

■ Monetary policy and financial stability – some future challenges

BY STEFAN INGVES, MIKAEL APEL AND ERIK LENNTORP¹

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Every once in a while, developments take a course that turns old truths on their heads and forces new solutions. This is what happened in Sweden in conjunction with the economic crisis at the start of the 1990s, when the policy of a fixed exchange rate reached the end of the road. At that point, we were lucky enough to be able to change track and become one of the very first countries to start to apply an innovation in the field of monetary policy – inflation targeting.

In much the same way, the financial crisis, not yet a completely closed chapter, has come to function as a catalyst for reassessment and renewal – not just at home this time, but also on an international level. The spotlight has primarily been focused on the work of maintaining financial stability – but the crisis has also raised the issue of whether there may be lessons to be learned for monetary policy too.

Today, I plan to discuss some of the challenges that I believe central banks will face in the future. These challenges exist both in the work on financial stability and in the field of monetary policy – and in the borderland between the two. Indeed, developments in recent years have demonstrated that monetary policy and financial stability, in many ways, are more intimately connected than we may previously have imagined. One of the challenges I intend to address today deals with the difficulty of assessing the effects on potential output and growth of the financial crisis and the regulations following in its wake. Another challenge concerns the impact of these regulations on monetary policy's transmission mechanism. Finally, I will also discuss the possibility of preventing a credit-driven property boom.

One highly current and significant challenge is that of preventing the central government finance problems primarily facing Greece, but also a number of other countries, from leading to new problems on the financial markets. The solution to this must primarily be sought on the internatio-

¹ This article is based on a speech by Stefan Ingves at the Swedish Economics Association on 17 May 2010.

maintain confidence and of solving the most acute problems. The comprehensive support package for countries with serious budget problems, recently presented by the EU countries and International Monetary Fund, should be considered one such measure. Of course, a more lasting solution will also require the problem to be tackled at its root – for the regulatory framework for central government finances to be reviewed so that similar situations can be avoided in the future. Discussions on how best to do this have also been initiated. Hopefully, this will be enough to restore calm and for the process of recovery and normalisation following the financial crisis to continue. I do not intend to say much more about the unfolding situation other than that we are naturally following developments very carefully and, as always, are prepared to act to safeguard financial stability, should such action be necessary.

Allow me, therefore, to return to the more general discussion I had originally intended to hold. However, before proceeding further, I would like to point out that the thoughts I present here are my own. My colleagues on the Executive Board do not necessarily analyse matters in completely the same manner as I do. I would also like to emphasise that my ambition is to illustrate different ideas in an intuitive manner, without attempting to propose any cut-and-dried solutions.

MONETARY POLICY HAS DEVELOPED

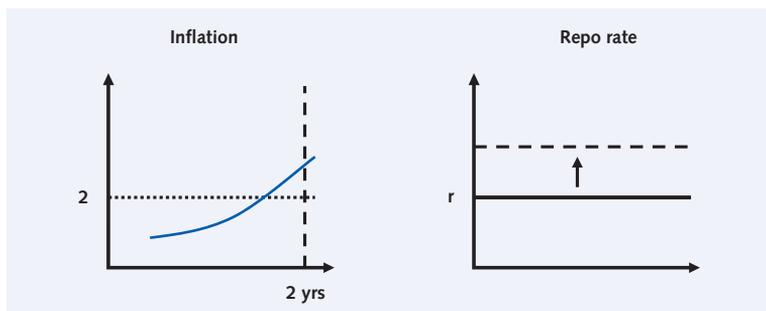
Let me start by looking back on how monetary policy has developed in Sweden and other countries over the last fifteen to twenty years. As I have already mentioned, we were one of the first central banks to introduce inflation targeting. When we started in 1993, our only forerunners were the central banks of New Zealand, Canada and the United Kingdom. Today, inflation targeting is applied in approximately twenty-five countries.² Furthermore, many other central banks have adopted essential elements of inflation targeting, such as setting price stability as the overriding goal, basing the policy on forward assessments and publishing regular reports to provide relatively comprehensive explanations of the reasoning used.

Also within the framework of inflation targeting, the manner in which monetary policy has been conducted has seen some development over the years as experience and knowledge have increased. For quite a long period of time, monetary policy in Sweden took guidance from a rule reading approximately as follows:

² Roger, Scott, "Inflation Targeting Turns 20", *Finance & Development*, March 2010, International Monetary Fund.

"If the forecast for inflation two years ahead exceeds the inflation target—raise the repo rate. If the forecast falls below the target – decrease the repo rate." (Figure 1).

Figure 1. A simple rule of action

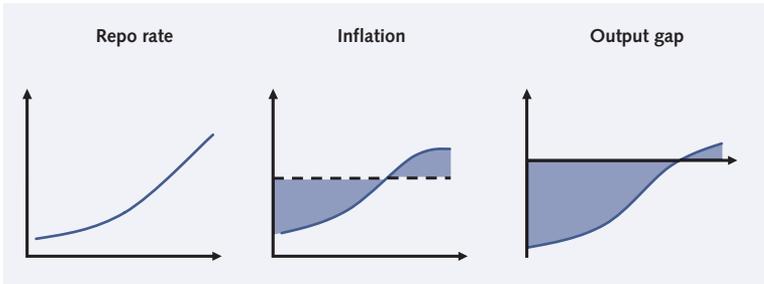


This simple rule had a number of advantages, above all in the communication of monetary policy decisions. For example, it clearly indicated that inflation was the overriding goal and that monetary policy had to be forward-looking. These were important points to make when the inflation-targeting regime was new. However, in many ways, this presented an excessively simplified view of monetary policy. One weakness was that the forecasts for inflation and the other variables were based on the assumption that the repo rate would be held unchanged for the entire forecast period. This assumption was often quite unrealistic, for example during a strong economic upturn with rising inflation, when an increase in the repo rate was widely expected. Consequently, it could be difficult to reconcile this assumption of an unchanged repo rate with credible and consistent forecasts.³

Today, our reasoning is somewhat different. We attempt to determine a forecast path for the future repo rate that entails that monetary policy is, as we often put it, well-balanced. A well-balanced monetary policy is normally a matter of finding an appropriate balance between stabilising inflation around the inflation target and stabilising the real economy, that is to say, production and employment. One way of illustrating this balance is to say that the deviations arising during the forecast period between, on one hand, inflation and the inflation target, and, on the other, the real economy and a trend, may not become altogether too great (Figure 2). As a measure of deviations in the real economy, the output gap is

³ It can be demonstrated that an incentive arises for the central bank to deviate from the unchanged repo rate as time passes and the forecast horizon is moved ahead, even if the forecast was initially on target two years ahead and no new information has been received. For a more in-depth discussion of this time inconsistency problem, see for example Kai Leitemo, "Targeting Inflation by Constant-Interest-Rate Forecasts", *Journal of Money, Credit and Banking* 35, August 2003.

Figure 2. Well-balanced monetary policy

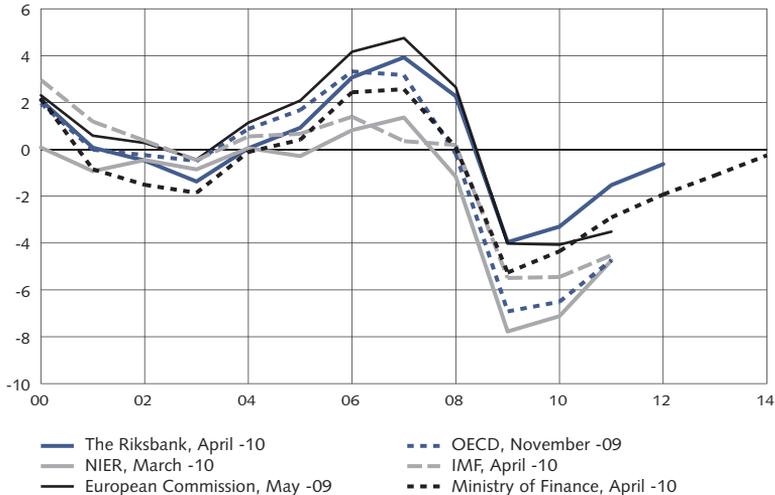


often used – that is to say, the difference between actual production and the economy’s long-term production capacity or potential output. That the Riksbank does not only care about inflation, but also about the real economy, is nothing new. We have done so more or less right from the very start, even if, when the inflation-targeting regime was new, there was particular reason to emphasise that low and stable inflation should be prioritised. However, in the present framework, the considerations that we actually make as regards both inflation and the real economy have become more apparent.

However, a number of problems still remain. For example, it is not obvious which measure of the real economy monetary policy is to stabilise nor how best to calculate the trend to be stabilised around. Quite different estimates can be made, not only in terms of the present and the future, but also of past events (Figure 3). However, it remains clear that intellectual progress has been made and that developments have moved forwards.

So far, relatively few central banks have gone so far as to publish forecasts of their policy rates, as the Riksbank does. But it is clear that the

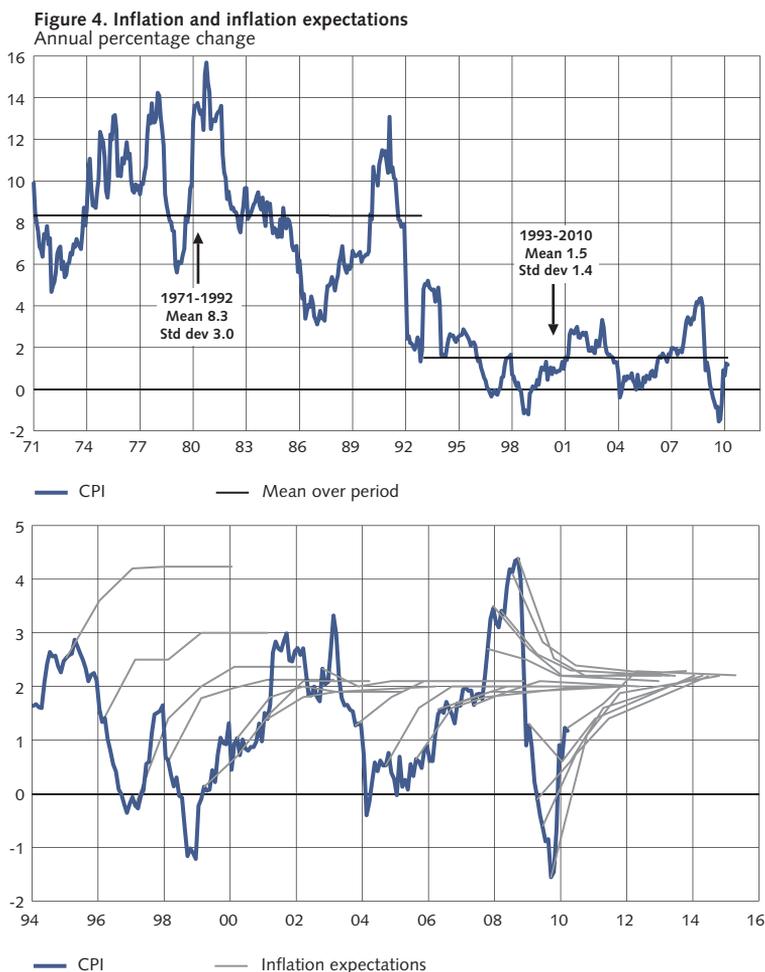
Figure 3. Different measures of resource utilisation
Per cent



manner in which monetary policy is conducted has developed in most parts of the world and is presently more open and clear than was the case fifteen to twenty years ago.

MONETARY POLICY HAS CONTRIBUTED TO INCREASED MACRO-ECONOMIC STABILITY

The trend towards inflation targeting, or policies resembling inflation targeting, and increased openness and clarity has had positive results. In Sweden and other countries affected by high and fluctuating inflation during the 1970s and 1980s, inflation has become lower and more stable. Similarly, inflation expectations have been significantly better anchored than before (Figure 4). I believe that countries with explicit, quantified inflation targets have had a particular advantage. These days, actual in-



Note. Inflation expectations refer to money market participants.
Sources: TNS SIFO Prospera, Statistics Sweden and the Riksbank

flation can differ quite considerably from the inflation target, for example due to temporary increases in energy prices, without households and companies finding it particularly alarming. They rely on the Riksbank to return inflation to target within a couple of years.

More or less at the same time as inflation decreased and started fluctuating less, growth also became more stable. This increased macroeconomic stability was a more or less worldwide phenomenon, being generally known as “The Great Moderation”. There exist various hypotheses on what may lie behind this increased stability. One of them is that monetary policy had started to be conducted in an improved manner, in which an emphasis on low and stable inflation allowed inflation expectations to be better anchored. If actual and expected inflation vary less, this will entail fewer variations in real interest rates and real exchange rates. This may, in turn, allow for the more stable development of demand and, thereby, the real economy. Well-anchored inflation expectations also make it easier for monetary policy to stabilise the economy. Unless households and companies immediately adjust their inflation expectations upwards, a minor increase in the interest rate will be enough to prevent an inflationary impulse from becoming entrenched. And when substantial interest rate changes become less necessary, fluctuations in the real economy become less extensive than when inflation expectations are poorly anchored. One way of putting it is that well-anchored inflation expectations make it easier for central banks to take consideration of the real economy.

For Sweden's part, one important explanation for the increased macroeconomic stability is probably also that inflation targeting – together with a more long-term focus for fiscal policy – spelled the end of the uneven ‘stop-go’ policy entailed by the many devaluations of the 1970s and 1980s. Quite simply, the stabilisation policy has shown more orderliness.

To sum up, the manner in which monetary policy is conducted across the world has changed quite extensively in the last fifteen to twenty years. Within both the central bank world and among academic researchers, a great deal of effort has been expended upon attempting to find a solution for how monetary policy best should be formulated. These efforts have also borne fruit. In most areas, inflation has fallen significantly and has been more stable than previously. The real economy also seemed to be developing with more stability, which was probably partly due to improved policy. There may be those who believed that most problems had been solved, and that the improved stability of the macroeconomy was here to stay. But the Great Moderation would turn out to be a deceptive calm.

BUT AN IMPROVED MONETARY POLICY WAS NOT ENOUGH

The recent period has seen frequent discussion of the financial crisis and its causes. Consequently, I do not intend to go into any detailed description of the development of the crisis, but will remain on a relatively intuitive level. The origin of the financial crisis lay in a number of interacting macroeconomic and microeconomic factors. However, the core of the crisis was that the banks and other participants took on too much debt in relation to the risks they were taking. Shortcomings in the regulatory framework, combined with a lack of understanding of new complex financial instruments, contributed towards the altogether too low pricing of risk by the market. Regulatory frameworks and supervision also failed to ensure that the banks had enough high-quality capital to maintain confidence when the economy took a downward turn and inflated asset values fell. Neither did the banks have a sufficient liquidity buffer to manage their short-term funding in an environment in which confidence in banks in general was being questioned and previously liquid assets were suddenly becoming illiquid. The banks simply lacked sufficient resilience. When Lehman Brothers filed for bankruptcy in the autumn of 2008, an acute crisis of confidence arose in the financial system. Only massive efforts from central banks and authorities across the world could prevent a collapse.

Paradoxically the fairly long period of macroeconomic stability preceding the financial crisis may partially have contributed towards making the crisis as deep as it became. When things have gone well for a long period of time it is probably human nature to relax and become slightly less cautious. Without oversimplifying matters, I think it could be said that this was something that characterised not only investors and financial institutions but also supervisory authorities and political decision-makers during this period.

Even if the financial crisis has triggered a new wave of thinking regarding the central banks and their activities, I would like to point out that in no way do I consider that the development of monetary policy over the last fifteen to twenty years has been misguided or a waste of time. On the contrary, I am convinced that the policy that gradually developed will continue to contribute towards more stable development in the future. Even so, it is clear that the financial crisis functioned as a wake-up call in many ways. It showed that there existed areas in which we needed to think further or maybe even revitalise old knowledge. Not least, it made it apparent that, while central banks had become more adept at handling normal shocks to demand and supply, there remained a great deal to be learned regarding the manner in which imbalances on the financial markets ought to be handled.

So what consequences can we expect the crisis to have for central banks' method of working in the future? Is there reason to supplement current monetary policy reasoning – and, if so, how? A large part of what I will address here today consists of matters that are currently the subject of intensive international discussion. The final result of these discussions remains to be seen. Nonetheless, let me think aloud on the manner in which central banks' work may be affected and on the challenges we will face.

EFFECTS ON POTENTIAL OUTPUT AND GROWTH?

One challenge concerns attempting to assess to what extent the crisis will affect the economy's long-term production capacity or potential output. This is significant for several reasons. Firstly, the deviation between actual and potential output, the output gap, is a measure of the stability of the real economy. Secondly, the output gap can affect the manner in which inflation develops. If the production of an economy exceeds its long-term production capacity (that is to say, if the output gap is positive), this tends to exert upwards pressure on inflation. The opposite applies if the output gap is negative. For a central bank with a price stability target, it is thus useful to have a good idea of the long-term production capacity. If, for example, it is believed to be higher than is actually the case, an excessively loose policy may be being conducted, in the belief that there are spare resources in the economy. This may cause inflation to rise. One hypothesis about why inflation in the United States increased so much during the 1970s is indeed that the Federal Reserve believed that the economy's long-term production capacity was higher than was actually the case.⁴

To a certain extent, this is a 'traditional' challenge in the sense that, after any deep recession, it must be asked whether potential output may have fallen and, if so, by how much. Potential output may fall as a consequence of permanent loss of real capital when companies are forced into liquidation or because dismissed personnel have difficulty in finding new work when economic activity turns upwards again. Following the crisis at the start of the 1990s, assessments of this nature were a central feature of forecasting work. Of course, estimating the extent of the output gap is no easy task. As I have already mentioned, it is possible to arrive at fairly disparate estimates even under normal circumstances when there is no reason to suspect a fall in potential output.

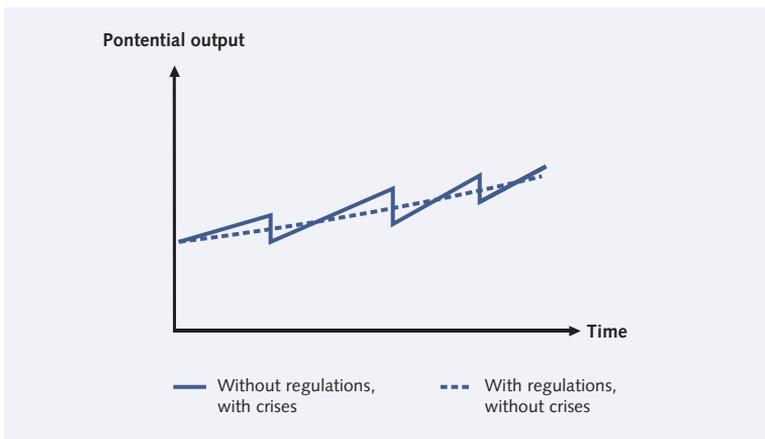
⁴ See, for example Athanasios Orphanides, "Monetary Policy Rules and the Great Inflation", *American Economic Review Papers and Proceedings* 92:2, May 2002.

Looking forward, another aspect also exists that may be more specific to this crisis in particular. One consequence of the financial crisis is that, in the future, we will see more regulation of banks and the financial sector in general. The fundamental aim of these regulations is, of course, to reduce the likelihood and effects of crises of the type we have just experienced. These increased requirements will probably lead to increased prices for financial services, slightly higher lending rates to households and companies, and a slightly lower credit supply. One way of putting it could be that these costs are a kind of insurance premium that society is willing to pay to avoid financial crises or to considerably reduce the risk of them.

However, at the same time, it should be borne in mind that these regulations could impact the economy's potential output and growth. If the regulations are too far-reaching, they may have a negative impact on the efficiency and growth potential of the financial sector. It is true that the significance for growth of the financial sector is not entirely clear, but the possibility that an 'over-regulated' financial sector could contribute to lower potential growth in the economy as a whole can hardly be ruled out.

For central banks and other economic forecasters, the challenge will be to attempt to make the best assessment possible of how potential output and growth may be impacted by both the crisis and the regulations resulting from it. For the authorities that are to design the regulations, the challenge will lie in finding an appropriate balance: on one hand, the regulations will need to be sufficient to reduce the risk of financial crises – which can cause potential output to fall. However, on the other hand, they should not be so comprehensive as to impede the financial sector unnecessarily, thus risking dampening potential growth. In other words, it is a matter of finding just the right level of regulation.

Figure 5. Potential output with and without crises

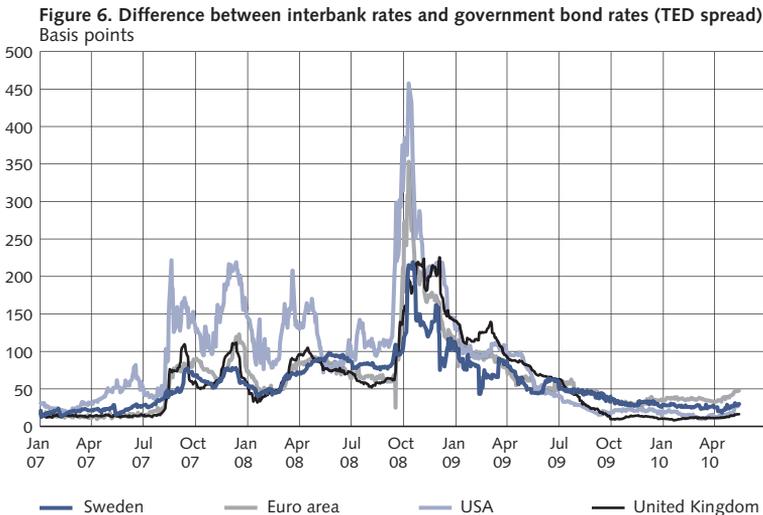


Somewhat simplified, it could be said that this is a matter of making a choice between two development paths for potential output (Figure 5). In one, development is interrupted now and again by crises, during which potential output falls, but between these, growth is relatively strong. In the other, development is even, but growth may be slightly lower than is the case between crises in the first development path. It is not obvious which development provides the best welfare effects over the long term, but it is clear that general opinion at present is that we should attempt to reduce the risk of crises and abrupt halts. I am quite certain that most observers deem that this would also provide better growth over the long term.

HOW WILL REGULATION AFFECT MONETARY POLICY'S TRANSMISSION MECHANISM?

Another consequence of the regulation agenda is that what is usually known as monetary policy's transmission mechanism may look slightly different in the future. More specifically, the connection between the central banks' policy rates and the interest rates affecting households and companies may change.

A stable transmission mechanism is usually an underlying assumption in economic models. This is probably a fairly good approximation under normal circumstances, but during the crisis it became necessary to re-assess this assumption. The impact of monetary policy was affected by a decline in willingness to take risks and the impaired functioning of the interbank markets (Figure 6).



Note. The difference is calculated as the difference between three-month interbank rate and the rate on a three-month treasury bill.
Sources: Reuters EcoWin and the Riksbank.

A simplified illustration of this can be provided by describing the banks' lending rate as a function of the central bank's policy rate plus an interest rate margin or spread:

$$i_t^{lending} = i_t + \delta_t.$$

The interest rate margin (δ_t) is a function of the compensation taken by the banks for administrative costs and capital costs, risk premiums, the banks' profit margins, and loan-to-value and amortisation requirements. Loan-to-value and amortisation requirements are not directly visible in the interest rate applied to the customer, but, in order to illustrate their effects on an aggregated level, these can be recalculated in terms of interest relatively simply.

When risk propensity fell during the financial crisis, the interest rate margin increased as a consequence of both higher risk premiums and lower loan-to-value ratios. This counteracted the cut in the policy rate. When central banks and governments subsequently adopted various measures to increase confidence on the markets, risk premiums fell in a similar way. The lending rate thus fell without a change in the policy rate being required.

Now, it is not only during a crisis that there exists reason to consider the financial sector's significance for the transmission mechanism. As I have just discussed, one of the consequences of a crisis is that the regulations of banks and other institutions will become more stringent. The intention of this is to reduce the socioeconomic costs that can result from banking. However, there is also reason to consider how the regulations introduced could affect the impact of monetary policy.

These regulations usually entail an increased cost for the banks which, to a certain extent, is passed along to customers in the form of an increased interest rate margin. This could be seen as a sort of 'regulation premium'. This premium can also be seen as the price to be paid by households and companies for more stable real economic development as represented by the broken curve in Figure 5. This concept can be illustrated with the equation for the lending rate by adding a variable (\bar{z}) designating regulations affecting the interest rate margin:

$$i_t^{lending} = i_t + \delta_t(\bar{z}).$$

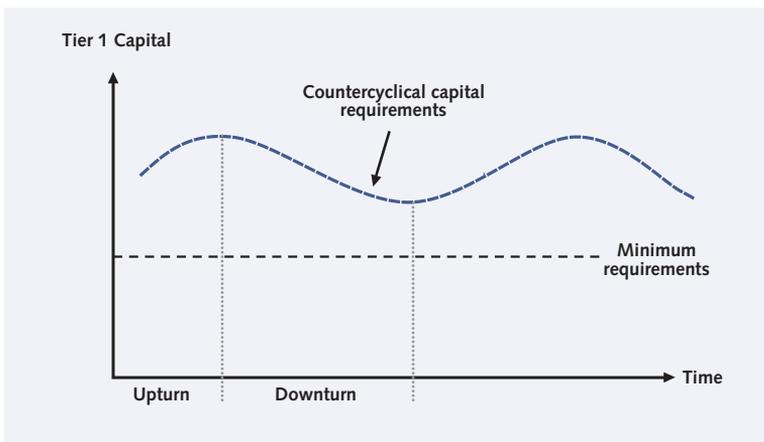
I would like to emphasise that this equation is, of course, a simplification. However, as my focus today is on the correlation of interest rates and regulations, this description will be facilitated by viewing regulations as a kind of 'shadow interest rate', even if they can also be analysed in terms

of the supply of credit. If regulations become more stringent, the interest rate margin and thus the lending rate both increase.

New regulations will not be introduced until we have emerged completely from the crisis, and they will be introduced successively. The end result will probably be a higher interest rate margin than was the case prior to the introduction of the regulations. In principle, this can be seen as a 'one-off shift' upwards in the interest rate margin. Adjustment to this higher level may be more or less protracted, depending on the rate at which the regulations are implemented and the degree towards which they are expected by the market. During this period of adjustment, the transmission mechanism will be affected.

One criticism of the regulatory framework and supervision of the financial area was that, prior to the crisis, these focused excessively upon individual institutions. The assumption was that the system would remain stable as long as the individual institutions were stable. Consequently, processes creating risks on the system level were ignored – processes such as a general underpricing of risk, the increased element of short-term market funding and the increasingly intimate connections between various market participants. One of the components in macroprudential policy, the package of more explicit systemic crisis preventative regulations being discussed internationally, is the more active application of regulations to dampen risk-building tendencies and build buffers when times are good. One specific proposal is to allow the capital requirement for the banks to vary over time. This would entail a division of the total capital requirement into two components. The first of these would be a constant minimum requirement to establish the amount of capital a bank is always to hold. To this can be added a further capital requirement that

Figure 7. A time-varying capital requirement



varies over time by being linked to a suitable indicator of, for example, credit growth or cyclical position of the economy (Figure 7).

When economic activity is strong, the capital requirement is high, and vice versa. This time-varying capital requirement has two functions. The first is to build up the bank's capital buffer when times are good and then let this buffer decrease during less favourable periods. The second function is to dampen credit growth when times are good by increasing the capital requirement and thereby the bank's lending costs. This increase in the bank's lending costs in turn implies an increase in the interest rate margin – and thus the lending rate.

In light of the discussion of 'just the right level of regulation', a time-varying capital requirement and other regulations varying across time may have certain advantages. Their more apparent connection with risk build-up may make them less costly than the alternative of introducing a constant higher 'minimum requirement'.

One objective of varying regulations across time is to affect credit growth through the interest rate margin. This creates an additional source of variation in the interest rate margin, which can be illustrated in the lending rate equation by adding an additional time index for the regulations:

$$i_t^{lending} = i_t + \delta_t(z_t).$$

An interest rate margin with time-varying regulations also implies another dynamic for the transmission mechanism and is more complicated than a one-off shift. Of course, this will have implications for monetary policy decision-making, which will become more complex.

The application of time-varying regulations may also give rise to a more indirect effect on the interest rate margin. Just as uncertainty about the future policy rate gives rise to a risk premium, so can uncertainty about the manner in which regulation will develop give rise to an additional 'regulation risk premium'. It is already possible to see that the uncertainty prevailing around the proposed tightening of the capital and liquidity regulations – which are not intended to vary over time – is affecting both interest rate margins and the supply of credit.

One way of increasing predictability would be to adjust the regulations automatically, according to a specific rule, as, for example, is the case with the dynamic provisioning used in Spain.⁵ However, I do not consider it practically feasible to rely entirely upon automatic decision-making rules. Uncertainty surrounding the manner in which regulations may change over time will thus always remain. However, it may be pos-

⁵ Dynamic provisioning is, in principle, a rule in which banks make specific and general provisions when times are good for later use in less favourable periods. These provisions are rule-based and are built upon credit stocks and credit flows calibrated by data on average historical loan losses to different sectors.

sible to learn lessons from the experiences of monetary policy in order to reduce this regulation risk premium. Even if monetary policy is essentially conducted in a discretionary manner, economic agents frequently have a fairly good idea of the way in which the interest rate will change. Naturally, I would like to believe that this is due to the present openness and clarity of monetary policy. Hopefully, it will be possible to achieve an equivalent level of openness and clarity in the matter of time-varying regulations. One possibility could be to develop some kind of rule of action based on assessments regarding, for example, credit growth. Such a rule would thus provide information on whether the 'regulatory controls' needed to be shifted upwards or downwards.

Inspired by the Taylor rule that is well-known within monetary policy, the arguments in the regulation could be formed of the non-time varying regulations (\bar{z}), a measure of actual credit volume in relation to a level deemed sustainable over the long term ($l_t - \bar{l}$), and the output gap:

$$z_t = z(\bar{z}, l_t - \bar{l}, y_t - \bar{y}, \dots).$$

I would like to emphasise that this is intended as an illustration of a so-far quite loose conception, rather than a concrete proposal. However, it is a useful illustration, not least because it indicates the comprehensive development work that will be required before anything practically applicable can result. Nonetheless, I believe there are good conditions for development work within this area to result in equally healthy returns as the efforts expended upon developing monetary policy over the last fifteen to twenty years.

The application of time-varying regulations also raises the issue of what would be an appropriate form of institutional organisation. Different countries have chosen different solutions as regards the allocation of responsibility. One common feature is for the central bank frequently to have a certain responsibility for financial stability via its role as lender of last resort. In certain countries, the central bank also has responsibility for supervision and the application of regulations. Meanwhile, in other countries, such as Sweden, responsibility for regulatory and supervisory matters is placed with a separate supervisory authority. This means that, in Sweden, it is the Riksbank that controls the policy rate and the Swedish Financial Supervisory Authority, Finansinspektionen, that controls regulations.

For some time, a discussion has taken place on the international level regarding the role central banks should play in matters of supervision and the application of rules. Ideas regarding the application of more time-varying regulations are adding fresh fuel to this debate. Utilising the expression for the rule of action above in the equation for the lending rate allows dif-

ferent institutional arrangements to be illustrated. In the previous equation for the lending rate, the regulations were described as a time-varying variable. However, with a rule of action, the application of regulations itself becomes a function of a number of variables that vary over time:

$$i_t^{lending} = i_t + \delta_t(z(\bar{z}, l_t, y_t, \dots))$$

Various institutional arrangements can be imagined, based on the distribution of responsibility for assessing the variables in the function, determining rules of action or functional form and, finally, for translating the function into actual regulations. The latter would probably require an element of discretionary decision-making. One possibility would be for the central bank to determine the policy rate (i_t) and for the supervisory authority to determine regulations, that is to say both \bar{z} and $z(\dots)$, as is the case in Sweden. Another possibility would be for the central bank not only to determine the policy rate, but also to determine the time-varying regulations through taking responsibility for the application of the rule of action ($z(\dots)$), while the actual implementation of the non-time variable regulations (\bar{z}) would be the responsibility of the supervisory authority. A variation of this would be for the central bank to be completely responsible for the implementation of the time-varying regulations. Finally, there is the possibility of the central bank taking responsibility for all regulation and supervision.

At present, it is still too early to say whether the international debate will conclude that one form of organisation is better than any other. Nonetheless, regardless of the form of institutional organisation, it seems inevitable that monetary policy and regulatory activities will increasingly approach each other.

CAN MONETARY POLICY PREVENT A CREDIT-DRIVEN PROPERTY BOOM?

One issue that has been discussed for quite some time, and which has gained fresh impetus from the financial crisis, concerns the extent towards which monetary policy should be used to attempt to counteract a rapid increase of property prices and credit volumes. That the focus on the property market in particular is because problems there often have greater effects on the financial system and the economy in general than problems on, for example, the stock market.

The dynamic of a credit-driven increase on the property market can be described as follows. When the price of an asset starts to rise, it becomes possible to borrow against that asset for a higher amount. This frees up money to buy more of the asset, but also for consumption. The latter implies that rising property prices may lead to a credit-driven con-

sumption boom. When the price increases, there also arises a tendency to regard the asset as being less risky, meaning that the credit risk premium decreases and the loan-to-value ratio is allowed to increase. In the lending rate equation, this implies a decrease in the interest rate margin. Cheaper credit feeds further price increases, which, in turn, feed further credit expansion, and so on.

The situation one would like to avoid is one in which the upturn is characterised by exaggerated optimism and excessive risk propensity. In such a situation, the fall can be dramatic when something causes this sentiment to turn. Prices fall, participants become more pessimistic and risk propensity decreases among both lenders and borrowers. This may result in an extended period during which participants consolidate their balance sheets, consumption and investment develop weakly, and lending becomes exaggeratedly restrictive. Fluctuations in property prices and credit volumes can thus amplify the fluctuations of the real economy.

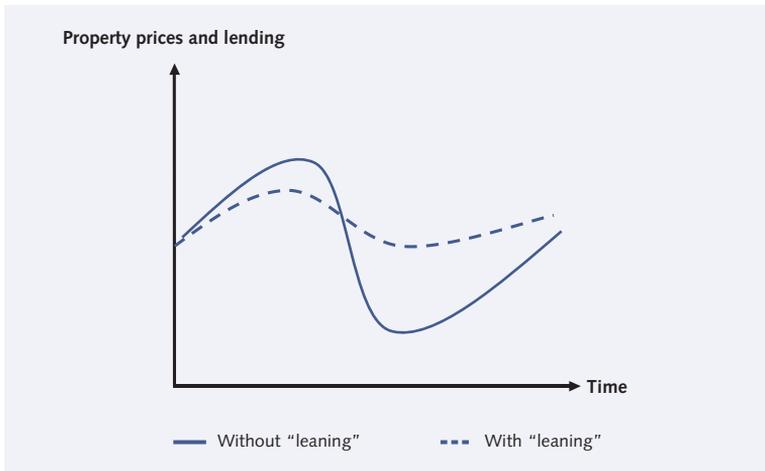
A fall in prices or expectations of such a fall may also lead to financial instability with possible consequences in the form of increased uncertainty, a credit crunch and stresses on central government finances. This is because a credit-driven imbalance can create a significant credit risk if the banks have filled the asset side of their balance sheets with loans based on inflated prices and with high loan-to-value ratios. The credit risk also depends on the manner in which borrowers' obligations in the event of a default will be regulated, that is to say whether the bank will be able to claim only the actual collateral or whether it will also have a claim on the remaining loan. An individual bank has no reason to take consideration of anything other than the risk to its own balance sheet and can, in general, ignore the effects on the real economy and financial stability: these are external effects. This 'credit expansion externality' implies a market failure and may justify public intervention. As experience has shown that it is precisely the bursting of property bubbles that has played such a decisive role in several financial crises, there exists reason to believe that such credit expansion externality may be particularly great on the property market.

According to one view, a central bank should try to counteract the increase of property prices and credit volumes by keeping the policy rate higher than would otherwise be necessary during the upturn. Central banks should lean against the wind, as this is usually called. The idea is that the increase in property prices and credit volumes will thus be smaller, but also that the decline, in return, will be significantly less dramatic (Figure 8). If the development of property prices and credit volumes becomes more balanced, it is also assumed that the real economy and inflation will be more stable. While growth will undoubtedly be somewhat lower in the upturn, it will, on the other hand, make it possible to avoid

the deep recession that may be the consequence of a fall in property prices.

One complication arising in this context is that it is not entirely easy to incorporate the risks that may be associated with the rapid increase of property prices and credit volumes into the normal work of forecasting and analysis. One difficulty is, for example, that the financial sector is often rather underdeveloped in the models used by central banks in their analysis work. At present, fairly intensive efforts are being made in many areas to better include financial variables in the central banks' forecast models. Another, not unrelated, problem is that property prices and bor-

Figure 8. Leaning against the wind



rowing are occasionally driven by psychological factors – exaggerated optimism and high risk propensity in upturns and the opposite effect in downturns. It is, of course, primarily this kind of development that leaning against the wind is an attempt to counteract. However, such factors are difficult to capture in economic models, as these are often based on the assumption that participants will act in a rational manner. In other words, it is difficult for a model to generate a scenario such as that represented by the unbroken curve in the figure. Even so, we know that such scenarios occur. It is part of human nature to reassure oneself by believing that “this time is different”, which, at the end of the day, is seldom the case.⁶

The difficulty in making forecasts that capture and quantify the risks that may be associated with a credit-driven property boom has meant

⁶ “This time is different” is the title of a newly published book by Carmen Reinhart and Kenneth Rogoff (Princeton University Press). The book analyses financial crises occurring over several hundred years. The title is a reference to the phenomenon that, even though it is common knowledge that crises occur every now and again, there seems to be a tendency to believe that, on just this occasion, there is probably no danger.

that monetary policies that lean against the wind are often described as the adoption of 'extra action' or the increase of the interest rate 'over and above' the forecasts for inflation and the real economy by the central bank.⁷ A central bank's decision to act in this manner should not be interpreted – as has sometime happened – as indicating that the development of property prices and credit volumes is an end *in itself* of monetary policy. The reason that the central bank is leaning against the wind is that it thereby expects to achieve a more stable development in the real economy and inflation. One could say that the central bank sees property prices and credit growth as *indicators* saying something about the way in which inflation and resource utilisation may develop over the longer term. However, it is clear that such a monetary policy places great demands upon a central bank's communications.

It should be pointed out that the reason that a central bank may wish to lean against the wind does not have to be because it only wishes to safeguard financial stability. That *may* be the case, but it may also be a purely monetary policy decision. The bank may simply wish to attempt to avoid severe fluctuations in the real economy and inflation, even if these are not deemed to be associated with financial stability problems.

Leaning against the wind is not a problem-free strategy. Three primary counterarguments have been put forth.⁸ Firstly, the imbalance must be identified at a sufficiently early stage. Attempting to rectify the imbalance too late may be problematic as monetary policy acts with a time lag. If property prices fall steeply immediately following an increase of the policy rate by the central bank, the delayed effects of the interest rate increase will reinforce the negative effects on the economy of the falling property prices. Of course, one must also be sufficiently certain that an imbalance really is building up. If the upturn is being caused by fundamental factors, a higher interest rate would hinder growth unnecessarily.

Secondly, one has to rely upon being able to deal with the property price increase through reasonable increases of the policy rate. One hypothesis is that the optimistic mood often prevailing during a boom in the property market means that significant increases of the policy rate are required to have an effect. Such a tightening of monetary policy could have severe negative effects on the rest of the economy.

Thirdly, at least previously, there existed a view that the negative effects of the bursting of a bubble need not be so dramatic, but can be

⁷ See for example Donald L. Kohn, "Monetary Policy and Asset Prices," speech held 16 March 2006, Federal Reserve Board and Frederic S. Mishkin, "Housing and the Monetary Transmission Mechanism", in *Housing, Housing Finance and Monetary Policy*, Federal Reserve Bank of Kansas City Jackson Hole Symposium, 2007.

⁸ See for example Donald L. Kohn, "Monetary Policy and Asset Prices Revisited", speech held 19 November 2008, Federal Reserve Board.

counteracted or considerably mitigated relatively painlessly by easing monetary policy, or by other measures.

These arguments have convinced some that monetary policy should not lean against the wind, but should restrict itself to 'cleaning up afterwards'. I am one of those who has 'cleaned up afterwards' in a number of countries, and I know how expensive and complicated it can be. These experiences have contributed towards my conviction that ending up in such a situation is something best avoided. This was a point I made at a conference at Jackson Hole a few years ago, where the theme was monetary policy and asset prices.⁹ That was before the financial crisis, when criticism of using monetary policy to lean against the wind was significantly stronger than it is today. What it ultimately boils down to is that if one creates money, as a central bank does, and this leads to a high level of mortgaging of properties, it is difficult to discharge oneself entirely from responsibility for what is happening.

The dramatic effects of the financial crisis have made their mark on the debate. As I interpret matters, it seems as though advocates of the strategy of 'cleaning up afterwards' have partially modified their view, primarily because the potential profits of limiting bubbles seem to be greater than previously estimated. It seems to be an increasingly accepted view that a central bank should at least do something when it suspects that a credit-driven imbalance is building up on the property market.¹⁰ This does not necessarily mean increasing the policy rate, even if it now seems to be increasingly accepted that this can also be considered.

CAN TIME-VARYING REGULATIONS PREVENT A CREDIT-DRIVEN PROPERTY BOOM?

I mentioned earlier that an international discussion is underway regarding the more time-varied application of regulations within the framework of macroprudential policy. Even if this discussion primarily addresses the prevention of risks to financial stability, it is conceivable that the time-varied application of regulations may also be used to prevent a credit expansion that may destabilise the real economy, without any threat to financial stability being perceived. In the same way as leaning against the wind with the policy rate can be justified by monetary policy reasons, so too can a policy that leans against the wind with regulations.

⁹ Stefan Ingves, "Housing and Monetary Policy: A View from an Inflation-Targeting Central Bank", in *Housing, Housing Finance and Monetary Policy*, Federal Reserve Bank of Kansas City Jackson Hole Symposium, 2007.

¹⁰ See for example Alan S. Blinder, "How Central Should the Central Bank Be?", *Journal of Economic Literature* XLVIII, March 2010.

How, then, would this time-varying application of regulations look in practice? One possibility is to raise the capital adequacy requirement, which would raise the interest rate margin and thus the lending rate. Higher capital adequacy would also lead the banks to increase their buffers and thus improve their resilience to loan losses. Another alternative to increase the interest rate margin would be to require a larger proportion of own funds from borrowers by setting a ceiling for leverage – such as, for example, the ceiling recently proposed by Finansinspektionen, the Swedish Financial Supervising Authority – or amortisation requirements. Raising the requirements for own funds will primarily strengthen borrowers' buffers against falling prices, even if lower indebtedness will also reduce the banks' risks. In contrast to capital requirements, the regulations on loan-to-value and amortisation requirements mean that it will not only become more expensive but also more difficult to raise loans. This latter suggests that such regulations could be analysed in terms of more explicit supply limits. However, today I have decided to discuss loan-to-value and amortisation requirements in terms of a 'shadow interest rate' in order to illustrate the connection between quantitative regulations and monetary policy.

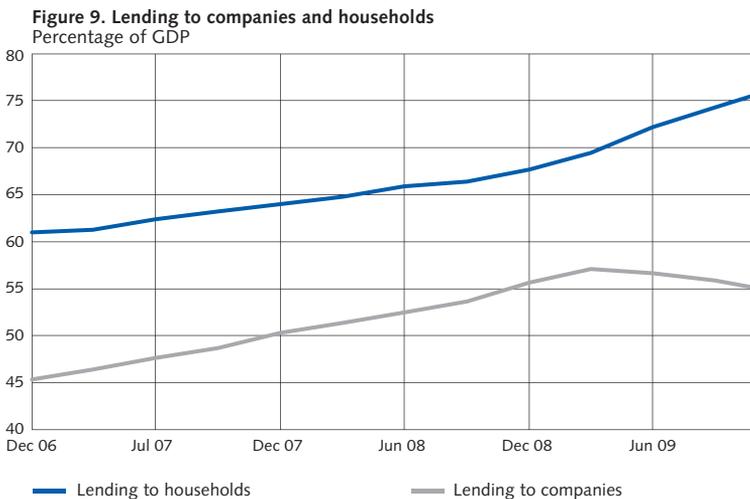
Rather than regulations, an economist may be more used to thinking in terms of Pigovian taxes as regards handling negative external effects. Pigovian taxes are common within the area of environmental regulation, where they can, for example, take the form of fuel taxes in order to put a price on the negative environmental effects of traffic. In the same manner as these taxes attempt to put a price on the environment, it is possible to imagine using a Pigovian tax, based, for example, on the banks' lending, to price – or internalise – negative external effects associated with banking. As the banks would pass at least a portion of such a tax on to their customers, the effect of this tax on the borrowing rate would be equivalent to an increase of the interest rate margin.

Sweden recently introduced a stability charge to be paid by the banks. This charge is intended to finance a stability fund to act as a central government financial buffer for the costs that may arise in a financial crisis. At present, the stability charge is not risk-differentiated. A charge that is risk-differentiated in an appropriate manner to provide the banks with the incentive to redistribute their activities depending on risk could be seen as a type of Pigovian tax.

It could also be imagined that Pigovian taxes could be used to attempt to correct the cross-border external effects that may arise in an increasingly integrated European banking market. One example is the Swedish banks' lending activities in the Baltic which have probably entailed a liquidity risk in foreign currency in Sweden. The presence of a

liquidity risk reduced confidence in the Swedish banking system in general and led to a disruption to the Swedish financial system. If the banks had internalised this liquidity risk, lending in the Baltic would probably have been less extensive.

One circumstance that may be worth taking into account here is that the credit market is not homogenous. One distinction that can be made is to view the credit market as being divided into a corporate market and a household market. In the recent period in Sweden, we have seen ample evidence of the great variance in developments between these two sectors (Figure 9).



Even if certain factors affecting the lending rate are common to these two sectors, for example the policy rate, other factors can be sector specific. In other words, there is no common interest rate for the corporate sector and the household sector. Consequently, no single equation can be used to describe the lending rate for all sectors in the economy. Instead, one equation for households (H) and one for firms (F) are needed:

$$i_{iH}^{lending} = i_t + \delta_{iH}(z_{iH}),$$

$$i_{iF}^{lending} = i_t + \delta_{iF}(z_{iF}).$$

If we suspect that a bubble is building up in one of the two markets, measures can be aimed at just that market. This is not possible with the policy rate, as there only exists one policy rate in the economy. In other words, both equations have the same 'lever'. Regulations or charges can also be adjusted on the basis of the aggregated credit growth and, in this case, the effect would be rather like an interest rate increase. However, with regulations, it is also possible to aim measures in a specific direction

and only increase the interest rate margin for the market in which credit growth is deemed to constitute a problem. This strategy allows us to avoid tightening credit growth for the other sector which does not form a risk, which – all other things being equal – reduces the costs of leaning against the wind. One condition for the implementation of such targeted measures is, of course, that the rules governing when action is to be taken are based on developments in the individual sectors.

Of course, the time-varied application of such regulation would not be unproblematic. As in the case of leaning with the policy rate, any imbalance must be identified at a sufficiently early stage. Changing the regulation too late will contribute more towards making the fall greater than braking the build-up of the imbalance. Neither do we have much practical experience of using regulations to prevent bubbles – even if it should be mentioned that we actually do not have particularly much experience of using policy rate increases for that purpose either. Consequently, it may be difficult to determine the appropriate “dosage”. One potentially fairly serious problem with regulations is that experience has shown us that it is relatively easy to circumvent them. Possibilities for regulatory arbitrage can be particularly great when the regulatory framework is applied in a more differentiated manner. The role played by the ‘shadow banking system’ in this crisis is an example of the consequences of circumventing regulations.

IS A COMBINATION OF POLICY RATE AND REGULATION NEEDED?

I mentioned earlier that it seems as though more and more are advocating that something may need to be done when it seems as though a credit-driven imbalance is building up. I do not believe that the increasing popularity of this view has so much to do with the fact that the identification of an excessive credit expansion is now considered to be easier. Neither is it because we have identified tools that can effectively and accurately brake an unsustainable credit growth. Rather, I believe that it is due to society’s increased unwillingness to live with the real economic risks entailed by such imbalances. In other words, it stems from an increased acceptance of paying a certain price over the short term in order to reduce the risk of a particularly unfavourable outcome later on. However, the question remains of what this “something” that can dampen the build-up of imbalances could be. Should we deploy the weapons of the policy rate, of regulations or of a combination of the two?

The answer to this question largely depends upon the view taken of the efficiency of the policy rate and regulations respectively as regards dampening excessive credit growth. It also depends upon the conse-

quences arising for inflation and the real economy in various time perspectives if the policy rate or regulation, respectively, are used. Both the policy rate and regulations have their advantages and disadvantages. The policy rate is a blunt instrument in so far as it impacts all lending in the economy, which can be seen in the two interest rate equations for companies and households, respectively. It can require decision-makers to make difficult choices and is a tough challenge to communicate. It is probably quite difficult to explain that the policy rate is being increased to safeguard stability in inflation and the real economy further ahead, even though everything looks good in a more short-term perspective. This task is not made any easier when policy rate increases impact sectors in which credit growth is not deemed to pose any problem. At the same time, the very bluntness of the policy rate is one of its strengths compared with regulations. As the policy rate impacts the cost situation in the economy in general, it is difficult to circumvent it in the same manner as regulations can be avoided. On the other hand, regulations can be applied in a more differentiated manner, which can mean that they will be a less costly way to lean against the wind. Another advantage is that regulations increase resilience by building buffers, for example in the form of capital. Consequently, neither the policy rate nor regulations are preferable in all situations. The conclusion I have reached is that a combination of policy rate and regulations may be the most practical path.

CONCLUDING REMARKS

The financial crisis has exposed problems and shortcomings, much as crises often do. As I see matters, this is not a decisive blow for the prevailing order, as far as monetary policy goes. I still believe that the best model is an inflation targeting policy conducted in an open and clear manner, and in which the work of clarification and development continue apace. However, it is obvious that we need to learn more about how financial imbalances should be handled, and that the crisis will have consequences for central banks' methods of working.

I have attempted to present a picture of a few of the challenges I see ahead. By necessity, this picture is quite sketchy and has been painted with broad brushstrokes. The final practical consequences of the intensive discussion currently being held cannot be predicted with any certainty at present. In many respects, this will be a matter of trial and error and seeing which solutions seem to work. One step in that direction is Finansinspektionen's recent decision to recommend a ceiling for the loan-to-value ratio of new mortgages. Something that can, however, be said with certainty is that we will probably never completely be able to

prevent financial crises – here, history speaks all too clearly. But I do believe that now, when our awareness of the problems is unusually great, we have the chance to design regulations and frameworks that will at least make these crises a little rarer and a little less dramatic.