest rate would entail for our households. Say that the banks' lending rate increases by 2 percentage points from 4 to 6 per cent and, as in the other examples, our households have variable interest rates. It is becoming increasingly common that households borrow at a variable interest rate. At the beginning of the 2000s, one quarter of all mortgages were at variable interest rates, now the figure is one half. This situation means that changes in interest rates have a faster and increasingly severe impact on households with a high level of indebtedness.

For our household in Upplands Väsby, interest expenditure would increase by just over SEK 2,000 per month, or by 4.6 per cent of disposable income, given our assumptions in general. For our households in Luleå, interest expenditure would increase by almost SEK 1,300, which corresponds to 3.3 per cent of

■ disposable income. For our highly-indebted Stockholm household, the effect is much greater, of course, namely SEK 4,600 per month after tax, which is 8.4 per cent of disposable income.

To summarise, there are thus several measures that could be taken to influence households' incentives to take loans.

With regard to the countercyclical capital buffers, the rough calculations I have presented indicate that they would need to be raised quite a lot more than the 2.5 per cent we have estimated to have the same effect on households as an interest rate raise of 2 percentage points. But as I pointed out, increased capital adequacy requirements are of course important and reasonable in themselves as they strengthen the banks' resilience.

Abolishing the tax relief would have a greater effect. In my example, abolishing the right to tax relief would have roughly the same effect as increasing mortgage rates by 1.7 percentage points.

Cutting the mortgage cap from 85 to 75 per cent would not affect all households, but in my examples it would affect the households' expenditure through higher interest rates and amortisations on the parts of the loan that are not the first loan. The effect of lowering the mortgage cap by ten percentage points as in my example corresponds for our households the cost of an increase in the mortgage rate of just over 1.9 percentage points.

In the examples I have given, the introduction of an amortisation requirement would have the largest effect of all. If our households, which at the start did not amortise at all, were to be obliged to pay off their loans over 50 years, the increase in their expenditure would correspond to the increase that would arise if the mortgage rate instead rose by almost 3 percentage points.

Some conclusions

I wish to emphasise once again that what I have just presented are very simple calculations of the direct effects of various measures on some standard households' expenditure. To be able to compare different course of action, one really needs more accurate calculations that can take into account how households' behaviour changes over time as a result of the various measures. I nevertheless think that one can draw some conclusions from these exercises:

Firstly: Whatever the authorities do in terms of macroprudential policy measures, changes in fiscal policy or in monetary policy, it will affect the price of money in the economy, that is, loan costs, and thereby the incentives for indebtedness. This means that measures taken in one area must take into account what is being done in other areas. The one hand must be aware of what the other is doing, even if they are not completely coordinated.

Secondly: It is clear that of the measures now being discussed, some have much greater potential than others for influencing the incentives for households to borrow. Here the challenge will be to find measures that are sufficiently forceful, but will not be the actual straw that breaks the camel's back. What one wants to achieve is a controlled adjustment.

Thirdly: If we are to deal with the excessively high indebtedness, it is unavoidable that this will have an effect on individual households and entail costs for the economy as a whole – although of course the benefits will

ultimately weigh heavier, if we can avoid a really poor outcome. Let me be clear that I do not believe it is enough to solely implement measures that affect the supply and demand for credit through increased loan costs for households. Other measures are also needed. I and my colleagues on the Executive Board, like many others, have also highlighted the poor functioning of the housing market and the fact that a low supply has pushed up prices and thus household debt. So measures that increase the supply of housing are also needed, but I have talked about this before and do not intend to go into it any further today.

Fourthly: It is important to act as soon as possible. If indebtedness and housing prices keep on increasing they will gradually reach levels that involve even greater risks and where the economy will be even more sensitive to shocks. The costs could then be even greater. We have previously published estimates of what might happen in the economy when a shock occurs and indebtedness is high.²¹ Such estimates are always very uncertain, but it could be a question of rises in unemployment of around 5 percentage points when the economy suffers a financial crisis. If we look out at today's Europe, where there has been negative growth and high unemployment for many years, I think that the alternative, hiding our heads in the sand, is not a good idea.

One can also argue that the shock the actual policy measures entails, what one might call the direct adjustment cost, will be less with lower interest rates. If, in the prevailing low interest rate situation, one takes measures that seriously affect households' incentives to borrow, such as abolishing tax relief, interest expenditure would increase considerably. Given the current aggregate household debt, interest expenditure would increase by SEK 30 billion.²² Households' disposable incomes, which are expressed in a simplified manner as the result of salaries after tax plus capital incomes minus interest expenditure, are currently around SEK 1,900 billion. If we assume that incomes will remain unchanged, abolishing the tax relief would thus reduce households' disposable incomes by around 1.6 per cent.²³ A simple calculation shows that household consumption would then decline by 1.3 per cent. If one only uses consumption's share of GDP, this corresponds to a 0.5 per cent lower GDP.²⁴

If, on the other hand, one waits to take measures, the adjustment costs for households when the measures are actually taken will be greater. If interest rates have risen to twice what they are now, which is not at all inconceivable, the effects of abolishing the tax relief will be correspondingly greater. In my opinion, it is thus much better to try to do something about household debt now, when interest rates are low and the conditions in general are relatively favourable, than to be forced to take measures further ahead, when conditions

²¹ Monetary Policy Report, July 2013.

²² At present, the average mortgage rate households pay is around 3.1 per cent, so that households pay interest of around 2.2 per cent after the tax relief of 30 per cent. If the tax relief were abolished, in other words, households' interest expenditure would rise by around 0.9 percentage points. As households' aggregate debt is around SEK 3,300 billion, this corresponds to an increase in interest expenditure of SEK 30 billion.

²³ The ratio between the increase in interest expenditure and the aggregate disposable incomes, that is 30/1900. The effect on disposable income is here less than for our standard households as it is calculated on aggregate debt data for the entire population.

²⁴ To estimate the effect on household consumption, one can use a so-called consumption equation, which relates changes in consumption to changes in wealth and disposable income. According to this equation, consumption falls by around 80 per cent of the decline in disposable income, that is, around $1.6 \cdot 0.80 = 1.3$ per cent. Consumption comprises around 50 per cent of GDP. However, consumption also contains an imported content of around 25 per cent, which means that if consumption falls by 1 per cent, GDP falls by roughly $0.5 \cdot (1 - 0.25) = 0.38$ per cent. In the example, thus, GDP falls by $1.3 \cdot 0.38$, or around 0.5 per cent. A more thorough calculation should also take into account indirect effects that arise over time.

■ may be less benevolent and the adjustment costs for both individual households and society as a whole will be unnecessarily high.

A step in the right direction: more amortisation

So how should we deal with the debt problems?

I have discussed and compared a number of different possible measures to counteract excessively high debt in the household sector. Essentially, it is a question of making households and the financial system less sensitive to shocks. One measure that immediately comes to mind is a change in the amortisation culture. If households amortise their mortgages to a greater extent, the debt ratio will decline. If, moreover, this means that households adjust their savings and use some of what they save now to pay off their loans instead, we hopefully will not need such major changes in consumption. The real economic consequences could be limited, at the same time as indebtedness and the risks linked to it could be held in check.

The most natural thing would be for the banks to require that customers amortise their first loans. As a direct effect, the stock of existing mortgages would then decline. This would, moreover, give households stronger incentives to borrow less. This type of requirement would be reasonable and something that is considered self-evident in many parts of the world.

International coordination on stability issues

So far I have talked about macroprudential policy and monetary policy and the potential effects of the measures taken from the perspective of an individual country. But there is also a world outside that each country needs to relate to.

With regard to financial stability issues, there has long been extensive international cooperation. There are a number of forums in the central banking and financial supervision circles in which issues are discussed, and some of them draw up regulations and standards in the financial stability field. The Basel Committee on Banking Supervision, which was formed in 1974, in the wake of the Herstatt incident²⁵, has been setting the norms for banks' capital adequacy, for instance, since the 1980s. With regard to financial legislation, harmonised regulations have long been drawn up for banks and other financial companies within the framework of the European Union.

However, there is no doubt that the international cooperation has further intensified since the global financial crisis. The focus has more clearly been on a systemic perspective, or, if you will, a macroprudential policy perspective. After the crisis, it became a natural task for the Basel Committee to make a thorough review of the requirements with regard to capital and liquidity. The results of this review include the guidelines that are known as Basel III. The G20 countries' reform agenda now includes, within the framework of the work conducted by the Financial Stability Board, special capital requirements for so-

²⁵ On 26 June 1974, the West German authorities revoked the Cologne-based Herstatt Bank's licence to conduct banking activities. On that date, several banks released payments in D-mark to Herstatt Bank in Frankfurt, in exchange for US dollars, which were to be delivered in New York. A time lag arose between the different time zones, where operations ceased before the counterparts in New York had received their dollars. The Herstatt incident is a famous case that is often used as an example of so-called settlement risk.

■ called systemically-important institutions as well as new guidelines as to how these institutions can be liquidated in an orderly manner in the event of a solvency crisis. One also looks in particular at how OTC trading in derivatives will be conducted and how the financial operations outside of the traditional banking sector – the so-called shadow banking sector – shall be supervised and regulated.

A lot of effort has also been put into creating an organisation that enables the discovery and management of risks in the financial system that could affect several countries at the same time. In January 2011, the European Systemic Risk Board (ESRB) was formed, with the task of identifying threats to financial stability within the EU and of issuing warnings and recommendations to individual countries about such systemic risks. The ESRB cooperation has also included developing models to assess systemic risks and also macroprudential policy tools to counteract these risks.

Moreover, the earlier European financial supervisory committees have now received the status of public authorities and been given the task of developing technical standards and guidelines in a large number of areas. They shall also play a mediating role, if member states are unable to reach agreement with regard to financial supervision.

Recently, important steps have also been taken within the euro area towards the so-called banking union, with the European Central Bank (ECB) as joint financial supervisor for all banks in the member countries. The idea is that the banking union would also include a joint crisis management mechanism and a joint deposit guarantee. The negotiations in this field are difficult, and the shape the banking union is to take has not yet been decided in detail.

There has also long been an extensive cooperation on financial stability within the Nordic-Baltic region. This cooperation has also intensified since the crisis. Today there is, for instance, a Nordic-Baltic macroprudential policy forum, which includes the central bank governors and the heads of the financial supervisory authorities in the different countries of the region. There is also extensive Nordic-Baltic cooperation on the preparedness to deal with financial crises.

Given the fact that capital and financial agents are able to move relatively freely around the world, it is logical that there should be an international coordination of macroprudential and microprudential policy and of the regulation of the financial markets. A lot of decisions are made within all of these international standard-setting bodies that we in Sweden are obliged to follow or at least take a stance on in some way or another. When it comes to monetary policy, however, we have a higher degree of autonomy.

Debate on the need for cooperation within monetary policy too

When it comes to the central banks' other main task – monetary policy – international cooperation is nowhere near as widespread. Since the Bretton-Woods agreement collapsed in the early 1970s, monetary policy has largely been conducted by countries (and currency unions) individually. There have been sporadic exceptions, usually in times of crisis. One example is the coordinated interest-rate cut made by a number of central banks, including the Riksbank, on 8 October 2008, during the financial crisis. But as I said, these are exceptions.

■ However, recently there have been discussions as to whether more international monetary policy coordination is needed even under more normal circumstances.²⁶ In brief, the background is that the ongoing integration of the global financial markets means that large volumes of capital can be quickly moved to where the return is expected to be relatively higher. One of the driving forces behind these capital flows could be the policy conducted in large, leading countries. These flows can make it difficult to conduct monetary policy in the recipient countries and may have consequences for the economic and financial stability there. Some therefore feel they see a motive for international coordination of monetary policy. It should be emphasised that the debate being conducted has largely concerned emerging markets and the problems that have arisen there.²⁷ However, the mechanisms as such are a matter of principle and advanced economies are also affected to varying degrees, particularly if they are small and open. My view is that Sweden is no exception.

Interest rates are now determined to a large extent directly or indirectly by the conditions on the global financial markets. This makes it more difficult for central banks in individual countries to affect the domestic long-term rate through the expectations hypothesis – the interest-rate channel becomes less predictable. Moreover, the large capital flows can have effects on the exchange rate and risk premiums that complicate monetary policy's exchange rate channel. If long-term interest rates and exchange rates previously had a reasonably close connection with the short-term rate, one can say that they are now affected to a large degree by factors abroad.

Monetary policy can also be complicated by the capital flows affecting financial stability. One hypothesis that has some support in empirical research is that the capital flows can be regarded as part of a global financial cycle.²⁸ It appears that one of the driving forces behind the cycle is the monetary policy conducted in large countries, particularly the United States.

In terms of Figure 1, it may thus be the case that the financial cycle is to a large extent driven by global factors. Of course, the global financial cycle does not need to be in tune with the macroeconomic conditions in individual countries. When I discussed the economic cycle and the financial cycle in an individual country, I noted that these do not need to be synchronised. And if the financial cycle is moreover affected by global conditions, this conclusion will of course be reinforced.

Free capital movement makes it more difficult to isolate a country from the global financial cycle – and indirectly thereby from monetary policy in large countries – even if they have a floating exchange rate. Some go so far as to say that developments on the financial markets imply that, regardless of the exchange rate regime, there are only two alternatives. Either one has free capital movement and accepts that it is then difficult or impossible to conduct a monetary policy of one's own, or one conducts one's own monetary policy but counteracts the free movement of capital.²⁹ However, this appears too strong a conclusion. The main line of inquiry so far is that countries with floating exchange rates *can* conduct a monetary policy of their own, but that domestic monetary and financial conditions have become more sensitive to

²⁶ See, for example, Eichengreen, et al. (2011), Caruana (2012) and Rajan (2014).

²⁷ See, for example, Rajan (2014).

²⁸ See Rey (2013).

²⁹ See Rey (2013).

shocks from abroad, and that it has thus become more complicated to pursue a well-balanced monetary policy.³⁰

How can international spillover effects be managed?

If one now considers that spillover effects from larger countries' monetary policy via the global financial markets are a problem, how can one resolve it? One possibility, at least on paper, would be for central banks around the world to coordinate their policy.

I am personally not particularly optimistic about the possibilities or the usefulness of trying to achieve an international coordination of monetary policy in any more formal sense. Ultimately, the national central banks have the task of fulfilling mandates that are determined nationally, and if they were to try to take into account the spillover effects of their policy abroad, this would mean having to set aside the national objectives, at least temporarily. It would probably be difficult to get the domestic support and understanding that is ultimately needed for such a policy. It would moreover probably be difficult to both estimate and reach agreement internationally on the size of the effects – different countries will most likely have different opinions.³¹ Having said this, I believe there are good reasons to take global aspects into account in models and monetary policy analyses, to a greater extent than is the case today – spillover– and feedback effects that individual countries' monetary policy may lead to. Just as the financial crisis started a research agenda on how financial conditions should be included in macro models to a greater extent, I believe that the increased globalisation will create a need for further development work with regard to the analysis of monetary policy in open economies. But it remains to be seen how far this will lead and whether it will have an impact on the practical policy, and if so, how large an impact. In any case, I believe that the financial globalisation and the way it affects the conditions for monetary policy, including coordination with macroprudential policy, is a question that will continue to be discussed intensively in coming years.

As an important problem is that exaggerated credit growth can arise in the countries to which capital flows, financial stability can hopefully be guaranteed by the frameworks for macroprudential policy that are now being built up.³² We will see how well these frameworks can resist the global forces in the "learning by doing" process we are facing in the macroprudential policy area.

A more complicated world after the crisis

Let me try to summarise. The fact that I have chosen cooperation as something of a theme is because, as I said initially, our world in the wake of the financial crisis appears more complicated than it was before – or at least more complicated than we thought it was. I think it has become more evident that monetary policy in individual countries is dependent on both what happens in other policy areas and on monetary policy in other countries.

³⁰ See Kamin (2010) for a compilation of the empirical research into the effects of globalisation on monetary policy.

³¹ See Ostry and Ghosh (2013).

³² A further possibility that I will not take up here, but which has been tested in emerging markets in particular, is to use capital regulation. For a detailed and partly critical review of the efficiency of capital regulation, see Klein (2012).

■ Of course, there has always been a need to get different policy areas to interact and support one another, and nor is it anything new that there are links between the monetary policies conducted in different countries. But my feeling is nevertheless that the financial crisis has in a way brought these relationships to a head.

The crisis gave rise to a new policy area – macroprudential policy – which partly works by influencing the volume of credit in the economy, in roughly the same way as monetary policy. To me, it is fairly obvious that these two policy areas need to interact. If monetary policy is to carry out its tasks well, then macroprudential policy must function properly and most likely also vice versa.

The crisis also made necessary a monetary policy that was in many leading countries more expansionary than ever before, and which was conducted in ways not previously tested. Given this, the debate that has arisen on international monetary policy spillover effects is perhaps not particularly remarkable.

We do not yet know what our final conclusions will be with regard to these two areas. These are a couple of the loose threads that I am not able to tie up here today. However, a certain amount of new thinking will probably be required, both with regard to monetary policy and financial supervision and the regulation of the financial markets – but also concrete measures. It is difficult to say exactly what an appropriate policy mix should look like, as we are on relatively uncharted ground here. There will be a lot of “learning by doing”. New research will contribute to the learning, but bearing in mind the risks, we will also have to increase the pace at which the reforms are implemented. There will not be so much learning if we do not add a little more doing. The measures needed will probably have tangibly negative effects on private consumption and growth in the short term, but are necessary to reduce the risks of an even worse outcome further ahead.

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■ **Figure 1. Business cycle and financial cycle**

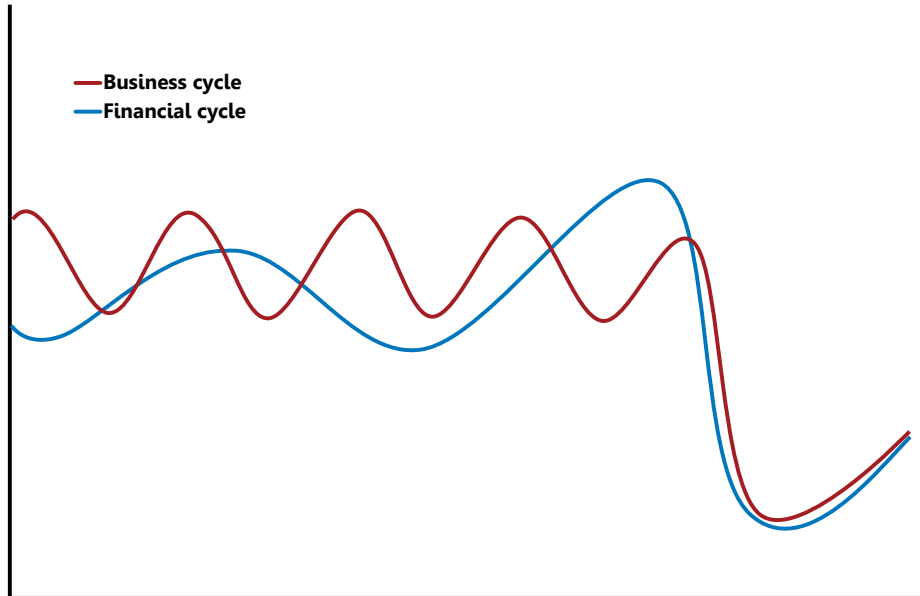


Table 1. Increases in expenditure for standard households due to policy measures

SEK and per cent

	Luleå	Upplands Väsby	Central Stockholm (high debt ratio)
Disposable income (SEK/month)	39 000	44 000	55 000
Total debt (SEK)	1 100 000	1 750 000	3 950 000
Debt ratio (%)	235	331	598
Increase in expenditure in SEK			
Countercyclical capital buffer	128	204	461
Tax relief	1 100	1 750	3 950
Mortgage cap	1 229	1 956	4 415
Amortisation expenditure	1 078	1 716	3 873
Interest expenditure	151	240	542
Amortisation	1 833	2 917	6 583
Increase in interest rate	1 283	2 042	4 608
Increase in expenditure as a percentage of disp. income			
Countercyclical capital buffer	0.3	0.5	0.8
Tax relief	2.8	4.0	7.2
Mortgage cap	3.2	4.4	8.0
Amortisation expenditure	2.8	3.9	7.0
Interest expenditure	0.4	0.5	1.0
Amortisation	4.7	6.6	12.0
Increase in interest rate	3.3	4.6	8.4

Source: The Riksbank