

Stefan Ingves: The monetary policy landscape in a financial crisis

Speech by Mr Stefan Ingves, Governor of the Sveriges Riksbank, at the Swedish Economics Association, Stockholm, 31 March 2009.

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Introduction

"The monetary policy landscape in a financial crisis" is the theme of my speech this time. I thought for once that I would begin by showing you a picture.



The slide shows an oil painting that was done in 1842 by the English artist William Turner.¹ It is called "*Snow Storm – Steam-Boat off a Harbour's Mouth*". It is part of the collection at the Tate Gallery in London.

The only thing you need to know about the painting just now is that Turner used a very special technique. He built up the picture gradually by painting several thin, semi-transparent layers on top of each other. He then added somewhat thicker, more pastose sections. As you can see, this layer-by-layer technique gave his paintings a special lustre and a special atmosphere. We would probably say that the atmosphere in this painting is dramatic. Turner's technique can also act as a starting point for a description of the situation today. Reality is made up of different layers. Every layer that is added or peeled away reveals a partly new landscape.

We can compare the financial crisis to the snow storm in Turner's painting. In order to paint the picture of the complete storm we need to begin with a layer that describes the macroeconomic preconditions, *the macroeconomic landscape*. Then comes a layer that describes the financial landscape. This consists of financial players, institutions, markets and

¹ Joseph Mallord William Turner (1775–1851), British artist most famous for his Romantic landscape paintings, whose style can be said to have paved the way for Impressionism.

instruments. Over this there is yet another layer that describes *the regulatory landscape*, that is the special legislation, regulations and supervisory arrangements that cover the activities of financial companies.

Somewhere in the middle of the picture, symbolised by the steam boat that is trying to navigate the right course through the snow storm, we have the Riksbank which is fighting to both meet the inflation target and safeguard the stability of the payment system. For the Riksbank, as for steam boats at sea, the room for manoeuvre is determined by the conditions in the surrounding landscape. We have to understand how the weather, visibility and other prevailing factors affect our chances of steering the boat in the right direction. This becomes particularly important when conditions are difficult, when there is a snow storm raging at sea. This – in a nutshell – is what my speech today will be about. First, however, it may be interesting to look at how we sailed into the storm.

From fair weather to the perfect storm – what went wrong?

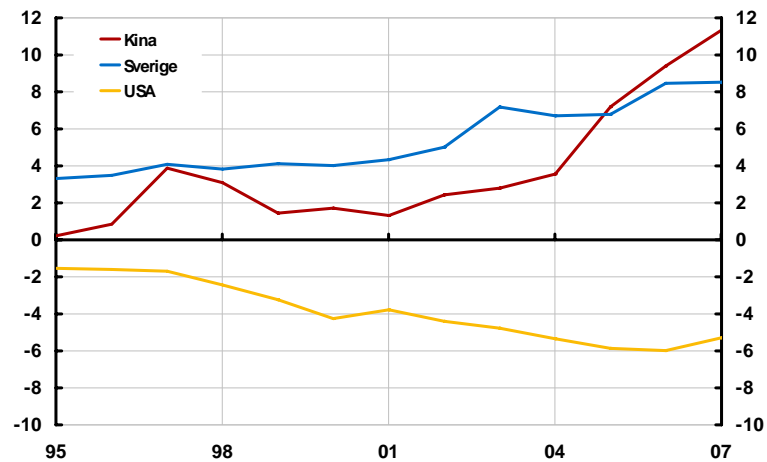
The metaphor of the different layers in Turner's painting can be used to describe the causes of the current crisis.

Global imbalances were built up

If we are to understand the origins of the crisis, we cannot ignore certain factors in the macroeconomic landscape. This applies in particular to the major global imbalances that were built up over a long period of time. In the rapidly-developing economies in the oil-producing countries and Asia, particularly China, domestic saving reached a level that was higher than required to fund domestic investments. This led to substantial current account surpluses. Large amounts of capital were built up which sought an outlet on the global financial markets. These were used, for example, to buy assets in the West.

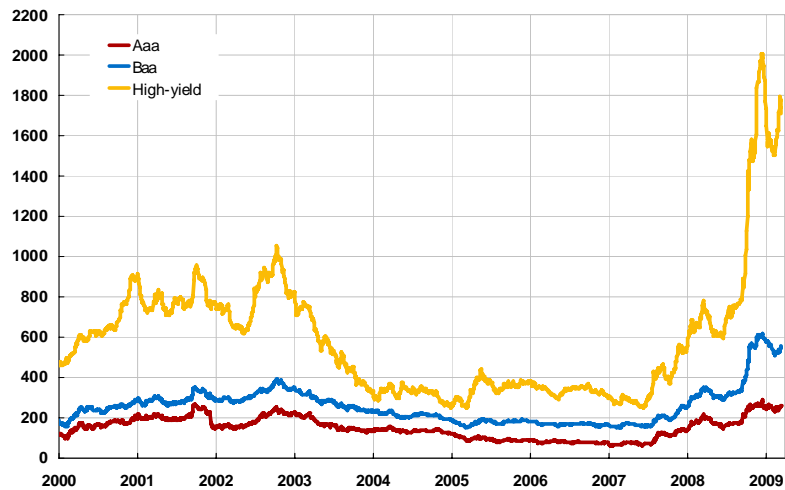
At the same time, the economies in the West, especially the USA, experienced an unusually long, uninterrupted period of favourable conditions with strong growth and low inflation. Policy largely focused on maintaining these good conditions. It was possible to stimulate domestic demand at the cost of a gradually increasing current account deficit. The large capital flows on the financial markets helped to keep interest rates down. With consumer prices held in check, it was also felt that there was no real reason to conduct a stricter monetary policy. The result was that significant global imbalances arose – a lasting savings surplus in some countries and a deficit in others.

Image 2: Current account deficit as percentage of GDP



Källa: IMF

Image 3: Credit spreads* for corporate bonds in the USA
Basis points



*The difference between the yield on corporate bonds and the yield on treasury bonds. Source: Reuters Ecowin

The markets priced risk incorrectly

This also laid the foundations for changes in the financial landscape. The good supply of capital available for investment and the low interest rates for risk-free assets increased the demand for assets with a higher yield, a "search for yield" arose. However, investors all over the world, including many major banks, largely ignored the fact that, in the long term, higher yield can only be achieved by taking greater risks. This contributed to a dramatic increase in asset prices. The very favourable conditions that prevailed on the global financial markets

meant that the premiums for credit risk were generally extremely low for a long period of time.

The explosion in asset prices was fuelled by a rapid expansion in credit. Money was lent more carelessly than previously. Housing bubbles developed in several parts of the world. In the USA, the development of such bubbles was reinforced by the inadequate regulation of the mortgage market and a political agenda that aimed to promote house ownership among people on low incomes.

The search for yield drove investors to borrow more in order to achieve greater leverage in the investments. Financial innovations also helped to drive this development. A steady flow of new and increasingly complex instruments were created to satisfy the demand for investments with a higher yield. Advanced techniques arose for the securitisation of different forms of credit, including mortgages for less creditworthy borrowers. Many banks around the world – although this applies to a lesser extent to Swedish banks – thereby changed their business model. While previously they had specialised in developing long-term customer relations and in evaluating and monitoring credit risks, the banks now increasingly went over to repackaging and selling their credit risks as quickly as possible. One might think that the banks used securitisation to get rid of a large proportion of their credit risks. Unfortunately, this was largely an illusion. The banks created special intermediaries off their balance sheets to hold and structure the securitised credits. This made it possible for the banks to increase leverage both on and off the balance sheet. However, explicit and implicit guarantees from the banks to these special companies meant in practice that the risks led directly back to the banks' balance sheets.

The result of all these new instruments and artificial intermediaries was a motley and almost impenetrable structure. A wide range of asset types with idiosyncrasies in pricing arose. This also made them more difficult to value. Moreover, the complicated links between the banks and their special investment vehicles made it difficult to see exactly what the banks' exposures were. Eventually, no one knew where the risks were. The increasing amount of credit not only made investors highly indebted in relation to their equity, many banks also did not really have enough capital in relation to the risks they took.

When economic activity began to decline in the USA and prices fell on the US housing market, many institutions suffered major losses. Above all, however, a great deal of uncertainty arose. It proved to be simply impossible to know with any certainty who was exposed to "toxic assets", that is assets that risked losing value as a result of major credit losses. The realisation that many institutions could be more in debt than appeared to be the case on their balance sheets fuelled this uncertainty. The resulting anxiety led to the waning of trade on a number of financial markets. As the banks have become increasingly dependent on the financial markets for their funding, many banks now found it difficult to refinance their operations. In other words, they found it difficult to borrow in order to cover their lending.

When the US investment bank Lehman Brothers was forced to apply for bankruptcy protection in September last year, this had major repercussions in many parts of the world. The global financial crisis escalated and the Swedish banks were also affected to an increasing extent. When the conditions on the global financial markets deteriorated, there was a general increase in credit risk premiums. For those borrowers – banks or countries – that were deemed to entail the highest risks, the premiums increased more than for others. A process to reduce exposures and debt/equity ratios began among banks and other financial institutions around the world. The rapid decline in the supply of credit reinforced the downturn in global economic activity. This in turn accelerated the substantial fall in asset values and the increase in the bank's credit losses. A vicious circle arose in the global economy in which the financial turmoil aggravated the weakening of the real economy and vice versa.

The events in the financial sector reflect fundamental failures in the risk management of the financial players. Securitisation partly removed the banks' incentive to monitor credit risks.

The credit rating institutions largely took over this role. But the models used by the rating agencies were in many respects inadequate and the credit ratings were interpreted incorrectly. The correlation between credit risks was underestimated, as were the liquidity risks. The market thus priced risks incorrectly. This did not mean, however, that all of the players acted irrationally. Many players were able to make a lot of money in the upturn while others had to bear the losses in the downturn. The reward systems in many cases thus encouraged exaggerated risk-taking by promoting short-term profits.

There were thus shortcomings in basic corporate governance. These shortcomings were not helped by the fact that many institutions had developed into very large and complex organisations – too large in some cases to be allowed to fail.

Gaps in regulatory frameworks and supervision

These developments of course all took place against the background of the landscape of regulations and supervisory arrangements that surround the financial system. A general problem in all forms of financial regulation is that, if the regulations are binding, players attempt to conduct an increasing proportion of their activities outside the regulated sector. There were without doubts large gaps in the regulatory frameworks that enabled so-called regulation arbitrage. Some institutions, for example many investment banks, were not subject to the same insight or constraints as ordinary banks. Some markets, for example the OTC market for credit derivatives, were permitted to grow explosively without the authorities having any real oversight. The capital adequacy frameworks also made it cheaper in many areas for the banks to expand off their balance sheets. After the event, we can also note that the regulatory frameworks focused too little on liquidity risks. Many of these gaps in the frameworks are now being closed. However, the eternal problem is of course that the markets are always faster at finding new ways of circumventing the regulations than the authorities are at closing the gaps.

Perhaps a more fundamental problem was that there was too weak a link between financial supervision and macro factors and other factors that affect the risk of shocks in the financial system as a whole. There was quite simply too much focus on individual companies and too little focus on broader development trends. Nor did the supervisory arrangements adequately reflect the increased internationalisation of the financial sector. In recent decades, the financial markets have become increasingly interlinked and very large sums change hands around the world every day. Large, complex banks and other financial institutions now conduct extensive operations in several countries. At the same time, supervision was mainly conducted on the basis of national mandates and focused on companies within individual, national jurisdictions. Supervision thus lacked the oversight required.

Many factors interacted

A number of interacting factors thus lay behind the situation that arose. Global macroeconomic imbalances, fundamental shortcomings in the risk management of the financial players and gaps in regulatory frameworks and supervision together formed the underlying layers in the current financial and economic crisis – a crisis that many observers regard as the worst since the 1930s. In order to avoid a total breakdown in the financial system, governments, central banks and other authorities around the world have been forced to take a range of massive and unusual measures.

Massive and unusual measures on the part of the authorities

So, what have the authorities done? The central banks have lent large sums of money to the banks at longer maturities and against other forms of collateral than has normally been the case. This has improved the short-term funding situation for the banks. Several central banks have also provided emergency liquidity assistance to individual institutions. The Federal

Reserve, the European Central Bank and other central banks have also entered into agreements to provide loans in their own currencies to other central banks to mitigate the effects of the crisis in other countries. The central banks have also cut policy rates rapidly and forcefully, sometimes in coordinated actions, to alleviate the repercussions of the financial crisis on production, employment and inflation. Governments have offered guarantees and capital injections to reduce the risk of further bankruptcies in the banking sector. Deposit guarantee schemes have been extended. Several countries have also adopted fiscal policy stimulation packages to mitigate the effects on the real economy.

In Sweden too, authorities such as the Riksbank, the National Debt Office and Finansinspektionen (the Swedish Financial Supervisory Authority) have acted to alleviate the crisis. As in many other countries, the government has increased the national deposit guarantee scheme and has extended it to cover all forms of deposits in accounts. The government has also introduced a guarantee programme, set up a guarantee fund and decided on capital injections for banks. At the same time, the government is conducting a more expansionary fiscal policy than previously to mitigate the effects on the real economy.

The Riksbank has implemented a large number of measures to safeguard financial stability and mitigate the negative effects of the financial crisis. We have changed the collateral requirements so that the banks can use more types of security as collateral when they borrow from the Riksbank. We have, for example, begun offering loans with commercial paper as collateral to facilitate the companies' financing. We have also begun to lend at longer maturities, with variable interest rates and with smaller supplements. We have provided special liquidity assistance to Kaupthing and Carnegie. In addition, we have entered into loan agreements with Iceland, Latvia and Estonia to ease the situation in these countries. All this has meant that during the second half of 2008 the Riksbank increased its total lending to the banks by more than SEK 450 billion. I will discuss what this entails in just a moment.

The Riksbank has also cut the repo rate to the lowest level it has been at since we introduced an inflation target. How monetary policy can be conducted under the prevailing conditions is a question that I will discuss in more detail later. The financial crisis has of course changed these conditions a great deal. But before we get into that, I would like to say a few words about how monetary policy is supposed to work under normal conditions.

How monetary policy works normally

Normally, monetary policy aims to keep inflation at a low and stable level and to stabilise the real economy. To achieve this, the Riksbank controls the shortest market rate, that is the overnight rate which is the interest rate on loans between the banks from one day to the next. The overnight rate in turn affects the interest rates charged to the general public, and thereby activity and prices in the economy. We have a system in which we influence the overnight rate by determining the conditions for the banks borrowing and lending with the Riksbank so that it is close to our policy rate, the so-called repo rate. The repo rate expresses the level at which the Riksbank wants the overnight rate to lie.

The way in which the monetary policy conducted has an impact on, for example, the banks' lending rates, the development of the real economy and inflation is usually called, somewhat loosely, *the transmission mechanism*. This mechanism is often described in terms of three different channels: *the interest rate channel*, *the credit channel* and *the exchange rate channel*. These channels are intertwined with each other and the division is mostly for explanatory reasons.

The interest rate channel can be used to influence the cost of saving and borrowing. A lower interest rate means that it becomes less expensive for companies to finance investments and for households to borrow for consumption. Lower interest rates normally also make saving less attractive.

Interest rate changes also affect the economy through *the credit channel*. Lower interest rates generally increase the net present value, that is the value today, of the cash flows that financial assets are expected to generate in the future. Lower interest rates also increase the demand for real assets, for example housing. In this way, the prices of both real and financial assets increase. As these assets are used as collateral for loans, the creditworthiness of households and companies also increases. This leads banks and other financial institutions to be less restrictive in their lending and means that they can lend more. This in turn stimulates investment and consumption and thus increases inflationary pressures in the economy.

Through *the exchange rate channel*, monetary policy can influence the value of the currency. Normally, a reduction of the repo rate leads to a weakening of the krona. This is partly because Swedish assets appear less attractive than investments in other currencies. A weaker exchange rate affects inflation directly in that imported goods will become more expensive. At the same time, domestic goods become cheaper than foreign goods. This leads to a decline in imports and a rise in exports. Higher demand for domestic goods contributes to an increase in resource utilisation and inflationary pressures.

Inflation expectations are also important to the way in which companies set prices and to how wage formation functions, and thereby to the development of inflation. If everyone is confident that inflation will remain low, the companies do not need to change their prices so often, and employees do not need to increase their wage demands. This makes it easier for the Riksbank to achieve the inflation target.

This then is mainly how monetary policy is supposed to work normally. But when the financial markets are not working normally the transmission mechanism is also affected. The various channels simply do not work as effectively as they usually do. This also makes the link between monetary policy and financial stability particularly important.

Monetary policy and financial stability are interlinked

As you know, the Riksbank has more than just a monetary policy mandate. In addition to maintaining price stability, the Riksbank also has the task of promoting a safe and efficient payment system. We thus have two main tasks: monetary policy and financial stability. These tasks are of course interlinked even under normal conditions. Without stability in the financial system it becomes more difficult to conduct monetary policy, and price stability is part of an effective payment system. Practically and organisationally, however, these are two separate fields of work. You could say that we normally use two different toolboxes to perform these two tasks.

First, we have a monetary policy toolbox, parts of which I have already described. The monetary policy measures, for example the setting of the repo rate, have a clear objective: to influence economic activity with the aim of maintaining price stability. This in turn is an important component of our efforts to achieve stable development in the real economy.

Second, we have a box of tools for promoting stability in the financial system. Financial stability is a basic prerequisite for a safe and efficient payment system. The Riksbank normally uses tools other than the repo rate to promote financial stability. Our analyses of the risks in the financial system that we produce and publish every six months in our "Financial Stability Report" represent the primary tool in this toolbox. If nothing else, this and other feedback that we provide to the banks makes them more aware of potential vulnerabilities and, in the best case, gets them to take preventive measures. This is usually referred to as "moral suasion". But this toolbox also contains more concrete tools. These include the possibility to quickly add liquidity to the banking system.

We thus normally approach these two main tasks somewhat differently and we often regard monetary policy and financial stability as two separate parts of the Riksbank's mission. Recently, however, it has become increasingly clear just how interlinked these two tasks are.

When the interbank markets have been ineffective and interest rates have to a certain extent been governed by a lack of confidence, the impact of monetary policy has been weakened. This has meant that we have needed to use tools from both of the toolboxes during the crisis. The situation has required the use of some tools that we otherwise use rarely. We have even had to reinvent some of the tools and refine them as we go along. The measures have primarily aimed to strengthen financial stability and to maintain the functionality of the financial markets so that the payment and credit systems work effectively. This is a prerequisite for the effective functioning of the economy as a whole.

Many measures that are taken with the aim of safeguarding financial stability also have indirect monetary policy effects. For instance, measures that lead to greater confidence in the markets contribute to lower interest rates and increased access to credit, thereby increasing the impact of monetary policy. Similarly, the Riksbank's interest rate reductions contribute to financial stability by improving the supply of credit. The measures that are normally taken under the framework of monetary policy or to promote financial stability have thus begun to complement and mutually reinforce each other. To illustrate what we are doing today we can use a simple equation that describes the banks' lending rate – that is the rate charged to households and companies – as the repo rate plus a premium.

Image 4: Monetary policy and financial stability are interlinked



$$i_t^{lending} = i_t + m(c_t, \dots)$$

The size of this premium depends on the bank's demand for compensation for, for example, credit risks, any differences in periods to maturity and the need to retain sufficient capital to cover the loans. What we are doing now is partly to control the first term, that is the policy rate, and partly to attempt to influence the second term, that is the risk premiums that are today reflected in large credit spreads as a result of the financial turmoil. To do this we must use tools from both of the toolboxes. It is against this background that we can view the monetary policy measures of a more or less unconventional nature that are now being taken in various parts of the world. I will now try to discuss this in a little more detail.

Unconventional monetary policy

As I mentioned earlier, the central banks have reduced policy rates quickly and dramatically in order to mitigate the effects of the financial crisis. At the end of last year, the US central bank cut its policy rate target to an interval of 0-0.25 per cent. In early March, the Bank of

England cut its policy rate to 0.5 per cent and is thus also close to zero. Many other central banks, including the Riksbank, have also reduced their policy rate to all-time low levels.

When the central banks' traditional tools for influencing demand in the economy can no longer be used – when no further cuts in the policy rate are possible – then other options have to be found. In both the USA and the UK, as in some other countries, the central banks have begun to conduct monetary policy using unusual, and in some case untested, methods. It may be worth pointing out, however, that there may be good reasons for implementing a lot of what the central banks have done irrespective of whether the policy rate is close to zero or not. This relates to various measures that aim to improve the functioning of the financial markets and ease the supply of credit.

One way of trying to illustrate the course of events is to study the central banks' balance sheets. The exact form of these balance sheets varies from country to country, but they have a number of common features. For the sake of simplicity, and without claiming to present an exact picture of reality, allow me to assume a stylised balance sheet. On the asset side there are foreign and domestic assets and the lending to the banks. On the liabilities side, there are banknotes and coins, deposits from the banks and equity.



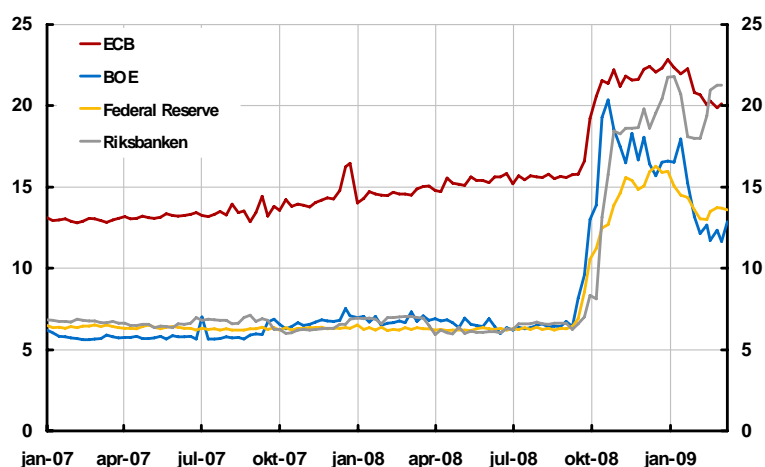
Image 5: Unconventional monetary policy

A stylised balance sheet for a central bank

Assets	Liabilities
Foreign assets	Banknotes and coins
Domestic assets	Bank deposits
Lending	Equity

The balance sheet totals of the central banks increased dramatically during the autumn of last year and have remained at approximately these levels since then. A major part of this increase was due to the expansion of lending.

Image 6: Central banks' balance sheets
Percentage of GDP



Sources: Bureau of Economic Analysis, Eurostat, Office for National Statistics, SCB and the respective central banks

As I have mentioned, during the second half of 2008 the Riksbank increased its lending to the banks by more than SEK 450 billion. As a result of the increase in lending, the Riksbank's balance sheet grew during the second half of 2008 from around SEK 200 billion to around SEK 700 billion, that is it more than tripled. What happened was, put briefly, that when the interbank and securities markets stopped working normally, the demand from the banks for loans and for liquidity reserves at the Riksbank increased. It could be said that the Riksbank acted as an intermediary in the sense that the banking system was able to borrow at longer maturities in order to invest in a secure and liquid asset in the Riksbank.

Image 7a: The Riksbank's balance sheet
30 June 2008 (before Lehman Brothers)



Assets		Liabilities	
Gold	26	Banknotes & coins	108
Currency reserve	158	Fine tuning	0
Lending USD	0	Riksbank certificates	0
Lending SEK	4	Debt to Fed	0
Other	4	Equity	59
		Other	25
TOTAL	192	TOTAL	192

Image 7b: The Riksbank's balance sheet 31 December 2008 (after Lehman Brothers)



Assets		Liabilities	
Gold	30	Banknotes & coins	112
Currency reserve	200	Fine tuning	207
Lending USD	196	Riksbank certifikates	49
Lending SEK	262	Debt to Fed	189
Other	7	Equity	59
		Other	84
TOTAL	700	TOTAL	700

If we compare the balance sheets at the end of June and the end of December 2008 – that is before and after Lehman Brothers applied for bankruptcy protection – we can see that lending in Swedish kronor increased by approximately SEK 260 billion. This is reflected on the liabilities side by the increase in the Riksbank's fine-tuning facility, where the banks deposit their surplus liquidity overnight, as well as the increase in Riksbank certificates with a maturity of one week. The banks have thus increased their reserves at the Riksbank.

The Riksbank has also lent almost SEK 200 billion in US dollars. We have financed this partly by borrowing against the currency reserve and partly by means of a loan agreement with the Federal Reserve. The fact that the currency reserve appears to have increased is primarily due to exchange rate effects.

The liabilities item "Other" includes the Riksbank's net income and the revaluation account. This item has increased mainly due to exchange rate effects, but also because we have earned quite a lot of money from these transactions.

Some other central banks, such as the Federal Reserve and the Bank of England, have gone one step further. Apart from increasing their lending to the banks, they have also bought various types of domestic financial assets. When a central bank lends money to the banks, or purchases different types of assets, the banks' access to funding increases. This in turn increases the so-called monetary base on the balance sheet's liability side, that is the total of outstanding banknotes and coins and the banks' deposits in the central bank.

A common feature of the measures taken by the central banks is thus that they have inflated the balance sheets and increased the monetary base. There are, nevertheless, some differences and different central banks have also described their measures in slightly different ways. For example, most of the measures taken by the Federal Reserve have aimed to make it easier for households and companies to get access to credit and to reduce risk spreads. The strategy has therefore been called credit easing. The Federal Reserve has thus focused on the asset side and has, for instance, bought different types of domestic, private financial assets. In this context, what happens to the monetary base on the liability side of the balance sheet has not been the central issue, although of course everything that happens on the asset side of a balance sheet is directly reflected on the liability side and vice versa. Technically speaking, the monetary base has increased in Sweden too because the Riksbank has increased its lending to the banks. This has not, however, been the main aim

of the lending and is not something that, in the present circumstances, can be expected to automatically lead to an increase in lending to borrowers outside the banking system. The Riksbank's lending has, on the other hand, eased trading on the interbank market.

However, increasing the monetary base may sometimes be a deliberate strategy. In such a case we usually talk about quantitative easing. What we mean by this term is that the central bank has moved away from monetary policy easing in the form of reductions in the price of the banks' deposits in the central bank, that is the policy rate, to increasing the quantity of the bank's deposits – and the monetary base – directly. Opinion is divided on exactly how quantitative easing works and how it relates to credit easing. Most economists are cautious about describing the concrete channels. In very simple terms, it is possible to illustrate what we want to achieve with quantitative easing with the help of a classic quantity equation.



Image 8: Quantity equation

$$M \times V = P \times Y$$

This well-known equation says that the money supply times the turnover rate for money is equal to the price level times production. In severe crises, the turnover rate for money, V , declines. To keep up prices, P , and production, Y , we need to increase the money supply, M .

By buying government securities and thus increasing the supply of money, the central banks aim to increase the supply of credit and thereby improve liquidity among private players – and ultimately increase consumption. This presupposes, however, that the banks do not simply hoard these extra reserves but also actually increase their lending. If the central bank buys government securities, risk free interest rates at slightly longer maturities may also fall. It can be said, in simple terms, that the application of quantitative easing entails a focus on the liability side of the balance sheet, while the state of the asset side becomes less important even though this is also reflected in the balance sheet. The express purpose of this shift from price to quantity is usually that "the price" can no longer be affected as the policy rate is zero. It could therefore be said that quantitative easing is a type of monetary policy that is more directly dedicated to dealing with a zero interest rate than credit easing. The latter focuses more directly on reducing the spreads and improving the supply of credit in the economy. It should be emphasised, however, that a zero interest rate is not necessarily a precondition for either quantitative easing or credit easing and it may sometimes be possible to find a use for both methods even when the policy rate is positive.

The measures that the Bank of England began to implement at the beginning of March can be characterised as quantitative easing. In its communication, the Bank of England has

talked about injecting money directly into the economy. This is done by buying government securities and, to a certain extent, securities issued by private players, for example corporate bonds. The latter implies that the strategy also includes elements of credit easing in the sense that the supply of credit to companies is eased. The Federal Reserve has a more explicit focus on reducing spreads on those markets that are considered to be important to the financial system, but has recently also begun to buy government securities on a large scale.

Both quantitative easing and credit easing are examples of a type of policy that is only used in special and unusual circumstances and whose effects we therefore do not really know very much about as yet. I think it is important to be clear about this: the situation that has arisen is new for practically all central banks in countries with well-developed financial markets. It would be wise to address the question of how to best handle the situation with a great deal of humility.

So what is the situation here in Sweden – will we need to implement as extensive measures as those now being implemented by, for example, the Bank of England or the Federal Reserve? The answer to this question is that we simply do not know yet. What we can say is that we are prepared to do what is required, when it is required, within the existing frameworks. We also have the advantage of being in a situation where we can get an indication of how well the unconventional measures taken by other central banks have worked, even though the differences between countries of course mean that we cannot draw too far-reaching conclusions. In this sense it is an advantage to us that the crisis is not "home made" and that it has not yet developed to the same point here as in many other countries.

A key to the measures that may become necessary in Sweden is whether traditional monetary policy, that is keeping the interest rate low, will be sufficient. The significant factor for demand in the economy is the real interest rate, that is the nominal rate minus expected inflation. Inflation expectations among households and companies are thus important. The most important thing is to avoid a situation in which the credibility of the inflation target is undermined and the players in the economy expect to see long-term deflation, that is that prices will continue to fall during the foreseeable future. Even if the nominal interest rate has been pushed down to the lowest possible level, the real interest rate may still be too high to stimulate demand.

The Riksbank's monetary policy framework is a strength in this context. The fact that we have an established, numerical target for inflation probably makes it easier to keep inflation expectations well-anchored on the positive side of zero. Surveys also indicate that expectations are well in line with the target a few years ahead. In the shorter term they are lower, but there is nothing particularly strange about this – inflation in our own forecasts is lower too.

Nor should we forget that the Riksbank is not the only authority that influences interest rates in the economy. Apart from the measures taken by the Riksbank, crisis measures taken by the Ministry of Finance and the National Debt Office of course affect costs (spreads) on the credit market. Fiscal policy stimulation measures also affect the costs of credit risk and thus the price of credit. We should also remember that supervisory and regulatory measures that establish different forms of constraint, for example capital adequacy requirements for the banks, can indirectly affect the price of credit.

A question that we are wrestling with just now is how serious the credit crunch is and whether there is a risk that it will hit the non-financial sector so hard that it will have major repercussions on the real economy over and above the credit crunch that normally follows a recession that undermines the creditworthiness of companies and households. On the one hand the supply of credit declines when the banks want to shrink their balance sheets. Many companies in the Riksbank's company survey state, for instance, that they are finding it difficult to borrow at longer maturities. On the other hand, the demand for credit should also

decline as a consequence of weak economic activity. What can be done about this and what is the role of the central banks in easing the credit crunch?

The Riksbank's view is that it is the financial system that as far as possible should be strengthened in order to ease the credit crunch. It is mainly the commercial banks that have knowledge about credit for non-financial companies. Primarily, the banks need more capital in order to increase their resilience to potential losses in the future. This can indirectly be expected to increase the banks' credit capacity. Many banks have already strengthened their capital base. The government's capital programme has also made it possible to inject further capital if the need arises.

In the worst case, it may of course become necessary for the government to provide loans or guarantees directly to the non-financial sector in some way. But this is not primarily a task for the Riksbank. At the same time, it is more important than ever that the authorities co-operate effectively and pull together. Different phases and components of the crisis require different measures from the central bank and from other authorities. It is extremely important that these measures are well co-ordinated and that the division of work is clear.

How can we prevent crises in the future?

I have now talked about what public authorities can do to alleviate the financial crisis, how monetary policy is conducted both under normal circumstances and in the present situation, and about the increasingly clear link between monetary policy and financial stability. One very important question is of course what lessons we can learn for the future. How can we as public authorities help the financial system to avoid suffering similar problems in the future? Can we in some way ensure that macro economic factors and systemic risk factors have a better impact in our policy measures and supervisory systems?

Bursting bubbles with interest rate policy?

Many analysts consider that one important factor behind the current financial crisis is that interest rates have been kept at a low level for a long period of time, particularly in the United States. The outlook behind the policy conducted was that central banks are not particularly good at assessing whether or not an asset bubble is being built up. Monetary policy should therefore only respond to a rapid increase in house prices and indebtedness if the forecast is that this risks leading to overheating in the economy and thereby to excessively high inflation. If this is not the case, the central bank should wait and see, but be prepared to quickly ease monetary policy if the housing market were to collapse and demand in the economy were to fall drastically.

This view has come to be increasingly questioned, not least as the work on "cleaning up afterwards" has proved to be fairly extensive if the central banks have been too passive during the build-up phase. This is particularly so if the price bubble can be linked to a credit expansion. In most cases it is the credit expansion – and not the prices themselves – that is the most worrying.

Should it not therefore be possible to use monetary policy more actively to subdue an upturn in asset prices? This is a difficult question that requires more detailed analysis, but it is unlikely that it will be easy to reach a general policy conclusion. I am convinced, on the other hand, that many central banks will review their macroeconomic models and more precisely define the role of asset prices in the transmission mechanism. I do not believe, however, that we should exaggerate the ability of monetary policy to prevent crises from arising. Even if excessively expansionary monetary policy can contribute to the build-up of a bubble, it is less clear to what extent monetary policy can entirely prevent this from happening. It is probable that it would require fairly substantial interest rate increases, something that may not be received sympathetically when the reasons for the increases are not crystal clear. But more moderate interest rate increases could, of course, contribute somewhat. If nothing else, it

would provide a signal from the central bank that it envisages certain development problems. I also believe that risk scenarios with a longer forecast horizon may be an option for clarifying what the risks may be in the longer term. It is conceivable that the price of housing or some other asset may be driven by factors that are difficult to explain or which may be assumed to give rise to inefficient risk allocation and large fluctuations in economic activity and inflation. This would then be taken into consideration in our monetary policy thinking in some way.² Nevertheless, it is probably the case that the greatest contribution to a more effective strategy is to ensure that appropriate regulations and supervision procedures are in place.

New financial supervision arrangements

As I mentioned earlier, one of the problems was that financial supervision did not give sufficient consideration to factors in the macro economy and to systemic risk. At the Swedish level, an important step in this is of course to ensure that the coordination between the Riksbank and Finansinspektionen functions as efficiently as possible.

It is also necessary to have coordination at the international level. In November 2008, the European Commission appointed Frenchman Jacques de Larosière to lead a task force to draw up proposals for reforming the regulatory regime within the EU. The proposals were presented on 25 February this year.³ They include establishing a special body, the *European Systemic Risk Council*, with responsibility for overall financial supervision (macro-prudential supervision) in the EU. The idea is that the twenty-seven central banks in the EU would be members of the council and that the council would receive resources from the ECB. Its tasks would include pooling and analysing information, for instance on macro economic conditions, which may be significant to the stability of the financial system.

Part of the problem is that financial supervision has had an excessively national focus. The de Larosière group therefore proposes enhanced coordination of the national supervisory authorities. There is already cooperation on financial supervision within the EU. This takes place for instance in the form of special committees for the supervision of banks, securities and insurance. Now it is proposed that these supervisory committees should be given the status of public authorities. This would make it clearer that the joint supervision standards are binding and not, as now, recommendations.

Although I guess that in the long term we will need to go even further, this is a step in the right direction, and not a moment too soon!

The crisis management routines also need to be reinforced. Supervision, regulation and crisis management are interlinked. This may seem obvious. But here the same psychological phenomenon that has driven private players to take excessive risks has also been found among politicians and others in positions of responsibility. As long as everything is going well they are happy to ignore the risks. I note that Sweden and the Riksbank have been at the forefront of these discussions. It is good that many other countries have now begun to be aware of this.

A Taylor rule for capital adequacy?

Let me now, towards the end of my speech, test out an idea on you. The nice thing about this gathering is that one can take such liberties without it leading to any misguided monetary policy interpretation. Everyone here is familiar with the Taylor rule, which has many

² See Ingves, S. (2007), "Housing and Monetary Policy – a View from an Inflation Targeting Central Bank", at a symposium, Housing, Housing Finance and Monetary Policy, arranged by the Federal Reserve of Kansas City, Jackson Hole, Wyoming, 1 September 2007.

³ The High-Level Group on Financial Supervision in the EU, Chaired by Jacques de Larosière, Report, Brussels, 25 February 2009.

variations. Put briefly, these are short reactive rules to adjust the policy rate in response to changes in both inflation and economic activity. These Taylor rules have become a useful tool in studying and assessing monetary policy without needing to make a more detailed analysis of the supply of and demand for money. As an aside it may be worth mentioning in this context Knut Wicksell's in many ways pioneering monetary theory, which he presented at the Swedish Economics Association's meeting on 14 April 1898, that is almost exactly 111 years ago.^(4,5) In his theory on the natural interest rate, Wicksell suggested perhaps the simplest of simple reactive monetary policy rules ever: *"If the price rises, the interest rate should be raised; and if the price falls, the interest rate should be cut..."*^(6,7)

Today, a Taylor rule usually expresses the policy rate as a function of the inflation rate and its deviation from the desired inflation rate, the output gap expressed as the logarithm of real GDP and the logarithm of its deviation from potential GDP, as well as the real interest rate.



Image 9: Taylor rule for monetary policy

$$i_t = \pi_t + r_t^* + \beta_\pi (\pi_t - \pi^*) + \beta_Y (Y_t - \bar{Y})$$

This type of rule is one of many supplementary tools that most central banks currently use in their monetary policy analysis, although these do not replace other, more in-depth analyses and qualitative assessments.

Should it not be possible to use similar simple rules to attain a more balanced credit growth in the economy and a more stable financial sector? Here it ought to be possible to combine supervisory regulations with macro factors into a simple rule to subdue fluctuations and make the banks more resilient. The cost of the banks' lending is partly dependent on the market's capital adequacy requirements, which in turn depend on the requirements of the regulatory regime. The principle is that the banks must maintain an amount of equity capital in their balance sheets that is in proportion to the amount of risky assets, primarily in the form of

⁴ In the same year Knut Wicksell published a book on the subject, *Geldzins und Güterpreise* (Gustaf Fischers publishing company, Jena 1898; translated in 1936 *Interest and Prices*, MacMillan, London).

⁵ See also Siven, C-H. (1998) "Penningteori utan pengar – hundra år med Knut Wicksell", *Ekonomisk Debatt* 1998, year 26, no. 6.

⁶ Wicksell, 1898 [1936], p. 189.

⁷ See also Orphanides, A. (2007), "Taylor Rules", Board of Governors of the Federal Reserve System, January 2007.

lending. In the same way as the policy rate can be expressed as a Taylor rule, it should be possible to express the banks' capital adequacy requirement as a function of, for instance, the lending gap, or growth in lending in the economy and the output gap.

Image 10: A "Taylor rule" for capital adequacy



$$c_t = c + \alpha_L (L_t - L^*) + \alpha_Y (Y_t - \bar{Y})$$

Here the capital adequacy requirement the banks are subject to depends on the development of total lending in relation to a long-term trend and economic activity. The idea is that the capital adequacy requirement will increase when lending increases too substantially, and will decrease when lending declines. In this way the banking system will be forced to build up capital reserves in good time, which can in turn be used to cover losses when times are hard. One creates a model that evens out cycles rather than reinforcing them. The current capital adequacy rules are sometimes accused of being procyclical. In the best case, this provides a more balanced development, both with regard to the growth in credit and the banks' resilience to shocks. This is a slightly more general approach than, for instance, the system of dynamic provisioning they have in Spain.⁸ The beauty of it is that by using aggregate measures of growth in lending we also capture other things that would otherwise remain off the banks' balance sheets.

Note that we can make a connection between the Taylor rule for the policy rate and a corresponding rule for capital adequacy. Let me refer back to an equation I showed earlier, namely the banks' lending rate expressed as a function of the central bank's policy rate and a risk premium.

⁸ <http://www.bde.es/provesta/proestae.htm>.



Image 11

$$i_t^{lending} = i_t + m(c_t, \dots)$$

The premium is partly due to the bank's demand for compensation for the need for capital cover for lending. If the capital adequacy requirement is controlled with the aid of our special rule, then not only bank-specific risks but also systemic risk factors will be priced in the lending rate.

The banks' lending rate thus depends on both the policy rate and a premium that in turn depends on the capital adequacy rule. In addition, both the Taylor rule for the policy rate and the capital adequacy rule depend on the output gap. This means that one can in principle link together these equations into a system. In this way we obtain a model that links together monetary policy and financial stability.

I would like to emphasise that these are merely very preliminary ideas, which I first launched at a conference in Geneva in January this year. Incidentally, an excellent report resulting from this conference was published – I can recommend reading it.⁹ Of course, more work is needed to specify and estimate a model of this type. And there are of course substantial problems in measuring the variables included. Moreover, it would require considerable effort to communicate a rule like this. But I think that stylised models like this can be useful as a starting point for consideration of these issues. Moreover, I believe that concrete quantitative rules of this kind could provide valuable support to those public authorities that exercise supervision over the banks. I hope that this digression will inspire someone to take the idea further. It would give both individual countries and the future European Systemic Risk Council something to get their teeth into.

Some concluding thoughts

Let me in conclusion make some reflections. The current financial crisis is in many ways similar to earlier financial crises. Periods of strong optimism with rapidly rising asset prices and rapid credit expansion that suddenly break down into deep pessimism are nothing new. We have seen such boom-bust scenarios many times before. It appears to be human nature

⁹ Brunnermeier et al (2009). The Fundamental Principles of Financial Regulation. Geneva Report on the World Economy.

to be drawn into an overoptimistic frenzy and to underestimate the risks as long as things are still on the way up.

What distinguishes this crisis from earlier ones is of course its global range and extreme complexity. This means that we can put a further couple of layers onto the foundation of Turner's canvas. The globalisation and development of the art of financial engineering in recent decades can be said to be part of the first coat of paint on the canvas. The scope and complexity mean that the situation is in many ways much more serious than before. The course of events has also made us more confused than we have been in previous crises.

At the same time, we can now see an increase in deglobalisation in the wake of the crisis. The cross-border integration of the financial sector has come to an abrupt standstill. And in the global economic downturn many countries are tempted to resort to protectionist measures. This is a worrying development.

Both globalisation and the development of the financial services sector entail large potential welfare gains. In recent decades, an increasingly large share of the world population has obtained a reasonable standard of living, and a smaller share is living in poverty. Financial integration and new services lead to efficiency gains that in the long term benefit households and companies in all countries. It is important that we do not throw these welfare gains out of the window.

At the same time, we have seen the risks in this development in no uncertain terms. The flows in the financial system have increased substantially while the system has become increasingly complex and difficult to survey. The mutual dependence of the various markets has increased. This means that crises can more quickly and more forcefully hit an increasing number of economies at the same time.

The important thing now is to find the right tools for managing these new risks; to find instruments for a better-balanced development. We need a better insight into the build-up of global risks. This requires increased cooperation between public authorities around the world. It requires greater harmonisation of regulations and supervision. It requires a better readiness to manage cross-border crises. And to find the means to counteract the build-up of large imbalances we must begin to think along new lines.

At present the functioning of the financial system is being maintained with the aid of the measures implemented by public authorities. One sign that the crisis is no longer as acute is that the TED spreads have fallen in Sweden, as well as the United States and the euro area. These spreads are now back to around the same levels that prevailed immediately prior to the worsening of the crisis in autumn 2008. But the financial markets are still functioning much less efficiently than normal. It is also still difficult for companies to finance themselves in the capital market.

The major question now is how we can restore confidence in the financial markets so that they can manage on their own. This is a task that authorities around the world have been struggling with for some time now.

In my opinion, we need a purge of the international banking system. The problems that are weighing down the banks' balance sheets must be brought to light. It is only when we see the depth of the losses that confidence can be restored. The great complexity in the current financial system means that this is a much more difficult process than in the Swedish bank crisis of the 1990s. It is difficult to say how long it will take before the programmes currently being implemented in Europe and other parts of the world have the intended effect. Meanwhile, the Riksbank is prepared to do whatever it takes to maintain the functioning of the Swedish financial system. Thank you!