



# Financial Stability Report 2008:2



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## ■ Foreword

The Riksbank has the Riksdag's mandate to promote safe and efficient payments. This entails safeguarding the stability of the financial system, which is also a prerequisite for an effective monetary policy.

An ongoing analysis of stability provides possibilities for the early detection of changes and vulnerabilities that together can lead to a serious crisis. A thorough analysis also facilitates the management of a crisis if one were to occur. The Financial Stability Report, which is published twice a year, presents the Riksbank's overall assessment of risks and threats to the financial system and an evaluation of the capacity for coping with them. The work on the analysis of stability is accordingly an instrument that is directly connected with the Riksbank's function of promoting safe and efficient payments.

By making the analysis available to financial market participants and other interested parties we can share our viewpoints and contribute to the debate on this subject.

The Executive Board of the Riksbank discussed this Report at its meetings on 5 and 19 November. The Report uses data available as at 19 November.

Stockholm, November 2008

*Stefan Ingves*

GOVERNOR OF SVERIGES RIKSBANK

## The Riksbank and financial stability

**T**he Riksbank has the Riksdag's mandate to "promote safe and efficient payments". Payments are material to every economic activity and a central feature of the financial system. The government therefore has a particular interest in overseeing the functioning of payment systems. A serious crisis in the financial system is liable to entail extensive economic and social costs.

**The commercial banks are responsible for the central components of payment systems.** At the same time, banking has a number of special characteristics. Liquidity risk is a natural part of banks' activities since they normally obtain short-term funding and provide long-term loans. Moreover, the similarity of the operations in different banks entails a risk of problems elsewhere hitting many banks simultaneously.

**In Sweden the four major banks (Handelsbanken, Nordea, SEB and Swedbank) have a dominant position, with a combined market share of around 75 per cent.** Besides the banks, the financial system comprises other institutions, market places and the financial infrastructure for registering and settling transactions. The infrastructure also includes the public framework, that is, rules and legislation.

**Stability is founded on confidence in the financial system.** The occurrence of a problem in one institution may suffice to generate apprehensions that spread to similar operations elsewhere. A loss of confidence can make it difficult for the banks to undertake their operations, in which case the system will be in danger. The basic requirements for confidence are sound institutions and efficient markets.

**The Riksbank analyses the financial system's stability on a continuous basis for the early detection of changes and vulnerabilities that could lead to a crisis.** The analysis focuses on the systemically important institutions: the four major banks. The Financial Stability Report, published twice a year, presents the Riksbank's view of the risks and the banks' capacity to cope with any shocks. Knowledge is also disseminated in other ways: by arranging dialogues with market participants, publishing speeches and participating in the public debate. Moreover, the Riksbank is in a position to influence the framing of laws and rules that pertain to supervision and crisis management, for instance by submitting opinions and by participating in international organisations.

**The Riksbank is the authority that has the possibility to provide emergency liquidity assistance if problems arose of such a serious nature as to threaten the entire system.** To be able to use this possibility in a good way requires adequate crisis preparedness. This in turn requires an appropriate crisis organisation with good information channels and analysis tools and well-developed forms of cooperation with other authorities.

**The Riksbank cooperates closely with Finansinspektionen and the Ministry of Finance.** The Ministry of Finance is responsible for the regulation of financial enterprises and Finansinspektionen (the Swedish Financial Supervisory Authority) is responsible for supervision. The authorities' interaction is important both in the preventive work and in the event of crisis management. The same also applies internationally as financial enterprises increasingly operate across national borders.

## ■ Summary of the stability assessment

### In brief

The crisis in the global financial markets has considerably worsened in the six months since the publication of the previous Financial Stability Report and during the autumn the Swedish financial system has been tangibly affected by the global lack of both confidence and liquidity.

The crisis affects the profits of Swedish banks. To date, the direct losses that stem from the international financial crisis have been limited and the banks' profitability and financial strength remain sound. Moreover, loan losses are still historically low and borrowers are in a good position to service debt. In the light of this, the Riksbank considers that the Swedish banks have satisfactory buffers for meeting the current situation.

With the exacerbation of the financial crisis during the autumn there has been an appreciable increase in the Swedish banks' liquidity risks. Funding with longer maturities has become considerably more difficult and funding costs have risen. The financial markets have not functioned as they should in many respects and this has led to heavy strains on the banks.

As a result, Swedish authorities, like authorities in other countries, have been forced to take measures to facilitate the banks' funding. These measures are currently a precondition for the stability of the Swedish financial system remaining satisfactory.

To safeguard financial stability, the Riksbank is prepared to continue to supply the liquidity needed. At the same time, the new law on support for credit institutions means, for instance that support will be given to banks experiencing financial problems so severe that there is a risk of serious disruption in the financial system.

### The Riksbank's assessment of financial stability

THE PROBLEMS IN THE GLOBAL FINANCIAL MARKETS HAVE NOW CLEARLY AFFECTED THE SWEDISH FINANCIAL SYSTEM

The crisis in the global financial markets has worsened in the six months since the publication of the previous Stability Report. What began as a crisis in the US house mortgage market has now developed into a worldwide liquidity crisis, driven by distrust of banks' viability. At present there is a lack of confidence throughout the financial sector. The uncertainty has made financial market participants unwilling to trade with or lend to one another. When the markets function less well or not at all, individual financial institutions, banks in particular, are heavily hit. Moreover, one of the financial

system's primary tasks, channelling capital, is subjected to strains that also have consequences for the real economy.

The Swedish banks have not been exposed to any major extent to the markets or institutions that have been hardest hit. This explains why the Swedish financial market was less affected than those in many other countries during the first year of the crisis. For example, in an international perspective the Swedish mortgage bond market functioned well up to mid-September. As the crisis worsened during the autumn, however, the global lack of both confidence and liquidity has now also clearly affected the Swedish financial system. Various sections of the financial markets have also ceased to function at times in Sweden. Because of investors' uncertainty and risk aversion, there has been a greatly increased demand for Swedish government securities, for example, while demand for mortgage bonds has fallen. Moreover, banks in Sweden, like those abroad, have had growing difficulties in obtaining funds with longer maturities. Besides reducing the supply of corporate and household credit, this has increased the banks' borrowing costs.

#### FORCEFUL MEASURES BY AUTHORITIES AROUND THE WORLD

As a result of this global crisis of confidence and liquidity, the financial markets have not functioned as they should and in some cases have not functioned at all. Central banks around the world have therefore been obliged to provide liquidity in order to keep markets in working order. This has been done with general measures of various types, for instance augmented lending facilities in both domestic and foreign currency, and the possibility of using additional categories of security as collateral for such loans (see the box Measures taken by international authorities in autumn 2008). Countries have also had to find individual solutions to problems in various financial institutions.

The original intention was that these measures would improve the workings of the financial markets. As the crisis worsened, however, to a growing extent the measures have become a prerequisite for the functioning of the global financial system.

During the autumn, measures have been introduced by authorities in Sweden (see the box Measures taken by the Riksbank and other authorities in Sweden in autumn 2008). Action by the Riksbank has included facilitating Swedish banks' borrowing, particularly in the long term.

The Riksbank has also provided exceptional liquidity assistance for Kaupthing Bank Sverige and Carnegie Investment Bank with the aims of maintaining confidence in the credit and payment systems and safeguarding financial stability.

Extensive government support packages have also been presented in a number of countries. One feature of these packages has been to facilitate the functioning of the bank system through



capital injections and purchases of assets. The US Congress, for example, has approved a rescue package and the countries of the euro area have also agreed on a package for stabilising the financial system. In Sweden, the new law on support for credit institutions gives the government the possibility to take the measures necessary to strengthen the stability of the financial system. The government has, among other things, presented a guarantee programme to support the banks' and the mortgage institutions' medium-term funding, and set up a stability fund for the management of any future solvency problems in Swedish institutions.

#### WHAT IS NEEDED TO RESTORE CONFIDENCE?

Even though the measures taken by authorities are necessary to solve the acute situation in the financial markets around the world, they are not sufficient to restore confidence. In the longer run there are instead two requirements. One is increased transparency about which banks and other financial institutions it is that have problems. As long as this remains uncertain, agents will be unwilling to trade with one another and that will hamper the workings of the financial system. The other is the need for certain financial institutions to review their capitalisation and adjust it to the prevailing conditions, either by allocating capital or by reducing business.

The situation in Iceland is a clear example of the risks involved when the balance-sheet turnover in the banking system, in a small open economy with free capital flows, becomes too large in relation to the country's gross domestic product (see the box Developments in Iceland). In a brief period, large segments of the Icelandic banking system have been nationalised, the Icelandic currency has collapsed and Iceland's sovereign credit rating has been lowered. However, Swedish banks are not directly affected by what happens in Iceland.

For a normalisation of the situation, bank balance-sheets need to be stabilised internationally and the participants in the international financial markets need to understand the situation in individual institutions. If balance-sheet stabilisation is too rapid or vigorous, however, it could be a problem because it entails a reduction of bank lending to firms and households. That in turn has negative effects for real economic development.

For the major Swedish banks, the course of events has been less dramatic than for many international banks. Their losses have remained low, which is explained by the fact that they have not to any great extent been exposed to the institutions with the gravest problems. However, the markets that function poorly can still affect financially-strong banks like the Swedish ones, as they are sensitive to shocks that affect confidence. Therefore, the possibility cannot be ruled out that more Swedish banks need to review their level of capitalisation. In order to guarantee stability while this process is under way, Swedish authorities must therefore continue with their measures.

More information about the causes, course and management of the financial crisis in different countries will be found in the article "From local to global – today's crisis in the light of yesterday's", in which the current crisis is considered in relation to the Swedish bank crisis in the early 1990s.

#### THE GLOBAL ECONOMIC DOWNTURN IS ACCENTUATED BY THE FINANCIAL CRISIS

In the Monetary Policy Report in October,<sup>1</sup> the Riksbank considers that the global economic decline will be considerably deeper than was foreseen in the Monetary Policy Update in September, when the financial turbulence was already expected to contribute to an economic downturn in many countries. The financial market unrest has now become appreciably more pronounced and is judged to have more considerable negative real economic consequences internationally, which affects the prospects for Swedish exports. Moreover, greater uncertainty and poorer credit opportunities in Sweden tend to dampen household consumption and corporate investment. This is accompanied by a reduction of household wealth on account of falling prices for shares and housing. Taken together, this means that this year's and, above all, next year's activity in the Swedish economy will be lower than the Riksbank assumed earlier. The GDP growth rate for Sweden in 2009 is now expected to be 0.2 per cent. It is foreseen that the financial crisis will start to become less acute early in 2009, with an economic recovery towards the end of the year. Just when a recovery will occur is, however, very uncertain.

In an economic downturn, banks' earning potential is affected by, for example, a lower volume of lending and decreased financial activity. At the same time, weaker economic conditions influence the debt-servicing ability of households and firms, which can lead to credit losses for the banks.

#### THE RESILIENCE OF THE SWEDISH BANKS IS SOUND

Despite the global economic downturn and financial crisis, the Swedish banks are assessed as still having good resilience to deal with the situation that has arisen and future developments. The losses stemming from the international financial crisis have so far been limited, and both the banks' profitability and their financial strength are sound. At the same time, credit losses are still at a historically low level. In addition, most of the banks' borrowers have good resources for paying their loans, although the ability to pay is expected to deteriorate as economic activity weakens. This applies in particular to the corporate sector and to borrowers in the Baltic countries.

Although profitability is good, it has continued to decline during

<sup>1</sup> See Sveriges Riksbank (2008), Monetary Policy Report 2008:3, October.

the financial year and credit losses have begun to rise. The financial crisis has contributed to this situation in several ways. For instance, the value of debt securities has declined, which has had a negative effect on the results. Moreover, the falling share prices have led to a decline in securities-related commission income.

In addition, the banks' liquidity risks have increased as the crisis has affected Sweden to a greater extent. This is because it has become much more difficult to find funding at longer maturities. Moreover, funding costs have risen in that the costs for both deposits and wholesale funding have increased. At the same time, the Swedish banks have large loans falling due that require refinancing over the coming quarters. Despite the Swedish banks' capital situation and resilience being good, the measures taken by the Riksbank and other authorities are currently a necessary condition for ensuring satisfactory stability in the financial system.

#### CONSIDERABLE RISKS LIE AHEAD

There are a number of risks whereby the situation for the major Swedish banks could deteriorate in the future. The most tangible risks are presented below (not in order of importance). The arrows indicate to what extent the risks have increased or decreased since the previous Financial Stability Report.

##### ↑ **Developments in the financial markets**

The functioning of the financial markets is currently directly dependent on central banks around the world implementing various types of measure to supply liquidity, and it is also indirectly dependent on the government guarantee programmes in many countries. The situation is thus serious and entails substantial strain on the banks.

There is a risk that the situation in the financial markets will worsen. This could happen, for example, if several markets are affected in their way of functioning or if several market participants experience problems. Such scenarios could affect the banks both directly and indirectly. In the present situation, with continued great uncertainty regarding which banks and financial institutions that risk suffering problems, even minor negative events may have large contagion effects.

##### ↑ **The effects of a poorer development in the real economy**

There is great uncertainty over developments in economic activity in the future, for instance because of the difficulty in assessing the effects of the financial crisis on the real economy. In addition, there is a risk of a further credit crunch by the banks. This means that households and companies will find it more difficult to borrow money for consumption and investment, which will subdue economic activity.

Thus, there is a risk that the economic downturn will be more serious and more prolonged than is expected in the Riksbank's assessment, and that the economy will enter a negative spiral of falling activity and credit crunches.

↑	Increased risks
↗	Slight increase
→	Unchanged
↘	Decreased

A deterioration in economic activity would have a negative effect on the banks, both in terms of their earnings and of borrowers having less ability to pay. Above all, there is a risk that companies' payment defaults will increase more than is expected now. This applies in particular to the commercial property sector, where companies have been affected by the financial crisis through difficulties in obtaining funding and falling prices.

#### ↑ **Developments in the Baltic countries**

There is a risk of the economic downturn becoming protracted in the Baltic countries. The probability of this increases as the financial crisis continues. The Swedish banks' loan losses could then be much greater than anticipated.

### Stress tests

The financial crisis has greatly strained the global banking system in that liquidity at longer maturities has virtually disappeared from the markets. Even though stress tests are integral to risk management by banks and are used regularly by central banks and other authorities to assess how bank resilience would be affected by less probable events, it was difficult to predict the scope of the current crisis. This is partly because stress tests usually focus on the banks' credit and earnings risks. But even if the liquidity situation of the banks is not stress-tested directly, it is partly taken into account via its effects on earnings. Furthermore, one can test the effect of the strained liquidity situation in the form of higher funding costs.

Results of some of the stress tests performed by the Riksbank are presented in this report. The outcomes provide an indication of how the banks cope with different scenarios that start from their present strained situation.

The first scenario is a test of how greatly impaired creditworthiness among the Baltic borrowers affects the resilience of the banks that have large exposures in Baltic countries. According to the outcome, both SEB and Swedbank cope with a markedly impaired development in the Baltic countries. There is, however, some loss of resilience for SEB compared with the results in the two previous Stability Reports. Swedbank's resilience has increased as a consequence of the bank's new share issue.

In the second scenario, the Riksbank tests how the banks withstand a pronounced economic downturn in Sweden that impairs the creditworthiness of borrowers. According to this test, the resilience of the banks to such a development is still sound, though for most banks it has become slightly lower.

The third scenario explores how an extensive recession in Sweden, the Baltic countries and elsewhere would affect the banks' loan losses, earnings and resilience. The result indicates that the four major banks would cope even with such a combined scenario.

Finally, a test has been made of how the banks are affected by higher funding costs, a matter which has come under greater focus as a result of the financial crisis. A marked increase is assumed in the cost of bank funding via deposits as well as in the market. The result indicates that the higher funding costs would have an impact on the banks but not in a way that affects their viability.



### Financial markets – in brief

The global financial crisis has worsened since the previous Financial Stability Report was published. This happened in particular in connection with the US investment bank Lehman Brothers filing for bankruptcy. This meant that the confidence crisis affecting the banks intensified, which made them even more cautious in lending money to one another. The uncertainty also meant that financial institutions experienced serious problems in issuing securities with longer maturities and that the trading in some securities came to a total halt. During the autumn the crisis has to a greater extent than before spread to the Swedish financial markets.

As an effect of the worsening crisis, the banks, both in Sweden and abroad, have experienced greater difficulty in refinancing themselves at longer maturities, and interbank rates have risen. At the same time, the increased demand for risk-free assets has meant that the interest rate on government securities has fallen. The crisis has also decreased the demand for securities issued by non-financial companies and thereby curtailed companies' refinancing opportunities. In Sweden the borrowing costs for the companies that have succeeded in issuing have risen substantially. During the autumn the Swedish market for mortgage bonds has also functioned less efficiently than normal.

To alleviate the problems in the financial markets, the authorities in several countries have taken forceful measures. For instance, central banks have established different types of facilities to improve the functioning of the interbank markets, and in several countries the governments have presented comprehensive rescue packages to re-establish confidence in the financial markets.

All in all, the uncertainty in the global financial markets is expected to remain high for a long time to come. Confidence between financial institutions will not be restored until it becomes clear which banks and financial institutions have problems and until the banks' capital situation has adjusted to the prevailing circumstances.

Moreover, the financial crisis is expected to have substantial consequences for the real economy.<sup>2</sup> However, it is difficult to estimate the effects on the real economy and there is great uncertainty. There is a risk that the economic downturn will be deeper than assumed, which could mean that credit losses increase.

<sup>2</sup> Sveriges Riksbank 2008, "Monetary Policy Report 2008:3", October.

Developments in the financial markets affect both banks and their borrowers. This chapter begins with an overall description of developments in the financial markets since the previous Financial Stability Report was published. This is followed by a description of what has happened on selected sub-markets globally and in Sweden during the same period. The concluding section illustrates the risks on the financial markets.

## The crisis in the financial markets

**The financial turmoil that has lasted for more than a year began with a subprime crisis in the US mortgage market.** For a long period of time US financial institutions had conducted aggressive lending to households with weak credit histories after which the loans were repackaged and sold to investors around the world. When the credit losses on these loans turned out to be unexpectedly large, it became clear that the investors had largely underestimated the risks.

**The subprime problems were primarily a US problem, but as the loans had been sold on outside the United States, the turmoil took a global hold right from the start.** As no one knew where the losses would arise, a situation quickly arose where confidence in banks and other financial institutions declined and they became cautious in lending money to one another. Instead, the institutions began hoarding their liquidity to meet their own obligations and to deal with potential speculations that they were exposed to subprime loans. As a result the functioning of the interbank markets deteriorated, to the extent that the banks experienced problems in refinancing themselves at longer maturities, and consequently interbank rates soared. Several central banks provided additional liquidity to the interbank markets to ease the distress. This had the desired effect to some extent, but did not eliminate the distrust that had arisen among the banks.

**An increasing number of asset types and an increasing number of geographical markets were affected when borrowers with better credit ratings experienced problems.** The problems were no longer merely a question of low credit ratings among US borrowers. The ability of European borrowers to pay also began to be questioned. In connection with the failure of the investment bank Bear Stearns in March, the turmoil reached its first peak.<sup>3</sup> After the Federal Reserve contributed to JP Morgan being able to take over Bear Stearns, conditions in the credit markets eased temporarily and the interbank market began to function slightly better. At the same time, credit risk premiums declined considerably. It appeared as though confidence was returning to the financial markets.

<sup>3</sup> See Financial Stability Reports 2007:2 and 2008:1 for further information on what happened during the second half of 2007 and in spring 2008.



**However, during the summer the storm clouds began to gather once again in connection with the US government being forced to take over the housing agencies Fannie Mae and Freddie Mac.** The US government tried early on in the summer to solve the agencies' problems by providing a government guarantee to both companies. This guarantee contained an extended liquidity guarantee and a temporary permit for the government to buy shares in the agencies. Despite this assurance the investors' confidence was undermined and the value of the agencies' shares plummeted, which made it difficult for the housing agencies to acquire new capital. At the beginning of September the agencies were placed into conservatorship by the federal government (see the box The US housing agencies Fannie Mae and Freddie Mac).

**The crisis accelerated further when investment bank Lehman Brothers filed for bankruptcy in September.** This occurred after unsuccessful negotiations with other banks regarding a takeover of the bank and in the absence of government guarantees against future losses. The lack of confidence in the banks intensified and became worse than ever before. The uncertainty meant that financial institutions experienced serious problems in issuing even securities with shorter maturities and that the trading in some securities completely disappeared. This meant that the banks borrowed increasingly large volumes on the interbank market at ever shorter maturities to manage their funding needs. Share prices plummeted on stock markets around the world as the uncertainty began to centre on whether financial institutions would survive. The financial crisis moved from being a US subprime crisis to becoming a global confidence and liquidity crisis with effects on the whole of the global financial system.

**This led to a number of US and European banks experiencing severe problems.** Among the banks and financial institutions that have been taken over or taken under government control is Merrill Lynch, which went from having been a prospective buyer for Lehman Brothers to instead being acquired by Bank of America. A further example was the insurance company American Insurer Group (AIG), which received a two-year loan of USD 85 billion in return for the government taking over 80 per cent of the shares in the company. There were five large investment banks in the United States at the beginning of the year, but none of these remain.<sup>4</sup> In Europe the German Hypo Real Estate, the British Bradford & Bingley and parts of the Belgian Fortis institutions have been nationalised. In addition, Dexia received capital injections and later also a government loan guarantee from Belgium, Luxembourg and France. Among the Nordic countries, the Icelandic government

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<sup>4</sup> Bear Stearns was taken over by JP Morgan, Lehman Brothers was declared bankrupt and Merrill Lynch was taken over by Bank of America. The remaining two, Goldman Sachs and Morgan Stanley, have been converted into commercial banks.

took over the country's three largest banks; Landsbanki, Glitnir and Kaupthing (see the box Measures taken by international authorities in autumn 2008).

**During the autumn the Swedish financial markets have been markedly affected by the financial crisis.** Swedish banks have also had greater difficulty funding themselves in the long term and interbank rates have increased. Despite the fact that the situation has worsened in Sweden, too, it is important to note that the problems are not domestically generated and that the Swedish financial market has fared relatively well in an international perspective. The banks in the Swedish market still have confidence in one another and lend money to one another.

**The financial crisis has required extraordinary measures to be taken by the authorities.** Central banks have continued to act to improve and maintain the functioning of the financial markets. In addition, governments have implemented extensive rescue packages to prevent further failures and to ease the strained situation that arose when several financial institutions in the United States and Europe in particular experienced substantial problems that in some cases have led to bankruptcy. In Sweden the Riksbank, the Swedish National Debt Office, Finansinspektionen (the Swedish Financial Supervisory Authority) and the government have taken measures to ensure the functioning of the Swedish money and bond markets. The Riksbank has, for instance, offered loans in both USD and SEK and the government has presented a stability plan that contains both a stability fund and a guarantee programme (see the box Measures taken by the Riksbank and other Swedish authorities in autumn 2008).

## The US housing agencies Fannie Mae and Freddie Mac

**The mortgage crisis in the United States has led to the US housing agencies Fannie Mae and Freddie Mac being nationalised. Their operations have over many years grown to such an extent that they have become very important for the entire US economy. The discussion below describes their special function, how they could grow so large and why the government finally had to take over them.**

### *Support to the housing market*

The US housing agency Fannie Mae was established after the Great Depression in the 1930s and Freddie Mac was established after the Savings and Loan crisis in the 1980s. The background was the willingness to make it easier for the general public to obtain mortgages. The housing agencies' business model is based on buying mortgages from banks and then issuing mortgage bonds with the mortgages as collateral. If the holders of the mortgages are unable to repay their loans, repayment is guaranteed by Fannie Mae and Freddie Mac. By guaranteeing the mortgages in this way, the housing agencies take over the credit risks from the banks, while the housing market receives fresh money.

### *Implied government guarantee*

Despite the fact that both agencies were privatised and listed on the stock market, they have always had close ties to the Federal Government. For example, the US Congress regularly sets a number of goals that the agencies are to meet, including a requirement that they must buy a certain share of mortgages from low-income earners and ethnic minorities. This has meant that they have been perceived as semi-private, government guaranteed companies. As a result of this implied government guarantee, both agencies have been able to expand their operations substantially without investors demanding a

higher return in the form of higher interest rates. The shareholders have thus had an incentive to increase their risks without being responsible for the costs.

### *New types of loans*

At the beginning of the 2000s, new more risky types of loans began to appear in the mortgage market, where in particular the requirement for a down payment had been reduced significantly. The reduced requirement for a down payment was the factor that increased the opportunity for many low-income households and those with a limited ability to pay to take out mortgages. To begin with it was mainly private market agents who were willing to take on the risk entailed in buying the new types of mortgages. As the new types of loans spread, private market agents began to dominate to an increasing extent in the sector that Fannie Mae and Freddie Mac were created to support, namely lending to low-income households. This brought political pressure to bear on Fannie Mae and Freddie Mac to buy these loans too. For this to be permitted, it was necessary for the highest risk part of the loan to be insured. Despite the insurance however, the low down payment meant that these mortgages were much more sensitive to changes in house prices than traditional loans.

### *Mortgage crisis begins*

In 2007 house prices in the United States began to fall. It gradually became increasingly apparent that many investments made in recent years proved much more risky than had been originally estimated. At the same time, the mortgage crisis meant that hardly any investors were prepared to buy mortgage bonds unless they came with an (implied) government guarantee. Fannie Mae and Freddie Mac now really played a decisive role in the mortgage market by being the only agencies that could buy mortgages. The politicians gave them a mandate to buy even more loans than before in the hope that

they could stabilise the housing market. The evident government involvement and the fact that Fannie Mae and Freddie Mac were the only agencies that could still issue mortgage bonds meant that the implied guarantee became increasingly clear. Both agencies appeared increasingly to be instruments of the Federal Government's housing policy.

#### *Losses and confidence crisis*

As house prices fell, however, the institutions' losses increased. Large capital injections were necessary, but no investor was prepared to inject new capital when the share price was constantly falling. Although the credit risk was still considered to be very small, many foreign investors also wanted to be on the safe side and chose to invest in government securities rather than in Fannie Mae's and Freddie Mac's bonds. This meant that their borrowing costs rose substantially in August 2008, which created even larger losses.

The high borrowing costs and the large capital requirement risked preventing Fannie

Mae and Freddie Mac from continuing to buy mortgages. This would have severe consequences for both the housing market and the banks. Mortgage costs would increase and house prices would fall even more. Towards the end of summer 2008 it became increasingly clear that only the Federal Government could stop this vicious circle.

#### *Government intervention*

The alternatives at hand were total nationalisation of the two housing agencies or a semi-nationalised solution in the form of conservatorship. Nationalisation would have required that the Federal Government explicitly guaranteed the agencies' outstanding bonds, which would have meant that the outstanding government debt doubled. Instead they decided on conservatorship combined with a number of government guarantees and support. The guarantees entail the government keeping Fannie Mae and Freddie Mac well-capitalised and liquid as long as they are under conservatorship.

## Effects of the aggravated crisis in the money market

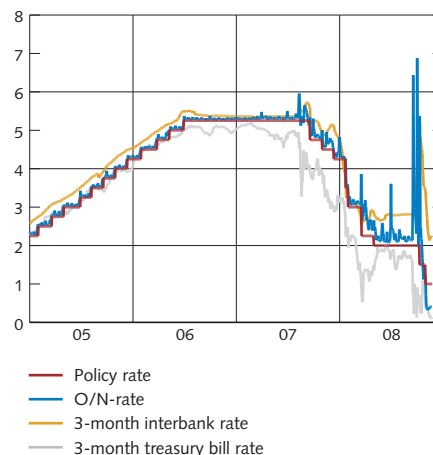
**The interest rates the banks charge one another, the interbank rates, rose substantially in the wake of the confidence crisis that arose after Lehman Brothers collapsed.** In both the United States and Europe the problems in the interbank market have resulted in the money market occasionally functioning unsatisfactorily, and the overnight rate in the United States in particular has varied to a greater degree than before (see Chart 1:1). Interbank rates on longer maturities have also risen, and the difference between a three-month interbank rate and the expected policy rate, the basis spread, has reached a record high in many countries (see Chart 1:2). In Europe, interest rates have also been affected by the European banks' large demand for dollars. This has led to market participants demanding euro to exchange (swap) for dollars. The increased demand for euro has in turn pushed up euro rates. Despite the fact that the Federal Reserve and the European Central Bank (ECB) have supplied liquidity and extended various types of loan programme in dollars, the situation has not improved significantly for loans with longer maturities. However, in the euro area the ECB's measures have contributed to holding down interest rates on the overnight market (see Chart 1:3).

### Interbank rates have risen in Sweden, too, but not to the same extent.

Unlike the euro area, the overnight market in Sweden has functioned during the entire course of the financial crisis. But the tomorrow-next (T/N) interest rate has continued to show a more volatile pattern than before and has at most amounted to 170 basis points above the repo rate (see Chart 1:4). As is the case in other countries, it has only been possible for the Swedish banks to fund themselves at short maturities in the interbank market, as the possibility for long-term funding has almost disappeared. To ease the banks' funding, the Riksbank has offered loans against collateral in SEK with three-month and six-month maturities. In addition, the Riksbank's interest rate cuts in October have contributed to a slight fall in interbank rates. In relation to the market expectations of the future policy rate, however, the interbank rates are still very high. For example, the difference between a Swedish three-month interbank rate and the expected policy rate amounts to around 120 basis points (see Chart 1:2). But the difference is much lower than, for instance, in the United States and the euro area, where it is around 170 basis points in the respective countries.

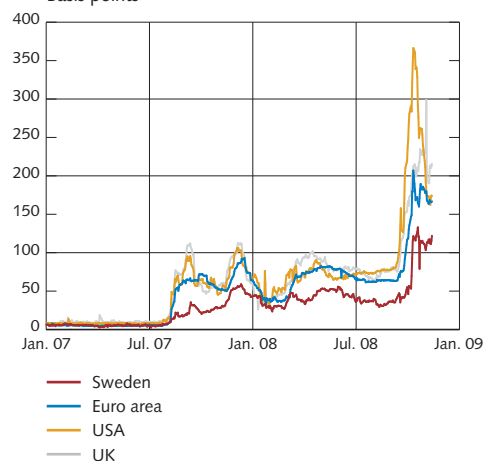
**At the same time, demand for risk-free assets in the form of treasury bills has been high, in the United States in particular.** This has led to the interest on these securities falling to close to zero. For Sweden, the large demand for risk-free assets has led to the Swedish banks, which act as retailers for the Swedish National Debt Office, suffering a shortage of treasury bills. This is also shown in the responses to the

**Chart 1:1. Selection of interest rates in the US money market**  
Per cent



Source: Reuters EcoWin

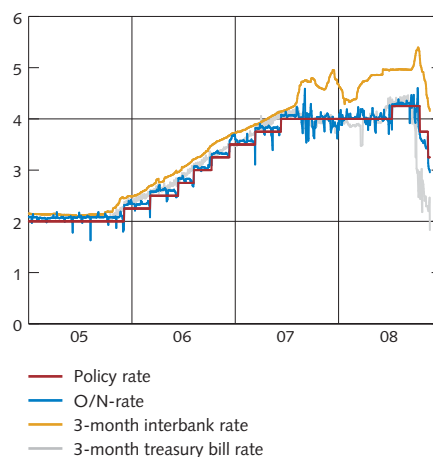
**Chart 1:2. Difference between interbank rate and expected policy rate**  
Basis points



Note. In Sweden the difference is represented by the difference between the three-month Stibor and overnight index swap (STINA) rate.

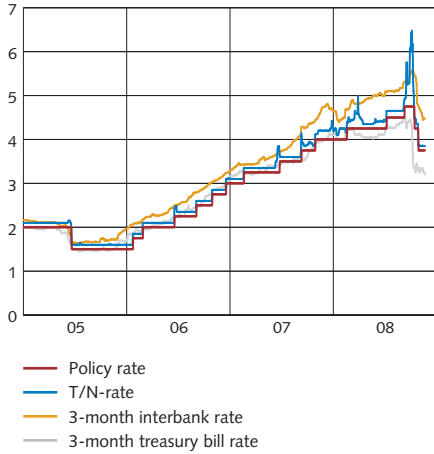
Source: Bloomberg

**Chart 1:3. Selection of interest rates in the euro area money market**  
Per cent



Source: Reuters EcoWin

**Chart 1:4. Selection of interest rates in the Swedish money market**  
Per cent



Note. Swedish tomorrow/next (T/N) rate, that is, the interbank rate from tomorrow to the next day.

Source: Reuters EcoWin

Riksbank's risk questionnaire, where only 20 per cent of the participants in the Swedish fixed-income market consider that the market for treasury bills is functioning satisfactorily, compared with 75 per cent six months ago (see the box Swedish market participants' views of risks and the functioning of the Swedish markets). However, a large share of the problems has been alleviated by the Swedish National Debt Office, in consultation with the Riksbank, making additional issues of treasury bills.

**The US money market funds that normally invest in commercial paper were affected by large withdrawals in September.** The reason for this was that a number of money market funds had invested in paper issued by Lehman Brothers and they were then forced to write down the value of their fund holdings in connection with Lehman's bankruptcy. The money market funds substantially reduced their investment in commercial paper issued by financial institutions and instead demanded risk-free assets such as treasury bills. This aggravated the liquidity situation for the banks as it then became both more difficult and more expensive to refinance through this channel. The maturity for the issues that could be made declined substantially to around one to four days.<sup>5</sup> The problems in the US commercial paper market have created problems in the euro area and in Sweden, as a large share of the banks normally use this market to for funding. The Federal Reserve has established two new facilities to support the commercial paper market. One is a fund<sup>6</sup> that will invest in commercial paper to make it easier for banks to fund themselves. The other is a programme<sup>7</sup> to support money market funds experiencing problems with investors withdrawing their money.

<sup>5</sup> <http://www.federalreserve.gov/datadownload>.

<sup>6</sup> Commercial paper funding facility (CPFF).

<sup>7</sup> Money market investor funding facility (MMIFF).

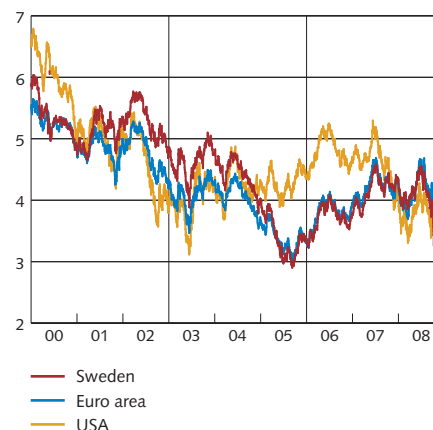
## Effects of the aggravated crisis in the bond market

**Government bonds yields have fallen globally since the most recent Financial Stability Report** (see Chart 1:5). The main reason for this is an increased unwillingness to take risk and thereby a large demand for assets perceived to be safe such as government bonds. At the same time, the earlier anxiety regarding rising inflation has declined, and the focus is now instead on the global economic downturn and to what extent it is aggravated by the financial crisis. To alleviate the consequences of the ongoing financial crisis, the Riksbank has cut the repo rate on two occasions by a total of one percentage point to the present 3.75 per cent, which has also contributed to the decline in the interest rate for Swedish government bonds.

**The substantial fall in demand for corporate bonds in September led to issues declining substantially, primarily in Europe but also in the United States.** As a result companies with large outstanding volumes of bonds and certificates were facing difficulties in refinancing their debts when these securities matured. In the euro area the possibility to issue high-yield corporate bonds in principle disappeared at the end of September.

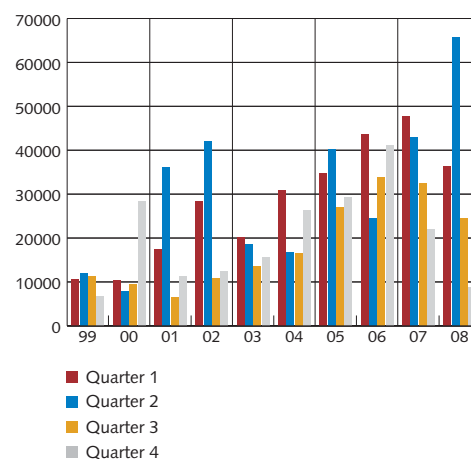
**The demand for corporate bonds has declined significantly in Sweden, too, and borrowing costs for the companies that have succeeded in issuing them have risen substantially.** Swedish companies therefore only issued bonds to a value of SEK 25 billion during the third quarter of this year (see Chart 1:6). However, in total the issuance volume during the first nine months of this year increased compared with last year which is mainly due to unusually high issue volumes during the second quarter. The high issue volume during the second quarter is partly due to a single institution issuing large volumes (just over 25 per cent of the total volume) and partly due to the two previous quarters being characterised by slightly lower volumes than before. Financial institutions have dominated the supply of corporate bonds over the year, while issues by other companies have fallen by half compared with last year. The difficulty in finding funding in the market has led to companies instead making use of their credit facilities with the banks. This has in turn put further pressure on the banks, which thus require more funding. To make it easier for the banks to lend money to companies, the Riksbank has established a new credit facility where the banks can use commercial paper with a maturity of up to one year as collateral to a greater extent than before.

Chart 1:5. Ten-year government bond yield  
Per cent



Source: Reuters EcoWin

Chart 1:6. Total issued on the Swedish corporate bond market  
SEK million

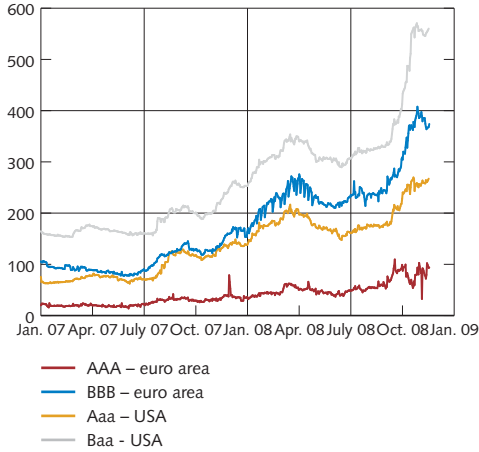


Note. The statistics refer to all corporate bonds with a maturity of more than 18 months not issued by governments or in the mortgage institutions' benchmark programme. The outcome for Q4 refers to issues up to 18 November 2008.

Source: Bloomberg

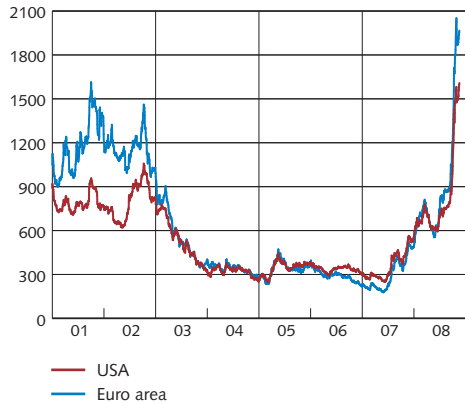


**Chart 1:7 Credit spreads for corporate bonds in the United States and the euro area**  
Basis points



Note. Definition according to Moody's and Standard & Poor's.  
Source: Reuters EcoWin

**Chart 1:8 Credit spreads for high-yield corporate bonds in the United States and the euro area**  
Basis points



Note. Definition according to Merrill Lynch. High-yield is classified by Moody's/Standard & Poor's as Ba/BB or lower.  
Source: Reuters EcoWin

**Chart 1:9. Global default rate**  
Per cent



Note. Concerns companies classified by Moody's/Standard & Poor's as Ba/BB or lower. The majority of the number of defaults is among companies classified as Ba/BB or lower, and the chart accordingly shows these companies.  
Source: Reuters EcoWin

**The difference between the corporate bond yield and the yield on government bond, the credit spread, has increased** (see Charts 1:7 and 1:8). This is both because the government bond yield has fallen, and the yield on bonds issued by companies has risen on the whole. This applies in particular to high-yield bonds. The credit spreads for these bonds are now higher than in the IT crash at the beginning of the decade. The increased credit spreads signal an increased unwillingness to take risk and an anxiety that the economic downturn will be deeper than was earlier feared. This means that expectations of an increased number of bankruptcies globally have increased and contributed to an increase in corporate bond yield. In September the default rate amounted to 2.8 per cent, which can be compared with the record-low levels at the beginning of the year (see Chart 1:9).

**The reduced international demand for bonds issued by financial institutions has also affected demand for covered bonds in Sweden.**

Since the crisis began just over a year ago, the market for bonds in Europe has functioned unsatisfactorily or not at all. This has resulted in a very low turnover in the trade in covered bonds and a substantial decline in the number of issues. In an international perspective, the Swedish mortgage bond market has functioned well up to September, when the crisis began to affect Sweden to a greater degree than before. This meant that the demand for mortgage bonds declined and the market makers found it difficult to price them. During the autumn the turnover has declined significantly and the market has functioned relatively poorly. This picture is also confirmed by the results of the Riksbank's risk questionnaire. To alleviate the problems in the covered mortgage bond market, the Swedish National Debt Office has invested the funds it receives from its extra issues of treasury bills in covered bonds, while the Riksbank is now to a greater extent accepting covered bonds as collateral. The measures taken by the Riksbank and the Swedish National Debt Office together mean that Swedish authorities have lent around SEK 500 billion against collateral primarily in covered bonds. This sum can be compared to the total outstanding stock of covered bonds in Sweden, which at the end of August was estimated to be approximately SEK 1000 billion. It means that Swedish authorities currently hold about half of the outstanding stock. In addition, Finansinspektionen has changed the regulations for calculating the

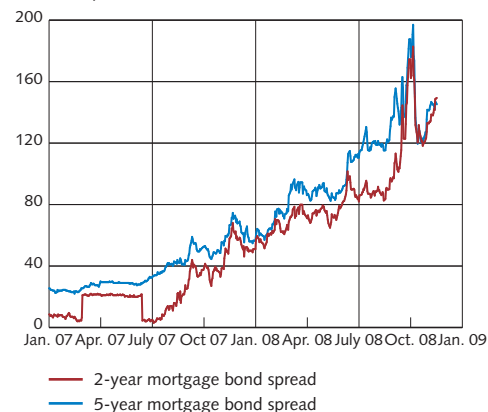


discount rate, which means that life assurance companies can calculate the discount rate as an average of the yield on government bonds and the yield on covered bonds.<sup>8</sup> This opens the way for life assurance companies to increase their investments in mortgage bonds.

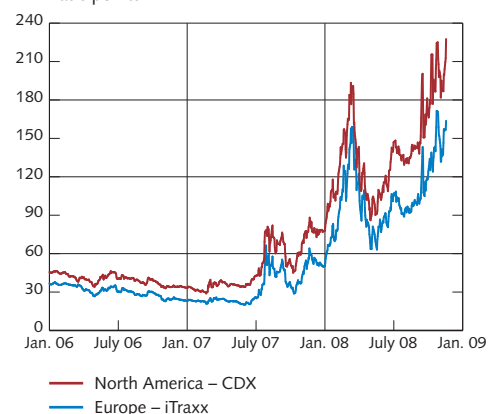
**Over the year the covariation between mortgage bond yield and government bond yield has declined.** This is reflected in the fact that mortgage bond yield has not fallen to the same extent as the government bond yield. However, the difference declined slightly in October when mortgage bond yield fell in connection with Finansinspektionen's proposal. During the crisis the difference has at most been almost 200 basis points in comparison with 10-30 basis points prior to the crisis (see Chart 1:10). The large difference during the crisis can also be compared with an historical average. Between 1993 and 2007 the difference between the yield on a mortgage bond and that on a five-year government bond was around 50 basis points, with the difference on a two year bond being around 30 basis points.<sup>9</sup> The covariation between the mortgage bond yields for different institutions has also fallen during the crisis. The Swedish market for mortgage bonds is among those with the highest credit rating in the world (see the box Swedish covered bonds). This means that the yield on these bonds should fall in the long term and provide a more fair picture of the valuation of credit risk.

**The premiums on credit default swaps (CDS), which is a kind of credit insurance, have risen substantially during the autumn** (see Chart 1:11). This applies above all to the CDS premiums for financial institutions. When US investment bank Lehman Brothers filed for bankruptcy in mid-September, the CDS premiums rose substantially for other banks, too, but mainly for US investment banks (see Chart 1:12). The premium for a CDS normally measures the credit risk in a company's underlying assets and is used as an insurance against the credit risk in corporate bonds.<sup>10</sup> The market for CDS contracts for individual companies can be relatively illiquid and a few deals may therefore lead to larger fluctuations in the premiums of CDS contracts, which can make them difficult to interpret.

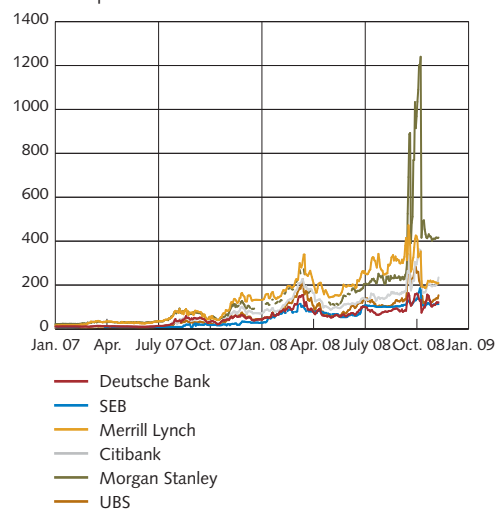
**Chart 1:10. Difference between mortgage bond yield and government bond yield with two and five years maturity respectively**  
Basis points



**Chart 1:11. Premiums in the CDS index.**  
Basis points



**Chart 1:12 Premiums in CDS for a selection of banks**  
Basis points



<sup>8</sup> According to a decision made by Finansinspektionen on 10 November 2008.

<sup>9</sup> Prior to December 2005 the credit rating was based on the institution issuing the bonds, while it is now based on the cover pool. This means the credit rating is now higher.

<sup>10</sup> For a more detailed review of different types of credit derivative, see the article "Trading activity in credit derivatives and implications for financial stability" in Financial Stability Report 2006:2.

**Chart 1:13. Premiums in the CDS index for emerging markets.**  
Basis points



Note. The CDS index is represented by Markit's CDX index for emerging markets. The index consists of credit ratings for countries in the regions of Latin America, eastern Europe, the Middle East, Africa and Asia.

Source: Reuters EcoWin

**Emerging markets have also been affected by the financial crisis to a greater extent.** The yield on government bonds issued by emerging markets that show weaker economic activity has risen, as have the CDS premiums for these countries (see Chart 1:13). Most emerging markets were relatively unaffected by the financial turbulence up until the end of the summer, which is because the banks in these countries were not exposed to the structured products that had problems. But as in other countries, their banks have now also suffered difficulties in finding long-term funding. In addition, the global economic slowdown that is now affecting the emerging markets' export prospects and thereby growth. This could also reduce the interest among foreign investors. In addition, the global banks' funding problems may cause them to move capital to their home countries, which could result in an increased capital outflow from emerging markets. Moreover, a reduced risk propensity generally tends to curb foreign investors' interest in emerging markets.

## Swedish covered bonds

**C**ompared with many other countries, the Swedish market for covered bonds has functioned relatively well during the current crisis. But it has not been unaffected. The difference in price between covered bonds and government bonds has increased significantly, and the banks have only issued very small volumes of new covered bonds. Covered bonds are, however, a good and relatively cheap form of funding for the banks.

Since the beginning of July 2004, Swedish banks and credit market companies have been able to issue covered bonds. A covered bond is first of all a claim on the issuing institution. In the event of the issuer not being able to meet its obligations, the holder of the bond has priority to specially-selected collateral, that is known as the cover pool, which is linked to the covered bonds. The cover pool consists mainly of different types of mortgage loans. To some extent the collateral volume also consists of loans to central governments and municipalities.

The purpose of covered bonds is to give the general public access to first and foremost mortgages at a low costs by giving Swedish banks and credit market companies access to the same competitive funding that has long existed in other European countries. All four major banks or their mortgage institutions have permits

from Finansinspektionen (the Swedish financial supervisory authority) to issue covered bonds. The four major banks' outstanding volume of covered bonds amounts to around SEK 900 billion. This corresponds to 30 per cent of the total outstanding securities issued by the banks and is by far the largest source of funding for mortgage loans.

There are several advantages with covered bonds. Firstly, covered bonds are safeguarded by a modern and well-defined regulatory framework. This regulates, for instance, the maximum loan-to-value ratio on the collateral in the cover pool, what types of collateral can be included in the cover pool and how this can be composed (see Table B1). In addition, the issuer must keep a register of the covered bonds and the cover pool. This register must be updated daily. The regulations also require that an independent inspector, appointed by Finansinspektionen, must oversee the operations and ensure that the cover pool meets the requirements. It is essential that the cover pool maintains a high quality to meet the purpose of the covered bonds.

Secondly, the holder of a covered bond has a priority claim on a specific cover pool if the issuing institution should default on payments. This means that covered bonds differ

**Table B1. Eligibility criteria for the assets that can be included in the cover pool**

Type of collateral	Highest loan-to-value ratio, per cent	Maximum percentage of cover pool
Property, land leaseholds and tenant-owner apartments for housing purposes.	75	100
Property for agricultural purposes.	70	100
Property, land leaseholds and tenant-owner apartments for commercial purposes	60	10
Public loans to local authorities or States	100	100
Supplementary securities, e.g. liquid claims on States and municipalities	100	20

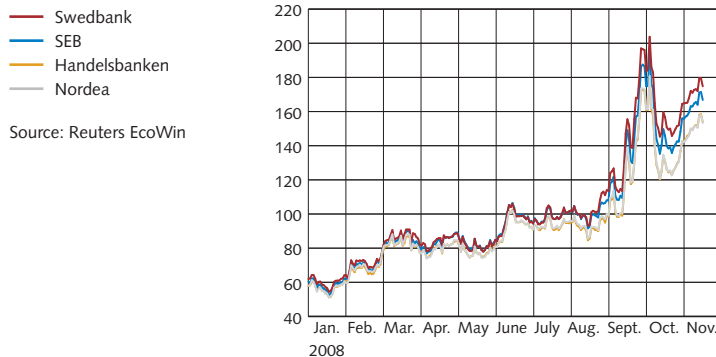
Source: Covered Bonds (Issuance) Act (2003:1223).

from traditional corporate bonds where the holder only has a claim on the issuer. Thirdly, the cover pool linked to the secured bond is dynamic. This means that collateral that is not up to standard is removed from the cover pool and can be replaced with new. This is not the case with, for instance, Residential Mortgage-Backed Securities (RMBS), which are securities that have property as underlying collateral. Nor is an RMBS covered by the same standardised regulatory framework; it is regulated by specific agreements between the parties in the transaction. Fourthly, covered bonds, unlike RMBS, have the attractive characteristic that the credit risk remains in the lender's balance sheet. This is of course something that reinforces the incentive to

make a considered credit risk assessment of the assets in the cover pool. There is thus good reason to regard covered bonds as having a high credit quality.

As the holder of a covered bond has a priority claim on a specific cover pool, it is reasonable that the credit risk is assessed entirely on the basis of the credit quality of the cover pool, and is not affected by the issuing institution's credit rating. This reasoning is reinforced by the fact that all covered bonds in Sweden enjoy the highest credit rating from agencies such as Moody's and Standard & Poor's. For the same reason, it is difficult to justify the current price difference between covered bonds issued by different institutions, other than that this reflects market and liquidity risk. The difference between government bonds and covered bonds appears unwarrantedly high, although it has declined recently (see Chart B1).

**Chart B1. Difference between mortgage bonds with maturity in June 2011 and three year government bond**  
Basis points

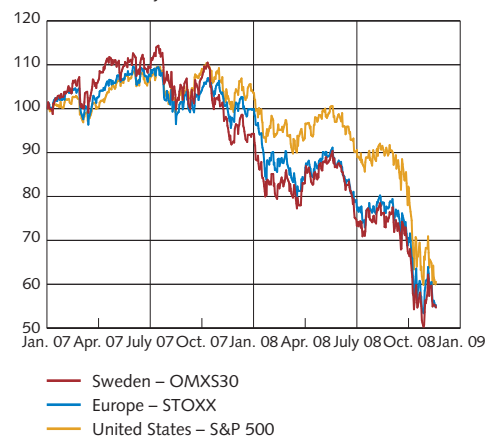


## Stock markets have been volatile

The stock market has continued to be marked by reduced risk propensity among investors and by plummeting share prices (see Chart 1:14). Share prices rose temporarily during the second half of July and at the beginning of August, only to fall heavily once again. In some countries there are suspicions that speculation in falling share prices, known as short selling, has aggravated the stock market fall. This applies in particular to financial companies, which led to intensified monitoring of short selling in many countries, and it was even prohibited in the United States and the United Kingdom, as well as a number of other countries. The stock market uncertainty is expected to continue. Implied volatility<sup>11</sup> increased substantially during the autumn as a result of the general turbulence in the financial markets (see Chart 1:15). As economic activity has slowed down, growth in company profits is expected to be lower. The value of the companies in terms of P/E ratios<sup>12</sup> has declined during the autumn and is now well below the historical average since 1990 (see Chart 1:16).

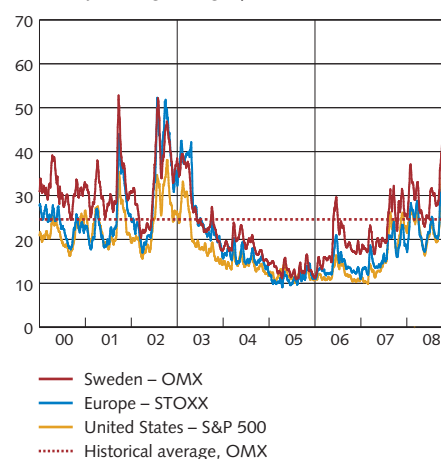
In Sweden, too, uncertainty over the development of the financial crisis and its effects on economic activity has contributed to high volatility in the stock market. The stock markets have reacted strongly to rumours, which have affected Sweden in general and bank shares in particular. As in the United States and Europe, the price falls are due to investors' anxiety that the banks will suffer credit losses or liquidity shortages. This has also led to extensive short selling of bank shares even in Sweden. However, no ban has been introduced, although Finansinspektionen has increased its monitoring. So far this year, Swedish listed companies' profits have declined by just over two per cent compared with last year. Despite the fact that the market is expecting a substantial slowdown in economic activity in the future, they believe that profits will increase over the coming two years.<sup>13</sup> However, there is considerable uncertainty regarding the companies' future earnings. The falling P/E ratios indicate a lower valuation of the companies, which could indicate that the yield required by shareholders has increased more than the increase in profits expected by the market. This can in turn be explained by uncertainty measured in terms of implied volatility being substantial during the autumn.

Chart 1:14. Stock market developments  
Index, January 2007=100



Source: Reuters EcoWin

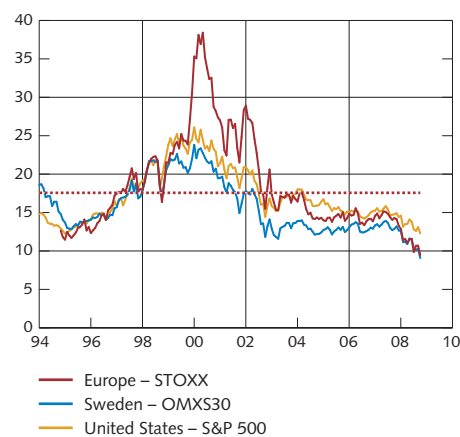
Chart 1:15. Implied stock market volatility  
10-day moving average, per cent



Note. Historical average refers to the period January 1996 to October 2008

Source: Bloomberg.

Chart 1:16. P/E ratios



Note. Historical average refers to the period January 1996 to October 2008

Source: Reuters EcoWin

11 Implied volatility describes the market participants' expectations of future variations in stock market rates and is calculated from share option prices.

12 The P/E ratio (price/earnings) relates the price of equity to the expected development of earnings.

13 The profits of the 70 largest companies listed on the OMX are expected to rise by around thirteen per cent in 2009 and by eight per cent in 2010, according to the SME database in October 2008.

## Uncertainty has also been visible in the foreign exchange market

**The dollar increased in value substantially against other currencies in September and October, as it is regarded as safe haven in times of considerable uncertainty.** This means that investors with less risk propensity have sold other currencies in favour of the dollar. One contributory factor has been the increasingly clear spread of the financial crisis to Europe during the autumn and the fact that economic outlook there has deteriorated. This also means that larger interest rate cuts are expected in Europe than in the United States, which has contributed to investors selling euro and buying dollars. Further causes behind the dollar appreciation have been an increased demand for assets in dollars and the fact that the oil price has fallen.

**At the same time, smaller countries' currencies have weakened.**

This is common in times of uncertainty, when investors turn to what are perceived as safe havens. This has affected emerging markets in particular, including those in eastern Europe. But both the Swedish and Norwegian krona have been affected, too. In addition, the Danish central bank has chosen to raise its policy rate to defend the fixed exchange rate against the euro.

**Trading in the Icelandic currency ceased to function in connection with the Icelandic authorities taking over the three largest Icelandic banks in October.** To begin with the exchange rate depreciated substantially when investors sold their holdings of the currency and interest generally declined as a result of the considerable uncertainty. In order to temporarily solve the problems of the currency not being priced on the market, the Icelandic central bank has begun holding daily auctions to try to give an indicative level of the exchange rate. In line with an agreement with the International Monetary Fund (IMF), the central bank has also raised the policy rate substantially to stabilise the foreign exchange market (see the box Developments in Iceland).<sup>14</sup>

<sup>14</sup> See Sedlabanki's press release dated 28 October 2008.

## Developments in Iceland

**A**t the end of September 2008, the global financial crisis hit Iceland with full force. In a short period of time, the central government was forced to take over large sections of the banking system, while the Icelandic currency depreciated substantially and the Icelandic government's credit rating was reduced. This box provides a background to why Iceland was so hard hit by the financial crisis.

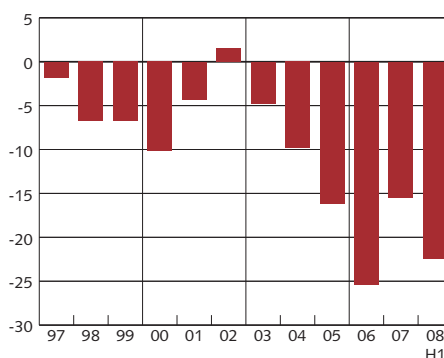
### Background to the crisis

Developments in Iceland are not merely the result of the global financial crisis; they originate in a strong domestic economic expansion during the period 2003 to 2007, combined with low risk premiums in international capital markets. The economic upturn in Iceland began with large investments in the country's aluminium industry. Private consumption increased substantially in the wake of this investment boom, house prices and private sector indebtedness rose rapidly and the current account deficit grew (see Chart B2). The large investments and the rapid growth in credit led to the Icelandic economy overheating and inflation rose far above the central bank's target. To slow down the economy and bring down inflation the central bank raised its policy rate. However, the interest rate increases made it more attractive for investors to borrow money in countries with a low interest rate and invest them in Icelandic debt securities with a higher interest rate, this is known as carry trade. This led to large capital inflows to Iceland, which financed its growing current account deficit and large economic imbalances were built up.

Parallel to the overheating, the Icelandic banks expanded rapidly outside of Iceland, primarily in the Nordic countries and the United Kingdom. This occurred both via corporate acquisitions and by opening own branches. The banks funded their expansion largely by borrowing on the international capital markets, but also through cheap new issues which were made possible by large stock-price increases. The fact that the CDS premiums for the Icelandic

banks rose during this period can be interpreted to mean that participants in the financial markets assessed this expansion as risky (see Chart B3). In 2007 the cost of wholesale funding rose substantially. This led to some of the banks starting deposit programmes in other countries, including Sweden, to obtain funding. The rapid expansion led to the Icelandic banking system's assets finally being nine times as large as the Icelandic gross domestic product (see Chart B4).

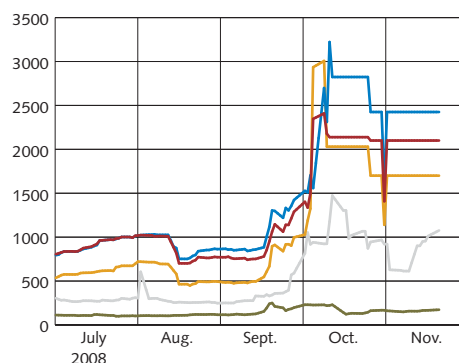
**Chart B2. Current account as a percentage of GDP**  
Per cent



Note. 2008 refers to the first half of the year.

Source: Reuters EcoWin

**Chart B3. CDS premiums for Icelandic banks**  
Percentage points



— Kaupthing  
— Glitnir  
— Landsbanki  
— Icelandic government  
— Reference bank

Note. The reference bank is an unweighted average for Citibank, SEB, HSBC, Barclays, Deutsche Bank and Goldman Sachs. Time to maturity is five years.

Source: Bloomberg.

### The crisis breaks out

As the financial crisis worsened in 2008, international investors began to sell their Icelandic assets, which led to large capital outflows and to the currency depreciating substantially (see Chart B5). The factors that were a facilitating condition for the economic expansion between 2003 and 2007 (high risk appetite and good access to capital), now acted in reverse. Although the financial crisis

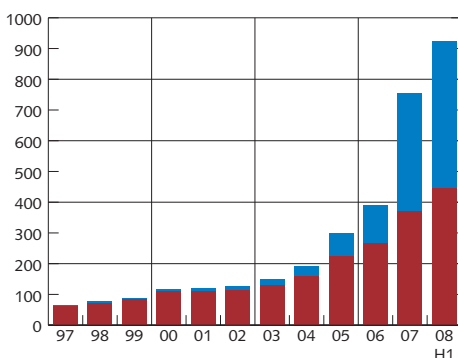


affected all banks that fund themselves in the international capital market, the Icelandic banks were considered more vulnerable than their competitors. This is illustrated by the large increase in CDS-premiums for the Icelandic

measures only had temporary effects. The weakening of the Icelandic currency also fuelled inflation, which prevented the central bank from cutting the interest rate even when domestic demand began to decline.

In September 2008 the funding problems finally became too large for the Icelandic banks and the government intervened. On 29 September 2008 the Icelandic government announced that it intended to buy 75 per cent of the shares in Glitnir for EUR 600 million. In connection with this intervention, crisis legislation was introduced, which gave the Icelandic government the authority to declare individual banks bankrupt, to force mergers and also to appoint boards of directors. The first bank that was taken over by virtue of the new legislation was Landsbanki, where the board of directors was dismissed and representatives of the Icelandic financial supervisory authority took over management of the bank. Shortly thereafter both Glitnir and Kaupthing were also placed under government administration. When the scope of the problems became evident, the Icelandic krona fell substantially at the same time as credit rating agencies reduced the Icelandic government's credit rating. During October Iceland negotiated a support package of USD two billion from the International Monetary Fund (IMF). The loan is to be used to stabilise the Icelandic krona and to refinance the banks currently managed by the government. The conditions for the loan include, for instance, limits for the government's expenditure and borrowing. The loan will be paid out in instalments over two years, and each instalment will be preceded by scrutiny to ensure that the terms of the loan are fulfilled. Several countries and their central banks, including Sweden, are at the same time contributing around USD three billion to cover the remaining funding requirement. One of the terms of the IMF loans was that Iceland would stabilise its currency immediately. As a direct consequence of this the Icelandic central bank raised its policy rate by six

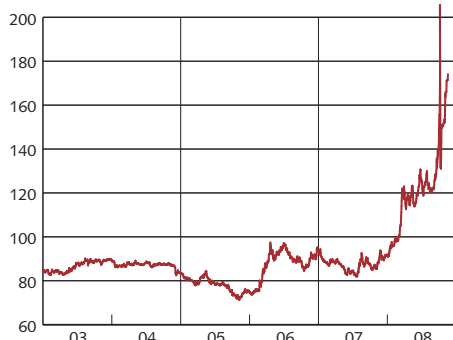
Chart B4. Banking system's assets as a percentage of GDP  
Per cent



Note. 2008 refers to the first half of the year.

Source: Reuters EcoWin

Chart B5. Development of the Icelandic krona against the euro



Note. The listings at the beginning of October 2008 should be interpreted with great caution as a result of the extraordinary market conditions at that time.

Source: Reuters EcoWin

banks during the autumn (see Chart B3). The vulnerability was partly due to their relatively large dependence on wholesale funding, but also to the high rate of expansion. In addition, the size of the Icelandic banking system in relation to the Icelandic economy led many to doubt that the Icelandic government had the necessary financial capacity to manage a bank crisis. With the aim of building up confidence, the Icelandic central bank signed bilateral agreements with other central banks (in Denmark, Norway and Sweden) regarding borrowing euro to build up its foreign currency reserve. However, these



percentage points to 18 per cent on 28 October.

Iceland's crisis highlights the risks involved when a small country with an open economy and free capital flows builds up a banking system with a balance sheet several times greater than the country's GDP. Apart from the fact that the Icelandic economy has been hit hard, the collapse in the banking system also has consequences for the financial systems in countries where the Icelandic banks have had deposit activities. For instance, Kaupthing's Swedish subsidiary, Kaupthing Sverige, was affected by the problems in Iceland, and to avoid contagion risks to the Swedish banking system the Riksbank chose to give the subsidiary special liquidity assistance. Determining how such cross-border problems can be resolved in the future is an important task for authorities and decision-makers. The case of Iceland has also shown that "sudden stops", that is, a situation where a confidence crisis means that earlier large capital inflows from abroad are

suddenly reversed, can affect not only emerging markets but also industrial nations.

#### *Future developments*

What will happen to the Icelandic economy in the short term is very uncertain. The size of the banking system has already declined as the Icelandic parent banks have sold off their foreign subsidiaries. The banks' balance sheets will probably decline further. It is likely that in the future aggregate demand will shrink considerably and result in higher unemployment and more bankruptcies. However, there is reason to emphasise that Iceland's economy has good chances of recovery in the longer term. For one thing the country's product and labour markets are flexible, and further its public finances have been managed well so far. In addition, the country's natural resources in the form of renewable energy provide a clear competitive advantage in a world of high energy prices.

## Summary of risks for the financial markets

**The great uncertainty in the financial markets is expected to remain for a fairly long time.** The main reason for this is that it will take time before the confidence between financial institutions can be restored. This cannot happen until the banks' capital situation has been adjusted to the prevailing conditions, either by increasing capital or by reducing its business. This is a long process that will probably be costly. However the process has already begun and so far write-downs worth almost USD 900 billion have been made, mainly in the US and Europe, at the same time as just over USD 820 billion in new capital has been injected.<sup>15</sup> However, further write-downs and capital contributions will be required when all of the losses are brought to light. It is only when the banks' balance sheets have stabilised and the markets can assure themselves that the solvency in the banks is satisfactory, that confidence will be restored to the financial markets. Only then can the liquidity supply begin to function without central bank aid.

**The financial crisis is expected to have substantial negative consequences for the real economy, but it is difficult to assess its effects on the economic downturn.** In addition, there is a risk that the financial crisis will continue for a long time. If the economic downturn worsens, it may rebound on the financial markets through increased credit losses and problems in several large institutions.

**However, the Riksbank's assessment is that the most acute crisis will begin to wane at the beginning of 2009.** But a more complete return to normal will probably take longer. In addition, the question is whether the effects of the central government measures on the credit markets will be sufficient. If the number of bankruptcies continues rising, it may delay the recovery of the credit market.

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<sup>15</sup> Refers to write-downs and capital losses made by banks, insurance companies and Fannie Mae and Freddie Mac. The banks alone account for 75 per cent of the write-downs while they received 85 per cent of the capital injections. Source: Bloomberg 17 November 2008.

## Swedish market participants' views of risks and the functioning of the Swedish markets

**W**illingness to take risk has declined substantially among participants in the Swedish markets. Participants also consider that the fixed-income market and some sections of the foreign exchange market are functioning poorly. In addition participants in the fixed-income market especially state that liquidity has declined. This picture is given in the results of the Riksbank's risk survey which is carried out once every six months, starting from last spring. The purpose of the questionnaire is to obtain an overall picture of the view of risk among participants active in the Swedish markets. It also aims to assess the functioning of the markets.

This box describes the results of the autumn risk questionnaire which was answered between 18 September and 8 October.<sup>16</sup> It was sent to 88 participants and the response frequency amounted to 86 per cent. The groups included in the survey are the Riksbank's monetary policy counterparties and other participants active in the Swedish fixed-income and foreign exchange markets.

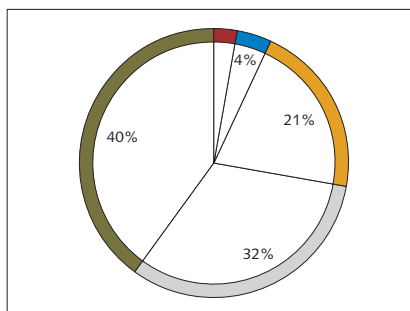
*Willingness to take risk has declined substantially and is expected to remain low*

The participants' willingness to take risk has declined substantially over the past six months. A majority of those asked state that their willingness to take risk has declined considerably or slightly compared with six months ago (see Chart B6). The pattern is largely the same for participants in the fixed-income and foreign exchange markets, but with the difference that the Riksbank's primary monetary policy counterparties state to a greater degree that their willingness to take risk has only declined slightly rather than declined substantially. A majority also expects that the willingness to take risk will remain low over the coming six months.

When there is great uncertainty in the financial markets, the need for liquidity buffers

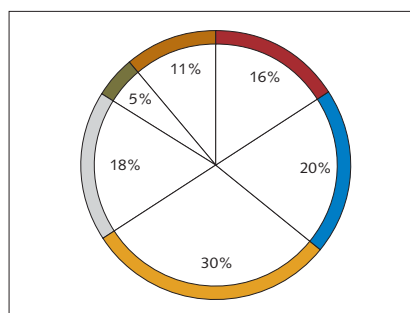
often increases. This picture is confirmed by the questionnaire responses, which show that the buffers of liquid assets have increased somewhat compared to six months ago (see Chart B7). Just over one third of those asked stated that the

Chart B6. How has your propensity to take risk changed compared to six months ago?



- Greatly increased
- Slightly increased
- Neither increased nor decreased
- Slightly decreased
- Greatly decreased
- Don't know

Chart B7. How has your institution's buffer of liquid assets changed in relation to six months ago?



- Greatly increased
- Slightly increased
- Neither increased nor decreased
- Slightly decreased
- Greatly decreased
- Don't know

liquidity buffer had increased. A majority of those questioned expect the buffers to be unchanged or larger over the coming six months.

*The markets are generally functioning less well and showing a decline in liquidity*

A broad impression is that the market for both government and mortgage securities has deteriorated over the past six months. The deterioration in the market for mortgage bonds is particularly marked, with almost three out of four participants saying it is functioning poorly. With regard to the market for government bonds, less than one third of those asked consider it has functioned poorly. This is a

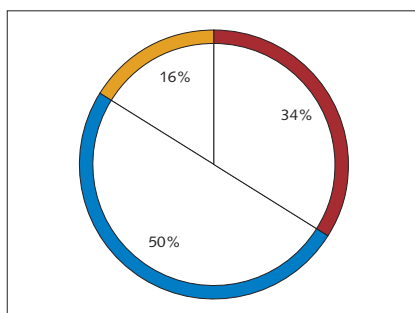
<sup>16</sup> The risk survey is a follow-up to the spring risk survey that was carried out between 10 and 25 April 2008. The Riksbank commissioned survey company Markör to send out the questionnaires on its behalf.

substantial difference compared with the previous risk survey carried out in spring 2008. Then, 93 per cent of those asked considered that the market for government securities was functioning well, while 86 per cent considered that the market for mortgage securities was functioning well.

The deterioration in the functioning of the fixed-income market is also reflected in the participants' views of liquidity in the trade in various credit instruments. Only 20 per cent consider that the liquidity in treasury bills has been satisfactory over the past six months.

Chart B8. Do you consider that the financial crisis has peaked?

■ Yes  
■ No  
■ Don't know



This is a substantial deterioration compared with the previous survey, where 75 per cent considered that liquidity in this part of the fixed-income market was good. Similarly, the liquidity for government bonds has deteriorated over the past six months. Only 62 per cent of the participants consider that liquidity has been satisfactory. In the previous survey, 95 per cent considered liquidity to be good.

With regard to trade in mortgage securities, the survey responses indicate that developments have been even worse. This applies to both mortgage certificates and mortgage bonds.

Only 14 per cent and 16 per cent of participants respectively consider that the liquidity in trade in mortgage certificates and mortgage bonds has been satisfactory over the past six months.

However, the participants have a positive picture of the Swedish foreign exchange market. Four out of five participants questioned consider that the market for Swedish krona has functioned well over the past six months. Moreover, just as many participants consider that the Swedish krona market has functioned well in an international comparison. In addition, four out of five participants questioned consider that the liquidity in the spot market for SEK/EUR has been good over the past six months. However, the spot market for SEK/USD is considered to function slightly less well and only half of the respondents considered that liquidity has been good here.

*Focus will be on market liquidity and funding possibilities over the coming six months*

There is great uncertainty with regard to what phase the financial crisis is in. Half of the respondents do not believe that the financial crisis has peaked (see Chart B8). Most of the participants believe that market liquidity, the banking system's funding possibilities, consolidation in the financial sector, bank mergers and economic activity will be in focus on the Swedish financial markets over the coming six months. Long-term effects of the financial crisis mentioned include tighter regulation of the financial sector, permanently higher risk premiums, consolidation in the financial sector and few counterparts to trade with. Poorer liquidity, the banks' funding possibilities, deep recession and deeper crisis in the Baltic countries are mentioned as risks to the Swedish financial markets over the coming six months.

## Measures taken by international authorities in autumn 2008

**D**uring the autumn several countries' central banks and governments have taken forceful measures to ease the strained situation in the international financial markets. Below is a description of these measures.<sup>17</sup>

### *Liquidity measures*

Earlier during the crisis the banks' demand for safe and liquid investment increased at the same time as the supply of interbank loans declined. This trend has continued during the autumn and several central banks have continued to inject liquidity to the interbank markets in different ways. For example, the ECB has increased its repo transactions with maturities of three and six months during the autumn.

At the same time, new liquidity facilities have been established. In August 2008, for instance, the Federal Reserve, the ECB and the Swiss National Bank introduced 84-day auctions (TAF, Term Auction Facility) that gave the banks the opportunity to borrow US dollars against collateral with longer maturities than before.

A further measure implemented in many countries is to accept a broader spectrum of securities as collateral for loans with the central bank. For example, the Bank of England, the ECB, Denmark's Nationalbank and Norges Bank have extended the list of eligible collateral to include mortgage securities with a high credit rating to a greater extent. The purpose has been to make the securities in the banks' portfolios more liquid. The Federal Reserve has also allowed money market counterparties to borrow against other assets as collateral, for instance, shares, following the collapse of Lehman Brothers in September 2008. In Sweden, measures with the same aim have been implemented in autumn 2008 (see the box Measures taken by the Riksbank and other authorities in Sweden in autumn 2008).

Liquidity support has also included support in foreign currencies. On several occasions during the autumn, central banks have provided the markets with dollars. This has been done partly with funds from their own foreign currency

reserves, and partly by extended foreign currency arrangements with the Federal Reserve, known as swap facilities. On 13 November 2008, for instance, the ECB had outstanding loans in US dollars against collateral in euro equivalent to a sum of USD 288 million. The purpose of the measures has been to facilitate access to liquidity in dollars in the European banking system, which has been strained. During the autumn, the Federal Reserve has entered into new such foreign currency arrangements with central banks in, for instance, Japan, Sweden, Australia, Denmark and Norway.

The ECB has also established extended foreign currency arrangements with certain central banks in Europe, including the Danish and Hungarian central banks. This increased the ability of these countries to supply euro to the domestic market against collateral in their own currency. In addition, the ECB has established an agreement with the Swiss National Bank (SNB), where the ECB gains access to Swiss francs. The ECB and the SNB are jointly supplying the banking system with Swiss francs once a week to meet the increased demand for francs.

### *Policy rate cuts*

Several central banks have cut their policy rates during the autumn. For example, the Reserve Bank of Australia cut its policy rate by 100 basis points at the beginning of October in order to reduce the banks' funding costs. In October, the Federal Reserve, the ECB, the Bank of England, the Bank of Canada and the Riksbank cut their policy rates by 50 basis points in a joint action. The reason was to alleviate the consequences of the ongoing financial crisis on the real economy. At the same time, the Swiss National Bank lowered the target range for its policy rate to the interval of two to three per cent. The Bank of Japan expressed its strong support of these policy actions. However, they chose then to hold their own policy rate unchanged, although later reducing it by 20 basis points at the beginning of November. The Chinese central bank has also cut its lending rate by 27 points and reduced

<sup>17</sup> For a description of earlier events in 2007 and at the beginning of 2008, see the box "Credit market turbulence" in Financial Stability Report 2007:2 and "The international financial crisis, winter 2007 and spring 2008" in Financial Stability Report 2008:1.

its reserve requirement by 50 points. At the beginning of November the Bank of England the ECB cut their policy rates further, by 150 and 50 basis points respectively.

#### *Deposit guarantee schemes*

During the autumn the governments in many countries have extended the deposit guarantee schemes to reinforce confidence in the banks among the general public. The Irish government was the first to extent its deposit guarantee to cover 100 per cent of the general public's deposits in the six largest Irish banks and their subsidiaries.<sup>18</sup> The finance ministers in the EU have later agreed to raise the minimum level of the deposit guarantees to EUR 50,000 to eliminate potential concerns among the banks' customers. The authorities in a number of countries, including the United Kingdom, Italy, Belgium, Cyprus, Spain, Greece, Lithuania, the Netherlands and Portugal have chosen to set the level for their deposit guarantee above the European minimum level. In other countries, governments have guaranteed bank deposits in full; this applies for instance to Greece, Slovakia, Slovenia, Germany, Hungary and Austria. Australia, New Zealand and the United Arab Emirates have also issued government guarantees for all bank accounts. Another example is Denmark, where the government and the Danish private banks agreed in October on a guarantee package in addition to the existing deposit guarantee in order to protect savers. The US Congress has also decided to extend its deposit guarantee.

#### *The US rescue package*

The US Congress has approved a rescue package (Troubled Asset Relief Plan, TARP) that aims to reduce the amount of troubled assets in the banks' balance sheets. The package was approved on 3 October and means that the US

Treasury is permitted to purchase troubled assets to a value of USD 700 billion from financial institutions' balance sheets. It also means that the government deposit guarantee is temporarily extended from USD 100,000 to USD 200,000. This applies until 31 December 2009.

On 14 October a new proposal was launched with a number of measures to strengthen financial stability. Of the USD 700 billion within the TARP framework, the US government offered capital injections of a total of USD 250 billion to a large number of financial institutions. To protect tax-payers interests, the government receives preference shares<sup>19</sup> (without a voting right) and warrants<sup>20</sup> in exchange for the injection of capital. The shares will provide the government with an annual dividend of five per cent during the first five years and after that nine per cent, until the financial institution buys back its own shares. Another element of the package is a limit in the remunerations and bonuses to company management as long as the support measures apply. For example, the right to tax deduction for the remuneration to company management in excess of USD 500,000 is withdrawn.

At the same time, it was decided that the authority that is normally responsible for deposit guarantees, Federal Deposit Insurance Corporation (FDIC), will provide a temporary guarantee that covers the banks' new debt (up to three year maturity). The guarantee also covers loans on the interbank market. In addition to that, the US government extended the deposit guarantee to cover non-interest bearing transaction accounts.

#### *European rescue package*

In Europe, individual countries have introduced their own guarantee packages and the countries have also agreed on joint guidelines regarding the minimum level of the deposit guarantee. Most of the European countries have issued government guarantees for the banks' debt. A

<sup>18</sup> On 20 September the Irish Minister of Finance announced that the deposit guarantee was being extended to EUR 100,000, which was later extended to cover the deposits in full.

<sup>19</sup> A preference share is a share that has right of precedence over other shares with regard to dividends and liquidation and thereby provides a better right to the company's assets and/or profits in the event of bankruptcy or liquidation.

<sup>20</sup> The warrants give the government the right to buy the underlying asset, that is, shares in the financial institution, at a set price, known as a redemption price.



number of countries in the euro area have also created opportunities for governmental capital injections into financial companies.

The Irish government, was the first to introduce a guarantee on 30 September that in addition to the extended deposit guarantee included loans on the interbank market, covered bonds, primary promissory notes and subordinated dated debt instruments for the six largest banks in the country. This is to reduce potential anxiety among the banks' customers and other counterparties.

After this, on 8 October, the United Kingdom presented a rescue package that involved the central government offering GBP 250 billion in guarantees to alleviate the credit crunch in the economy. The guarantee is to cover the banks' new debt in GBP, USD and EUR with maturities of up to 36 months. In addition the central government is offering GBP 50 billion in capital injections, GBP 37 billion of which was allocated to the three British banks RBS, HBOS and Lloyds TSB in October. The Bank of England is extending its facilities within the package to stabilize the financial system. For instance, GBP 200 billion will be made available to banks and mortgage institutions, which can borrow government securities in exchange for mortgage bonds and other collateral through a special liquidity programme.

On 12 October 2008 the euro zone countries agreed on guidelines for a European rescue package to strengthen confidence in the financial system. The other EU countries expressed support for this proposal. One of the bases of the agreement is that governments will guarantee the banks' new debt up to 31 December 2009 to facilitate the banks' funding. Loan guarantees will only apply to newly-issued loans with a maturity of less than five years. The German government has, for instance, allocated EUR 400 billion to debt guarantees with a time limit for the financial institutions' new debt with maturities up to three years. The Spanish government has issued guarantees for up to EUR

100 billion for the banks' new debt in 2008 and an unspecified amount for next year. France has issued a guarantee of EUR 360 billion, for the banks' newly-issued securities with up to five years to maturity.

Another European measure entails governments being able to inject new capital if necessary to financial institutions in exchange for, for instance, preference shares. The German government has, for instance, allocated EUR 80 billion as a capital injection to banks in exchange for shares. In the French proposal the government is also given permission to buy securities or preference shares in the French financial institutions.

Other countries, too, including Greece, the Netherlands, Belgium, Portugal and Italy have proposed guarantees for newly-issued debt as well as capital injections. Greece has decided on a rescue package amounting to EUR 28 billion, where EUR 15 billion is allocated to a government guarantee for newly-issued debt instruments and EUR 8 billion is allocated to issuing treasury bills for the purpose of supplying the interbank market with liquidity. The remaining EUR 5 billion is reserved for measures aimed at reinforcing the banks' capital base. The Italian package gives the government an opportunity to purchase preference share in the Italian banks and to issue guarantees up to five years for the banks' new debt. The Dutch package allocates EUR 200 billion as a capital injection to financial institutions with substantial operations in the country.

#### *Other market maintenance measures*

The authorities in the United Kingdom, the United States, Australia, France, Germany, Ireland, Russia, Denmark, Norway and Canada have also introduced a temporary stop on investors selling shares they do not own, what is known as short selling, in order to reduce the scope for speculating in share price fluctuations. In some countries, only short selling of financial shares has been banned.

## Measures taken by the Riksbank and other authorities in Sweden in autumn 2008

Swedish authorities have taken forceful measures for the purpose of facilitating the functioning of the financial markets in Sweden. The Riksbank has lent a total of around SEK 390 billion, whereof SEK 190

billion has been lent in USD. Together with the Swedish National Debt Office's issues of treasury bills the total value of the measures taken by Swedish authorities amounts to around SEK 500 billion.

**Table B2. Swedish measures**

18 September	The Swedish National Debt Office announces that after consultation with the Riksbank it has decided to issue a large volume of short-term treasury bills. The money from the extra auctions will be placed in so-called reverse repos with mortgage bonds as collateral. Two issues of SEK 25 billion each are announced for 19 September and 23 September, and further issues are signalled. It is estimated that the total issued volume will be a maximum of SEK 150 billion.
22 September	The Riksbank decides to increase credit facilities in the RIX payment system. The permitted percentage of covered bonds from an institution with close links to the counterparty concerned that can be used as collateral in the system is increased from 25 per cent to 75 per cent.
22 September	The Swedish National Debt Office announces several extra auctions of treasury bills on 25 September, 26 September, 30 September and 3 October.
24 September	The Riksbank announces together with several other central banks that it will set up temporary mutual currency arrangements (swap facilities) with the Federal Reserve with the aim of dealing with the strained situation on the markets for short-term borrowing in US dollars. These arrangements mean that the Riksbank and the Federal Reserve have agreed on a swap facility amounting to USD ten billion.
29 September	The Riksbank announces a new loan facility in USD. Two auctions, on 1 October and 22 October, are announced. The Riksbank and the Federal Reserve have also agreed to increase the previous swap facility to USD 30 billion.
30 September	The Swedish National Debt Office announces further dates for extra issues of treasury bills.
1 October	The auction for USD seven billion with a maturity of 28 days is over-subscribed.
2 October	The Riksbank sets up a loan facility in kronor with the aim of increasing access to longer-term loans. A first auction is announced for 6 October comprising SEK 60 billion for loans with terms of three months and against collateral. A further auction for loans with terms of three months but without a fixed amount is announced for 27 October 2008.
6 October	The Government decides to increase the deposit guarantee for current accounts from SEK 250,000 to SEK 500,000. The deposit guarantee is also extended to cover all types of deposit in accounts irrespective of whether the savings are fixed or can be withdrawn freely.
6 October	The Riksbank announces that it has decided to lend more money to the banks. The sum in the auction on 6 October is increased from SEK 60 billion to SEK 100 billion. The auction, which is held later the same day, is over-subscribed. A further auction is also announced for 8 October comprising SEK 100 billion with a maturity of six months.
8 October	The Riksbank cuts the repo rate from 4.75 per cent to 4.25 per cent.
8 October	The Riksbank once again changes the collateral requirements for credit in the RIX system. The permitted percentage of covered bonds from an institution with close links to the counterparty concerned that can be used as collateral in the system is increased from 75 per cent to 100 per cent. At the same time, it is also decided to lower the minimum credit rating requirement for longer-term securities pledged as collateral.
8 October	The Riksbank provides special liquidity assistance with a loan of up to SEK five billion to Kaupthing Bank Sverige AB.
8 October	The Riksbank's kronor auction of SEK 100 billion is not fully-subscribed. SEK 66.5 billion is loaned with a maturity of six months.
8 October	Finansinspektionen (the Swedish Financial Supervisory Authority) announces that it is prepared to change the regulations governing the calculation of the discount rate for life insurance companies. The aim is to make it possible for life insurance companies to increase their investments in mortgage bonds.
10 October	The Riksbank decides to issue Riksbank Certificates, beginning on 14 October. The Riksbank Certificates will have a maturity of seven days and be issued at the repo rate. The aim is to create an additional way of withdrawing the surplus liquidity in the banking system that the Riksbank's SEK loans at terms of three and six months have created and to provide the banks with a further instrument for managing liquidity.
13 October	The Riksbank announces that it will auction off an additional USD 10 billion on 15 October and SEK 80 billion on 16 October. Both loans will have a maturity of three months.
14 October	The first issue of Riksbank Certificates is conducted. The issue is not fully-subscribed. Of the announced SEK 164 billion in Riksbank Certificates, SEK 55 billion is subscribed.
15 October	The Riksbank's dollar auction is over-subscribed. USD ten billion is loaned, against collateral, for three months.



16 October	The Riksbank's kronor auction of SEK 80 billion is not fully-subscribed. SEK 13.5 billion is loaned, against collateral, for three months.
16 October	The Swedish National Debt Office announces that it will continue issuing treasury bills in extra auctions. Issues of SEK five billion each will be made on 17 October, 21 October, 24 October, 27 October and 4 November. After this the Swedish National Debt Office will hold at least one extra auction per week.
17 October	Finansinspektionen proposes a change in the regulations governing the calculation of the discount rate for, primarily, the insurance allocations of the life insurance companies and occupational pension funds. The change aims to stimulate an increased supply of interest-bearing securities with long maturities.
20 October	The Government presents a stability plan to safeguard the stability of the financial system. The plan includes a guarantee programme of a maximum of SEK 1,500 billion to support the medium-term financing of the banks and mortgage institutions and a stability fund to deal with any future solvency problems in Swedish institutions, to which the Government intends to allocate SEK 15 billion. A special stability fee will be charged to all credit institutions in Sweden. The aim is that the stability fund – together with the deposit guarantee fund – will amount to an average of 2.5 per cent of GDP within 15 years.
21 October	The second issue of Riksbank Certificates is conducted. The issue is not fully-subscribed. Of the announced SEK 177 billion in Riksbank Certificates, around 42 per cent, or SEK 74.2 billion, is subscribed.
22 October	The Riksbank's dollar auction for USD ten billion is over-subscribed.
22 October	The Riksbank notifies that the earlier-announced auction for three-month loans on 27 October will cover SEK 80 billion.
23 October	The Riksbank cuts the repo rate from 4.25 to 3.75 per cent.
24 October	The Riksbank announces that it will auction USD seven billion on 28 October to replace an earlier loan that has matured. The loan term will be 28 days.
24 October	The Riksbank announces that it will offer three-month loans in SEK in a programme of regular auctions. The loans will be offered at regular intervals of approximately two weeks, starting on 10 November. The exact terms for each auction will be published at least two days prior to the auction. The announced sum will be set taking into account the prevailing market conditions and the outcome of previous auctions.
27 October	The Riksbank grants special liquidity assistance with a credit of SEK one billion to Carnegie Investment Bank AB.
27 October	The Riksbank's kronor auction of SEK 80 billion is not fully-subscribed. SEK 3.5 billion is lent against collateral at a maturity of three months.
28 October	The Riksbank grants increased special liquidity assistance to Carnegie Investment Bank AB. The liquidity assistance, including the one billion already granted, will amount to a maximum of SEK five billion.
28 October	The third issue of Riksbank Certificates is held. The volume allocated is SEK 74.2 billion.
28 October	The Riksbank's auction of USD seven billion results in an allocated volume of USD 4.8 billion.
29 October	The Riksbank announces that it is establishing a new temporary credit facility where the banks can use commercial paper with a maturity of up to one year as collateral to a greater extent than before. The purpose of the new credit facility is to facilitate the supply of credit to non-financial companies. The new credits will be supplied by auction, with the first one being held on 5 November and consisting of SEK 40 billion for a loan of three months. After this the plan is for the auctions to be held regularly at two-week intervals.
30 October	The Swedish National Debt Office has issued treasury bills to a total value of SEK 108.5 billion in September and October within the framework of the programme published on 18 September.
31 October	The Swedish National Debt Office establishes guarantee charges that the four major banks will pay to receive government guarantees on individual loans.
4 November	The Swedish National Debt Office announces that it intends to replace part of the extra issues of treasury bills with "normal" issues of treasury bills.
4 November	Riksbank Certificates are issued. The volume allocated is SEK 82.5 billion.
5 November	The Riksbank auctions loans in SEK with commercial paper as collateral. The total amount announced was SEK 40 billion. Bids totalling SEK 4.5 billion were received and this was the volume allocated.
6 November	The Swedish National Debt Office announces that it will continue to issue treasury bills in extra auctions.
10 November	The Government increases its support to Swedish companies by allocating to Almi företagspartner and Svensk Exportkredit SEK two billion and SEK three billion respectively. The purpose is to facilitate borrowing for the export industry and for small and medium-sized enterprises in general.
10 November	The Riksbank's auction in SEK is held. A total of SEK 60 billion was announced, and bids totalling SEK 15 billion were received, which was also the volume allocated.
10 November	Finansinspektionen revokes Carnegie Investment Bank AB's license to conduct banking operations. The Swedish National Debt Office grants Carnegie a loan of a maximum of SEK five billion. The loan replaces the special liquidity assistance the Riksbank had earlier granted Carnegie. In addition, the Swedish National Debt Office takes over Carnegie, which thereby recovers its licence to conduct banking operations.

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10 November	Finansinspektionen decides in accordance with the proposal of 17 October.
11 November	The Riksbank's issue of Riksbank Certificates is not fully-subscribed. The volume allocated is SEK 70.5 billion.
18 November	The Riksbank's issue of Riksbank Certificates is not fully-subscribed. The volume allocated is SEK 82 billion.
19 November	The Riksbank's second auction of loans in Swedish kronor with commercial paper as collateral is not fully-subscribed. The total amount announced was SEK 40 billion. The bids received were for a total sum of SEK one billion, which was the volume allocated.

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## ■ The Swedish banks' borrowers

### The Swedish banks' borrowers – in brief

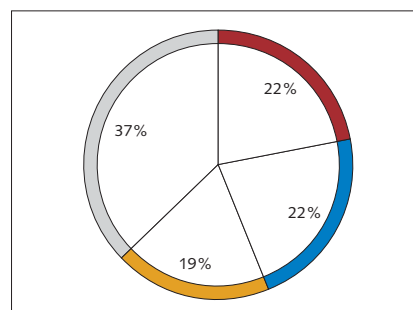
The economic slowdown and the ongoing financial crisis affect the debt-servicing ability of the banks' borrowers in Sweden. The households' financial situation is expected to remain sound in the future, but their financial net wealth has decreased due to the crisis. House prices are also expected to fall as the economic slowdown continues. For several years, defaults in the Swedish corporate sector have been extremely low, but they can now be expected rise in the future. Forward-looking indicators based on the market value of companies' shares point to rather substantial worsening of corporate credit quality. This also applies to property companies. After rising for several years, property prices are now falling, at the same time that activity in the property market is declining. A longer and deeper than expected slowdown of economic activity could result in lower rental income for property companies and payment problems for companies active in the industry.

The problems in the Baltic Countries have worsened since the last stability report was published, particularly in Estonia and Latvia, where GDP is now decreasing due to waning domestic demand. At the same time prospects are worsening in the Baltic countries' export markets. Parallel to the negative real economic developments, the financial crisis has now spread to other emerging economies in Eastern Europe, which previously were not affected to any great extent. Overall, these factors complicate the adjustment of the Baltic countries to more long-term sustainable growth after the overheating of previous years. The debt-servicing ability of Baltic borrowers is still good, but there is reason to believe that it will deteriorate over the next few quarters.

The Swedish banks' borrowers in Sweden and abroad currently have favourable conditions for repaying their loans. However, there is reason to believe that the debt-servicing ability of certain groups of borrowers will deteriorate with the economic downturn.

Monitoring developments for the Swedish banks' borrowers is an important component in the analysis of financial stability. The risk that borrowers will not be able to service their debt is one of the greatest risks to which banks are exposed. In addition, interest income on lower loan volumes will have a direct negative affect on the banks' results. Just over 20 per cent of the banks' total lending (about SEK 6,700 billion in September 2008) goes to Swedish households (see Chart 2:1).<sup>21</sup> Swedish companies receive about the same share of total lending, with property companies representing a substantial

Chart 2:1. The banks' lending broken down into Swedish and foreign households and companies



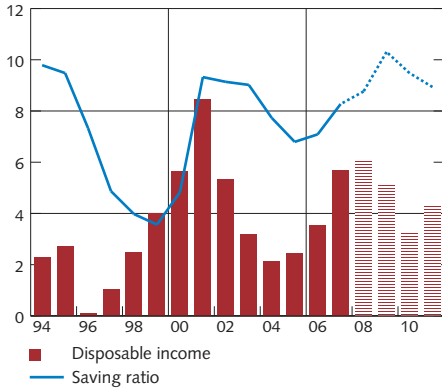
- Swedish households
- Swedish companies
- Foreign households
- Foreign companies

Note. Refers to total loan stock in September 2008.

Source: The Riksbank

<sup>21</sup> Refers to the four major banks at the group level (including foreign operations) as of 30 September 2008.

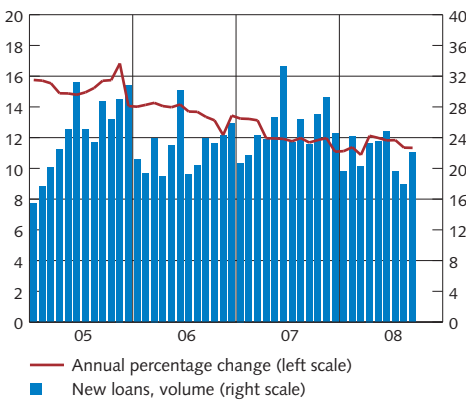
**Chart 2:2. Households' nominal disposable income and saving ratio**  
Percentage change and per cent



Note. Households' savings in relation to disposable incomes. The broken line and striped bars show the Riksbank's forecast as presented in the Monetary Policy Report 2008:3.

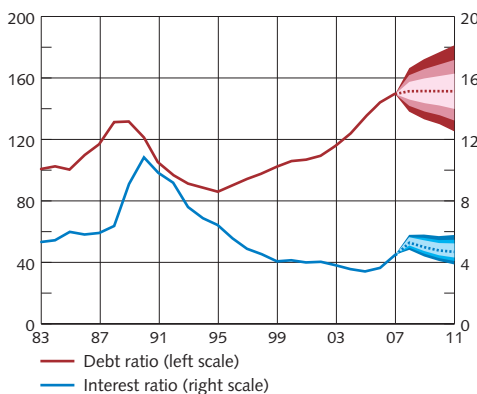
Sources: Statistics Sweden and the Riksbank

**Chart 2:3. Household borrowing for purchase of housing**  
Percentage change and SEK billion



Source: The Riksbank

**Chart 2:4. Households' debt ratio and interest ratio**  
Per cent of disposable income



Note. Households' debt ratio is defined as household debt in relation to disposable income and households' interest ratio corresponds to the households' interest expense, that is, post-tax interest expenditure, in relation to their disposable income. The uncertainty band shows the intervals within which the debt and interest ratios are expected to be with a 50, 75 and 90 per cent probability, given the Riksbank's main scenario in the Monetary Policy Report 2008:3.

Sources: Statistics Sweden and the Riksbank

borrower category. Borrowers abroad have also become increasingly important for the Swedish banks. Compared with five years ago, the share of foreign loans has increased by around five percentage points. This is partly due to a strong growth in credit and to the banks acquiring foreign operations.

This chapter opens with a review of the Swedish household sector, followed by an analysis of the Swedish corporate sector. A separate section addresses property companies, along with developments in the commercial property market. Finally, the chapter closes with an analysis of borrowers in the foreign markets where the Swedish banks are active.

## The Swedish household sector

This section analyses the debt-servicing ability of the Swedish household sector. Since households often use properties as collateral for loans, house prices are also analysed.

**Households' financial situation will continue to be sound despite the slowdown of economic activity.** This is explained by the fact that disposable income in Swedish households will continue to rise at a relatively high rate due to additional tax cuts as well as continued rising income. However, income will increase at a somewhat lower rate than previous years because employment is expected to fall. Households' saving ratio has increased in recent years. In the future household consumption is expected to increase at a lower rate, which means that the saving ratio will remain at a high level over the next few years (see Chart 2:2).<sup>22</sup> However, household net wealth decreased due to sharply falling stock prices, while households continued to increase their borrowing.

**Households continued to borrow at a relatively high rate over the past year.** Total borrowing increased by 9.8 per cent in September compared with the same month last year. Borrowing for residential purposes increased by 11.3 per cent compared with one year ago (see Chart 2:3). Household borrowing has increased more than disposable income and household debt in relation to income, the debt ratio, has therefore continued to increase (see Chart 2:4). Since December 2004 the debt ratio has climbed almost 30 percentage points, the majority of which can be attributed to an increase in household borrowing with residential property as collateral. Households have continued to borrow at a high rate, in part because transaction volumes in the housing market remain high even though the economic situation is more uncertain.<sup>23</sup> According to mortgage market participants, another reason for the high rate of borrowing may be that many households took out second mortgages on their homes to finance refurbishing

<sup>22</sup> See Sveriges Riksbank (2008), "Monetary Policy Report 2008:3", October.

<sup>23</sup> See sales data from Mäklarstatistik, which cover sales data from members of Mäklarsamfundet, Fastighetsbyrån and Svensk Fastighetsförmedling.

or other consumption. However, in recent months new lending from mortgage institutions fell somewhat (see Chart 2:3), suggesting that household borrowing is slowing down.

#### Household borrowing will increase at a lower rate in the future.

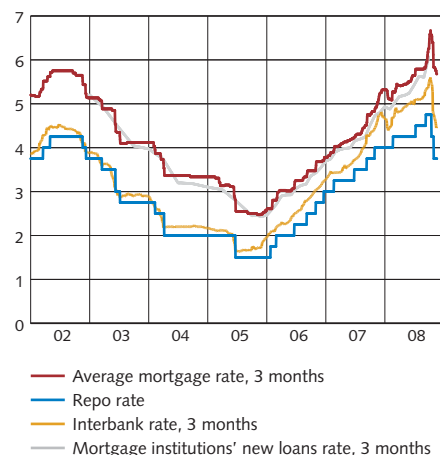
The main reasons are the continued slowdown of the economy and the great uncertainty about the future due to the financial crisis. Households are also encountering tighter credit standards because of the financial crisis; loan-to-value ratios are lower and new customers no longer receive approval for interest-only loans. The uncertainty may also explain why a larger percentage of households responding to the most recent business tendency survey from the National Institute of Economic Research stated that they probably would not refurbish their homes during the coming year. This means that fewer households are likely to take out second mortgages on their homes to finance refurbishing.

**Households' interest expense is expected to remain at a higher level for some time.** The reason is that during the autumn the banks' funding costs rose sharply, which in turn are being transferred to the customers (see Chart 2:5). The banks are also trying to increase their margins, which have been squeezed for some time.<sup>24</sup> Since the majority of new loans have a variable rate, households are at the same time more sensitive to interest rate changes (see Chart 2:6). Fixed rate loans that previously had lower rates have to some extent been refinanced at higher interest rates.

**Households' debt ratio will remain essentially unchanged, while the interest ratio is expected to fall somewhat between 2009 and 2011** (see Chart 2:4). The slowing economic activity and the financial crisis further increase uncertainty about the future, causing households to continue to borrow at a less rapid pace. However, to date this year household borrowing has risen at a higher-than-expected rate, resulting in upward adjustments of both the debt ratio and the interest ratio for 2008. Meanwhile, the repo rate was lowered and is expected to drop even more, which means that the interest rates households encounter will also go down somewhat in the future. At the same time, disposable income is expected to rise at a higher rate than interest expense, which when combined with debt increasing at a lower rate will lead to a lower interest ratio at the end of the forecast period.

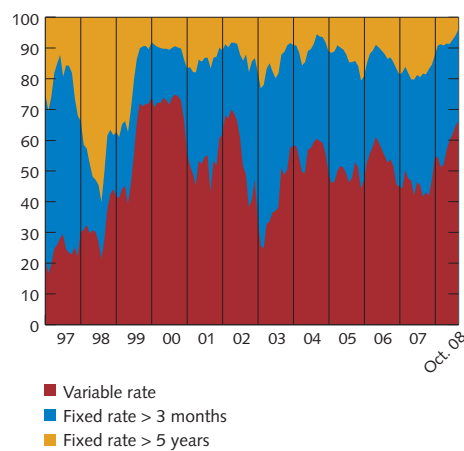
**Mortgage rates are higher for all households due to the financial crisis.** However, metropolitan area households are affected most as they have larger loans. The effect of the financial crisis in Sweden

Chart 2:5. Mortgage rate, interbank rate and repo rate  
Per cent



Note. Refers to an average of the three month mortgage rate from Handelsbanken, Nordea, SBAB and SEB, the three month interbank rate and the monthly average of the three month mortgage rates for new lending by the mortgage institutions.  
Sources: Reuters EcoWin, Statistics Sweden and the Riksbank

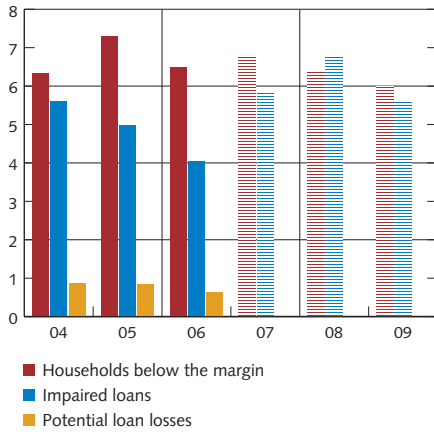
Chart 2:6. Duration of fixed interest periods for new mortgage loans  
Per cent



Source: The Riksbank

<sup>24</sup> For more information about the banks' margins, see chapter 3 and the box "Development of the major banks' lending and deposit margins in Sweden".

**Chart 2:7. Households below the margin, impaired loans and potential loan losses**  
Per cent

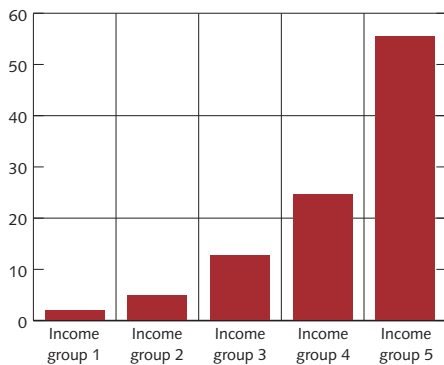


Note. The proportion of households below the margin denotes the proportion of indebted households that do not have a reasonable standard of living after they have paid interest and other housing costs. The proportion of impaired loans denotes these households' share of the household sector's total debt. Potential loan losses is the share of the debt held by households below the margin that is not covered by wealth.

The proportion of households below the margin and impaired loans from 2007 have been calculated from the preliminary outcome of 2007. Potential loan losses can not be calculated since the data does not contain values of households' total wealth. Striped bars show the results from the preliminary outcome and forecast.

Sources: Statistics Sweden and the Riksbank

**Chart 2:8. Percentage debt held by indebted households in different income groups**  
Per cent



Note. Income group 1 consists of the indebted households with the lowest disposable income and income group 5 consists of the indebted households with the highest disposable income.

Sources: Statistics Sweden and the Riksbank

can be illustrated with an arithmetic example. Table 2:1 below shows that interest expenditure for an average household in Sweden that bought a single-family house in summer 2007 is now 11.3 per cent of household income<sup>25</sup> per month. This may be compared with almost 10 per cent, if mortgage rates had developed more in line with a risk-free interest rate. This has given households about SEK 920 per month on average in October and November in increased interest expenditure. The calculation in the table below only applies to a household that purchased a single-family house, but higher mortgage rates have also affected those households that purchased tenant-owned apartments. These households may also be affected by higher monthly fees since tenant-owners' associations also face higher interest on their loans.

**Table 2:1. Effects of the financial crisis on households in terms of higher mortgage interest expenditure**

	Sweden	Stockholm region	Göteborg region	Malmö region	Sweden excluding metropolitan areas
Purchase price	1 737 000	3 214 000	2 551 000	2 591 000	1 182 000
Amount borrowed	1 563 300	2 892 600	2 295 900	2 331 900	1 063 800
Hypothetical interest cost as percentage of household income	9.8	15.0	12.7	12.5	7.6
Actual interest cost as percentage of household income	11.3	17.2	14.6	14.4	8.7
Increased monthly pre-tax interest expenditure	922	1 707	1 355	1 376	628

Note. The household is assumed to have purchased a single-family house at an average price in June 2007 with approval of a loan-to-value ratio of 90 per cent of the purchase price. An average of interest rates was used to calculate the household's interest expenditure. The household is assumed to have a fixed rate mortgage with various durations as shown in Chart 2:6 for June 2007.

Sources: Statistics Sweden and the Riksbank

### According to preliminary outcome of data on household finances<sup>26</sup>

the proportion of households unable to cover their running expenditures increased in 2007 (see Chart 2:7). The situation has mainly deteriorated for households in the two lowest income categories. These households essentially have not benefited from any increases in income at all, while interest expenditure has risen. However, it is important to remember that these groups account for only a small share of the total stock of household debt (see Chart 2:8). On average disposable income among indebted households has risen more than on an aggregated basis. Since the income of indebted households has increased at a higher rate than debt, the debt ratio for these households has also dropped compared to a year earlier.

<sup>25</sup> The average income for a household with a debt that amounts to the borrowed amount in table 2:1, from Statistics Sweden's survey of household finances (HEK).

<sup>26</sup> Statistics Sweden's annual cross-section survey of household finances (HEK) was used for this purpose. The most recent survey was carried out in 2007 and the preliminary outcome was published at the end of October this year. In recent years the preliminary outcome overestimated the percentage of households below the margin and the percentage of impaired loans, and it is therefore probable that these could be revised when the final outcome is published. Recent outcomes from the Financial Accounts and the National Accounts until the end of the second quarter of 2008 and the Riksbank's forecasts for 2008 and 2009 were used to generate these data.



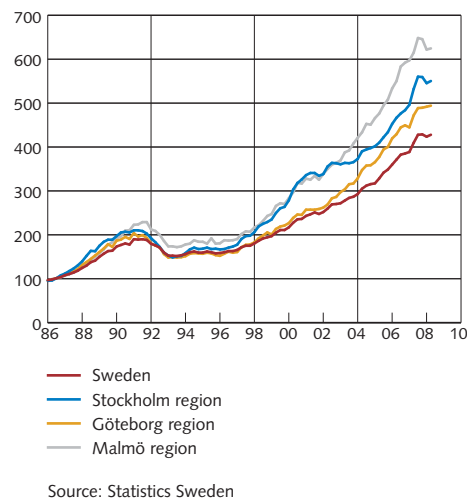
**Generating of data and stress tests show that households will still have a good ability to service their debt.** The reason that the proportion of vulnerable households may decline in the future is increased income<sup>27</sup>. The banks' loan losses, if any, from the household sector are expected to continue to be low, since high-income households account for the majority of the household sector's total debt (see Chart 2:8). Most of these households manage to service their debts despite rising interest rate, climbing unemployment and falling home values.

**Stress tests show that households' debt-service ability is not particularly affected by growing unemployment.** The proportion of impaired loans only increases from 5.8 to 6.7 per cent of households' total debt, when unemployment is increased by 4 percentage points (all other things being equal). To raise the unemployment level in the stress test, individuals assumed to become unemployed were randomly selected. Their income is then replaced by the unemployment benefit. This procedure is repeated until the assumed unemployment level is achieved in the population. The next step is to re-examine the proportion of households unable to cover their running expenditures and the percentage of these households' debt that is not covered by net worth.<sup>28</sup> A household with two incomes, one from employment and one unemployment benefit, still usually manages to service its debt and is able to cover other running expenditures. The conclusion can therefore be drawn that increased unemployment will probably not lead to the household sector causing major loan losses for the banking sector. However, it can not be ruled out that the debt-servicing ability for some households still will get worse. In particular, this may be the case in small municipalities with one dominant employer, where the risk of both becoming unemployed could be higher.

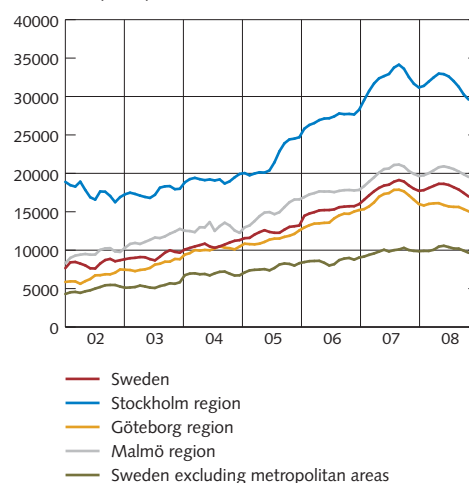
**Households' debt-servicing ability is affected more by increased mortgage rates.** However, higher interest expense is not expected to cause the banks larger loan losses since high-income households account for the majority of the loan stock. However, the capacity for households to consume anything other than housing could be affected. Moreover, the number of households unable to cover their running expenditures will increase when the two scenarios are combined, though mainly due to the interest scenario.

**House prices in Sweden have remained unchanged since September last year** (see Chart 2:9). In the Stockholm and Malmö regions, prices of single-family dwellings have dropped somewhat, while

**Chart 2:9. House prices in Sweden, Stockholm, Göteborg and Malmö regions**  
Index: 1986=100



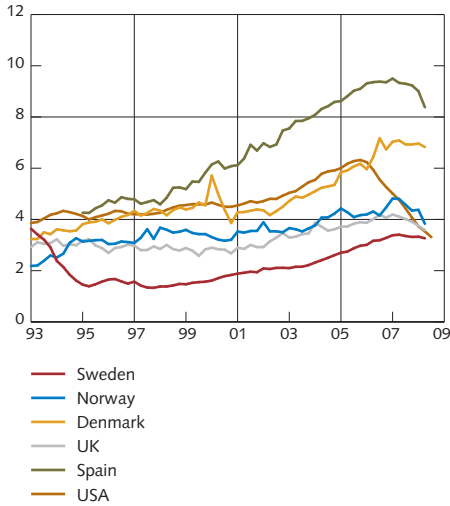
**Chart 2:10. Tenant-owned apartment prices**  
SEK per square metre



<sup>27</sup> However, there is uncertainty because the forecast is based on all households receiving higher income, which is not always the case. The proportion of vulnerable households could therefore be greater than in the forecast.

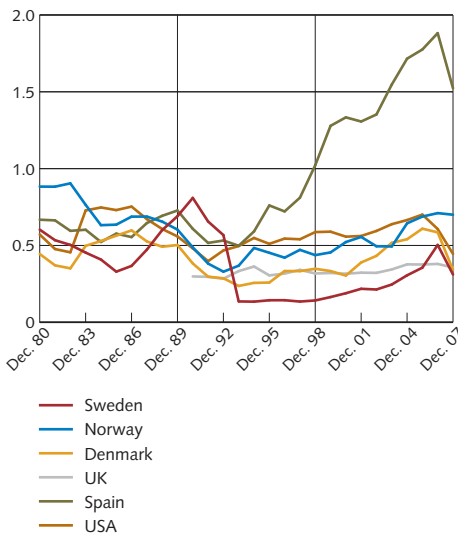
<sup>28</sup> The household sector's debt-service ability is tested by raising unemployment and interest expenditure, both separately and in combination. See also the article in Sveriges Riksbank Economic Review 2006:3 for a description of the method.

**Chart 2:11. Housing investment in relation to GDP, seasonally-adjusted**  
Per cent



Sources: Statistics Sweden and national statistics offices

**Chart 2:12. Number of housing starts in relation to population**  
Per cent



Note. The number of housing starts in Sweden during 2006 and 2007 is overestimated, as a result of the "Odell foundation slabs" (Odellplattorna); the actual number of housing starts was much lower, according to the National Board of Housing, Building and Planning. The Odell slabs (named after a government minister) arose due to companies bringing forward the construction start for 8,000 homes before the end of 2006, as the government decided to abolish the government interest subsidy and investment grant with effect from 1 January 2007.

Source: Reuters EcoWin

prices of single-family dwellings in the Göteborg area have continued to increase somewhat. Data from Mäklarstatistik also indicate a cooler housing market (see Chart 2:10). Over the past three months (August-October) prices of tenant-owned apartments fell 6 per cent throughout Sweden.

**Housing prices could decline in the future.** Reasons for such a decline include the economic slowdown and rising unemployment. Banks are now more cautious when lending and they have cut back on their loan-to-value ratios. The latest statistics from Hemnet and the SBAB's (Swedish Housing Finance Corporation) survey of estate agents indicate that the supply of housing is larger than normal, with a longer time to sales reported, and this also has a downward effect on prices. At the same time, price differences between properties have increased since last autumn, which is a common phenomenon in a cooling housing market. The Riksbank's assessment is that house prices could drop by at least 5 per cent, though this figure could increase if the economic downturn is deeper than expected. In addition, the National Institute of Economic Research Business Tendency Survey found that a gloomy sentiment prevails among households with respect to both their personal economy and the economy of the country. At the same time, SEB's housing price survey indicates that the majority of households responded that they believe that house prices will fall.

**Meanwhile, house prices will probably drop somewhat less in Sweden than in some other countries.** Several factors suggest that this will be the case. Firstly, new construction since the early 1990s has been at a much lower level in Sweden than in other countries (see Charts 2:11 and 2:12). Secondly, almost half of Sweden's municipalities have a housing shortage, especially in the metropolitan areas<sup>29</sup>. According to the construction companies' forecasts, the housing shortage will remain for the next few years due to a sharp decrease in new construction of apartments and single-family dwellings<sup>30</sup>. Moreover, Swedish households buy their homes to live in, not to rent them out to others. In contrast, Ireland and the United Kingdom, where house prices have now fallen sharply, have had a large "buy-to-let" market. A house or an apartment can be purchased to be rented out on a commercial basis, which has introduced a speculative element to the housing market that essentially does not exist in Sweden.

**Experience shows that house prices often covary between countries.**

Since houses are not goods traded across national borders, it is not clear how price changes in one country can spread to another. However there are other channels that may explain why

<sup>29</sup> National Board of Housing, Building and Planning Housing Market Survey for 2008-2009.

<sup>30</sup> According to the National Board of Housing, Building and Planning's indicators, Swedish Construction Federation and Statistics Sweden's "Byggindeindex".



developments in house prices track one another internationally.<sup>31</sup> For one thing, national housing markets have probably become more sensitive to the international capital markets. Disruptions in the capital markets could affect mortgage institutions through higher funding costs, which have occurred during the current financial crisis. The banks have passed these higher funding costs on to the customers, resulting in even higher interest rates and causing a dampening effect on house prices.

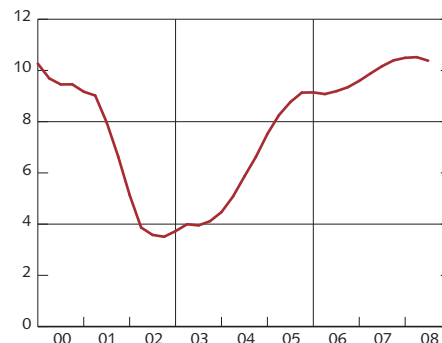
**In summary, households' ability to service debt is sound.** Stress tests also show that households have the capacity to deal with weaker economic activity, rising unemployment and continued high interest rates. Even if house prices were to fall, the household sector would not pose a threat to financial stability, since households can still service their loans. Nor is there any indication that the household sector as a whole would cause any major loan losses in the banking sector. However, individual households that have borrowed too much could experience payment problems. If the financial crisis is prolonged, there is a risk that higher interest expenditure will force households to cut back on other consumption. The real economy is affected on several levels; lower private consumption leads to lower corporate investments and housing investments, and so on.

### The Swedish corporate sector

Just over 20 per cent of lending in the four largest banks goes to Swedish companies. The Riksbank analyses developments in the corporate sector to monitor how risks in lending will develop. The analysis focuses on a few central financial ratios and an assessment of corporate credit quality during the period 2009–2011.<sup>32</sup>

**Swedish listed companies have gradually increased their profitability in recent years** (see Chart 2:13). The reason for this is that profits have improved due to several years of strong economic activity. The strong economic development has also implied that the number of bankruptcies has fallen to historically low levels (see Chart 2:14). However, the number of defaults has increased somewhat in recent months, which is natural in light of the deepening economic downturn.<sup>33</sup> According to the indicator for expected default frequency (EDF), corporate defaults will continue to increase from 0.2 per cent to 0.5 per cent in 2009.<sup>34</sup> Even though EDF is only based on developments in listed companies, it has proven to be a good indicator of future developments of defaults in the entire corporate sector.

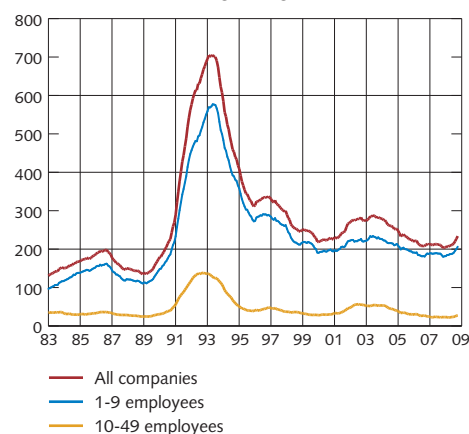
**Chart 2:13. Profitability in Swedish listed companies**  
Per cent



Note. Profitability is defined as the operating surplus in relation to the total assets.

Sources: Bloomberg and the Riksbank.

**Chart 02:14. The number of company bankruptcies broken down by company size**  
Twelve-month moving average



Sources: Statistics Sweden and the Riksbank

**Chart 2:15. Corporate borrowing from credit institutions**  
Annual percentage change



Source: The Riksbank

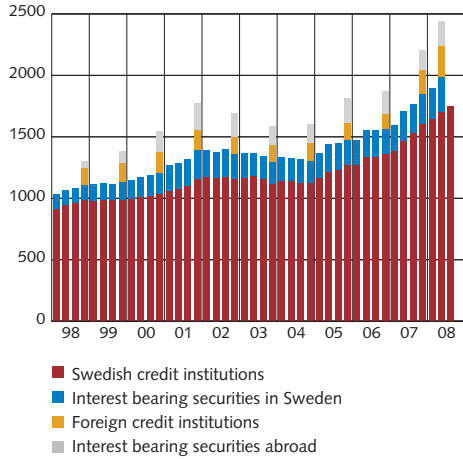
<sup>31</sup> IMF, World Economic Outlook, September 2004.

<sup>32</sup> The analysis concentrates on listed non-financial companies unless otherwise stated.

<sup>33</sup> The increase in corporate defaults mainly involves the private service sector, wholesale and retail trade, transport companies and the construction industry.

<sup>34</sup> Credit rating agency Moody's (Moody's KMV) calculates the probability of bankruptcies among listed companies within one year. EDF is a measure of the company's credit quality and is calculated as the probability that the market value of the company's assets will be lower than the size of its debts when the latter mature.

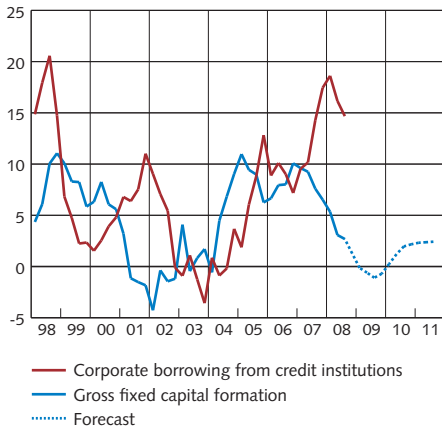
**Chart 2:16. Corporate borrowing from credit institutions and their securities funding in Sweden and abroad**  
SEK billion



Note. Security financing by corporates are available at the end of each year and at the end of the most recent half-year period. Corporate financing with interest-bearing securities takes place in both the bond market by issuing corporate bonds, and in the money market by issuing commercial papers.

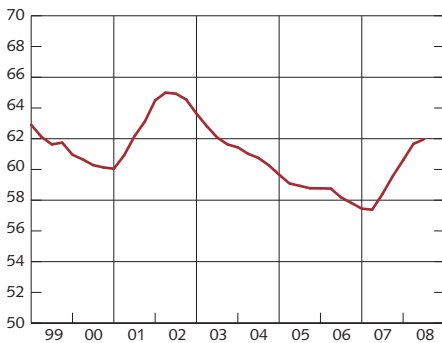
Sources: Statistics Sweden and the Riksbank

**Chart 2:17. Corporate borrowing from credit institutions and gross fixed capital investments**  
Annual percentage change



Sources: The Riksbank

**Chart 2:18. Debt/total asset ratio in Swedish listed companies**  
Per cent



Note. The debt/total asset ratio is defined as debts in relation to booked accounted capital.

Sources: Bloomberg and the Riksbank.

**Corporate borrowing from credit institutions has continued to increase at a high rate.** In September 2008 corporate borrowing from Swedish credit institutions rose by almost 15 per cent on an annual basis (see Chart 2:15).<sup>35</sup> Along with ordinary bank loans, the bond market is the most important financing source for large Swedish enterprises, even though it currently accounts for a small share of total corporate borrowing (see Chart 2:16). As shown in Chart 2:16, the companies' prospect to find financing in the securities market were good during the second quarter of 2008.

**Historically, the industry's borrowing has had some correlation with real gross fixed capital investments** (see Chart 2:17). This indicates that in the past companies have borrowed to finance their investments. Since the financial crisis began in the summer of 2007, however, the pattern has changed. The rate of increase in fixed capital investments has slowed considerably at the same time that corporate borrowing has continued to rise sharply. Many factors may have contributed to such a development. For instance, it was more expensive for listed companies to obtain financing on the stock market during this period. At the same time the banks offered relatively low lending rates for new loans with favourable credit terms. Indications also suggest that many companies took advantage of previously agreed credit lines with banks during this period. In September 2008 companies increased their borrowing from credit institutions at the same time that they reduced their borrowing from the money market through the issuance of commercial papers. Leveraged buyouts involving private equity investment companies are another factor behind the increased borrowing.

**Corporate debt in relation to total assets has grown rapidly during 2007 and 2008, after having fallen for many years** (see Chart 2:18). This is due to the strong credit growth in the corporate sector, as well as the fact that companies have decreased their book capital, mainly by decreasing their current assets and liquid assets. The reason is that the companies have had a large surplus of liquid assets at the same time that they have had few profitable investments. One way to reduce liquid assets is to increase dividends to shareholders and thereby lower shareholder's equity, which in turn imply a decrease in book capital.

**However, there is reason to believe that the rate of borrowing will slow down in the future.** This applies to corporate borrowing from both credit institutions and the market. As investments grow more slowly, companies' demand for new credits will decline over the coming quarters. In addition, banks have become significantly more restrictive to both short-term and long-term lending to companies as

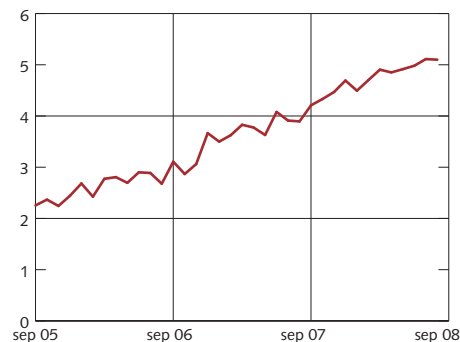
<sup>35</sup> Refers to total corporate lending by credit institutions.

a result of the financial crisis. According to the Riksbank's contacts with market participants, there are signs that banks have tightened their loan terms, i.e., signs of a beginning credit crunch.<sup>36</sup> At the same time interest rates have increased (see Chart 2:19). In addition it has become much more difficult for private equity investment companies, which previously contributed to the increased borrowing, to finance large corporate acquisitions or to carry out leveraged buyouts of medium-sized enterprises. Even the values of companies already in their portfolios have decreased as the companies' market value has declined, and prospects for selling companies at the stock market are not very good at this time. Moreover, corporates will also meet difficulties to bear the higher interest expenses, due to high interest rates in a declining economy. Finally, the investments by private equity companies are expected to decline as the economy deteriorates, even if their investments increased during the last year.<sup>37</sup>

**At the same time market borrowing has become more difficult for companies.** Opportunities for Swedish companies to finance current operations with bonds and certificates have deteriorated as a result of the financial crisis. In the current market situation it is difficult for large enterprises to raise capital on the stock market, which means that companies are largely relegated to bank loans for their financing. At the same time lending rates have risen in recent years and as was mentioned previously, banks are clearly more restrictive now about approving loans. Consequently companies encounter higher financing costs for their earlier market financing when refinancing loans, or that they are unable to refinance these loans because financing is unavailable. The effect could be that businesses will be forced to reduce their investments even more. Thus the financial crisis will have repercussions on the real economy. To alleviate these problems, the Riksbank has temporarily offered banks the opportunity to borrow at three months against collateral comprising more commercial papers than usual. In practice this means that non-financial companies may obtain funds by issuing certificates to the banks, which in turn use them as collateral for loans from the Riksbank.

**Companies are beginning to experience a worsening of their financial position as a result of higher indebtedness and rising interest rates.** Since 2007 the companies' capacity to cover their interest expense has worsened somewhat, as illustrated in a lower interest coverage ratio (see Chart 2:20). Nevertheless corporate earnings are still expected to cover their interest expense with a broad margin. Moreover, the companies' current ratio has gradually deteriorated, which means that companies have diminishing liquid assets to use for their short-term payment commitments (see Chart

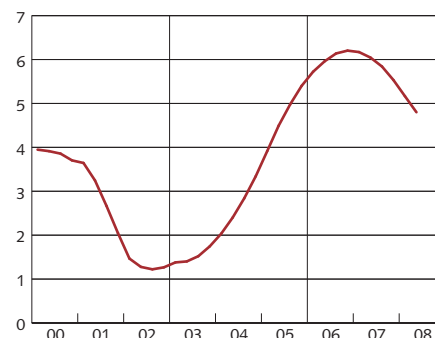
**Chart 2:19. The four major banks' lending rates on new loans signed by non-financial companies**  
Per cent



Note. The interest rate for new loans for companies comes from Statistics Sweden's financial market statistics and is a weighted average of the lending rates for new loans of the four major banks (Handelsbanken, SEB, Nordea and Swedbank). The weighting is determined by the maturity for new loans to companies.

Sources: Statistics Sweden and the Riksbank.

**Chart 2:20. Interest coverage ratio in Swedish listed companies**  
Ratio



Note. The interest coverage ratio is defined as operating profit/loss plus financial income in relation to financial costs.

Sources: Bloomberg and the Riksbank.

**Chart 2:21. Current ratio in Swedish listed companies**  
Per cent



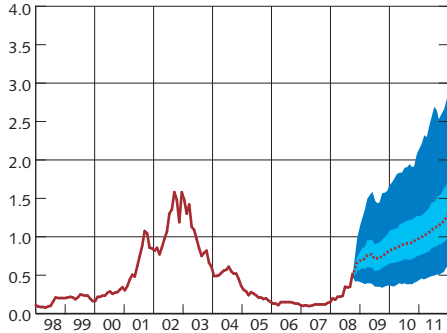
Note. The current ratio is defined as current assets in relation to current liabilities. If the current ratio is 100 per cent, this means that current liabilities can be paid immediately, provided that current assets can be immediately converted into cash.

Sources: Bloomberg and the Riksbank.

<sup>36</sup> See the ALMI Företagspartner lending indicator for October 2008. ALMI's lending indicator is a quarterly survey of 151 local bank managers all over Sweden.

<sup>37</sup> See the Swedish Private Equity and Venture Capital Association, Innovationsbron and the Swedish Agency for Economic and Regional Growth (Nutek), (2008), "Venture Capital Companies' Activities and Early Stage Funding, Quarter 2".

**Chart 2:22. Corporate credit quality measured by expected default frequency (EDF), historical outcomes and forecasts according to the Riksbank's main scenario**  
Per cent



Note. The uncertainty intervals are the intervals within which the average EDF is judged to lie with probabilities of 50 and 95 per cent, respectively, given the Riksbank's main scenario in the Monetary Policy Report 2008:3. The intervals thus reflect the uncertainty over how the EDF is affected by changes in GDP, inflation and in the three-month risk-free rate. The interval does not take into account the uncertainty in the macroeconomic variables.

Sources: Moody's KMV and the Riksbank

2:21). The worsened current ratio pose no problem that companies will not be able to meet their payment commitments as long as companies' earning capacity and profitability remain sound.

**Corporate credit quality is expected to worsen as economic activity slows down** (see Chart 2:22).<sup>38</sup> Companies are expected to become less profitable as their earning capacity diminishes with the economic downturn. The risk that the lending rate to companies will remain high may also be associated with a risk that their borrowing costs could increase. This contributes to a lower interest coverage ratio for the companies because their earnings will not cover their interest expense as well as in the past.<sup>39</sup> In view of that, companies are more likely to be unable to meet their commitments within a specific period of time, which in turn could lead to an increase in the number of defaults. If the financial crisis continues for an extended period and economic developments become worse than expected, corporate credit quality could deteriorate even more.

**Lenders might seek compensation for the worsened credit quality of their corporate customers.** The reason is that poorer credit quality could lead to future loan losses for the banks. To compensate for the increased credit risk banks can raise interest rates on new lending, which means that it will become even more expensive for businesses to finance new investments. Such a development would also have repercussions for private equity investment companies since loan-financed corporate acquisitions would become even more expensive. Activity for such transactions could also slow down due to a decrease in access to venture capital.

**In summary, credit risk will increase in the corporate sector over the next three years, which could influence the cost of borrowing and have a negative impact on investments.** The earnings capacity of companies is expected to worsen in future as economic activity slackens. Reduced earnings combined with a continued high lending rate could in turn lead to a situation in which companies find it more difficult to cover their interest expense in the future. Companies must then rely on their liquid assets to meet short-term payment commitments. But the companies have reduced their liquid assets in relation to their current liabilities, which entails a greater probability that companies will be unable to meet their commitments within a specific period, which in turn means that the credit quality of companies will deteriorate during the coming years. This could lead to more defaults. In addition, opportunities for companies to obtain

<sup>38</sup> To estimate how the expected default frequency develops over time, the Riksbank has developed a model for predicting future credit quality in the corporate sector. Credit quality is represented by expected default frequency (EDF). Credit quality is then related to macroeconomic developments. The model was presented in the Financial Stability Report 2007:1

<sup>39</sup> The uncertainty about the future earnings of companies has increased since the early autumn. This is shown by companies being valued lower on the stock exchange and in a higher implicit volatility in the stock market (see Chapter 1).

financing in the securities, bonds and stock market have deteriorated. Businesses are therefore increasingly relegated to bank loans for financing, in a situation with rising interest rates and signs of the beginning of credit crunch, indicating that banks have begun to tighten loan terms. This development could further restrain corporate investments and therefore have negative effects on the real economy.

## The commercial property market and property companies

Property companies, in other words those companies that own and manage properties, together account for the single largest sector to which the four major banks lend money. About one third of lending by the four major banks to non-financial companies goes to property companies.<sup>40</sup> A large part of this lending takes place with properties as collateral and consequently falling prices on properties entails a decrease in the value of the collateral. Falling rents in the property market entail decreased earnings for property companies and therefore a deterioration of their ability to make the interest and mortgage payments on their bank loans. Thus falling rents and falling prices on properties could cause credit losses for the banks. This section presents developments in the commercial property market, followed by a review of the debts and credit quality of the property companies.

### THE COMMERCIAL PROPERTY MARKET

**Prices for office premises have fallen sharply both in Sweden and abroad.** The development of property prices in Sweden, Ireland, the United Kingdom and the United States have followed a similar pattern and can be explained by the financial crisis and the worsened macroeconomic prospects (see Chart 2:23). Price developments in recent years, especially in the United Kingdom, are attributable in part to a closer connection between the property and capital markets.<sup>41</sup> During the financial crisis opportunities for funding investments in the property market have deteriorated both in Sweden and abroad. The reason is that the banks have tightened lending terms and the market for securitised property loans has essentially disappeared, which in turn resulted in weakened demand for properties as investment assets and falling prices. In Sweden the price decline during the third quarter was particularly noticeable in central locations of Stockholm and Göteborg, with prices down about six and four per cent respectively in nominal terms compared with the same period last year. Taking inflation into account, the price fall has been even greater (see Chart 2:24). Yet another sign of waning demand for properties is a decrease in the number of completed transactions.

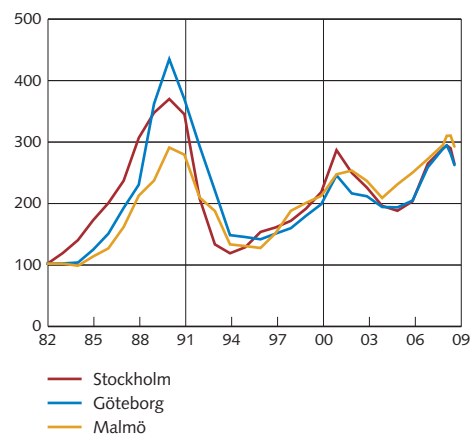
**Chart 2:23. Prices of office premises**  
Annual percentage change



Note. Figures for Sweden refer to Stockholm. The others are national levels.

Sources: IPD, Reuters EcoWin, MIT Center for Real Estate, Newsec and the Riksbank

**Chart 2:24. Real prices of office premises in city centres**  
Index: 1981=100



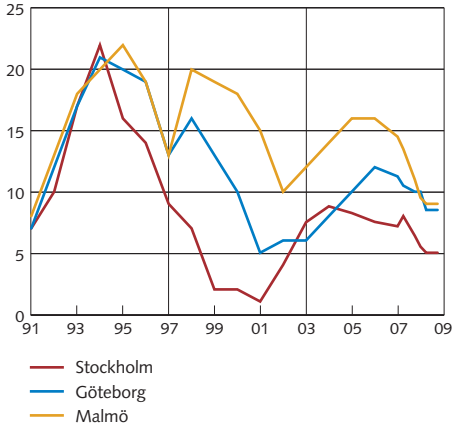
Sources: Newsec and the Riksbank

40 Corresponding to about SEK 1 300 billion for the third quarter of 2008.

41 This closer connection depends on the securitisation of property loans that has taken place. See also Financial Stability Report 2008:1.

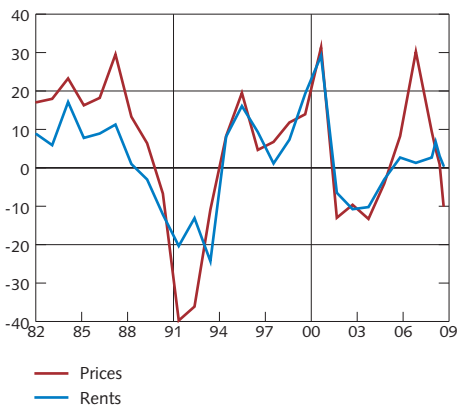


**Chart 2:25. Vacancy rate for office premises in city centres**  
Per cent



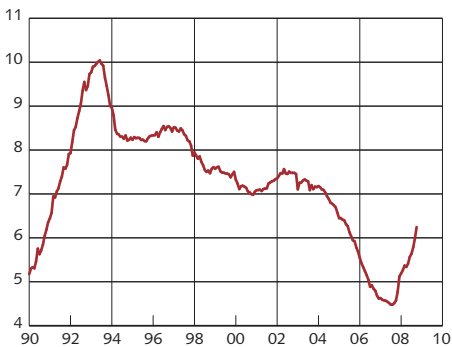
Sources: Newsec and the Riksbank

**Chart 2:26. Real prices and rents for office premises in Stockholm city centre**  
Annual percentage change



Sources: Newsec and the Riksbank

**Chart 2:27. Required return on office premises in the United Kingdom**  
Per cent



Sources: IPD and Reuters EcoWin

**Investments in the Swedish commercial property market have decreased.** During the first six months of 2008 investments (measured as total trading volume) totalled about SEK 50 billion, which can be compared with about SEK 70 billion during the corresponding period the previous year and about SEK 150 billion for all of 2007. Foreign investments in particular have decreased. Since the end of 2007, foreign investments as a percentage of total investments have decreased and during the first half of 2008 they comprised only one third of total investments, compared with about half in 2007.<sup>42</sup> The global financial crisis has worsened opportunities for those investors who are dependent on external funding. But even investors with greater capital strength have become cautious and are waiting for the markets to stabilise.

**The proportion of unlet premises, the vacancy rate, for office premises in city centres has been essentially unchanged.** The vacancy rate fell quickly in the central parts of the three metropolitan areas during 2007 and the beginning of 2008. However, vacancies have been unchanged since the second quarter of 2008 (see Chart 2:25). Modern office premises in central locations have continued to be most in demand, while less desirable premises in less attractive locations are less in demand. The increased occupancy of premises is a result of the earlier buoyancy of the economy and increased employment in office-intensive sectors. However, it is probable that the worsening economy and the slowdown in the labour market will lead to lower demand for office premises in the future and consequently an increase in vacancies.<sup>43</sup>

**Rent growth slows as vacancies remain unchanged.** Nominal rents have risen by almost five per cent in Stockholm during the third quarter compared with the same period last year, while real rents largely remained unchanged (see Chart 2:26). However, with vacancies expected to rise in the future, rents are also expected to climb at a slower pace.

**Direct earnings requirements on office properties continued to rise in Sweden and abroad.** This trend reflects the increased uncertainty and risk aversion as a result of the financial crisis. Investors have therefore demanded an increased return on their investments, which has reduced demand for properties as investment assets and thereby had a negative affect on property prices. This development has been particularly evident in the United Kingdom (see Chart 2:27). In Sweden, direct earnings requirements on office properties continued to rise, especially in Stockholm and Göteborg (see Chart 2:28). This particularly applies to less desirable properties in less attractive locations. According to market participants, the difference between

<sup>42</sup> However, total investments for 2008 are expected to reach relatively high levels as a result of four major property deals. See Newsec Nordic Report Autumn 2008.

<sup>43</sup> Compare with the Riksbank's Monetary Policy Report 2008:3.

the required return for modern premises in central situations and less desirable premises in less attractive locations increased.<sup>44</sup>

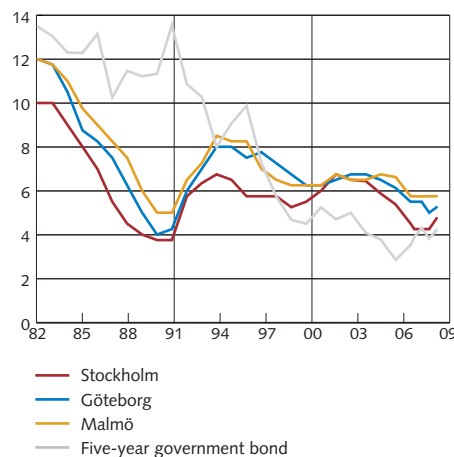
## THE PROPERTY COMPANIES

**Borrowing by the Swedish property companies continued to increase.** However, the annual percentage rate of increase during the report period was slower than at year-end.<sup>45</sup> In the majority of listed property companies, which are best covered by the statistics, interest bearing liabilities have increased during the report period. Indebtedness, i.e. interest-bearing liabilities in relation to equity, has increased across the board. However, companies' net operating income, that is the difference between rent income and operating and maintenance costs, improved during the report period for most listed property companies. This indicates that most property companies continue to have good earnings. However, all property companies report worse results, which can be explained by both unrealised and realised changes in value of the property portfolios.<sup>46</sup>

**The credit quality of Swedish property companies markedly worsened and may continue to deteriorate.** The realised defaults among property companies have slightly increased during the last few months and the expected default probabilities indicate that the risk of default will increase during the coming year.<sup>47</sup> Moreover, property companies will be less able to meet their interest and mortgage payments on their bank loans due to the continued economic downturn because of reduced demand for premises, which will mean less rent income for property companies. These price falls also erode the value of the collateral that banks received when lending to property management companies. Although property companies' interest coverage for the report period was generally good, signs suggest a reduction lies ahead. The financial crisis has also revealed the dependence of certain property companies on market funding. A continued lack of confidence in the capital markets could therefore also have an impact on opportunities for property companies to obtain funding.

**In summary there is a risk that prices in the property market will continue to fall.** The risk of continued falling prices is due to greater difficulties funding investments, rising required returns and lower demand for premises accompanied by falling rent levels. Against the background that the two most recent cycles in the Swedish

Chart 2:28. Average required direct return for modern office premises in city centres  
Per cent



Sources: Newsec and Reuters EcoWin

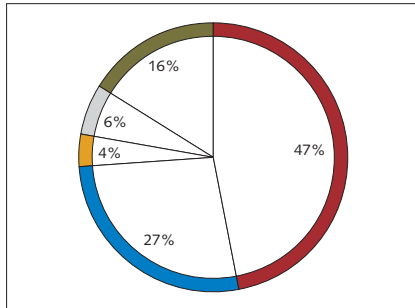
<sup>44</sup> It is conceivable that the required return rose more than what is illustrated in Chart 2:28, since these figures refer to modern premises in city centres, while price data also refer to less desirable properties in city centres.

<sup>45</sup> The report period is January to September 2008. Comparisons are made with the same period in the previous year unless otherwise stated.

<sup>46</sup> Refers to the 15 out of a total of 18 listed property companies which had published their interim reports for the period January to September 2008 when Financial Stability Report 2008:2 was compiled.

<sup>47</sup> According to the forward-looking indicator Expected Default Frequency (EDF), which reflects the probability of the market value of the company's assets being less than the value of its liabilities when these fall due for payment.

**Chart 2:29. Geographical breakdown of the major banks' lending 2007**  
Per cent

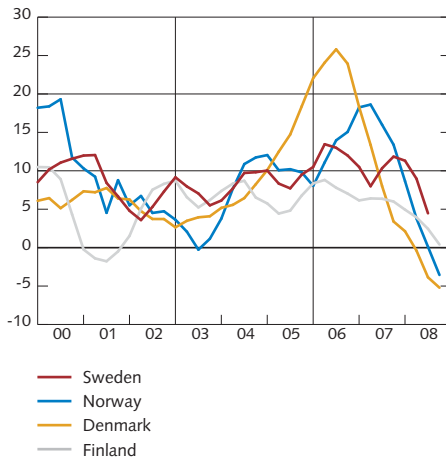


- Sweden
- Other Nordic countries
- The Baltic countries
- Germany
- Rest of the world

Note. Some of the banks include both off-balance sheet credit exposure and lending to credit institutions.

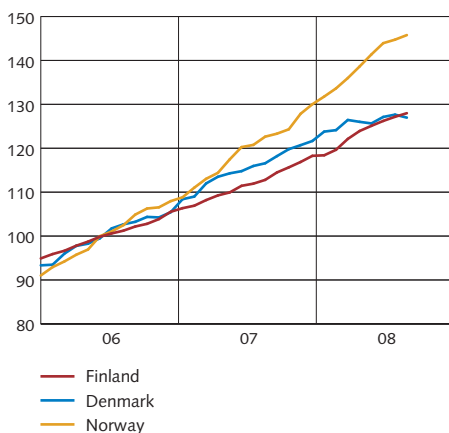
Source: The Riksbank

**Chart 2:30. House prices in the Nordic countries**  
Annual percentage change



Sources: Reuters Ecowin and the BIS

**Chart 2:31. Borrowing by companies in Nordic countries**  
Index 2006=100



Source: Reuters EcoWin

property market have lasted for about four years,<sup>48</sup> there is also additional reason to believe that the recent drop in prices may be the introduction of a period with continued falling prices. The slowing economy and financial uncertainty mean that the prospects for the property companies will worsen further. For example, there is reason to believe that even minor rate increases could worsen the interest coverage ratio, particularly for highly leveraged property companies, which could cause them to have problems servicing their bank loans. In addition, continued falling prices could result in a worsened equity ratio for property companies and the properties loan-to-value levels could exceed desirable levels.

### The Swedish banks' borrowers abroad

The Swedish banks are to a large extent active outside Sweden. With half their lending abroad, the banks' foreign business is as important as their domestic operations (see Chart 2:29). The other Nordic countries comprise the biggest market outside Sweden, followed by Germany and the Baltic countries.

#### THE NORDIC COUNTRIES OUTSIDE SWEDEN

##### The economic outlook has worsened in all of the Nordic countries.

The slowdown is most evident in Denmark where GDP is expected to grow by less than one per cent annually between 2008 and 2010.<sup>49</sup> The effects of the financial crisis have been most pronounced in Denmark, where the authorities have taken measures to save several banks from bankruptcy. At the same time there is no room for monetary stimuli when the Danish krone is exposed to pressure. Danmarks Nationalbank instead has been forced to raise the policy rate to defend the exchange rate, which is pegged to the euro. The cooling of the housing market in the Nordic countries is expected to continue due to the financial crisis and the deteriorating economy (see Chart 2:30). Since autumn 2007 house prices have been essentially unchanged in Finland, while they have fallen somewhat in Denmark and Norway. In Denmark's case the weakening is related in part to earlier large housing investments resulting in a housing glut in the market.

##### Households and businesses have not yet noticed the economic slowdown to any substantial degree.

Unemployment continues to be low in Denmark (1.6 per cent in August) and in Norway (2.8 during the second quarter), while it is higher in Finland (5.9 in September). Just as in much of the rest of the world, rising costs for energy and

<sup>48</sup> This means that it has taken about four years for real estate prices to go from a maximum to a minimum level.

<sup>49</sup> Danmarks Nationalbank, *Monetary Review*, third quarter 2008.



foods have contributed to erode households' purchasing power. However, in general, households have adequate margins and it is not likely that the debt-servicing capacity in the household sector will decline to any critical degree. As business activity slows, household borrowing – which is still rising relatively quickly – will probably increase at a slower pace. The economic slowdown has not yet had much of an impact on the corporate sector, though corporate borrowing is beginning to slow down (see Chart 2:31). The number of defaults is still historically low, but forward-looking indicators of future expected defaults (EDF) suggest a marked worsening of credit quality during the coming year (see Chart 2:32). In general, the ongoing financial crisis has also entailed worse loan terms and financing opportunities for Nordic households and businesses. If the financial crisis continues, there is a risk that economic activity will be even weaker than expected and that the credit supply in the economies will continue to decline.

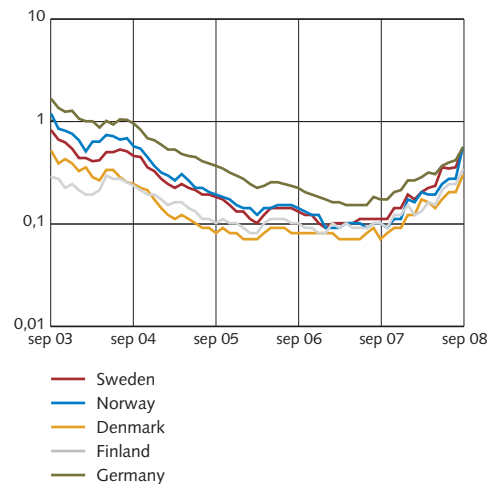
GERMANY

**Economic prospects in Germany continue to deteriorate.** According to preliminary data, GDP fell during both the second and third quarters. During the second quarter the preliminary reason was falling consumption and lower investment while the third quarter was marked by lower exports. German businesses are heavily dependent on their export markets, which means that weak global economic conditions will have a negative impact on them. Just as Sweden and the rest of the Nordic countries, Germany still reports few actual defaults, but forward-looking indicators of future defaults suggest these may increase during the coming year (see Chart 2:32). Germany has also been directly affected by the financial crisis, where the authorities have been involved in a series of rescue packages for German banks. German corporate borrowing remains high, but will probably subside in the future. Unlike most other countries, house prices and household indebtedness have not increased to any great extent in recent years (see Chart 2:33). Consequently Germany has relatively few heavily indebted households. There is therefore reason to believe that German households will not be directly affected by the ongoing financial crisis to the same extent as households in the UK or the USA. Households are of course affected by the economic downturn but their ability to service debt is expected to continue to be sound.

THE BALTIC COUNTRIES

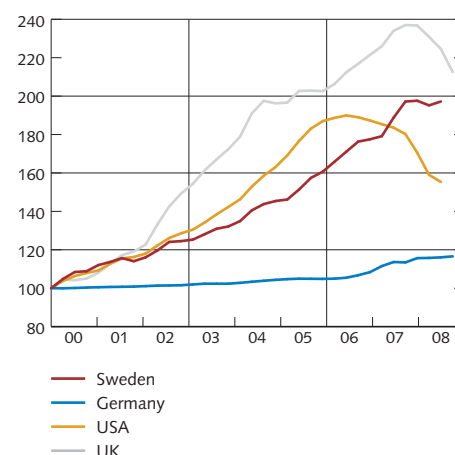
**Economic growth has come to a halt in Estonia and Latvia.** Growth in Lithuania has also slowed down quickly over the year but not as much as in the two neighbouring countries. Growth is still positive

Chart 2:32. Expected default frequency for listed non-financial companies in the Nordic countries and Germany  
Per cent



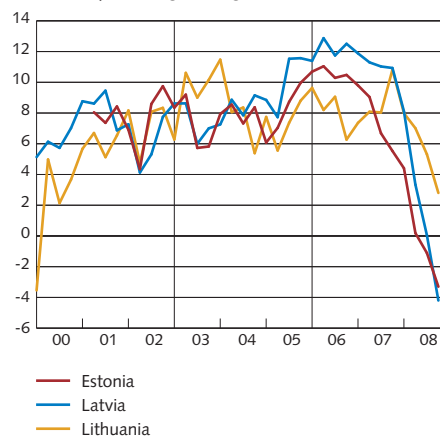
Source: Moody's KMV

Chart 2:33. House prices in Germany and abroad  
Index 2000=100



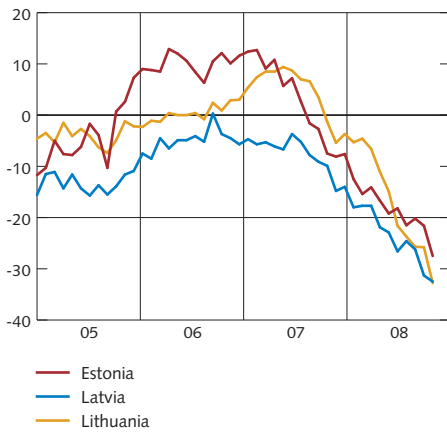
Source: Reuters EcoWin

Chart 2:34. GDP growth  
Annual percentage change



Source: Reuters EcoWin

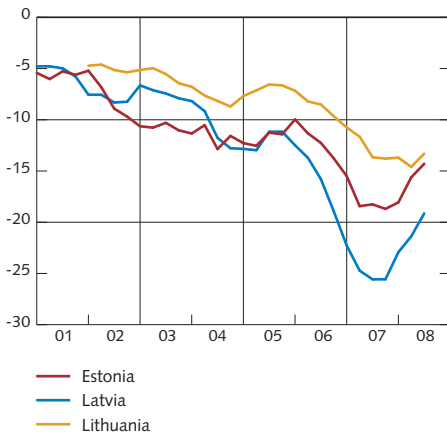
**Chart 2:35. Consumer confidence indicator**  
Net figures, per cent



Note. The confidence indicator is a weighing together of various questions about the respondent's own financial situation and the general state of the economy in the next twelve months. The net figures are defined as the proportion of respondents who reply positively less the proportion of respondents who have answered negatively.

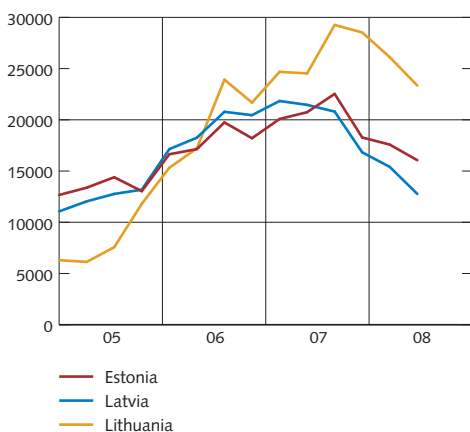
Source: European Commission

**Chart 2:36. Current account**  
Percentage of GDP, totalled over four quarters



Source: Reuters EcoWin

**Chart 2:37. Number of job vacancies**



Source: Reuters EcoWin

here (see Chart 2:34).<sup>50</sup> The slowdown in the Baltic countries is due to a decline in domestic demand, and this development is expected to continue in all three countries. It is reflected, for instance, in the fact that consumer confidence has continued to fall over the year (see Chart 2:35). Lower domestic demand has led to imports now falling or increasing at a slower rate. At the same time, exports are increasing in all three countries. This has meant that the large deficits on the current account have begun to shrink (see Chart 2:36). These are expected to continue to decline, although the weak imports will probably have greater significance for the improvement in current account than the growth in exports.

#### **Despite the fact that growth has diminished, unemployment is low.**

Unemployment has increased only marginally and from very low levels. However, one sign that demand for labour is not increasing as much as before is that the number of job vacancies has declined since autumn 2007 (see Chart 2:37). Wages have increased rapidly in all three countries the past few years. Lately, however, the rate of increase has declined in nominal terms, but above all in real terms (see Chart 2:38). As economic activity slows down further, the number of unemployed should rise and the rate of wage increase should decline further.

**Inflation has begun to decline in the Baltic countries.** However, inflation is nevertheless still high and amounted to about 10 per cent in both Estonia and Lithuania in October. In Latvia inflation amounted at the same time to just over 13 per cent. (see Chart 2:39). As the effects of higher food prices and energy prices subside and demand slows down further, inflation should also continue to decline.

#### **Weaker demand has meant that household and corporate borrowing is increasing at a slower rate.**

This is particularly evident in Estonia and Latvia, but can also be seen in Lithuania (see Charts 2:40 and 2:41). Credit terms have gradually been tightened over the past year and at the same time interest rates have risen as a result of the financial crisis. This has had the effect that household borrowing in both Estonia and Latvia has been almost unchanged since the beginning of the summer. On the corporate side, the picture is more fragmented. Latvian companies' borrowing has not slowed down noticeably over the past six months. In Estonia, however, construction and property companies have almost ceased borrowing, while borrowing in the manufacturing industry remains strong. The slowdown in borrowing is also reflected in households' and companies' indebtedness, debts in relation to GDP, which is not increasing as quickly as before (see Chart 2:42). A large share of the loans are still being denominated in foreign currency, particularly euro,

<sup>50</sup> The GDP figures in Q3 are preliminary, what is known as a flash estimate, and therefore usually more uncertain.

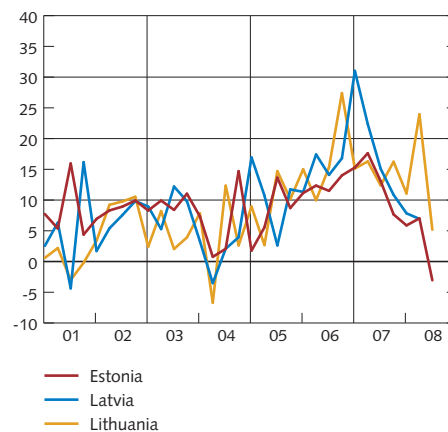
which means that the loans entail a foreign currency risk as long as the countries are not members of the monetary union.

**At the same time as demand for loans has declined, house prices are falling.** During the second quarter of 2008 real house prices, that is, house prices adjusted for inflation, were just over 20 per cent lower than in the same period in 2007, both in Estonia and Latvia.<sup>51</sup> This was one of the largest price falls noted among European countries. However, in Lithuania house prices remained almost unchanged during the same period. One effect of the economic downturn has been that the volume of overdue loans has increased rapidly, albeit from low levels (see Chapter 3). The main increase in late payments is among construction companies and real estate companies. Commercial property prices have not fallen. This is mainly because relatively few office premises have been built in recent years. The supply of office premises has therefore been relatively small at the same time as demand to rent these premises is substantial.<sup>52</sup> However, rents on office premises in both Tallinn and Riga have recently begun to fall, which could gradually also push down the price of this type of property.

**After several years of strong economic growth and rapid increases in borrowing, there has been a turnaround.** This is most evident in Estonia and Latvia. The credit quality has not yet deteriorated to any great degree, but with weaker economic activity, the credit ratings of both households and companies are expected to decline. The extent to which this occurs will depend on how profound and how prolonged the economic downturn is. Future growth in the Baltic countries is largely dependent on exports, but the prospects for exports have deteriorated, as growth abroad has slowed down and the financial crisis has continued to worsen. At the same time, domestic real wages are continuing to increase more quickly than productivity, which if this continues, may in the long term affect competitiveness and further deteriorate the prospects for exports. In Lithuania economic activity is still relatively strong. But at the same time, the Baltic countries are tightly linked to one another through trade, which means that there is a risk that a deep recession in Estonia and Latvia could spread to Lithuania. In addition, even if the current account deficit will probably continue to decline, there is still a significant need for capital inflows in the immediate future. At the same time, interest in investing in emerging economies assets have declined during the autumn. This was a contributing factor leading up to the Latvian government take over as majority owner of Parex Bank on 8 November.

Chart 2:38. Real wages

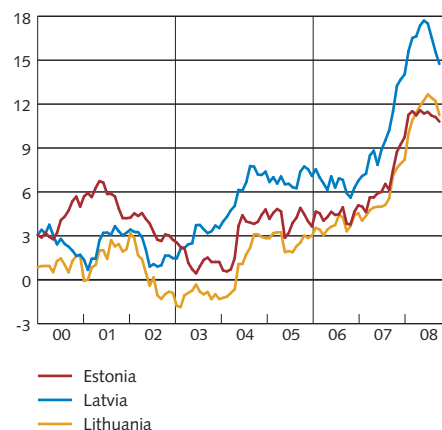
Percentage change from previous quarter, quarterly change, seasonally-adjusted on an annual rate



Sources: Reuters EcoWin and the Riksbank's calculations

Chart 2:39. Harmonised index for consumer prices

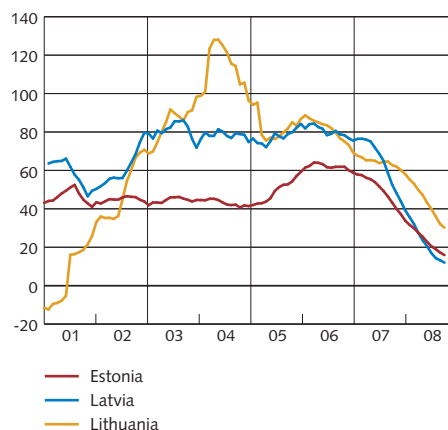
Annual percentage change



Source: Reuters EcoWin

Chart 2:40. Household borrowing in the Baltic countries.

Annual percentage change

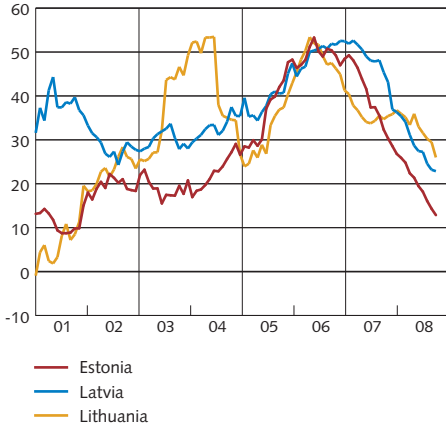


Sources: Reuters EcoWin and national central banks

<sup>51</sup> Source: Bank for International Settlements (BIS). House prices are measured in different ways in different countries. This means that it is inappropriate to make direct comparisons between countries, in particular with regard to relatively short periods of time.

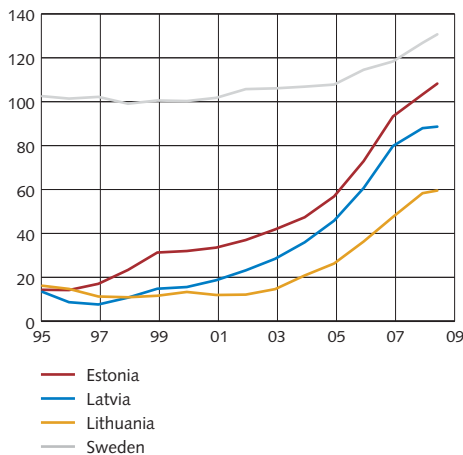
<sup>52</sup> See Newsec, Nordic Report, autumn 2008.

**Chart 2:41. Corporate borrowing in the Baltic countries**  
Annual percentage change



Sources: Reuters EcoWin and national central banks

**Chart 2:42. Households' and companies' debts in relation to GDP in the Baltic countries and Sweden**  
Per cent



Sources: The national central banks and Reuters EcoWin.

## Summary of risks for the borrower sector

In general, the banks' borrowers have a good capacity to pay, but certain groups are at greater risk of payment problems arising. The probability that this will occur depends on the future development of the economy, particularly on how economic activity interacts with and is strengthened by the crisis in the financial markets.

**A combination of an economic downturn and financial crisis has ramifications for borrowers in Sweden.** But even if some households in Sweden could be severely impacted, most have adequate margins to be able to service their mortgages. In this context it is also worth a reminder that households only accounted for a marginal portion of the banks' loan losses during the Swedish banking crisis in the early 1990s. If the financial crisis is prolonged, however, there is a risk that households must cut back on other expenditures, which in turn would negatively impact the corporate sector. Such a scenario would also directly affect businesses through higher financing costs and difficulties obtaining financing. In the current situation defaults in Sweden are still few, but they are expected to rise in the future. It is difficult to assess how much, but forward-looking indicators based on share values point to a fairly substantial worsening of credit quality. The property companies comprise one borrower group in particular that could be impacted, especially in light of previous large value gains on commercial properties. Deteriorating macroeconomic conditions and the increasingly difficult situation in the financial markets pose a risk for continued falling prices on commercial properties. Such a development would erode the value of the collateral that serves as the basis of the loans at the same time that property companies' earnings and capacity to pay decline.

**The cooling down in Estonia and Latvia has been both faster and stronger than was earlier feared.** As a result, the credit ratings of both households and companies are expected to deteriorate. The extent to which this occurs will depend on how profound and how prolonged the economic downturn is. This in turn depends on both domestic and external factors. As small, open economies the Baltic countries are dependent on economic activity abroad. If economic activity in the export markets were to decline substantially and the recovery were to be delayed it would increase the risk of the adjustment to a long-term sustainable economic growth rate being longer drawn out. But developments in the financial markets also play an important role, particularly in the light of the large current account deficits and depending on capital inflows. If the uncertainty and the low interest for investing in Eastern and Central European assets remain the economic situation could worsen.

## ■ Developments in the banks

### Developments in the banks – in brief

In an international comparison, the major Swedish banks are performing well. So far, the losses stemming from the global financial crisis have been limited and both the profitability and the financial strength of the banks are good. Credit losses remain historically low. Given this background, it is the Riksbank's assessment that the major Swedish banks have satisfactory buffers in relation to the risks they are exposed to, which is confirmed by stress tests.

The financial crisis has, however, had tangible consequences for the Swedish banks too. Although profitability is good, it has continued to decline throughout the reporting period and credit losses have begun to increase. The financial crisis has contributed to this situation in several ways. For example, the value of interest-bearing securities has fallen and this has had a negative impact on the bank's profits. In addition, the falling stock market has led to a reduction in securities-related commission income.

The banks' liquidity risks have also increased as the crisis has worsened. Since the summer, it has become much more difficult for banks to finance themselves on longer maturities and the costs for the banks' deposits and wholesale funding have risen. At the same time, the Swedish banks have considerable refinancing needs over the next few quarters. In order to ease the banks' funding situation, the Riksbank and other authorities have taken extensive measures during the autumn. The resilience of the banks should be viewed against the background of these measures.

The banks' borrowers are also being affected by the steady decline in the economic outlook. The slowdown in the economies of the Baltic countries is leading to an increased credit risk. At the same time, the expected default frequency (EDF) for Swedish companies has risen, especially for property companies which have also been affected by lower real estate prices. This increases the level of risk in the banks' lending, which makes the banks tighten their credit standards. The companies' and households' demand for credit will probably decline as the banks become more restrictive. For the banks this will in turn entail poorer opportunities to earn money at the same time as credit losses are expected to increase further in the period ahead. A sustained crisis will probably lead to a sharper credit crunch, which means that many companies and households will be refused loans even though they are creditworthy.

The Riksbank's analysis of the banking sector focuses on the four major Swedish banks – Handelsbanken, Nordea, SEB and Swedbank. These banks are of key importance to the stability of the Swedish financial system. Together, they account for approximately three-quarters of the deposits from and loans to the Swedish public. The major banks are becoming increasingly dependent on markets other than the Swedish market and a significant part of their risk exposure lies abroad (see Chapter 2). The Riksbank therefore analyses the entire bank groups and not just their Swedish businesses.<sup>53</sup>

The chapter begins with a brief summary of how the global financial crisis has affected the major Swedish banks. The different risks to which the banks are exposed are then analysed in turn.

First, an account is given of the development of the banks' profitability, which provides an indication of their strategic risks. This is followed by a review of the banks' assets where the risks mainly take the form of credit and market risks. An analysis of the development of the bank's capital base, which is central to the assessment of the banks' resilience, is then presented. Next, there is a discussion of the liquidity risks against the background of the banks' financing structure. Finally, the Riksbank presents the results of some of the stress tests conducted. These demonstrate the resilience of the banks in the event of unlikely but plausible scenarios.

### The effects of the financial crisis on the Swedish banks

**The financial crisis has created serious problems on the markets on which the Swedish banks depend for their funding and risk management.** These difficulties have affected banks that are creditworthy. It has, for example, been expensive or impossible for the banks to obtain funding at long-term maturities. Among other things, the banks have found it difficult to issue mortgage bonds. At the same time, the banks will need considerable refinancing over the next 12 months as outstanding issued securities fall due. The current financial crisis thus differs from previous crises in that creditworthy banks were not then affected.

**The liquidity risks have also increased for the banks as there have been periods when trading in mortgage bonds has functioned ineffectively** (see Chapter 1). A large proportion of the banks' liquidity buffers consist of mortgage bonds. In order for the banks to be able to convert these into liquid funds, it must be possible to sell or pledge the assets, which requires a functioning market.

<sup>53</sup> Unless otherwise stated, the term "major banks" refers here to the bank groups.



**The Riksbank and other authorities have taken several measures to ease the banks' funding situation** (see the box Measures taken by the Riksbank and other Swedish authorities during the autumn of 2008 and the section on Funding). For example, the National Debt Office has loaned the money it has received in its extra auctions of treasury bills against mortgage bonds as collateral (so-called reverse repos). The Riksbank has set up credit facilities in Swedish kronor and loans in US dollars where the collateral has largely consisted of mortgage bonds. In practice this means that, at the moment, the banks have exchanged illiquid mortgage bonds for liquid funds or government securities. In total, the Riksbank and the National Debt Office have supplied liquidity amounting to approximately SEK 500 billion. This corresponds to approximately five per cent of the total assets of the major banks.

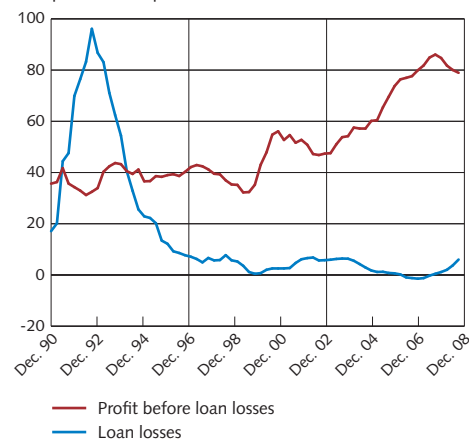
**There has been a negative impact on the profits of the major banks.**

There are several reasons for this. As a result of the financial crisis, the banks have made losses on certain interest-bearing securities. The market values of these assets have fallen as market interest rates have increased, which has affected the banks' profits and their equity. The commission income of the major banks has also been negatively affected by the falling stock markets. The funding costs have also risen as a result of increased costs for both deposits and market funding. However, the banks have largely been able to transfer these costs to their customers in the form of increased lending rates (see the box Development of the major banks' lending and deposit margins in Sweden). In addition, bankruptcies and the nationalisation of banks in other countries have led to a certain requirement for provisioning against losses in some of the Swedish banks.

**The financing risks have increased tangibly as the financial crisis has accelerated.** The risk propensity will remain low among many market participants. This entails an increased risk for the banks' market financing. A negative event in the banks' business operations, for example a significant increase in credit losses, may rapidly increase their funding costs and further curtail their access to wholesale funding.

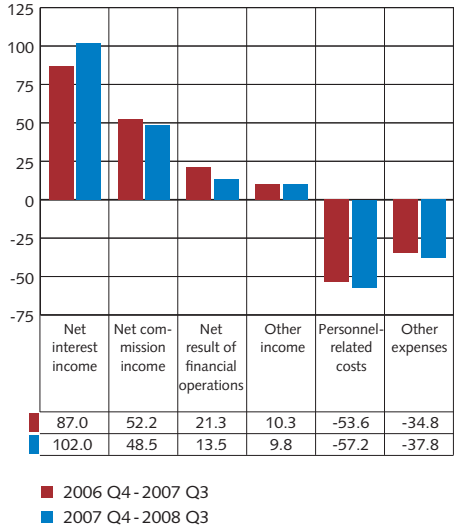
**In the event of a lasting crisis, the banks' customers will be affected to an increasing extent.** As the banks' funding has been disrupted for quite some time, they have begun to tighten their credit standards (see Chapter 2). As a result, there are signs that some companies are experiencing difficulties in financing their operations. If the crisis endures, this may lead to a sharper credit crunch which means that many households and companies that would be able to borrow from the banks in normal circumstances will not be granted loans. This in turn will affect the growth of lending and thus the banks' earnings.

**Chart 3:1. Profit before loan losses and loan losses (net) in the major banks**  
Summed up over four quarters, SEK billion, fixed prices, 30 September 2008



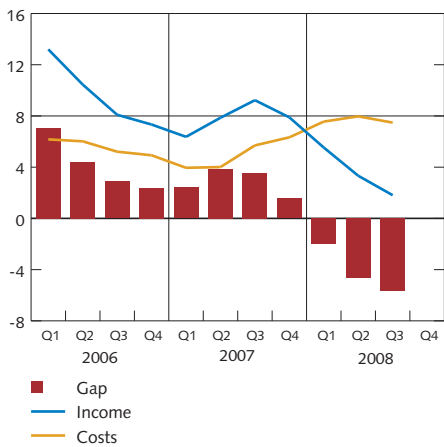
Sources: Bank reports and the Riksbank

**Chart 3:2. Income and costs for the major Swedish banks in the last four-quarter period compared with the preceding four-quarter period**  
SEK billion



Sources: Bank reports and the Riksbank

**Chart 3:3. The development of income and costs and the gap (difference) between their rates of growth**  
Per cent and percentage points, rolling four quarters



Note. The gap is equal to the difference between the increase in income and the increase in costs.

Sources: Bank reports and the Riksbank

## Profitability and earnings – strategic risk

### The profitability of the major banks continued to decline.<sup>54</sup>

Measured as return on equity it amounted to 14 per cent, which is a decrease of almost four percentage points compared to the level a year ago. This is mainly due to a lower rate of increase in income at the same time as the costs have continued to rise. Increasing credit losses have also contributed to the decline in profitability. However, although profitability has fallen it is still in line with the average level of profitability over the last 10 years.

### Profits before credit losses fell to SEK 79 billion (see Chart 3:1).

This is equivalent to a reduction of four per cent compared to the preceding reporting period. At the same time, credit losses have increased and amounted to SEK six billion, which is 0.1 per cent of the major banks' lending to the public. The level of credit losses is, however, still low in an historical perspective.

### Income and costs

The banks' profits are affected by their income and costs. The largest income items are net interest income, net commission income, and net financial transactions. The largest cost item is personnel-related costs (see Chart 3:2). Profits are also affected by the banks' credit losses, which are handled separately however (see the section Lending and credit risk).

### The costs increased more than income during the last four-quarter period (see Chart 3:3).

Income increased by two per cent, an increase that was mainly driven by strong growth in net interest income which is the largest earnings item. The costs rose by just over seven per cent. Over half of this increase related to personnel costs. During the profitable period of the last few years, the banks have allowed costs to increase in operations where it has been possible to achieve high earnings. However, the costs have continued to increase during a period when the rate of increase in earnings has slowed down. This means that cost-effectiveness has deteriorated during the reporting period, which is illustrated by the fact that the C/I ratio<sup>55</sup> increased by two percentage points to almost 55 per cent (see Chart 3:4).

**Net interest income rose by 17 per cent.** It is primarily the growth in the volume of lending (see the section Lending and credit risk) that lies behind the high rate of increase. Net interest income has increased for several quarters at the same time as the growth of net commission income has declined (see Chart 3:5). Some of the banks customers have, for example, transferred their savings in funds to deposit

<sup>54</sup> The reporting period is the latest four-quarter period running to the end of the third quarter 2008. Unless stated otherwise, comparisons are made with the preceding four-quarter period. The figures are adjusted for one-off effects.

<sup>55</sup> The C/I ratio stands for the banks' costs in relation to their income.

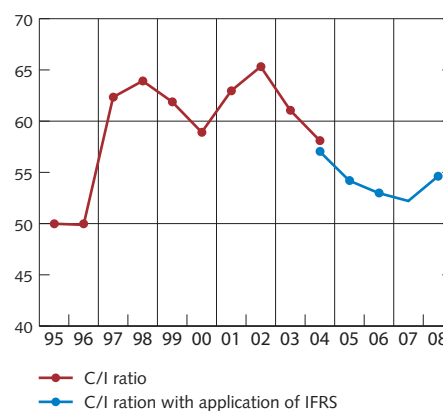


accounts. This redistribution of savings is largely due to the fact that the households seek more secure forms of saving in times of crisis at the same time as the competition between the banks for the savers' money has led to higher deposit rates. Net interest income in relation to the interest-bearing assets was relatively stable during the period. The banks have thus largely been able to pass on the higher funding costs to their customers in the form of higher lending rates.

**Net commission income fell by seven per cent.** Net commission income declined above all in the most recent quarter when it fell by 10 per cent compared to the figure for last year. The reduction was mainly due to the fact that securities-related commission fell by over 13 per cent. As this commission accounts for over half of the net commission income, this means that the net commission income largely reflects the developments on the stock market. Falling share prices lead to a reduction in asset management income at the same time as a lower turnover squeezes brokerage income (see Chart 3:6). Payment-related commission continued to develop positively, however, and increased by five per cent.

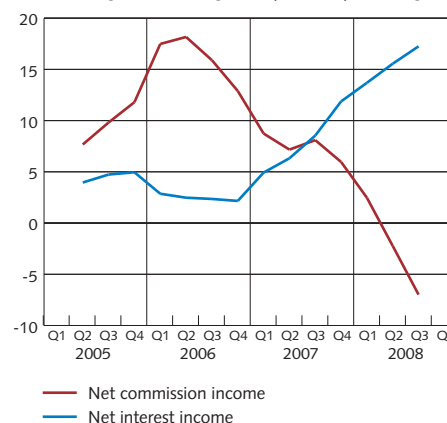
**Deteriorating asset values continued to have a negative impact on the profits of the major banks.** The net result of financial transactions decreased by more than a third during the last four-quarter period. This item is largely dependent on changes in the market value of certain assets on the banks' balance sheets. It was mainly the increase in credit spreads that led to a fall in the value of certain interest-bearing assets. The major Swedish banks have also implemented write-downs that are directly related to the financial crisis<sup>56</sup> (see Table 3:2).

**Chart 3:4. Cost-effectiveness at the major banks**  
Per cent



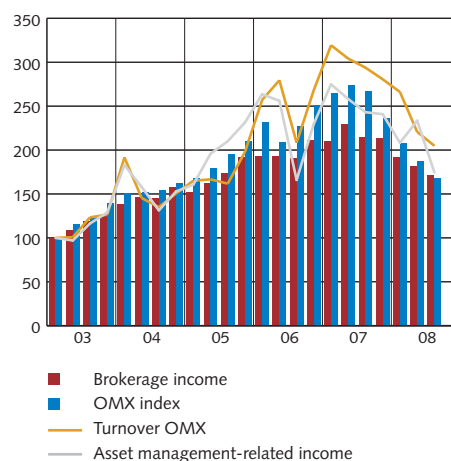
Note. The C/I ratio stands for costs divided by income. 2008 stands for the most recent four quarters.  
Sources: Bank reports and the Riksbank

**Chart 3:5. Development of commission and net interest income since 2005**  
Rate of growth, rolling four quarters, percentage



Sources: Bank reports and the Riksbank

**Chart 3:6. The major banks' securities-related commission income and turnover and stock market index**  
Index: 2003 Q1=100



Sources: Bank reports, Reuters EcoWin and the Riksbank

<sup>56</sup> In those case where an unrealised negative value change (write-down) applies to assets that the bank classifies as "available for sale", the write-down is taken directly against equity and thus does not effect the result.

**T**he financial crisis has made it more expensive for the banks to finance their operations. This box describes how it has been possible to pass on these higher costs to the banks' customers, which has led to higher lending rates.

The major Swedish banks are dependent on being able to borrow money on the financial markets to finance their lending. They do this partly by issuing certificates and covered bonds (see the box Swedish covered bonds).

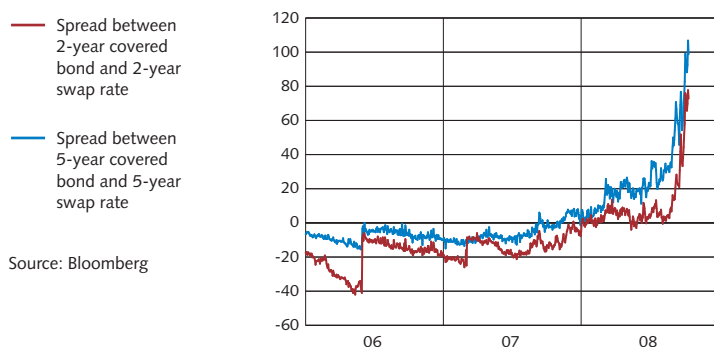
Since 2006, the banks' funding costs have increased for two reasons. First, the short-term, risk-free market rates have increased in Sweden in line with the repo rate. Second, the financial crisis has led to higher risk premiums (see Chapter 1). This is clear, for example, in the trade in the banks' covered bonds. The difference between the interest rates of the bonds for the four major banks and a so-called swap rate has increased in 2008 (see Chart R:9).<sup>57</sup> Under normal market conditions the swap rate reflects the banks' funding costs well,

as evidenced by the fact that in 2006 and 2007 the difference between the banks' covered bonds and the swap rate was close to zero or even negative. From the end of December 2007 to September 2008, the difference has, however, increased by approximately 80 basis points for a two-year covered bond and by approximately 95 basis points for a five-year covered bond.<sup>58</sup>

However, the financial markets are not the banks' only source of funding, this also consists of the deposits from the general public. Deposits are usually regarded as an inexpensive source of funding for the banks as the interest rate that the banks pay to their customers is usually lower than what it costs to borrow funds on the market. In this respect, higher market interest rates can be positive for the banks. This is because the difference between what the banks receive if the money is invested on the market and the interest rate the banks' pay to the customer, the so-called deposit margin, is then often greater.<sup>59</sup> It appears, however, that the increase in deposit margins as a result of the higher risk-free market interest rates has stopped since 2007. This can partly be explained by that fact that competition in the area has increased, which has led the banks to raise certain interest rates in order to attract more deposits.

If deposit volumes increase proportionately more than lending, i.e. if the so-called funding gap<sup>60</sup> decreases, the banks need to borrow less on the financial markets. Partly as a result of the dramatic growth in lending however, the funding gap has continued to increase moderately in 2008 for the four major banks, and the need to borrow on the market has thus also increased (see the section on Funding – liquidity risk).<sup>61</sup>

**Chart B9. Spread between covered bonds and swap rate**  
Basis points



Source: Bloomberg

<sup>57</sup> The swap rate is an interest rate where a series of cash flows based on fixed (or variable) interest payments are exchanged for cash flows based on variable (or fixed) interest payments. The variable component is normally the interbank rate or similar.

<sup>58</sup> The example does not illustrate the banks' total financing costs.

<sup>59</sup> If the risk-free interest rates are instead low, the banks' deposit rates for the public are also low as the banks' get lower interest rates when investing on the market. The interest rates that the banks' pay to their customers for many accounts are, however, very low or even zero. For these accounts, a low market interest rate therefore often entails lower margins as the banks cannot set the deposit rate below zero.

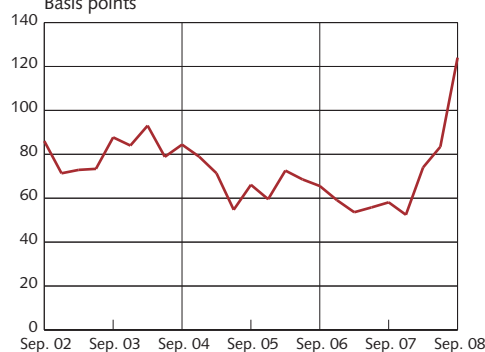
<sup>60</sup> Funding gap = (lending – deposits)/lending.

<sup>61</sup> Note that the lending and deposits margins apply to the Swedish market while the financing gap concerns the groups. A more exact analysis of the banks' margins could be made if the comparisons were made with the same legal entities. Using the approach presented in this box, however, a good picture of the major bank's deposits and lending margins can be obtained as financing is often managed centrally at the banks.

At the same time as the banks' need for market borrowing and their funding costs have increased, their lending rates have also risen. From the end of December 2007 to September 2008, for example, the difference between the average lending rate for new mortgages in Sweden and a three-month swap rate increased by over 70 basis points (see Chart B10).<sup>62</sup>

There are many indications that the banks have managed to pass on their higher funding costs to the customers with the result that their margins – and thus their earnings on lending operations in Sweden – have not diminished in 2008.<sup>63</sup> However, it does not appear that the banks have taken out markedly higher margins in their Swedish lending operations than justified by the higher funding costs. Here, however, we do not take into account the fact that deposits is also used to finance lending and thus affects the costs. It should also be pointed out that there are differences in how the margins develop between the four major banks in Sweden. There are, in addition, differences in the pricing of loans between the different countries where the banks conduct operations.

**Chart B10. Spread between the major banks' Swedish mortgage loans and a three-month swap rate**  
Basis points



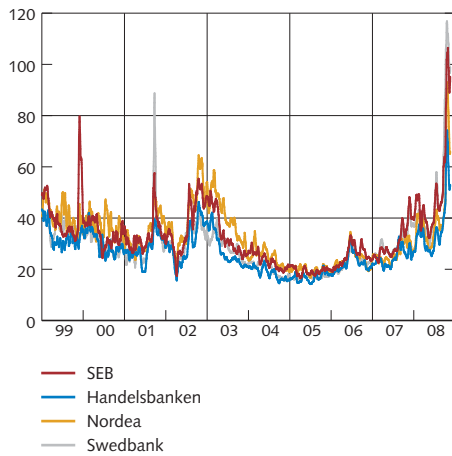
Note. The spread is the average mortgage rate for new loans minus a three-month interest rate swap (T/N STINA).

Sources: Reuters EcoWin and the Riksbank

<sup>62</sup> This applies to new mortgages with terms of three-months minus a three-month interest rate swap (T/N STINA).

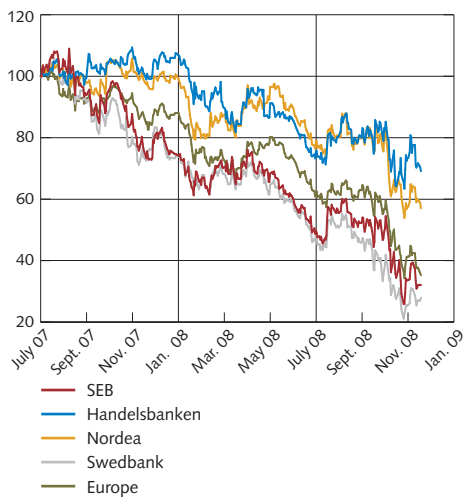
<sup>63</sup> It should be noted that earnings are also affected by the lending volumes and the deposit margins and volumes.

**Chart 3:7. Bank shares' implied volatility**  
10-day moving average, per cent



Sources: Bloomberg and the Riksbank

**Chart 3:8. Share price developments for major Swedish banks and in the European financial sector**  
Index: 2007-07-01 = 100



Note. European financial sector index from STOXX.

Sources: OMX and Reuters EcoWin

### Outlook for bank earnings

Uncertainty regarding the banks' earnings in the period ahead has continued to increase. This is apparent, for example, in the implied volatility of the banks' shares, which is now at a higher level than it was following the IT crash of 2001 (see Chart 3:7).<sup>64</sup> The figures for the expected operating profits of the major banks in 2009 have also been revised downwards by between 20 and 38 per cent as a result of the financial crisis.<sup>65</sup>

**The downward pressure on the price of bank shares indicates that investors see considerable risks.** Investors are uncertain about the banks' financing and liquidity situation and about their future profits. This is above all an effect of the financial crisis. The average share price development of the major Swedish banks does not differ significantly from the development of indices for the banking sector in Europe. The development is, on the other hand, better than in the US banking sector. Share prices for the major Swedish banks have, however, fallen much more in the two banks that are most exposed to the Baltic countries, i.e. SEB and Swedbank (see Chart 3:8). The profits and credit risks of these two banks are dependent on the macroeconomic development of the Baltic countries to a greater extent than is the case at the other banks. In periods of turbulence, however, it is common to overreact to an identified risk. In mid-November, for example, Swedbank's share was traded at more than 40 per cent below the value of the bank's equity per share.<sup>66</sup>

### There are many indications that the rate of growth in net interest income will decline and that net commission income will decline even more.

This is partly due to the fact that the banks' funding costs are expected to increase as they will need to refinance their wholesale funding at a higher interest rate at the same time as the competition for deposits will lead to an increase in deposit rates. The banks will, however, probably be able to continue passing on part of the increased funding costs to their customers in the form of higher lending rates. Higher rates will lead to a decline in demand for credit on the part of households and companies. Uncertainty about the development of the economy will also contribute to this (see Chapter 2). Lending will therefore probably increase at a lower rate in the period ahead. This is because the demand for loans from both households and companies will diminish in the light of higher interest rates and general public anxiety (see Chapter 2). The effects of a decline in the demand for loans on net interest income may, however, be balanced somewhat by the fact that companies that normally obtain part of their funding by issuing securities will find it much

<sup>64</sup> The implied volatility describes the market's expectations of future volatility and is calculated from the pricing of share options.

<sup>65</sup> Source: SME Direkt, 18 November 2008

<sup>66</sup> Pro forma with the new emission included.

more difficult to get access to wholesale funding. This may lead them instead to use lines of credit granted by the banks that they have not previously used, or to seek new loans. In the case of net commission income, the weaker development during the last quarters indicates that this will continue to decline in the period ahead. The main reason for the weaker outlook is the falling stock market.

**The situation can be summarised by saying that the profitability of the major Swedish banks will probably continue to decrease.** The reason for this is that income will probably develop at a slower rate at the same time as it will take longer to reduce costs. Personnel costs are the major cost item and only SEB has announced that it will make staff cuts in 2009. The banks will also need to participate in the financing of the stability fund. They have stated, however, that they will focus on keeping down costs in areas such as marketing, IT, travel and expansion abroad.<sup>67</sup> In addition, credit losses will probably also continue to increase in the period ahead (see the section on Lending and credit risk), which will have a negative impact on profitability.

### Assets and capital – credit and market risks

Approximately 60 per cent of the assets of the major banks consist of lending to the public. This is the main reason why the credit risk is the greatest asset risk in the bank's operations. The banks also have assets that are exposed to market risk, such as interest-bearing securities, but these usually constitute a minor component of the total risks. The Riksbank also analyses the development of the capital base of the major banks, which is central in the assessment of their financial resilience.

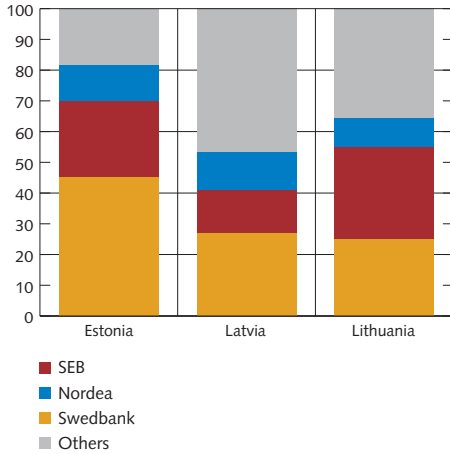
#### LENDING AND CREDIT RISK

##### **Lending increased by 19 per cent during the last four-quarter period.**

This is a high growth rate even in an historical perspective. The banks' lending to companies increased by 22 per cent, which was somewhat higher than the rate of increase for lending to the household sector. Lending in the operations abroad continue to increase at a faster rate than lending in Sweden. In addition to the other Nordic countries, the major Swedish banks have significant exposures in the Baltic countries, the UK and Germany (see Table 3:1). It is primarily Swedbank and SEB that have significant proportions of their total lending in the Baltic countries, while Nordea has less than three per cent of its total lending in these countries.

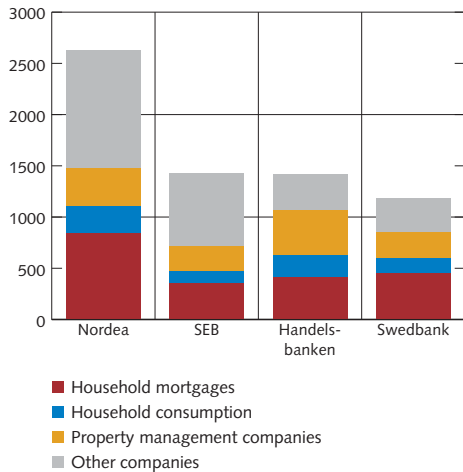
<sup>67</sup> According to reports for the third quarter 2008.

**Chart 3:9. Market shares in the Baltic countries**  
Per cent, September 2008



Sources: Bank reports and the Riksbank

**Chart 3:10. Lending per segment**  
SEK billion, September 2008



Note. Refers to lending to the public. Loans to the public sector are excluded.

Sources: Bank reports and the Riksbank

**Table 3:1. Lending in the major Swedish banks, geographical breakdown**  
Percentage share of total lending, September 2008

	Swedbank	SEB	Nordea	Handelsbanken
Sweden	73	40	25	68
Norway	2	9	17	13
Denmark	2	16	25	7
Finland	1	1	19	3
Estonia	6	3	1	*
Latvia	4	2	1	*
Lithuania	4	5	1	*
Germany	*	24	*	*
UK	*	*	*	4
Rest of the world	9	*	11	5

\* No data or low exposure.

Note. Including lending to financial institutions and off-balance sheet items. SEB's lending in the Nordic countries is based on their share of assets in December 2007.

Sources: Bank reports and the Riksbank

**The rate of growth of the Swedish banks' lending in the Baltic countries has slowed during the last four-quarter period.** Apart from a fall in demand on the part of the borrowers due to the macroeconomic situation, the banks are now more conservative in the provision of credit than previously. They have begun, for example, to focus more on the ability of the customers to repay the loans and are demanding that the borrowers have a larger buffer than previously, especially in the case of loans in foreign currencies. They have also reduced the maximum loan to value levels when providing mortgages. The average amortisation period for a mortgage is just over 20 years, which is much shorter than in Sweden. The banks also take a very restrictive view with regard to lending to the property management and construction companies, as the development of the property and construction markets has slowed down. However, the major Swedish banks are still the market leaders in all three countries (see Chart 3:9).

**The level of risk in the major banks' lending to companies has increased.** This is partly due to a clear increase in the risk of bankruptcy among corporate customers (see Chapter 2) and partly because the high rate of increase in lending is increasing the exposure to companies. It is in their lending to companies that the banks, historically speaking, have made their greatest losses. The risk that the banks will lose money as a result of credit losses in connection with a deterioration in the ability to pay (or bankruptcy) can be balanced by the value of the assets that the borrower has pledged as collateral covering the bank's claim. In an economic downturn, however, companies may experience problems with their ability to pay at the same time as the value of their assets declines. The fact that the ability of borrowers to pay and the value of their assets can covary applies in particular to property companies. The single largest sector that the banks lend to consists of property-

management companies. This sector accounts for between a quarter and one half of corporate lending in each of the banks (see Chart 3:10). Handelsbanken is the bank that has the largest proportion of lending to property-management companies.<sup>68</sup>

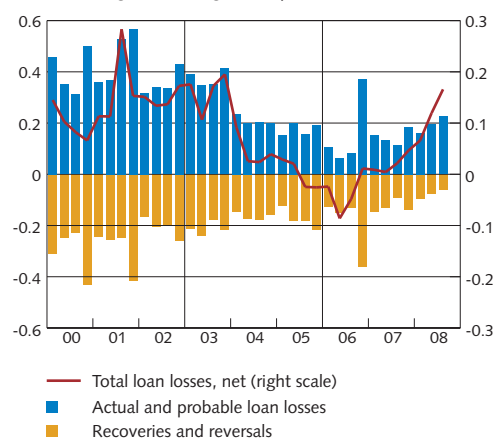
**The continued risk of a significant fall in the prices of commercial properties entails a greater credit risk.** However, a fall in prices will not necessarily affect the ability of the property companies to service debt initially. As long as a property company does not make a sale, a fall in prices will not affect its cash flow but only its profits in the form of an unrealised negative value change. Nevertheless, even a limited fall in prices could be sufficient to wipe out the profits of many property companies.<sup>69</sup> If a company makes a loss its equity will be reduced, which in turn may affect both the possibility to acquire funding and the conditions under which funding is provided.

**The major banks loan losses have continued to increase but are still low.** The total loan losses amounted to SEK six billion during the reporting period, which corresponds to 0.1 per cent of total lending. The increase in loan losses is primarily due to banks provisions for probable credit losses. It was not individually actual credit losses, stemming from for example bankruptcies, which constituted the majority of loan losses during the last four-quarter period. The probable credit losses constitutes of both provisions for individual commitments and for groups of similar credits, so called collectively assessed provisions. The collectively assessed provisions increased foremost during the latest quarter and can be seen as a buffer for future loan losses. Another reason for the increase in loan losses is that recoveries and reversals of former provisions have decreased (see Chart 3:11).

**The percentage of impaired loans in the banks major banks' lending has gradually increased since the end of 2007.** At the end of this reporting period it amounted to 0.5 per cent of lending.<sup>70</sup> Above all, it is in the Baltic countries that the banks' impaired loans have increased significantly over the last 12 months. The non performing loans<sup>71</sup> in Estonia and Latvia have almost tripled since the turn of the year.

**The overall assessment is that credit losses will increase further from the current levels.** Above all, the banks' risks facing increased credit losses in the corporate sector. It is assessed that the profitability and financial status of the companies will continue to deteriorate in pace with the downturn in the economy. The expected default frequency

**Chart 3:11. The major banks' credit losses per quarter**  
Percentage of lending to the public



Note. Annualised quarters

Sources: Bank reports and the Riksbank

<sup>68</sup> One fifth of the lending to property-management companies at Handelsbanken is to tenant-owner associations.

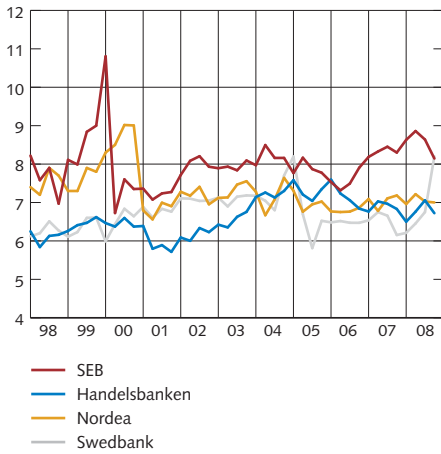
<sup>69</sup> As the properties are recorded at market value and the unrealised value change affects profits.

<sup>70</sup> Impaired loans are those where potential losses have been identified, which gives rise to the allocation of reserves. Impaired loans here refers to gross volumes, i.e. before accumulated reserves.

<sup>71</sup> A non performing loan is a loan that has fallen due but has not been paid. Normally, it is regarded as an unregulated claim when payment has not been made after 60 days.



Chart 3:12. Tier 1 capital ratios  
Per cent



Note. Since the first quarter of 2007, the banks have been reporting in accordance with Basel II transitional regulations. The new issue announced by Swedbank (27 October) constitutes a pro forma increase in the Tier 1 capital ratio in accordance with the transitional from 6.8 to 8.2 per cent.

Sources: Bank reports and the Riksbank

has increased, which reinforces this reasoning (see Chapter 2). The banks have also upwardly revised the figures for expected credit losses for parts of their lending abroad. Among other things, credit losses in the Baltic countries, which today constitute approximately 60 per cent of Swedbank's and SEB's total credit losses, are expected to more than double over the next 12 months.<sup>72</sup> The financial crisis may also have an indirect effect on the banks' credit losses if it further reinforces the slump in economic activity. At the same time, funding will become more expensive and many companies will find it more difficult to obtain funding.

### Market risk

#### The market risks of the major banks have continued to grow.

The foremost market risk, the interest risk, has increased due to the financial crisis. At one of the banks, Swedbank, the currency risk is, however, the main market risk due to the bank's exposure abroad. In general, however, the market risks (in accordance with the current capital adequacy requirements) are relatively small in the major Swedish banks. The capital requirement associated with market risks accounted for only between 2.4 and 6.9 of the total capital requirement<sup>73</sup> at the end of the third quarter 2008. The major Swedish banks' reported write-downs of interest-bearing securities over the last five quarters amounting to SEK 11.7 billion (see Table 3:2). This can be compared to the capital requirement associated with market risks under which the four major banks in total must have a buffer of SEK 11.5 billion. The Swedish banks' write-downs over the preceding five quarters thus exceed the total buffer that the banks must have over the course of a year. As the Swedish banks have had relatively small write-downs compared to banks in the rest of Europe and the USA. This raises the question of whether the capital requirement for market risks is too low.

Table 3:2. The Swedish banks' write-downs of interest-bearing securities since the start of the financial crisis

	Write-downs (SEK billion)	% of equity	% of profits for period
Handelsbanken	3.3	4.6	25.6
Nordea	1.0	0.6	3.1
SEB	6.9	9.1	59.0
Swedbank	0.5	0.7	3.4

Note. The figures in the table are before SEB reclassified its assets. The banks' total write-downs and credit losses due to their exposure to Lehman Brothers amount to at least SEK 700 million and are not included.

Sources: Bank reports and the Riksbank

72 According to the banks' own forecasts.

73 According to Basel II excluding future transitional regulations.



### Capital

Together with the banks' earning capacity, their capital constitutes a buffer against unexpected losses. The banks' Tier 1 capital ratios are the most important key ratios for assessing their capital strength. The ratio places Tier 1 capital<sup>74</sup> in relation to the risk-weighted assets.

**The banks' Tier 1 capital ratios amounted on average to 7.7 per cent by the end of September.** The average level, reported in accordance with the Basel II transitional regulations, was somewhat higher than a year ago (see Chart 3:12). A comparison over time and between the banks may, however, be misleading (see Table 3:3). Since the first quarter of 2007, the banks have been reporting in accordance with the new capital adequacy regulations (Basel II). In the case of the major Swedish banks, this entails a reduction of the capital adequacy requirements, mainly due to their relatively large proportion of lending to households. Up to 2010, however, transitional regulations apply under which the banks may only gradually reap the benefits of the reduced capital requirements.

**Table 3:3. Tier 1 capital ratios in accordance with Basel II, transitional regulations and Basel I, 30 September 2008**

	Basel II	Transitional regulations	Basel I
SEB	9.9%	8.1%	7.3%
Nordea	7.9%	7.0%	-
Swedbank	10.5%	8.2%	-
SHB	10.0%	6.7%	6.0%

Note. The figures for Swedbank are pro forma, rights issue included.  
Sources: Bank reports and the Riksbank

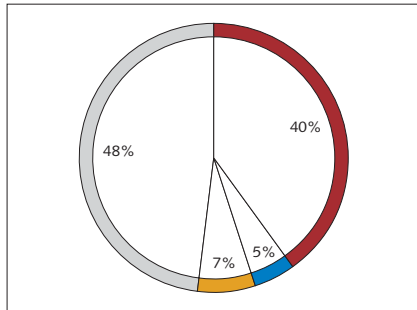
**The financial crisis has led to a greater focus on the capital strength of the banks.** Apart from the minimum legal requirement that the banks must meet,<sup>75</sup> a certain level of capital strength is required to participate in the Swedish guarantee programme.<sup>76</sup> In addition to this, credit rating agencies, shareholders and investors place further capital requirements on the banks. If these players believe that capital strength is inadequate this may be reflected in, for example, higher financing costs and falling share prices for the bank concerned. In order to adjust the Tier 1 capital ratio upwards, the banks can either add more capital or reduce the risk-weighted assets. The Swedish banks have not, unlike several international banks, made losses that have led to a capital reduction which in turn would have led to the need to acquire further capital. This is not to say that such requirements do not exist nonetheless. Swedbank, for example, has announced a guaranteed rights issue comprising a capital injection of SEK 12.4 billion, which increases the Tier 1 capital ratio (pro forma)

<sup>74</sup> Tier 1 capital is a part of the banks' capital base. It consists, in simple terms, of equity including untaxed reserves with deductions for goodwill. With the approval of Finansinspektionen, certain forms of debenture loans may also be included.

<sup>75</sup> The legal requirement is 8 per cent for the capital adequacy ratio and 4 per cent for the Tier 1 capital ratio.

<sup>76</sup> The minimum level for participating in the guarantee programme is 9 per cent for the capital adequacy ratio and 6 per cent for the Tier 1 capital ratio.

**Chart 3:13. The banks' sources of funding**  
Percentage of total financing

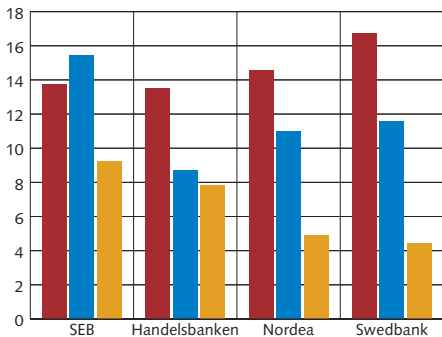


- Debt securities issued
- Liquidity supplied by the Riksbank and the SNDO
- Borrowing, interbank
- Deposits from general public

Note. The item "Liquidity supplied by the Riksbank and the SNDO" includes the four major banks' share of the sums loaned in the Riksbank's SEK and USD auctions, the SNDO's reverse repos in connection with its extra auctions of treasury bills and the securities that the banks have issued with State guarantees. It is assumed that the supply of liquidity will replace part of the banks' funding. Issued securities have therefore been reduced by the corresponding sums in the chart.

Sources: Bank reports and the Riksbank

**Chart 3:14. Maturity of outstanding bonds**  
Percentage of issued securities



- 2009
- 2010
- 2011

Note. The figures in the chart do not take into account the repurchase of securities issued by the banks themselves.

Sources: Bank reports and the Riksbank.

from 6.8 per cent to 8.2 per cent. In the prevailing circumstances, it cannot be ruled out that other Swedish banks will also feel compelled to inject more capital due to demands from market agents. There is, however, no information that suggests that the Swedish banks will reduce their dividend payout ratio in order to be able to build up capital more rapidly. Some major European banks have sold assets in order to increase their capital strength, but this has not been the case for the major Swedish banks. The major Swedish banks will, on the other hand, probably reduce the growth of the risk-weighted assets by, for example, reducing the rate of lending, which in turn will reinforce the ongoing tightening of their credit standards.

### Funding – liquidity risk

One of the most important functions of the banking system is to convert short-term deposits and borrowing to long-term lending. The banks funding and liabilities should therefore be regarded as liquid and their assets in the form of lending as illiquid. This difference between liabilities and assets means that the banks have a liquidity risk. During the financial crisis, it has become more difficult for the banks to borrow at long maturities. Consequently, funding has become more short term than usual. The shorter maturities mean that funding has to be renewed more often. The combination of the need to renew funding more often and the recent uncertainty concerning access to funding in the future has further increased the liquidity risk.

**Just under half of the banks' total funding is in the form of deposits from the public.** Wholesale funding accounts for the remaining part and mainly comprises bonds for long-term market funding and certificates for short-term funding. Borrowing on the interbank market, which is primarily used to balance liquidity, is also a part of the short-term wholesale funding.

**The Swedish banks' dependence on wholesale funding continues to increase.** For example, Swedish banks' mortgage loans is largely financed through covered bonds and certificates. As a result of the difficulties associated with obtaining long-term funding, the average maturity for the banks' wholesale funding has declined. Banks that have a large proportion of wholesale funding at short maturities generally run a greater risk of experiencing liquidity problems. During the autumn, part of the normal wholesale funding has been replaced by credit provided by the Riksbank and reverse repos from the National Debt Office (see Chart 3:13).

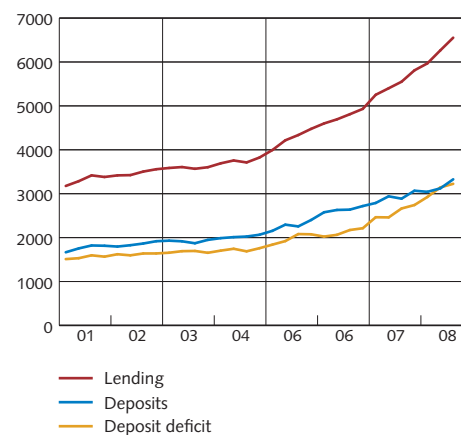
**The Riksbank and the National Debt Office have taken action to ease the constrained liquidity situation of the banks.** The difficulties for the banks in obtaining funding also affect the credit supply to companies and households. To facilitate the supply of credit, the

Riksbank has increased the supply of loans with maturities of three and six months for the banks. In addition, the National Debt Office has issued treasury bills over and above the regular issues and the funds they have received have then been loaned using mortgage bonds as collateral (reverse repos). This facilitates the banks' funding. The state guarantee programme for medium-term borrowing has also helped to improve the funding situation

**If the difficult wholesale funding situation endures, the banks' dependence on funding from various authorities will increase.** The great global uncertainty that prevails on the market concerning the counterparties' underlying collateral and liquidity situation has led to reluctance among investors to lend money to finance banks. Consequently, funding at longer maturities has become unusually expensive and at times impossible. A large proportion of the banks' issued bonds fall due within the next three years and approximately 15 per cent fall due within the next 12 months (see Chart 3:14). If access to market funding continues to be problematic, further measures on the part of the authorities will probably be required.

**Historically, deposits have been a more stable source of funding for the banks than wholesale funding, but they can also be affected in periods of unease.** Concern that a bank will be unable to meet its commitments can lead to more and larger withdrawals on the part of the public than normal. Some of the major banks have stated that unusually large withdrawals have been made during the autumn. In order to reduce public concern about bank savings, the Swedish deposit guarantee has been increased from SEK 250 000 to SEK 500 000 and now covers all types of deposit accounts. These changes will probably reduce the risk of further withdrawals. The government's guarantee programme means that the central government can intervene if a bank is unable to pay its creditors, at the same time as the Riksbank is prepared to supply the liquidity required. If solvency problems were to arise in a bank, the government can intervene. Although there are signs that competition for deposits has increased between the banks, resulting in higher deposit rates, deposits from the public are still the least expensive form of funding. Deposits continue to increase, as does lending (see Chart 3:15). However, lending is increasing more than deposits. This means that the average funding cost for the banks is increasing as a result of an increased dependence on wholesale funding (see the box Development of the banks' lending and deposit margins in Sweden).

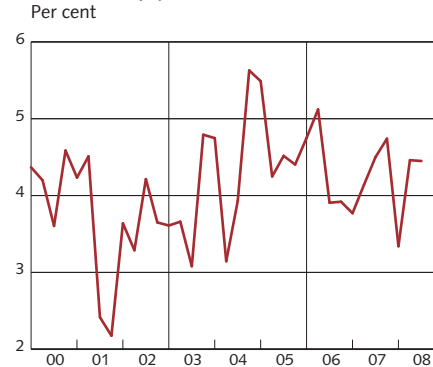
Chart 3:15. The banks' deposits and lending  
SEK billion



Note. Deposit deficit = lending – deposits.

Sources: Bank reports and the Riksbank

Chart 3:16. The major bank with the lowest Tier 1 capital ratio after another Swedish major bank defaulted on payments  
Per cent



Source: The Riksbank

## Contagion risk

The recent unease on the financial markets has raised the question of potential contagion risks in the Swedish banking sector. The major banks play a central role in the financial system and have considerable claims mutually and on other market participants, so-called counterparty exposures. Counterparty exposures give rise to a direct risk of contagion, i.e. the risk of funding problems in one bank spreading to other banks. The banks can actively affect direct contagion risks by controlling their counterparty limits and collateral. Contagion can also take place indirectly if a bank's liquidity shortage gives rise to fears of funding problems in other similar institutions.

**The direct contagion risks within and to the Swedish banking system are estimated to have been moderate during the period.** The Riksbank tests the direct contagion risks by assuming that one of the major banks collapses and that 75 per cent of the other three banks' exposures to the bank that collapses are lost. It is assumed that it will be possible to recover 25 per cent as some of the exposure is covered by collateral.<sup>77</sup> The losses are then deducted from the banks' Tier 1 capital.<sup>78</sup> During the first six months of 2008, none of the major banks had a level of exposure that, given the assumptions in the test, would lead to its Tier 1 capital falling below the statutory requirement of 4 per cent (see Chart 3:16). The tests are based on data on the banks' counterparty exposures that the Riksbank collects at the end of every quarter. This data provides an immediate picture of the major banks' exposures to their 15 largest counterparties.<sup>79</sup>

**The indirect contagion risks have declined as a result of the State guarantees.** The banks are often exposed to the same kinds of risk which means that they may be sensitive to the same macroeconomic events. Funding problems may therefore spread indirectly to a bank because fears arise that other banks may be affected by similar problems. Such fears, whether they are originally well-founded or not, may make investors unwilling to finance the bank. The financial crisis that began in the summer of 2007 and the liquidity problems it has led to have to a great extent been characterised by such fears, which has also affected the Swedish market. In order to improve confidence on the financial markets, many European countries, including Sweden, have introduced extensive stability plans that include State guarantees for the banks' liabilities. Moreover, the Riksbank has provided liquidity assistance to some banks (see the box The Riksbank provides liquidity assistance to Kaupthing and Carnegie).

<sup>77</sup> This is equivalent to a situation in which a major bank defaults on its payments without any prior warning and with immediate effect. The possible level of recovery is also assessed to be relatively low. The resulting levels of Tier 1 capital calculated in the tests should thus be seen as the outcomes of an extreme stress test.

<sup>78</sup> If the loss causes a bank to default on its payments, this may lead to further contagion risks. The risk of such second-wave effects increases dramatically if the banks have been affected by a similar shock.

<sup>79</sup> A more detailed description of the Riksbank's counterparty data is presented in the box on the Riksbank's counterparty data.

## The Riksbank's counterparty data

**S**weden has a relatively concentrated banking system with a few major players. As a result, the banks have mutual exposures that can lead to problems in one of the banks spreading to the others. In order to analyse this direct contagion risk the Riksbank has, since June 1999, collected data on the major banks' 15 largest counterparty exposures on a quarterly basis. This reporting has been valuable over the last 12 months as it has made it possible to compare the banks' exposures over time and to quickly obtain new data.

This data covers exposures both on and off the banks' balance sheets. The banks' report their gross exposure and any risk-reducing instruments in order to enable an analysis of the exposures that have the highest risk.

The most important components of the counterparty data are:

- All unsecured lending, for example deposits, overnight loans and commitments off the balance sheet.
- Securities; the gross position is stated as the market value of the securities holdings per counterparty. The net position takes into account any risk-reducing instruments (for example CDS).
- Derivative instruments; the gross position is stated with regard to all derivatives with a positive market value. The net position is the gross position with deductions for, for example, any netting agreements.

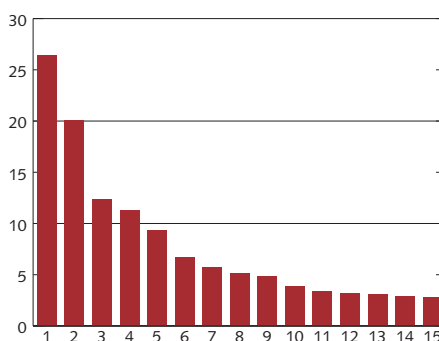
Chart B11 shows the size distribution of the largest exposures in relation to the Tier 1 capital. The size of the exposures is asymmetrical and typically, the major banks have one or two very large exposures. These often comprise deposits or overnight loans to one of the other major banks and can according to tests performed by the Riksbank be of such a magnitude that they could cause direct problems for the banks in the event of a collapse (see Chart 3:16).

The total of the net exposures constitutes the basis for ranking the 15 largest counterparty

exposures. The counterparty data also covers currency settlement exposures. This item is relatively small for the Swedish banks as between 65 and 85 per cent of all currency settlements go through the settlement system CLS.<sup>80</sup>

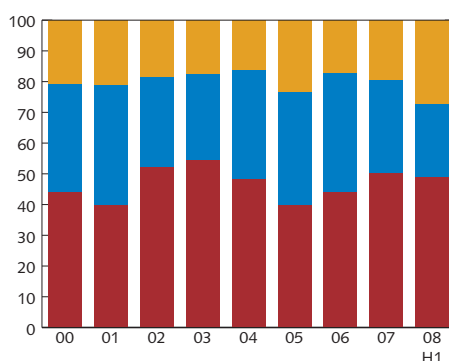
The largest item is unsecured lending, above all in the form of deposits that on average constitute half of the total exposure (see Chart B12). Gross exposure for securities is the second largest item and accounts for just over 30 per cent. As the banks to a great extent use risk reducing instruments for their securities exposures the net position amounts to only

**Chart B11. The size of the exposures in relation to Tier 1 capital**  
Per cent



Source: The Riksbank

**Chart B12. Counterparty exposures, shares of total exposures**  
Per cent



Source: The Riksbank

approximately 30 per cent of the gross exposure (i.e. an average netting effect of 70 per cent). The gross exposure for derivatives constitutes approximately 20 per cent of the total exposure. The netting effect for derivatives is much lower than for securities and averages 21 per cent.

<sup>80</sup> Continuous Linked Settlement. CLS offers a system for settlement of currency transactions which significantly reduces the risk normally associated with the settlement of currency transactions.

## The Riksbank provided special liquidity assistance to Kaupthing and Carnegie

**In order to safeguard financial stability and ensure the effective functioning of the financial markets, the Riksbank provided special liquidity assistance to Kaupthing Bank Sverige AB and Carnegie Investment Bank AB during the autumn. Against the background of the unease on the financial markets, the Riksbank's assessment was that the suspension of payments by one of the banks could constitute a risk of a serious disruption in the financial system and undermine confidence in the payment system.**

### *Kaupthing*

In 2008, the Icelandic banking sector, including the largest commercial bank Kaupthing, was subjected to severe stresses and strains. In connection with problems in the Icelandic parent company, the Swedish Kaupthing Group also experienced liquidity problems during the autumn. In early October, Kaupthing Bank Sverige AB contacted the Riksbank to request liquidity assistance amounting to up to SEK 5 billion. This was granted by the Riksbank on 8 October. The loan was to be used to pay depositors in the Internet bank Kaupthing Edge Sverige, which was a branch of the Icelandic parent company, and depositors and other creditors in Kaupthing Bank Sverige AB. Deposits in Kaupthing Edge Sverige amounted to over SEK 2 billion. Kaupthing Bank Sverige AB had at this time lending amounting to approximately SEK 10 billion and deposits of SEK 3 billion.

On 9 October, the parent company Kaupthing Bank hf was placed under special administration by the Icelandic authorities. On the same day, it was announced that Kaupthing Edge Sverige would be wound up. All of the deposits in Kaupthing Edge Sverige have since been paid out. Two of the other Swedish subsidiaries, Kaupthing Finans AB and Kaupthing Pension Consulting AB, were sold in November.

### *Carnegie*

The Carnegie Group has been one of the largest participants in Nordic share trading. On 30

September 2008, Carnegie's balance sheet total amounted to approximately SEK 33 billion and the assets under management to approximately SEK 122 billion. At this time, the Carnegie Group had over 4 000 customers in Sweden and deposits of SEK 2.5 billion. The holding company D Carnegie & Co AB had two wholly-owned Swedish subsidiaries: Max Matthiessen Holding AB, which acts as an agent for insurance and savings products, and Carnegie Investment Bank AB, which has operations in securities trading, investment banking, asset management and private banking.

During the autumn, Carnegie Investment Bank AB found it more difficult to fund its operations as it became increasingly difficult to borrow against securities and the collateral requirements for stock exchange transactions increased. In October, the funding situation became so strained that there was a risk that the bank would default on its payments. Carnegie Investment Bank AB therefore applied for special liquidity assistance from the Riksbank and on 27 October was granted a loan of SEK 1 billion. On 28 October, this sum was increased to a maximum of SEK 5 billion. As part of the collateral for the loans, the Riksbank took shares in the subsidiaries of D Carnegie & Co AB.

On 10 November, the Swedish Financial Supervisory Authority (Finansinspektionen) decided to revoke Carnegie Investment Bank AB's licence to run banking operations. Against the background of the new support legislation, it was decided that the National Debt Office would instead take over the loans and thus also the pledges on which the Riksbank's loans were based. In accordance with the pledge agreement between the National Debt Office and D Carnegie & Co AB, the National Debt Office realised the pledge for the loans and thereby took over ownership of the shares in Carnegie Investment Bank AB and in Max Matthiessen AB. Given that the National Debt Office had now take control of Carnegie Investment Bank AB, Finansinspektionen changed its decision to revoke Carnegie's licence and instead issued a warning.



## Stress tests of the major banks' resilience

The ongoing financial crisis has demonstrated the importance of effective risk management. Stress tests are an important tool in this work. By subjecting the banking system to stress in various ways it is possible to get an idea of the system's resilience to negative events. In the stress tests that the Riksbank conducts the focus is mainly on the banks' credit and earnings risks. The prevailing financial crisis has, however, placed enormous pressure on the global banking system in an entirely different respect as liquidity has practically disappeared from the market. This is something that it is difficult to guard against within the framework of normal risk management and the extent of the crisis has been difficult to predict.

In the following section, some of the stress tests that the Riksbank has conducted are presented. The stress tests focus, as previously, on credit and earnings risks and thus do not directly address a lack of liquidity. However, although the liquidity situation of the banks is not stress tested, it is partly covered through its effects on earnings. The effect of the constrained liquidity situation is also tested in the form of higher funding costs. The starting point for the scenarios is the prevailing situation in which the banks are already subject to high funding costs. This means that the results provide a guide to how the banks would cope with different scenarios given their situation today.

The first scenario entails a test of how a dramatic decline in the creditworthiness of the borrowers in the Baltic countries would affect the banks that have extensive exposures in these countries. The second scenario involves a study of how a downturn in economic activity would affect the major banks. The Riksbank has conducted these tests for several previous reports and in this report the results are compared with those of the two preceding sets of tests. The third scenario tests how the banks would be affected by a widespread recession in Sweden, the Baltic countries and the world at large. Finally, a simple test is conducted to investigate the effects of higher funding costs on the banks, which is particularly relevant in the light of the current crisis.

The Riksbank's method for measuring the resilience of the banks ("credit risk cover") is based on a generally-available portfolio model and on public information taken from the banks' reports.<sup>81</sup> As a number of simplifying assumptions are used in the model, the test results should be seen as indicative. The information that forms the basis for the calculations provides an approximate picture of the actual portfolio. It is therefore more relevant to study comparisons of the results over time rather than the absolute levels.

<sup>81</sup> For a more detailed description, see the article "Calculating credit risk using external information", Financial Stability Report 2006:1.



*Credit risk, capital and earnings*

A decisive factor for the resilience of the banks is to what extent they have sufficient capital to deal with significant risks. By far the single largest asset risk in the banks is credit risk. The stress tests therefore focus above all on the banks' resilience to deteriorations in the creditworthiness of the borrowers. The capital requirement for credit risk reflects the capital required to cover any unexpected losses.<sup>82</sup>

In the tests the bank's Tier 1 capital is put in relation to the capital requirement for credit risk. In this way, it is possible to determine the bank's credit risk cover.<sup>83</sup> The level of credit risk coverage a bank requires is dependent on its operations. Banks with large mortgage institutions, such as Handelsbanken and Swedbank, have a large proportion of credit risk in relation to their other operations and thus require a smaller buffer for other risks. Examples of other risks to be covered by Tier 1 capital are market risks, operational risks and credit risks that are outside the balance sheet.

A credit risk coverage level of 100 per cent means in principle that the Tier 1 capital exactly covers the credit risk. It does not, on the other hand, cover other types of risk. A coverage level of over 100 per cent means that the bank has a buffer for other risks and for unexpected negative events. The greater the buffer, the more resilient the bank is.

The calculations are based on the banks lending portfolios at the end of June 2007, December 2007 and June 2008 and it is assumed that the portfolios have remained unchanged during the three-year period of the scenario.

#### SCENARIO 1: A DETERIORATION IN CREDITWORTHINESS IN THE BALTIC COUNTRIES

**In the first scenario, the Riksbank tests how a significant deterioration in the creditworthiness of borrowers in the Baltic countries would affect the resilience of the banks.** The scenario assumes that a shock occurs which affects all borrowers in the Baltic countries. The creditworthiness of these borrowers deteriorates for three years. At the same time, there is a fall in the banks' earnings from operations in these countries. In the first year, the expected default frequency increases to five per cent, in the second year to 10 per cent and in the third year to 20 per cent.<sup>84</sup> It is assumed that pre-tax profits will fall by half in the first year. They fall by a further 25 percentage points in the following year and are wiped out completely

<sup>82</sup> The Swedish banks have chosen to define their capital requirement for credit risk based on an AA rating, which means that the default risk one year ahead should be no higher than 0.03 per cent. A credit risk coverage of 100 per cent thus means that Tier 1 capital covers the capital requirement for 99.97 per cent of all possible outcomes in the loss distribution. In the Riksbank's analysis the capital requirement for credit risk is calculated at a level of 99.9 per cent.

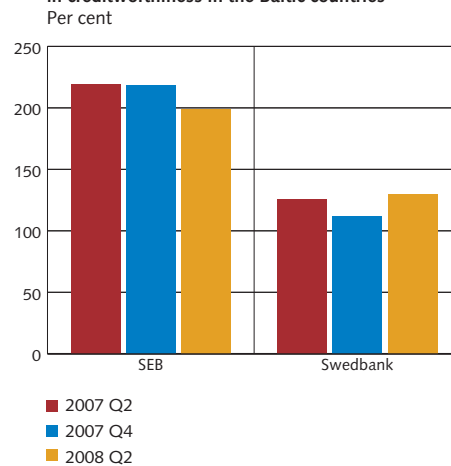
<sup>83</sup> Credit risk coverage = Tier 1 capital/capital requirement for credit risk.

<sup>84</sup> The expected default frequency (EDF) is the probability that an exposure will fail within one year ahead. A higher EDF leads to higher expected losses and a greater risk capital requirement.

in the third year. Year three represents a very extreme situation with high default frequencies and no earnings at all from the operations in the Baltic countries. The creditworthiness of other borrowers in the banks' loan portfolios is assumed to be unchanged. The same applies to earnings from the other operations. The scenario is applied to Swedbank and SEB, the two banks with substantial lending operations in the Baltic countries.<sup>85</sup>

**In comparison with the two preceding reports, the test indicates that both SEB and Swedbank would be able to cope with extremely negative developments in the Baltic countries.** The profits for the three years of the scenario are based on the profits for the four quarters between June 2007 and June 2008. In SEB's case profits have fallen, which contributes to a lower level of credit risk coverage.<sup>86</sup> In Swedbank's case, a capital injection in the form of a rights issue has strengthened the Tier 1 capital of the bank, which leads to an improvement in credit risk coverage.<sup>87</sup> Chart 3:17 presents the results of the stress test compared with the results in the two preceding reports. The bars show the level of credit risk coverage for the final, most extreme year in the scenario.

Chart 3:17. SEB and Swedbank's credit risk cover, year 3, according to the scenario on a deterioration in creditworthiness in the Baltic countries



Sources: Bank reports and the Riksbank

#### SCENARIO 2: IMPAIRED CREDIT QUALITY RESULTING FROM AN ECONOMIC DOWNTURN

**The second scenario involves a study of how a downturn in economic activity, and thus a deterioration in credit quality, would affect the major banks.** The test shows the resilience of the banks to an economic downturn when GDP growth falls by 4.5 percentage points, which is a much greater fall than is expected in the period ahead. It is assumed that the creditworthiness of all of the borrowers in the banks' portfolios will deteriorate for three years. In the first year, the expected default frequency increases to one per cent, in the second year to two per cent and, finally, in the third and worst year to approximately three per cent.<sup>88</sup> This is accompanied by a fall in earnings. During year one, the pre-tax profits decline by 25 per cent and continue to decline by the same amount in years two and three.

**The test shows that the banks' resilience to such a dramatic decline in economic activity is good.** The four banks' credit risk coverage is above 100 per cent in all the years of the scenario and they would therefore cope with a dramatic increase in default frequency. For Swedbank, the capital injection entails an improvement in credit risk cover. The level of credit risk coverage for the other banks declines

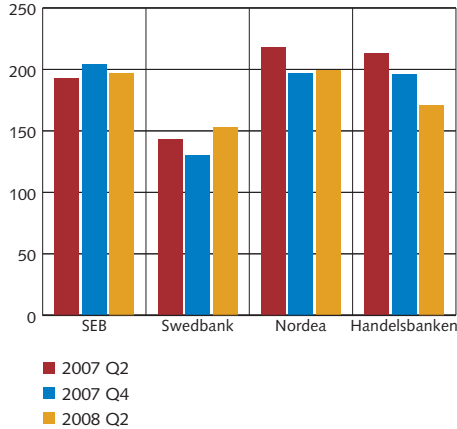
<sup>85</sup> Nordea also have operations in the Baltic countries. Since their share of lending in this area constitutes a very small share of their total lending they are excluded from the scenario.

<sup>86</sup> SEB's reclassification of investment portfolios is taken into account in the stress tests. This implies an increase of Tier 1 capital of SEK 1.8 billion.

<sup>87</sup> Swedbank's new issue will not take place until January 2009, but in the scenario the issue is included in the bank's capital base from and including the second quarter of 2008.

<sup>88</sup> Defaults in the portfolio are through-the-cycle measurements, which means that they are calculated as an average over the last five years.

Chart 3:18. Credit risk cover, year 3, according to the scenario on an economic downturn  
Per cent



Sources: Bank reports and the Riksbank

however, and consequently their resilience to further negative events also declines. The main reason for this is a weaker result in the initial position for the majority of the banks.

The Riksbank has conducted the same test for several previous stability reports. Chart 3:18 presents a comparison of the outcomes for credit risk coverage with the outcomes in the two preceding reports. The bars show the levels for the final, most extreme year in the scenario.

#### SCENARIO 3: MACROECONOMIC STRESS TEST – GLOBAL RECESSION

**In order to further test the resilience of the banks, a global recession scenario is used.** The scenario is in line with the Swedish crisis in the beginning of the 90's. At the time of this crisis, economic growth fell dramatically and was negative for a couple of years. Unemployment increased significantly and in December 1993 reached approximately 13 per cent. At the same time, property prices fell by up to 50 per cent. This had considerable consequences for the major Swedish banks. In 1992 alone, they allocated provisions for potential losses of approximately six per cent of total lending. The stress test below presents the potential effects on the banks' reserve requirements and their resilience if Sweden were to suffer a similar situation today.

In an initial stage (a) it is assumed that Swedish property companies are hit by a crisis similar to the property crisis that occurred in the 1990s. In order to replicate this scenario, it is assumed that the creditworthiness of the property companies deteriorates and that their expected default frequency increases to six per cent. It is also assumed that property prices will fall. Other Swedish borrowers are also affected by the economic downturn. In order to replicate this, it is assumed that the expected default frequency for Swedish companies and households increases to a total of three per cent.

In a second stage (b) a considerable deterioration also occurs in the Baltic countries. On the whole, it is assumed that the effect of the recession is greater in these countries. The expected default frequency for the Baltic property companies is assumed to be 20 per cent, while the figure for other companies and households is assumed to total 10 per cent. Finally, in a third stage (c) other parts of the world where the Swedish banks have operations are also affected.

**The results of the stress test show that the four major banks would cope with such an extensive crisis scenario, together as well as on an individual basis.** In the scenario, the expected losses amount to over SEK 77 billion (see Table 3:4). This can be viewed in relation to the SEK 79 billion that the banks have earned over the last 12 months. The expected losses are thus covered in this case by the earnings.

If earnings had not been sufficient to cover the expected losses the banks would have been forced to use their Tier 1 capital.

How much of the Tier 1 capital a bank can use to cover losses depends on the level of risk at the bank. The Tier 1 capital cannot fall below this risk capital level without undermining the bank's credit rating.<sup>89</sup> In this scenario there is a buffer, i.e. the difference between the Tier 1 capital and the risk capital requirement in the scenario, of around SEK 80 billion. This means that the banks can in principle lose their entire earnings but still manage to cover their losses.

**Table 3:4. Results of a combined stress test**

Base case	a) Sweden	b) Baltic countries	c) Rest of the world*
Lending, SEK billion	3 095	318	3 031
% of exposure assumed to default	0.6%	2.6%	
Probability of default, PD	property companies 0.4% other companies & households	property companies 2% other companies & households	0,5% all borrowers
Loss Given Default	20%	60%	40%
Provisioning need, SEK billion	2,5	4	6
Expected Loss, EL			
Provisioning need as percentage of lending	0.08%	1.26%	0.20%

\* primarily other Nordic countries

Stress scenario	a) Sweden	b) Baltic countries	c) Rest of the world*
Lending, SEK billion	3 095	318	3 031
% of exposure assumed to default	6%	20%	6%
Probability of default, PD	property companies 3% other companies & households	property companies 10% other companies & households	property companies 3% other companies & households
Loss Given Default	20%	60%	40%
Provisioning need, SEK billion	22	22	33
Expected Loss, EL			
Provisioning need as percentage of lending, per cent	0.7%	12%	1.1%
		property companies 6% other companies & households	

\* primarily other Nordic countries

Expected losses, SEK billion	a) Sweden	b) Baltic countries	c) Rest of the world*
a) Sweden	a) 22		
b) Baltic countries	a)+b) 44	b) 22	
c) Rest of the world	a)+c) 55	b)+c) 55	c) 33

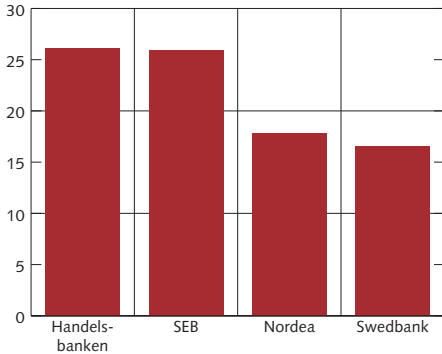
**Combined scenario, a)+b)+c)**

**77**

\* primarily other Nordic countries

<sup>89</sup> For a definition of capital requirement for credit risk see introduction to the section on stress testing.

**Chart 3.19. Increased funding costs in a 3-month liquidity crisis as a percentage of Q2 profits**  
Per cent



Sources: Bank reports and the Riksbank

### Funding

In this test, an estimate of the way in which the four major Swedish banks are affected by increased funding costs is made. These may increase if parts of the relatively inexpensive deposits from the public must be replaced by more expensive wholesale funding. They may also increase if market interest rates increase or if investors demand higher compensation for risk, an increase in the so-called credit spread. The test can either be applied to the banking sector as a whole or be seen as an isolated test for individual banks.

#### SCENARIO 4: INCREASED FUNDING COSTS FOR THREE MONTHS

**The results show that higher funding costs than at present would have an impact on the banks, but not in a critical way.** In the test, it is assumed that the costs for 10 per cent of the banks' least expensive funding increase by 2 percentage points. It is also assumed that the credit spread that the banks pay for borrowing on the securities market increases by a further 80 basis points over a period of three months. The scenario is extreme, partly because market interest rates are already high and partly because it is assumed that the banks in the test will not be able to compensate for this increase by raising lending rates.<sup>90</sup> The resulting cost increase corresponds to an average of 20 per cent of the profits of the banks in the second quarter of 2008 (see Chart 3:19).

### Summary of risks for the major Swedish banks

**The resilience of the major Swedish banks has declined since the assessment in the previous report.** However, the resilience of the major Swedish banks is still sound. This is mainly because the banks are financially strong and very profitable. The stress tests conducted by the Riksbank confirm this picture. The Riksbank stress tests the ability of the banks to absorb losses and whether these losses are high enough to threaten their solvency. The Riksbank's assessments and tests show that this ability is good at the major Swedish banks. However, the banks would not be unaffected by an extreme scenario. This could, for example, create unease among the banks' customers and investors which would have major consequences for the earning capacity of the banks.

**The liquidity risk is still high for the banks but it is partly mitigated by the support measures taken by the authorities.** As the banks have reduced the average maturity of their financing they need to renew their loans more often, which increases the liquidity risk. If the markets for the banks issued securities continue to function

<sup>90</sup> The banks have stated that they have been able to pass on the majority of the recent increases in funding costs (see the section on income and costs).

ineffectively, this will also contribute to an increase in liquidity risk. This is partly because these securities are included in the banks' liquidity portfolios. In order for the liquidity portfolios to serve their purpose, the banks are dependent on the functioning of the markets for the assets contained in the portfolios. In addition, a relatively large part of the banks' outstanding issued securities must be refinanced within the next 12 months. The risk has also increased that a single unexpected negative event may influence the cost of, or access to, financing.

**The credit risk has increased for the major banks.** This is partly due to a clear increase in the risk of bankruptcy among the corporate customers of the major banks, especially among property companies, and partly because the high rate of increase in lending is increasing the exposure to companies. At the same time, the risks in the Baltic countries have increased and credit losses are expected to increase in the period ahead.

**The financial crisis has reinforced the downturn in economic activity and this will lead to further negative impacts on profits.**

It is probable that profitability will decline when income is affected negatively at the same time as costs will not decrease at the same rate. Apart from lower growth in net interest income and a reduction in net commission income, the banks' will also probably need to make further write-downs for interest-bearing securities.





## ■ The financial infrastructure

### The financial infrastructure – in brief

A reliable financial infrastructure is particularly important in periods of financial turmoil when both the willingness and propensity to take risks decline. The Swedish financial infrastructure has worked well during the financial crisis this autumn and higher volumes in some of the systems have not affected functionality.

A number of important changes are now underway in the financial infrastructure in Sweden. One such change is that the Riksbank's new technical system for large-value payments will be commissioned in early 2009. In addition, there will be changes regarding clearing and settlement of transactions on the Swedish securities market. For example, Euroclear has acquired the Swedish central securities depository, VPC AB.

These changes will increase the integration between the Swedish financial infrastructure and the European markets. This will improve efficiency, but also increase interdependencies between the systems. In order to prevent these interdependencies increasing the risk that liquidity disruptions will spread from one system to another (contagion), it is important that the market participants and the authorities understand them and take them into account.

The financial infrastructure consists of systems that handle payments and transactions with securities. An effective financial infrastructure is crucial to financial stability. If the infrastructure is not sound, there is a risk that the problems experienced by one player or submarket may spread to others. The Riksbank's monitoring of the stability of the financial infrastructure therefore entails identifying structural weaknesses that can lead to contagion risks.

When overseeing the infrastructure, the Riksbank focuses on the critical systems, i.e. RIX, which is the Riksbank's own system for large-value payments; VPC, which is the central securities depository in Sweden; NASDAQ OMX Derivatives Markets (NASDAQ OMX DM), which acts as the central counterparty in derivative clearing and BGC, which is the main intermediary for retail payments between the banks. The Riksbank is also involved in overseeing the international system CLS, which deals with the clearing and settlement of currency transactions and SWIFT, which is used to send messages on the financial markets of the world.

This chapter presents a brief summary of how the Swedish financial infrastructure has functioned during the current financial crisis. This is followed by a description of the changes that will take place as

a result of the commissioning of the new RIX system, Euroclear's purchase of VPC and the introduction of central counterparty services for share transactions on the Nordic stock exchanges owned by Nasdaq OMX. The rest of the chapter analyses how liquidity disruptions can spread throughout the financial infrastructure (contagion).

### The Swedish financial infrastructure during the financial crisis

**The Swedish financial infrastructure has functioned well during the financial crisis this autumn.** During the autumn, the financial crisis has led to a larger number of transactions in NASDAQ OMX DM and CLS. On the other hand, the average value of the transactions has remained unchanged in both systems. In VPC, the volumes have been only slightly higher than under normal circumstances. In the Riksbank's payment system, RIX, the volumes have been constant. The increased number of transactions has, however, not affected the functionality of the system to any great extent; the transaction flows through the system have been as normal.

**When there is a high level of uncertainty on the financial markets the propensity to take risks declines and a stable and reliable financial infrastructure thus becomes even more important.** Reducing risks in the financial infrastructure is an ongoing task. The work undertaken in recent years has borne fruit in the sense that the systems have functioned largely without disruption while retaining the same level of security during the financial crisis. For example, banks have benefited from the secure settlement of currency transactions offered by CLS. The crisis has made it clear, however, that work remains to be done to make the handling of transactions secure, especially in periods of great uncertainty. Among other things, the market for various forms of OTC-traded derivatives has grown in terms of both turnover and the number of new products. The financial infrastructure for handling these transactions has, however, not developed as quickly. Consequently, the settlement risks associated with these derivatives are not always handled in an adequate way, a factor that during the autumn has contributed to the market participants' reluctance to trade in these products. Work on solving this problem began already in 2005. During the second half of 2008, the authorities and the market participants have continued working on the introduction of a central counterparty (CCP) for OTC derivatives.

## Why can lags arise in payment systems in periods of financial unease?

**U**sually, the banks make large-value payments in a central bank's payment system every day. At the beginning of the day, banks pledge securities in order to gain access to the central bank's intraday credit facility and thereby provide liquidity to the system.<sup>91</sup> The banks then send their payment orders to the system on an ongoing basis. The payments are handled in the system in real time one by one, i.e. on a gross basis. In the simplest way, they are processed in the order in which they are entered into the system. How quickly the payments are made depends, however, on how much liquidity the banks make available to the payment system. If a bank provides a large amount of liquidity its payments are completed quickly. If, on the other hand, a bank provides a small amount of liquidity to the system the payments may be queued until the bank receives additional liquidity in the form of an incoming payment.

Banks must make a trade-off between providing a lot of liquidity to the system and depending more on incoming payments. Adding a lot of liquidity entails a cost for the bank concerned. This cost is partly determined by the composition of an individual bank's portfolio and thus the possibilities it has to pledge collateral to the central bank. A bank that adds a large amount of liquidity can, however, be certain that its

payments will be settled quickly and that its liquidity will be sufficient. On the other hand, other banks may benefit during the day from the fact that a bank adds a large amount of liquidity without the contributing bank receiving any compensation for this. The contributing bank also runs the risk that it will not get the expected amount of liquidity back if a counterparty fails to pay. A bank that instead adds less liquidity has a lower liquidity cost but risks needing to acquire more liquidity at short notice.

In periods when there is a shortage of liquidity it becomes less advantageous to make liquidity available to the system. The liquidity costs are then higher and banks often become more cautious about contributing liquidity to other banks. The banks may therefore choose to provide less liquidity and instead wait for incoming payments. Consequently, the payments will be queued and it will take longer for a day's payments to be implemented in the system. When there is also a lack of confidence between the banks, their incentive to be restrictive with liquidity increases as they see a risk that a counterparty may fail and that they could thus end up in a situation where they have not received all expected liquidity at the end of the day. During the current crisis, the Riksbank's payment system has on the whole worked without disruptions and these problems have not arisen.

<sup>91</sup> In this context, liquidity is defined as access to convertible funds to meet commitments. The term liquidity must also comprise funds that are available over different time horizons. In this chapter, the focus is on intraday liquidity, i.e. the liquidity that the institute has access to to meet its commitments during the day in the payment system.

## The new technical system for large-value payments in SEK

### **The Riksbank will replace the present system for large-value SEK payments (a part of RIX) with a more modern technical system.**

The Riksbank operates the RIX system, which makes it possible for the banks to make SEK payments to each other. The RIX system is a Real Time Gross Settlement system (RTGS). In the system, which is the hub of the Swedish payment system, transactions averaging SEK 496 billion were settled every day in 2007. In the light of changes in the demands for payment system functionality, as well as technical advances, the Riksbank decided several years ago to replace the old, internally-developed system with a new one. The Riksbank will, as previously, run the system itself.

**New functions in the system will help to improve the efficiency of liquidity management and thus reduce the level of risk for the participants.** The new system will contain a total of six different settlement functions. Some of these are intended for certain types of payments, such as BGC, VPC and CLS payments, while others are for payments between banks. This will allow the banks to better control their use of liquidity. Certain functions will also compile the transactions that cancel out each other and settle them together. In this way the need for liquidity can be reduced. It will also be possible for the banks to prioritise payments and to reserve liquidity for certain payments. As payments have become increasingly time critical, the demand for these services is also expected to increase. The new system has been designed to improve the efficiency of the payment system at the same time as the capacity to provide the secure settlement of large-value payments will remain unchanged.

**The new system will be commissioned in early 2009.** This postponement of the start-up date from the previously planned date, 6 October 2008, was decided on by the Riksbank in consultation with the RIX participants. The decision was taken against the background of the turbulent market conditions that prevailed. Launching a new technical system is always associated with an increased risk of disruptions.

## Changes in the Swedish securities market

**Euroclear has acquired VPC AB which is Sweden's central securities depository (CSD) and plays a central role in the handling of securities.** Sweden's CSD will be called Euroclear Sweden. Today, Swedish securities exist only in the form of electronic registrations and VPC AB provides a system for handling and registering these securities. The system also comprises accounts which are used to

settle all transactions in Swedish securities. VPC AB also keeps a register of the owners of the securities which makes it possible to offer services in connection with corporate events such as the payment of dividends and bonus issues.

**The Euroclear Group provides services for the settlement of securities in the UK, Ireland, the Netherlands, Belgium and France, and now also in Sweden and Finland.** In the Euroclear Group, each national securities depository is run as a separate legal entity, which means that any national legal requirements concerning the management of securities are met. The Euroclear Group owns VPC as a subsidiary. The acquisition also comprises VPC's subsidiary APK, which offers CSD services in Finland. Euroclear is owned by its members. Ownership of Euroclear is, however, very widespread, which means that no single owner or small group of owners has majority powers in the company. The group is in the process of introducing a joint system that can settle all transactions and also perform other services that are now offered by the national securities depositories. The Swedish market will be transferred to this system within three to four years. It should be possible to settle cross-border transactions in the joint system as smoothly as national transactions are settled today.

**Those parts of Euroclear's activities that comprise joint operations are overseen in an international collaboration under the management of the National Bank of Belgium and the Belgian financial supervisory authority.** The Riksbank will also participate in this cooperation. Those parts that are still national in scope are overseen by the central banks of the respective countries.

**The reason for the sale of VPC was to improve the efficiency of the Swedish securities market.** Efficiencies arise because the Swedish market reaps the benefits of the economies of scale stemming from the handling of registration and settlement operations in a large group. Moreover, Euroclear has already invested in a new joint system that the Swedish market can benefit from. Efficiency will also increase due to the fact that Swedish market participants will be able to settle securities transactions from several markets through Euroclear. This will give them access to more markets at the same time as it will be easier for others to gain access to the Swedish market.

**Another important change on the Swedish securities market relates to the decision by Nasdaq OMX to offer a central counterparty service for share transactions on the company's Nordic stock exchanges.**<sup>92</sup> The service will be introduced on a voluntary basis

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92 The introduction of a central counterparty service is subject to approval from the authorities concerned.

in January 2009 and means that a central counterparty will offer netting<sup>93</sup> of the transaction flows and manage counterparty risks in share trading.<sup>94</sup> As share trading on OMX Nordic Exchange Stockholm is conducted anonymously, this risk management is valuable. In order to encourage the participants to use the services, Nasdaq OMX will offer rebates on the trading costs for deals that are cleared through the central counterparty. By the end of June 2009, it is expected that the central counterparty clearing will cover all transactions.

**Nasdaq OMX has signed a letter of intent with the European Multilateral Clearing Facility (EMCF) for the supply of the central counterparty service and also intends to purchase 22 per cent of EMCF's shares.** EMCF, which is a subsidiary of Fortis Bank, already offers central counterparty services for transactions in Swedish shares as it clears the transactions that take place on the market places CHI-X and Nasdaq OMX Europe.<sup>95</sup> From January 2009, it will also offer central counterparty clearing in Sweden. When these services are fully developed, the transactions on the Nordic stock exchanges will be handled separately from the EMCF's other transactions. This means that they will not be netted with transactions from other stock exchanges and that risk management will be separate. At the end of 2009, Nasdaq OMX will also introduce the same trading system as the one used in the USA and in Nasdaq OMX Europe to the Nordic and Baltic markets. This will harmonise the trading systems and also make it possible for the participants on the Nordic stock exchanges to trade in all the shares that can be traded on Nasdaq OMX Europe.

**Euroclear's acquisition of VPC and the introduction of central counterparty services to the Swedish share market will increase the integration between the Swedish financial infrastructure and the European markets.** This will make the handling of transactions in Swedish securities more efficient. At the same time, however, the interdependencies between the Swedish and European markets will deepen. How this might affect contagion risks associated with liquidity disruptions is discussed in the next section.

## Channels for spreading liquidity disruptions

How liquidity disruptions can arise in a settlement system and how these affect the system's participants is described below. This is followed by an explanation of how liquidity disruptions can spread from one system to another and the situation on the Swedish market.<sup>96</sup> Finally, important measures for combating potential

93 Netting means offsetting transactions against each other so that the transactions completely or partly cancel each other out.

94 See Sveriges Riksbank (2002), "Central counterparty clearing for the securities market", "Financial Stability 2002:2".

95 See Sveriges Riksbank (2008), "Financial Stability 2008:1", Chapter 4.

96 See Committee on Payment and Settlement Systems (2008), "The interdependencies of payment and settlement systems", BIS.

contagion risks are presented. The section is largely based on the analysis published in a report from the BIS Committee on Payment and Settlement Systems (CPSS), "The interdependencies of payment and settlement systems", in June 2008.

#### INCREASED INTERDEPENDENCIES AND THE RISK OF LIQUIDITY DISRUPTIONS

**Liquidity disruptions can arise within a settlement system as banks are often dependent on incoming payments for their liquidity.** In

the course of a day, the banks have major commitments in the form of payments that are settled in payment systems. In order to cover these commitments, the banks have liquidity in the form of securities that are eligible for refinancing at the central bank and in the form of incoming payments. The latter are of great importance as the gross payment flows through the payment system are much larger than the banks' net liquidity outflows. The expected incoming liquidity may not materialise if a counterparty fails to meet its commitments or if an operational disruption occurs.

**The banks and the settlement systems have routines and plans to mitigate the effects of liquidity disruptions.** For example, securities settlement systems often offer securities loans as a means of making it easier for the participants to complete their transactions. In addition, the banks have liquidity buffers to cover payments that do not materialise, and they are also ready to quickly add more liquidity to the system. Nevertheless, a considerable shortage of liquidity can arise if a large number of expected incoming payments are not made. In such a situation a domino effect can arise as the participants in the system are dependent on liquidity transfers from each other. Liquidity queues like this can reach such proportions that the payment system comes to a complete halt and no transactions can be settled, which can ultimately lead to gridlocks.

**Interdependence between different systems increases the risk that liquidity disruptions will spread.** Liquidity in one settlement system often comes directly from another settlement system. For example, the settlement of payments from different systems is often conducted via accounts at the central bank as a means of reducing the credit risk in the respective systems. In order to make this possible, clearing and settlement systems have set up links to the central bank's payment system. This entails interdependence between the systems and thus means that liquidity disruptions can spread between different systems. Thanks to this interdependence, however, the credit risk in the systems has decreased even though the liquidity risks have increased.

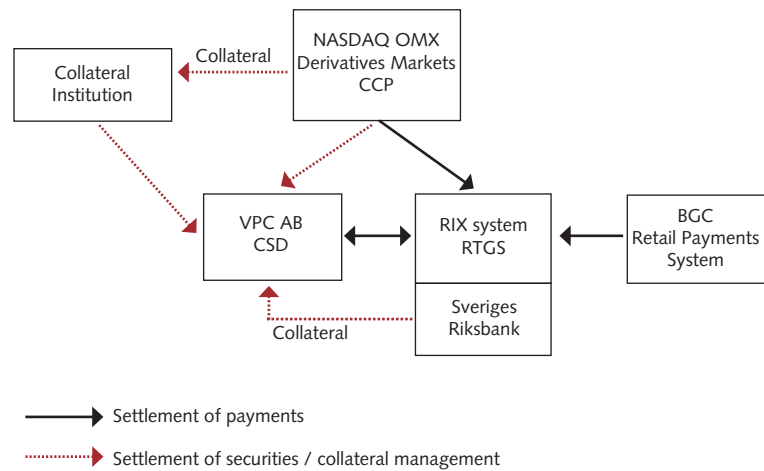


**Consolidation on the banking market and the globalisation of the banks' operations mean that certain banks are participants in several systems.** If, for example, a bank is an important participant in two systems, a liquidity disruption can spread between the systems if the bank is affected by the failure of major payments to materialise in one of the systems. If everything works well, the bank can borrow the corresponding sum during the day. But if this is not possible, it may lead to a situation in which the bank is unable to add sufficient liquidity to the other system. In this way, a liquidity disruption in one system can lead to a shortage of liquidity for an important participant, and in another system. Eventually, gridlocks may occur.

#### INTERDEPENDENCE ON THE SWEDISH MARKET

**There are strong interdependencies between the systems that make up the Swedish financial infrastructure.** Diagram 4:1 below shows the liquidity flows, securities settlement and the handling of collateral in the Swedish financial system. In Sweden, the credit risk in the retail payments system (BGC), the system that clears derivatives (NASDAQ OMX DM) and the central securities depository (VPC) is minimised by settling the respective payments via accounts at the central bank. This means that the three systems are directly dependent on the RIX system for liquidity. Similarly, both the RIX system and NASDAQ OMX DM are dependent on a well-functioning central securities depository to support the management of collateral. This mutual interdependence between payment systems and securities settlement systems is not unique to Sweden but is similar in many other countries.

Figure 4:1. Interdependencies in relationships between the Swedish systems



**The four major banks in Sweden are important participants in all the Swedish systems and are also important participants on other Nordic and Baltic markets.** At the same time Danske bank, for example, has an important role in the Swedish systems. If a bank has no liquidity at all, or postpones its payments, this will have an impact on other participants in the same system and there is a serious risk that the disruption will spread to other systems. Apart from the major banks that are active on several Nordic markets, there are other links that interconnect the infrastructure. The Nordic markets have a common derivative exchange and central counterparty, NASDAQ OMX DM. With the introduction of central counterparty services, the Nordic markets will also have the same central counterparty for share transactions. The Swedish, Danish and Norwegian central banks have also set up channels for the transfer of central bank liquidity between the countries.<sup>97</sup> This gives the banks increased flexibility in their liquidity planning but also means that the payment systems may be dependent on each other to a certain extent.

#### MEASURES TO REDUCE CONTAGION RISKS

**The need for good liquidity management has increased in pace with structural changes in the financial infrastructure.** Greater integration and other structural changes have led to increasingly strict requirements concerning the ability of the banks to handle and plan for short liquidity horizons. The report from the CPSS emphasises that financial institutions and infrastructures should begin their planning of risk and liquidity management with a broad review of the market and that they should develop an understanding of the sources of liquidity disruptions. The analysis finds that the dependence between different systems makes the risk of a shortage of liquidity more difficult to anticipate, so the likelihood that a bank will misjudge its own liquidity needs increases.

**As the interdependencies are understood, the systems and the banks can develop appropriate risk management measures to minimise the contagion risks.** The banks produce daily forecasts that take account of variations in their own payments flows and those of their customers, and complement these forecasts with a liquidity buffer for unforeseen events. In addition, the system owners investigate contagion risks and risk management as a natural part of every cooperation with other systems. This work is required by international standards for risk and liquidity management. In Sweden, the RIX system is used to provide liquidity to VPC at the start of every bank day. An operational disruption in the RIX system could therefore stop securities settlement during the bank day concerned. The Riksbank

<sup>97</sup> Liquidity can be transferred between the Nordic payment systems using the Scandinavian Cash Pool. This permits members in the payment systems in Sweden, Norway and Denmark to use securities from one country to get intraday credit in another country's payment system. For example, the banks use this service to convert Swedish securities to liquidity in, for instance, Danish kroner.

and VPC have therefore agreed that VPC can grant intraday credit even when the RIX system is malfunctioning and thus create liquidity to start the day. The risk of contagion between these two systems can thus be handled. Similarly, the system owners can implement risk management measures that counteract the contagion risks stemming from interdependency.

**The CPSS report suggests that central banks start from an understanding of the existing interdependencies in order to be able to oversee the systems.** The reason for this is that the contagion risks comprise more than one system and individual systems do not have sufficient incentives to handle the problem in isolation. It is therefore the role of the authorities to try to influence the incentives. That the banks should understand the liquidity risks that arise in connection with participation in payment and settlement systems is one of the principles for liquidity management drawn up by the Basel Committee. Furthermore, in their liquidity planning the banks should take into account the need for liquidity for transactions during the day. Liquidity planning should ensure that the banks can meet their commitments in the payment system in both normal circumstances and crisis situations. The Riksbank supports a greater focus by the authorities on the handling of the intraday liquidity risks associated with payment and transaction flows.<sup>98</sup>

**By means of regulations governing which assets are acceptable as collateral for intraday credits, the Riksbank is able to influence the supply of intraday liquidity.** The Riksbank accepts a diverse group of both domestic and foreign assets partly in order to reduce its own dependence on the local securities depository, which manages pledging. This also makes it easier for the banks to acquire reserve liquidity. In addition to securities from different countries and in different currencies, the banks can also use other balances in Danish or Norwegian kronor, or in euro, as collateral.

<sup>98</sup> See Basel Committee on Banking Supervision (September 2008), "Principles for sound liquidity risk management and supervision," BIS.

■ PART 2. ARTICLE



# ■ From local to global – today's crisis in the light of yesterday's

## Introduction

The present international financial crisis has led to intensive crisis management work on the part of market participants and authorities. An important component of this work is to try to identify what has gone wrong and why. It is also important to determine whether the crisis has been met by relevant crisis measures that restore confidence, minimise the costs to society and reduce the risk of moral hazard.<sup>99</sup> Authorities and market participants have a lot to learn from the present situation.

Although the crisis is still underway, it is important to start this discussion now. The aim of this article is to try to understand the current crisis in the light of experience gained during the Swedish bank crisis in the early 1990s.

The article begins with a comparison between what is happening now and what happened in Sweden at the beginning of the 1990s. We examine how the underlying weaknesses have developed, how these weaknesses have gradually become manifest and how the crisis has subsequently spread. From this starting point, we discuss crisis management in theoretical as well as practical terms. The article concludes with sections on the lessons that can be learned and forward-looking strategies.

## The course of the crisis, today and in the 1990s

This section briefly describes the underlying weaknesses that made the current crisis possible, the factors that triggered the crisis and how the crisis could spread and intensify. A comparison with Sweden in the 1990s reveals several similarities but also significant differences.

### UNDERLYING WEAKNESSES

The origins of both the present crisis and the Swedish crisis of the 1990s can be traced to over-optimistic lending connected with property. In the present case, a housing bubble developed in the USA between 2001 and 2006. Low mortgage rates and rising property prices made the housing market very attractive to many Americans. The low price of risk and an ample supply of capital made it possible to grant these people loans. It is significant that the strongest increase concerned the number of subprime loans, i.e. mortgages for US households with limited or unknown creditworthiness.<sup>100</sup> This increase was partly politically determined in that the regulations were changed in the mid-1990s with the aim of making it easier for these borrowers to obtain loans.

<sup>99</sup> Moral hazard may arise, for example, if financial market participants change their behaviour and take greater risks because they count on the state to protect them from losses.

<sup>100</sup> As a share of the total mortgage market in 2006, subprime loans constituted approximately 15 per cent or USD 1 300 billion according to Inside Mortgage Finance. Estimates vary somewhat, depending on the definition of subprime. The problems have mainly been associated with the subprime loans (approximately half of the total) that had variable mortgage rates.

The developments on the US housing market coincided with major changes on financial markets that led to a still stronger increase in the supply of loans. The most prominent of these changes occurred on the credit market, with financial innovations such as securitisation, structured products (composed of securitised loans and other assets) and credit derivatives. These innovations made trading in credit risk simpler and cheaper. This is basically positive as it can provide a higher return, better diversification and a more efficient use of capital. There were, however, several weaknesses in the way these possibilities were used.

One problem was that in some cases securitisation amounted to simple rule arbitrage. By securitising assets in special investment vehicles (SIVs), conduits that were separate legal entities, under the capital adequacy regulations the banks were not required to retain extra capital for this. As a result, the amount of credit risk on the market rose in relation to the amount of equity, and a large proportion of the risks ended up outside the banking system. This would not have been a problem if the risks had been correctly priced and ended up with financially strong investors (with equity). But this was not always the case. Instead, leverage effects were created that have aggravated the crisis.

Another underlying weakness was that these methods made it difficult to see where the risks did end up. The distance increased between those who constituted the risk (the borrowers) and those who assumed a part of it (for example the buyers of a structured product). Such a situation places high demands on transparency. Poor transparency may reduce the incentive of some players, for example those who issue and sell loans, to perform proper credit assessments. It also entails a risk of all products being judged alike when inferior loans are discovered in some of them. Another factor behind the failure to conduct proper credit assessments was that the risks associated with subprime loans were seriously underestimated. The low level of expected losses, particularly in combination with methods for strengthening credit, such as credit insurance schemes, enabled credit rating agencies to set high ratings. These ratings played a central role in pricing because the new, specially-designed financial instruments are generally not traded on a regular basis. Instead of spending time on investigating the underlying risks and models, or the assumptions and data on which the products were based, far too many investors were content with a high credit rating from an established credit rating agency.

This course of events was not unlike the run up to the Swedish bank crisis in the early 1990s. Before that crisis, developments on the Swedish property market had coincided with extensive financial deregulation. This gave the banks greater freedom to lend at a time when there was a pent-up need to borrow. These factors led to a rapid expansion of lending, channelled to investment in housing and commercial properties. In some respects, Swedish finance companies,



many of which were owned by or closely linked to the banks, played the same role as today's SIVs. It was these companies that largely financed the growth of the construction and property markets by issuing commercial paper on the money market. As in the case of many of today's SIVs, this was a consequence of rule arbitrage. By acting through finance companies, banks had been able to circumvent the credit restrictions in the days before the process of deregulation. Furthermore, during the era of regulation, banks had had no reason to build up extensive systems for credit assessment; they relied instead to a great extent on the rising value of collateral, mostly in the form of property.

A basic difference between the current crisis and the Swedish crisis in the 1990s has to do with the model for bank lending. The loans which Swedish banks granted were held by them to maturity, whereas today's banking operations, above all in the United States but also in other countries, are based to a much larger extent on the "originate to distribute" model – the banks' loans are repackaged and sold on in the form of securities. This makes banks more vulnerable to disruptions on the markets where the products are sold and on which they depend for liquidity. However, as Swedish banks' deposits have decreased in relation to total financing, they, too, have become more dependent on wholesale funding.

#### FACTORS THAT TRIGGERED THE CRISES

There are also clear similarities in the factors that triggered the two crises. It was falling prices on the US housing market that triggered the current crisis; the background was a general economic downturn and rising interest rates. Subprime borrowers were hit especially hard because their mortgage rates, which were often low in the first few years, began to rise in 2005 at the same time as property prices fell. Payment problems among borrowers soon led to loan losses. By the spring of 2007 it was clear that the losses would be much greater than previously expected.

Several hedge funds with exposure to subprime loans, for instance funds set up by UBS and Bear Stearns, recorded major losses in the spring and summer of 2007. When the financiers wanted to pull out, the funds were forced to sell assets. However, as the credit rating agencies had begun to lower their ratings and these had been the main consideration in asset valuations, the financial markets more or less lost confidence in anything that might contain subprime loans. Prices fell dramatically and the markets for several of these products soon became illiquid – there were no longer any buyers.

The Swedish crisis of the 1990s was also triggered by an economic downturn. This led to an unexpected increase in bankruptcies and rapidly rising unemployment. Property prices fell sharply, mainly for commercial properties. Many borrowers had debt-servicing difficulties at the same time as the value of their collateral

declined. This added to the uncertainty about finance companies and soon led to a funding crisis as many finance companies found it difficult to market commercial paper. A large number of finance companies, some of them comparatively large, collapsed.

#### CONTAGION AND AUGMENTATION

The present crisis spread to the banks because their SIVs had acquired US housing loans. Demand for securities issued by banks fell sharply if there was reason to suspect that their assets included subprime loans. The problems were accentuated by doubts about credit rating institutions' general ability to rate structured products, including those that did not include subprime loans. When the SIVs' assets ceased to be liquid, the parent banks were soon required to honour liquidity commitments they had made when the companies had been established. Some of the guarantees were of a formal nature, for example an undertaking to redeem commercial paper if the SIV could not do so. An instance is two German banks, IKB and Sachsen Landesbank, that faced serious problems in summer 2007 when their SIVs needed to draw on credit commitments to cope with large losses. Other guarantees may be informal, for instance to protect a bank's reputation. For example, Bear Stearns provided one of its hedge funds with very large amounts in summer 2007 even though there was no legal obligation to do so. Thus, problems outside the banking system quickly turned out to entail real problems for the banks as well.

Under these circumstances the entire banking system was pervaded by doubt and the banks started to look for secure and liquid investments. Banks that had SIVs needed a liquidity buffer to cope with guarantee commitments. At the same time, banks without a SIV were averse to the risk of lending to an institution that might run into difficulties. As it was not clear just where the credit risks were located, the lack of confidence hit every bank. This led to much higher interbank interest rates. The reluctance to lend was a heavy blow to institutions that were dependent on wholesale funding, for instance Northern Rock which in September 2007 was forced to apply to the Bank of England for emergency assistance.

As time passed, banks and other participants were forced to borrow increasingly large amounts at shorter and shorter maturities. Falling asset prices have necessitated large write-downs, obliging owners to provide additional capital and institutions to reduce balance-sheets. The latter has accentuated the price fall and entailed additional write-downs. Banks have also had to take over large volumes of loans from the market when investors became less willing to finance loan portfolios with risks that are difficult to assess. Bank balance-sheets therefore contain an increased proportion of loans, which calls for more capital and precautionary liquidity. The general deterioration was accentuated by many structured products being insured by companies, monolines, that specialise in insuring bond

loans.<sup>101</sup> A fall in the value of a substantial part of the underlying assets increased the risk of the insurance companies being required to meet their commitments. Credit ratings for a number of monolines have been lowered in the course of 2008 and this has added to uncertainty about the value of various assets in the financial system.

The crisis has worsened in autumn 2008 and large parts of the financial system are affected. The major government-associated house mortgage institutions in the United States have been heavily hit, as have the major investment banks, which were of central importance for the management of credit risks. Contagious effects of the fact that Lehman Brothers filed for bankruptcy protection in September generated further uncertainty in the global financial system. During the autumn, the crisis has also been a serious blow in Europe, particularly in countries where banks are heavily dependent on wholesale funding or exposed to the US market or other ailing property markets. However, the poorly functioning international markets are also having clear effects in countries, such as Sweden, where the banking system is not appreciably exposed to problem assets.

Some similarities can be discerned with the spread and worsening of the Swedish bank crisis. Most of the finance companies in which the problems started were legally independent of the Swedish banks. Still, many people – customers and other participants – associated some finance companies with certain banks. Consequently, many banks felt obliged to support these “associated” companies, for instance with liquidity, because there was a risk of the problems damaging the bank’s reputation.

The similarities also concern loan insurance. Loan losses rose to such an extent that Svenska Kredit, a major insurance company, could not meet its commitments and was declared bankrupt. That in turn made matters worse for the banks. Loan losses<sup>102</sup> became so large for some banks that their capital ratio fell below the statutory minimum (eight per cent). The State then had to intervene in cases where owners failed to provide adequate support. Moreover, the weaker situation alarmed foreign investors, who cut back lending to every Swedish bank, thereby creating additional problems.

#### DIFFERENCES BETWEEN THE CRISES ARE GREATER THAN SIMILARITIES

Although the crises, as mentioned above, have some things in common, there are important differences. One fundamental difference is that the current crisis is affecting a large variety of markets, asset types, institutions and, not least, countries. This

101 For more information about monolines, see Sveriges Riksbank, “Financial Stability Report 2008:1”, page 29.

102 The losses connected with the Swedish bank crisis were connected in the main with loans against property – primarily to companies that constructed or administered property. Losses on loans to the industrial and services sectors were limited, though they rose in connection with the economic slowdown. Losses on personal loans amounted to no more than about 10 per cent of total losses even though such loans made up a much larger share of the total loan stock.

complexity and diversity has led to greater losses of confidence than during the Swedish bank crisis, partly because transparency is poorer today but also because of the need to deal with other institutional categories, such as SIVs, insurance companies and mortgage guarantee institutions. Another basic difference is that in some places today, markets have ceased to function, whereas during the crisis in the early 1990s the international markets never faltered and the local Swedish market functioned on the whole. The authorities' problem at that time amounted in practice to restoring the counterparties' confidence in the Swedish banks. Today, various interbank markets, as well as markets for structured products, covered bonds and currency swaps, are simply not working properly. This makes the present crisis considerably more difficult to predict and analyse. It also means that the nature of the crisis differs between countries. The acute phase of the crisis which Sweden is currently experiencing has little in common with the crisis in the early 1990s. Swedish banks have neither incurred large loan losses nor been exposed to the problematic assets. They are affected, on the other hand, by the problems in international markets that are preventing them from raising funds abroad and causing them to reduce exposures in order to build up liquidity reserves.

### Crisis management – in theory and practice

How is a financial crisis to be managed? Some guidance can be had from earlier crises, the ways they were handled and the outcomes. The Riksbank's approach to crisis management is, of course, coloured by experiences from the Swedish bank crisis in the early 1990s. The answer to the question also depends on the nature of the crisis. No two crises are identical, so some degree of freedom is needed in crisis management.

For the sake of transparency and predictability, however, it can be argued that alternative solutions should fall within a framework that has been presented in advance. Clarifying consequences can deter undesirable behaviour. A framework also increases the chances of arriving at competitively "fair solutions" that do not discriminate certain institutions or other participants. If such a framework is not in place when a crisis erupts, the alternatives will be limited initially, which is liable to prolong the crisis. It is also desirable to have a framework that is harmonised between countries in order to provide a level playing-field and prevent a loss of confidence from spreading.

This section begins with a general discussion of what experience and research have to say about what such a framework should contain. That is followed by a more detailed account of some possible solutions. Continuous reference is made to crisis management as practiced both at present and in Sweden in the early 1990s.

## GENERAL PRINCIPLES FOR CRISIS MANAGEMENT

The overriding objective for the management of a financial crisis is to restore the financial system's working order. So it is the system and its functions that are to be supported, not the individual institutions and their owners. There are no internationally established principles for resolving crises but experience from numerous crises, including the Swedish bank crisis, shows that the following principles promote good solutions:

- A precondition for intervention by authorities is that a risk exists of a systemic crisis;<sup>103</sup> either through malfunctioning of certain markets or because problems in a particular institution are liable to spread. If authorities intervene in the absence of systemic risk, this will interfere with market forces and the State will risk unnecessary costs.
- Intervention shall occur as early and as quickly as possible. This is intended to reduce the turbulence that occurs in connection with acute crises and which is liable to spread to other institutions and markets. The longer it takes to resolve a crisis, the greater will be the destruction of capital and the risk of contagion.
- Authorities participating in an intervention shall be coordinated and have distinct functions. Experience shows that in cases where there have been conflicting actions or statements by the authorities, the situation has deteriorated. One consequence has been a loss of public confidence in the authorities' grip on the situation. It is also a great advantage if the political parties agree, at least broadly, about the measures that are needed. With firm political support, solutions have a greater chance of creating confidence, particularly if rules for dealing with distressed banks are not in place.
- There shall be the greatest possible transparency about the problems that have arisen as well as about the solutions. Sensitive matters may, of course, have to be kept secret for brief periods, for instance while a solution is being arranged. In the longer run, an open attitude is better than rumours.
- The chosen solution shall minimise the risk of moral hazard-behaviour today and in the future. Ways of achieving this include (i) winding up or selling distressed institutions where this is appropriate, (ii) leaving former shareholders to take losses in cases where the State has to rescue banks by providing capital, and (iii) using penal interest rates and other conditions to deter unwarranted use of assistance.

<sup>103</sup> There are also other reasons, for example to reduce the costs of the deposit guarantee or to safeguard consumer protection.

- All solutions should be constructed so that they entail the smallest possible cost for society (“taxpayers”). Besides financial outlays, costs in this context must include secondary economic effects. If the State incurs costs for resolving a crisis, it shall also have a share of the future profit if a reconstructed bank is successful.

These principles have been observed in most, though not all, cases during the present crisis. There are instances of authorities in certain countries issuing uncoordinated statements, of protracted solutions and of solutions being untransparent. During the Swedish crisis in the 1990s the principles were also observed to a large extent, though not invariably; in the initial stage, for example, management of the crisis did not give the State a share of future gains in value.

#### METHODS FOR RESOLVING CRISES

A distinction can be made between general solutions aimed at assisting the whole or parts of the financial system and individual solutions for managing a particular institution in distress.

##### **General solutions**

When the whole or large parts of the banking system are hit simultaneously, for instance by unmanageably large loan losses or a loss of public confidence, State intervention is usually unavoidable. At the same time, management of major crises tends to be reactive. Authorities and other participants are constantly engaged in dealing with the most acute problems connected with markets and institutions. There are, however, a good many proactive solutions, such as strengthening deposit guarantees, suspending certain market activities for the time being and introducing package solutions. The following are measures of various types that can be considered, depending on the situation.

##### *Measures for assisting liquidity*

One measure in the event of disruptions on the interbank market may be to provide the banking system with additional liquidity, for instance via the standing facilities. Central banks can also auction liquidity with different maturities against collateral that is sound but has become less liquid. However, institutions may have so little confidence in each other that these measures do not have the intended effect. As long as doubts exist about the value of assets and equity capital, there is a risk of banks preferring to hold on to their liquidity and only lend overnight in the payments system. During the present crisis, central banks have continued to hold liquidity auctions, both in larger amounts and with a wider range of assets as eligible collateral. However, this has mostly eased individual institutions' liquidity

problems, not the overall problems in the financial system.<sup>104</sup> Together with the Federal Reserve, a number of central banks, including the Riksbank, have also set up temporary mutual swap facilities in order to manage the strained situation in markets for short-term dollar loans.

#### *Deposit guarantee systems*

In order to reduce public fears and hence the probability of bank runs, it is important to have a system for deposit guarantees that inspires confidence. For this the system needs to be easy to understand, cover most depositors and their deposits, have routines for prompt payment of funds, and be credibly funded. During the present crisis many countries have reinforced their deposit guarantees by raising the ceiling and by increasing the number of accounts that are covered. In some countries, for instance Austria and Germany, the government has guaranteed bank deposits in full. In October, the government and banks in Denmark agreed on a guarantee system that is to give savers full protection; the banks pay a premium for this protection. The EU finance ministers have agreed on a greatly increased minimum level for deposit guarantees.

#### *Altered market rules*

This heading includes a wide range of alternative solutions, from altered accounting rules or valuation principles to a right for authorities to nationalise institutions. During the present crisis some accounting rules have already been changed and nationalisation has been used in some countries, for instance the United Kingdom, Iceland and Sweden. A lesson from the Swedish bank crisis, as well as from crises in other countries, is the advantage of transparency and a cautious valuation of bank assets. If banks avoid booking assets at current values and thereby conceal losses, the resultant uncertainty deters investors and delays a return to normal pricing. The stricter valuation procedure that was adopted during the Swedish crisis in the early 1990s did worsen the crisis in the short run but also meant that prices bottomed out fairly quickly and the market began to function again.

#### *Crisis packages*

A common solution for major problems is to introduce a comprehensive crisis package that includes separate components for dealing with different aspects of the problem. During the present crisis, measures for stabilising the global financial markets have been taken or are being planned by authorities around the world, for example in the United States, Japan and many EU countries, including Sweden.

<sup>104</sup> The central banks' measures are described in a box on page 37. Similar measures have been introduced in Sweden during autumn 2008; see the box on page 40.



Initially, the US crisis package totalling US\$ 700 billion was explicitly intended to buy up and extract bad assets from banks' balance sheets. This idea has gradually been abandoned, however, and priority has been given instead to capitalising the banks by subscribing preference shares, which give the State prior access to future profits. The British crisis package includes lending government securities against house mortgage paper, guarantees for interbank loans and £50 billion in fresh equity capital (against preference shares or similar if the offer is taken up) for credit institutions.

In October the EU countries agreed on a joint programme of measures for managing the financial unrest. The package includes the creation of national institutions and ways of managing distressed banks, as well as specific guarantees to secure bank funding against senior debt instruments. In that it is largely harmonised, the EU package reduces the risk of problems being transferred to the country where protection is weakest. The agreement also establishes that the problems in a particular country are that country's responsibility. A large majority of the EU member states have announced that they intend to implement the package. In most countries, the guarantees will be available during a period of six to twelve months; once a guarantee has been obtained, it will apply for the duration of the guaranteed paper, that is, for up to five years. In the event of a credit institution having problems with solvency, the State can provide other guarantees or additional capital, in the first place against preference shares to secure the State's share of an increase in value if the bank overcomes the problems.

One of the most drastic measures a State can take to deal with a financial crisis is to introduce a general bank guarantee to ensure the payment of all claims on the bank sector apart from share holdings. A milder variant is a similar State guarantee of liquidity to ensure that every institution has access to sufficient liquidity. During the Swedish crisis, a State guarantee was introduced in 1992 on claims on all Swedish-owned banks and some other credit institutions. At the same time, the Bank Support Authority was established, with general responsibility for resolving crises. Another measure was liquidity assistance whereby the Riksbank deposited foreign currency in the banks. During the present crisis, bank guarantees that are close to the general form have been introduced by some countries, for example Ireland (see the box Measures taken by authorities abroad).<sup>105</sup>

Sweden's package during the present crisis is in line with the EU agreement. The short-term liquidity situation of credit institutions is managed with measures that the Riksbank and the National Debt Office (Riksgäldskontoret) have already taken or will be taking. There is also a guarantee programme to support the banks' medium-term funding, and a stability fund that is to be built up with the aid of fees from institutions. The purpose of the stability fund is to ensure that

<sup>105</sup> For covered bonds, maturity should exceed 90 days but not five years.

any future problems with solvency in a Swedish institution can be managed without burdening taxpayers. The guarantee programme is voluntary for solvent Swedish credit institutions. The guarantee can apply in principle to all types of newly-issued bonds, bank certificates and other debt instruments (covered bonds, for example) provided they have a maturity between three months and three years. Subordinated, complex and structured products are excepted but there are no currency restrictions. If the guarantees do not suffice and a bank needs capital assistance, this is provided against preference shares. Under certain circumstances the State shall have the right to redeem an owner's shareholding in a credit institution if this is of particular importance for the public interest.

### **Crisis solutions for individual institutions**

When it is a matter of intervening in a crisis in a single financial institution, there are a number of alternatives and the choice depends on the actual situation and the national laws. An institution can have:

- temporary problems but be assessed as capable of meeting all its capital adequacy requirements and other commitments,
- more extensive problems, with temporary difficulties in meeting certain commitments, but still considered to be viable in the longer run, or
- serious problems, difficulty in meeting commitments and not considered to be viable even after attempts at reconstruction.

Management of the institution should depend on the nature of the problems, as well as on the institution's importance for the financial system. Various alternatives are described below. Besides the considerations mentioned above, whether and when they can be implemented will depend on the market situation.

#### *Market solutions*

Allowing market forces to prevail should always be the first choice, though for a solvent financial institution with temporary liquidity problems there is the possibility of the central bank providing assistance. If the problems are due to a misplaced lack of confidence in the institution, the authorities can provide the market with correct information. Central banks can grant liquidity from standing facilities or, if necessary, arrange temporary advances on special terms, so-called emergency loans. Alternatively, guarantees can be provided to enable the institution to borrow on the market. Intervention should occur in principle only to handle liquidity problems that have arisen because the market's allocation of liquidity has been suboptimal, which presupposes that the institution is viable. If emergency loans are provided for an institution that also needs additional capital, this

should be done as part of a reconstruction package that is credible and sustainable. During the Swedish bank crisis the Riksbank provided Gota Bank with emergency loans to enable an orderly closure within the framework for bank support. During the present crisis emergency loans have been provided in certain cases. Northern Rock in the United Kingdom received emergency loans in autumn 2007 to enable the bank to survive an ongoing run. Bear Stearns in the United States obtained emergency loans in March 2008 to gain time in the search for a private solution. In July 2008 Denmark's central bank issued guarantees for Roskilde Bank. In Sweden the Riksbank arranged emergency loans in October 2008 for Kaupthing Bank Sverige AB and Carnegie Investment Bank.

Even if an institution's problems are more extensive, a market solution should still be the first choice, for example a reconstruction and recapitalisation by the owners or a buy-out by another bank. Such private solutions reduce the risk of market unrest and do not burden taxpayers. The probability of achieving a private solution naturally depends on the circumstances. Owners with plenty of capital are needed, for example, or other financial institutions or investors that see the solution as financially attractive, which means that the distressed institution must be perceived as viable. Another driving force may be that the alternatives to a private solution are considered unattractive. The Swedish bank crisis in the 1990s did lead to a few private solutions; SEB's owners, for instance, chose to contribute capital in a new issue instead of turning to the Bank Support Authority. During the present crisis, private solutions have been more numerous. Examples from the United States include the Bank of America's takeover of Countrywide and Merrill Lynch. Two other investment banks, Goldman Sachs and Morgan Stanley, were re-established as ordinary commercial banks in order to be in a better position to cope with the prevailing market conditions. In the United Kingdom, Lloyds purchased HBOS without State support.

If a private solution cannot be arranged and the institution is not considered to be important for financial stability, it should be left to file for bankruptcy or liquidation. During the Swedish bank crisis a large number of finance companies were allowed to fail but only one bank, the holding company of Gota Bank. During the current crisis the US authorities did not assist Lehman Brothers; when a private solution did not materialise, this investment bank filed for bankruptcy protection under Chapter 11.<sup>106</sup>

#### *Assisted private solutions*

Uncertainty about the value of distressed banks may make it necessary for the State to "assist" a takeover or merger, for instance by making a small capital contribution or guaranteeing certain assets. If such a solution is less costly for society than other alternatives

<sup>106</sup> A legal clause that protects the company from its creditors during a period in which the company can be reconstructed or undergo an orderly closure.

(for example bankruptcy or nationalisation) it should always be preferred. During the Swedish bank crisis it was applied in one case: Sparbankernas Bank (the "central bank" of savings banks) obtained government loans and guarantees in return for assuming ownership of Första Sparbanken. In the present crisis, the Federal Reserve assisted JP Morgan's takeover of Bear Stearns by guaranteeing loans. In the United Kingdom, Abbey National's acquisition of Bradford & Bingley's branch network and deposit operations was assisted by the State activating the deposit guarantee and transferring the entire stock of deposits in cash to the buyer. Here, too, the prospect of achieving a solution depends on the circumstances. If the market is too unstable or the assets too uncertain, even a State-assisted solution may be impossible or too costly for the State. The latter was the case in the United Kingdom during the management of Northern Rock.

#### *"Bridge bank" solutions*

One alternative to private solutions is the construction of a "bridge bank", whereby a company under a new name, usually State-owned, takes over the distressed bank's assets and liabilities. The intention is to continue the bank's operations while a solution is sought by selling the bank or at least parts of it. This gives the authorities more time to restore order to the bank and sell it, which can cost the State less than, for example, a bank failure or a State-facilitated private solution. The method is common in the United States, where money from the deposit guarantee is often used in the process. For example, the authorities took over the IndyMac Bank and replaced it with the IndyMac Federal Bank in the course of a weekend in summer 2008. However, the law behind this applies to commercial banks and was therefore not applicable in the case of Bear Stearns, for instance. The Danish authorities used the method in August 2008 to transform Roskilde Bank into a new bank supported by Det Private Bankselskab.

#### *"Open-bank" support*

State support for an open bank is a method whereby the State, possibly together with other parties, supports the solvency of a bank that continues to operate in its own name. Such a solution is often used in the absence of other alternatives or when the State is already a major owner of the bank. With this method it is particularly important that the details of the solution do not entail moral hazard.<sup>107</sup> In the Swedish bank crisis the method was used in the form of capital support to Nordbanken (in which the State had a major holding) and in the form of capital adequacy guarantees to Föreningsbanken. In the latter case, Föreningsbanken was charged a fee for the guarantee and the State would have obtained preference shares if the guarantee had been utilised. During the current crisis the method has been used in a number of cases. A German bank,

<sup>107</sup> Solutions that are unduly advantageous for former owners and bank managements are liable to mean that they and others will be tempted in future to act unsoundly and take unwarranted risks.

IKB, was rescued when large sums were provided during 2007 by its largest owner, the State-owned Kreditanstalt für Wiederaufbau (KfW). In the United States, the insurance company AIG was assisted with a Federal loan in exchange for shares in September 2008. During 2008, moreover, Federal guarantees were provided for Fannie Mae and Freddie Mac; the size of these mortgage institutions virtually precluded private solutions, not to mention bankruptcy, so the only options were support or nationalisation. During autumn 2008 governments in the Benelux countries provided the Fortis bank with support against part-ownership as an initial step; subsequent solutions differed from country to country.

#### *"Good-bank/Bad-bank" solutions*

A bank with more extensive problems can be split into a "good" and a "bad" bank. The "good" component retains the valuable assets, while the problem assets (such as non-performing loans) are transferred to a newly-established liquidation unit known as an Asset Management Company (AMC). A market value is assigned to the bad assets and the liquidation unit is capitalised (often by the State) with a view to disposing of the assets, which usually occurs later when prices have stabilised. An advantage of this method is that the bank's sound component is relieved of the burden of managing the bad assets and can start to function again. The balance sheet will be burdened, however, in so far as assets have not been written down already to prudent market values. Concentrating the bad assets paves the way for experts to come in and enhance their value in the best possible way before they are sold. In the Swedish bank crisis this method was used for Gota Bank and Nordbanken; their bad loans and the associated collateral were transferred to Retriva and Securum, the respective State-owned AMCs. Retriva and Securum were non-bank companies and operated on commercial terms to process and dispose of the assets. All the State's costs were ultimately covered. The good component of Gota Bank was sold to Nordbanken, which is now a part of Nordea. During the current crisis, on the other hand, little use has been made of this method. Lehman Brothers, for example, tried to achieve a good-bad split independently before filing for bankruptcy protection. Some American monolines have also attempted to place their problematic structured products in a separate company and keep the traditional municipal bonds they have insured in another company. The American and Spanish authorities' plans to buy up bad assets from their banking systems are reminiscent of this idea but on a far larger scale and it remains to be seen whether the assets are valued conservatively.<sup>108</sup>

#### *Nationalisation*

The State can nationalise an institution, which means that it takes over the entire bank after deciding that no appropriate alternative

<sup>108</sup> The US government has since abandoned these plans in favour of capital injections in the banks.

exists and that for various reasons the bank ought not to be liquidated, at least not immediately. In the United Kingdom, Northern Rock was nationalised in February 2008 when no acceptable private solutions could be achieved. In September 2008 this was followed by the nationalisation of components of Bradford & Bingley that were not included in Abbey National's takeover. The Netherlands chose to nationalise the Dutch subsidiary of Fortis in October 2008. Iceland has nationalised its largest banks.<sup>109</sup> During the Swedish bank crisis, the part of Nordbanken that had just been privatised was re-nationalised. In the present crisis, the Swedish National Debt Office recently took over Carnegie's subsidiaries, following problems in this bank.

#### *Public administration*

There are sometimes grounds for not preventing the failure of an institution but still ensuring that this occurs in an orderly manner. In most countries, the general bankruptcy rules are unfortunately not particularly suitable for banks; they are not constructed to safeguard the public interest in financial system stability. One solution to this is to transfer the institution to some form of public administration where closure can be controlled. Elements of this have been included in British legislation in connection with the present crisis. Bradford & Bingley is currently under public administration in so far as an orderly closure can be undertaken if the State does not manage to sell the remaining activities. During the earlier Swedish crisis, no legal instrument existed for anything resembling public administration. The legislation for financial sector stabilisation which the Riksdag approved in October 2008 does provide for public administration of banks whose capital is very low or non-existent. However, there are still no legal grounds for certain mandatory measures if a bank ceases to meet the statutory capital adequacy requirements but has not reached the level that allows compulsory capital redemption. It is possible for Finansinspektionen (Sweden's FSA) to withdraw a bank's licence but such a measure can only be taken on the basis of criteria explicitly stipulated in law. Moreover, quick and orderly crisis management calls for intervention by the authorities before a bank's capital becomes inadequate. In this respect, however, the authorities have no specific alternative to relying on creditors making voluntary agreements to write down claims. This restricts what can be done and delays a solution.

## Lessons

What has come to light during the current crisis and what we know from the Swedish bank crisis provide some clear lessons. Three of them are general and particularly evident:

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<sup>109</sup> Iceland has placed the banks under public administration and in certain cases combined this with State ownership.

- In virtually every crisis, shortcomings in the financial system have arisen in the wake of imprudent lending and other fundamental mistakes, by authorities as well as banks. From this follows the importance of upholding and making future improvements to such international minimum rules as the Basel Core Principles for risk management and supervision. The provision of credit must invariably be based on repayment capacity in the first place, not on the value of collateral.
- Every form of economic and financial imbalance must be dealt with before it has become so large that it (or the restoration of balance) has negative consequences that extend far beyond the area in which the imbalance occurs. Authorities and private agents must therefore learn to identify dangerous imbalances and develop methods for their timely correction.
- If official regulations or a lack of them result in inappropriate incentives or rule arbitrage and the emergence of “grey” systems, these must be identified and dealt with before they lead to self-evident problems.

More specifically, events during the present crisis suggest the following:

- Deposit guarantee systems that are not credible may function as consumer protection but not as instruments for dealing with a crisis. To be a corner-stone of work for financial stability, they must cover most depositors and all of their deposits. It is also important that routines are in place so that depositors can get their money without delay. Clear rules are also needed for the guarantee fund's underlying financing, such as government undertakings to provide credit. The possibility of using the guarantee fund for alternative purposes, for example to assist private solutions, should also be considered.
- The central banks' emergency liquidity assistance (ELA) can be too exclusive and stigmatising. Non-bank institutions may need some form of liquidity assistance to prevent negative effects from spreading to the banking system. The problem of stigmatisation – that banks which apply for assistance are liable to be perceived as weak – also applies to the central banks' standing facilities. There have been several instances where banks preferred to refrain from using the standing facilities despite attractive terms. An example of stigmatisation is the run on Northern Rock when it was announced that the bank had obtained ELA.
- Financial crises are becoming increasingly universal, crossing market as well as national borders. That calls for cross-border solutions and harmonised rules for crisis management. This is all the more important in that one country's choice of crisis management can very soon affect financial stability in other countries.



- More emphasis must be placed on how banks and other financial institutions manage liquidity. The current crisis has clearly shown that decreased liquidity in certain markets leads to funding problems for many banks. In contrast to the capital adequacy rules, which focus on solvency, apart from general principles there is no harmonised system for liquidity.
- Insufficient consideration has been paid to the risks in off-balance-sheet commitments, to SIVs or to other participants. This applies in particular to what can happen in connection with financial unrest, when counterparties are particularly prone to demand that commitments are honoured.
- There is a clear incentive problem with the "originate and distribute" model (the process of securitising house mortgages and other assets and selling them on). Banks have less cause to make careful credit assessments, for example, if the credit risk is going to leave their balance sheet.
- Disrupted markets and price mechanisms have consequences for the valuation of assets, which raises the question of how illiquid instruments are to be assessed in connection with a crisis.

### Forward-looking strategies

During a crisis, as well as in its aftermath, far-reaching demands are often made for tighter rules. While this is warranted in many cases, there is always a risk of overreacting. What is needed may not be more regulation so much as rules which are more effective and harmonised than the current arrangements. The Riksbank considers that all financial regulation must have a sound foundation in socioeconomic analysis. Two conditions must be met to justify regulation: one is that some kind of market failure can be demonstrated, the other that the regulations' benefits are greater than their socioeconomic costs.<sup>110</sup>

Numerous measures for tightening and refining rules and supervision are being discussed at present in various international committees. Every regulatory endeavour in these matters needs to be analysed to ensure that it does not cost more than it is worth. Ways of providing appropriate incentives in securitisation processes, for example, must not "kill" the process as such. Furthermore, the Riksbank considers that far-reaching regulation of credit rating

<sup>110</sup> Risk is a natural component of banking and the operations of other credit institutions. However, the risks they take have a negative external effect for which they do not make sufficient allowance, namely systemic risk (the risk of a disturbance in one part of the financial system spreading and thereby jeopardising basic functions). In the absence of rules and supervision, the individual participants' incentives to manage systemic risk would be weaker than is socioeconomically optimal. Another, similar type of market failure also needs to be dealt with. Financial stability is a collective good, which is particularly evident in times of financial unrest. It benefits all institutions, including those that do not help to maintain it under normal circumstances or to restore it during financial unrest. This free-rider problem is another reason for some form of public intervention.

institutions would be unsuitable because the State would then be implicitly accountable for their credit assessments. That does not mean that these institutions should not have stricter standards than at present for internal control and, in particular, for credit assessment procedures. Similarly, the authorities are under a responsibility for how such credit assessments are used in certain regulations, such as Basel II, and the potential effects of this in crises.

In order to ease the situation for credit institutions and enable an increased supply of credit, various parties have proposed a temporary relaxation of certain rules. The Riksbank considers that it would be wrong to do this. The rules are there to safeguard stability; relaxing them would be inappropriate, particularly in a crisis. However, there may be a few exceptional cases.

The Riksbank supports international harmonisation of rules and supervision as a means of heightening effectiveness in relation to transnational financial groups, but also to reduce their reporting burden. The increasing degree of internationalisation in the financial system has underscored the need to improve coordination and the exchange of information between authorities in different countries, particularly in acute situations. There are therefore good reasons for strengthening the international agreements on crisis management. The Riksbank has taken an active part in crisis readiness and crisis exercises, at both the national and the international level. The prospects of finding crisis solutions that are appropriate, in practical terms as well as cost wise, are enhanced by a readiness for this.

## Conclusion

The current situation has many aspects that are reminiscent of the Swedish bank crisis in the early 1990s. There are also major differences. The Swedish bank crisis, like most other crises, was local and could be resolved with national measures. The current crisis is definitely international as regards its causes and the need for coordinated action. The dwindling supply of liquidity, for example in the interbank market, has affected countries where banks are fundamentally sound. Good global economic growth made it easier to resolve previous local crises. Today there is instead a negative global interaction between the financial crisis and an economic slowdown. As in other crises, a basic cause of the depth of the current crisis is the lack of confidence. This is also the key to a solution. The measures that have been taken to date, many of them drastic, have not yet led to a restoration of confidence. Still, they can be seen as stepping stones on the road to the day when their combined effect leads to normal market conditions.

## ■ Articles in previous stability reports

■ 2008:1

### **Liquidity risk in the banking system**

*During the financial crisis in the autumn and spring, liquidity risks in the financial system have been very apparent. When demand collapsed in a number of securities markets during the autumn of 2007, banks were affected both in the United States and Europe by acute funding problems. The whole of the global bank sector has been affected by the liquidity crisis since then. Several central banks have taken steps during the crisis to attempt to ease the strains. The question is what can central banks and other authorities do to reduce these risks in the future. Is there a need to create a completely new regulatory framework for management of liquidity risk?*

■ 2007:2

### **Financial stability – new challenges**

*With a separate article the Riksbank marks the 10th anniversary of its reports on financial stability. The Riksbank advocated at an early stage that risks and vulnerabilities in the financial system should be discussed openly. Since the time of the first report a lot has happened in the financial field which has led to a number of positive effects on both the efficiency and the stability of the financial system. But developments also bring authorities with responsibility for stability in the financial system face to face with a number of challenges. The article, describes these challenges and what they may entail for the Riksbank's future activities regarding financial stability.*

■ 2007:1

### **Effects of increased foreign ownership in the bank sector**

*The Riksbank assesses the consequences for financial stability of a foreign owner buying up a Swedish bank. The conclusion is that increased foreign presence is positive for financial stability. It may also be positive for competition in the bank sector. On the other hand, it puts greater demands on the authorities in the countries concerned to cooperate on issues concerning supervision and crisis management.*

Read more about previous articles at [www.riksbank.se](http://www.riksbank.se)



## Glossary

**Acquisition value:** The amount a company pays for an asset at the time of acquisition.

**Arbitrage:** Use of differences between prices or rules in different markets or business areas to gain from them.

**Asset Management Company (AMC):** A liquidation company established to take over bad assets to arrange orderly liquidation.

**Balance sheet:** Shows a company's financial position at a particular point in time. It consists of an assets side, for example liquid assets, bank deposits, receivables, and a liability side, for example equity, bank loans.

**Bankruptcy:** Legal procedure whereby in principle all assets owned by an indebted legal entity or an individual are taken over by a receiver to pay all debts.

**Basel Core Principles (for Effective Banking Supervision):** Rules and regulations for banks and regulatory authorities that define 25 principles to provide a minimum standard for good practices of banking supervision.

**Basel II:** Bank standards regulating how much capital a bank must retain in relation to the risk it faces.

**Basis point:** One basis point is one hundredth of one per cent, i.e. 0.01 per cent. Thus, 100 basis points is equivalent to 1 per cent.

**Basis spread:** The difference between the three-month interbank rate and the expected policy rate.

**Bond:** A fixed-income promissory note or debt instrument issued by a state, municipality, credit market company, mortgage institution or large company. Bonds generally have a time to maturity of at least one year. Periodic payments are made prior to maturity, at which time the principal amount is repaid.

**Bond market:** The credit market segment for trading fixed-income securities issued for a period of more than one year.

**Brokerage:** Transaction cost when an asset is bought or sold.

**Capital adequacy rules:** Rules concerning the minimum level of bank capital. See Basel II.

**Capital base:** The capital available to cover losses of a bank or an institution.

**Capital market:** Umbrella term for the stock, credit and derivative markets.

**Carry trade:** A strategy based on speculating that the exchange rate in a country with high interest rates will not depreciate to the extent indicated by the interest rate differential in relation to another country's currency.

**Cash flow:** A company's actual receipts and payments during a defined period of time.

**Central counterparty:** The institution that acts as a seller to all the buyers and a buyer to all the sellers of the traded instruments.

**Central securities depository:** An institution that handles securities transactions post-trade.

**Certificate:** A security for trading in the money market. A certificate is a debt instrument issued by e.g. a bank or a company with the purpose of borrowing money. Maturity is a maximum of one year.

**Chapter 11:** The chapter in US bankruptcy legislation that concerns reconstruction of companies. During reconstruction the company is under court protection from bankruptcy.

**Clearing:** The compilation of instructions about transfer of a payment to a recipient's account.

**Code of Conduct for Clearing and Settlement:** A code of signed by market participants in Europe with the primary purpose of improving price transparency for securities management services.

**Collateralized debt obligation (CDO):** A structured credit instrument made up of bonds from many different securitised loan portfolios and other assets. This composite portfolio is then structured into segments with different credit risks.

**Collective goods:** Goods that anyone can consume once they have been produced.

**Conduit:** A single-purpose company used to facilitate securitisation.

**Continuous Linked Settlement (CLS):** An international system for the settlement of currency transactions.

**Correspondent bank:** A bank in another country which a bank uses to make a payment in a currency other than its domestic currency.

**Counterparty limit:** A limit on lending to a counterparty.

**Counterparty risk:** The risk of a counterparty in a business transaction defaulting on the obligations.

**Covered bonds:** A bond whose holder has a special benefit right in a bankruptcy. Covered bonds are intended to be more creditworthy than non-covered bonds, which reduces the cost of funding.

**Credit:** The right to dispose of a sum of money belonging to the creditor (usually a bank) in return for compensation, mainly interest.

**Credit default swap (CDS):** A contract in which one party buys protection against the credit risk in an underlying bond in return for paying a premium; the other party receives the premium in return for accepting the credit risk. The instrument is used as insurance against credit risk. The premium for the CDS usually measures the credit risk in the company's underlying assets.

**Credit insurance:** A policy against loan losses. The buyer of the insurance is protected against a specific credit risk. The seller accepts this risk in return for a premium and incurs any loss on the loan.

**Credit line:** A credit agreement which a bank or other financial institution makes with a company or other institution, usually in return for a fee. The credit is to be available at short notice and not be subject to terms whereby the money is not forthcoming. Interest is paid on the utilized part of the credit; the unutilized part is dormant but available when needed.

**Credit market:** A market for trading borrowed capital with different maturities. It comprises fixed-interest securities.

**Credit rating agency:** A company that assigns ratings, i.e. makes an assessment of the credit risk associated with a company and indirectly with its securities.

**Credit rationing:** A situation that arises in the credit market when the supply of credit is less than the demand from potential borrowers at current terms.

**Credit risk:** The risk of a borrower failing to meet commitments.

**Credit spread:** The difference in yield between securities with the same maturity but different credit risks, for example, the difference between the corporate bond rate and the rate for government bonds.

**Creditworthiness:** The debt-servicing ability of a country, a company or an individual. Creditworthiness is classified to indicate the ability to pay. The ratings are usually made on a scale from AAA to C, where AAA is best.

**Currency swap:** An agreement to buy/sell a currency at the current rate and sell/buy back the same currency at a specified exchange rate on a specific day in the future.

**Currency transaction:** The transaction when one currency is traded for another.

**Debt/equity ratio:** A company's liabilities in relation to total assets.

**Debt ratio:** Household debt in relation to disposable income.

**Deposit guarantee:** Insurance on funds deposited in affiliated credit institutions. If the credit institution collapses, the funds are returned to the depositor, usually up to a specified amount.

**Derivative:** A financial instrument that entails agreements on commitments, rights or other prerequisites at a given future point in time. The value of a derivative is linked to an underlying asset. The most common derivative instruments are futures, options and swaps.

**Disposable income:** The total of a person's or a household's incomes less taxes and charges.

**Diversify:** Investing in a variety of assets in order to reduce the risk in the total portfolio.

**Emergency liquidity assistance:** The provision of credit on special terms by the central bank to an institution, e.g., a loan against collateral other than what is normally required, or a guarantee whereby an institution without collateral can borrow on the market.

**Equity:** Item in a company's balance sheet showing the difference between assets and liabilities, including, for example, capital provided by owners, retained profits and reserves.

**Expected default frequency (EDF):** The probability that a listed company will default within a year. Calculated as the probability of the market value of the company's assets being exceeded by its liabilities when the latter fall due. Used as a measure of default risk.

**Fair value accounting:** Market-value accounting of traded as well as non-traded assets and liabilities. The practice is not yet implemented in full, for instance for banks; many non-traded assets and liabilities are still not included.

**Financial institution:** A broad term for companies whose primary business is operating on the financial markets, for instance banks or mortgage institution.

**Financial markets:** A collective term for markets where financial assets are bought and sold. The financial markets in Sweden include the stock, fixed-income and foreign exchange markets.

**Fixed-income market:** The market for instruments that provide a return in the form of interest. It is usually subdivided into the bond market and the money market.

**Free riding:** Benefiting from something without contributing to its costs.

**Group:** A group of companies joined through ownership.

**Hedge fund:** A collective term for various types of fund with a wider choice of investments than ordinary funds. They may, for example, pledge large parts of the portfolio as loan collateral and invest large parts in particular securities, besides hedging with forward contracts and options to even out the risk. They may also engage in short selling, i.e. sell shares they do not own.

**Implied volatility:** Market participants' expectations of future variations in share prices, derived from option pricing. Volatility is usually measured as the standard deviation of the share's rate of return.

**Interbank market:** The market where banks trade interest and currencies with each other.

**Interbank rate:** A daily reference rate based on the interest rates for unsecured loans that banks offer to one another. In Sweden the rate that banks charge each other for SEK loans is called STIBOR (Stockholm Interbank Offered Rate). STIBOR is used as a reference for rate setting or pricing of derivative contracts.

**Interest coverage ratio:** A measure of a company's ability to meet financial costs.

**Interest ratio:** A household's post-tax interest expenditure in relation to disposable income.

**Investment bank:** A bank that issues and sells financial assets. Such banks also provide financial planning services and trade on their own account.

**Issue:** Issuance of securities.



**Key policy rate:** The interest rates which a central bank sets for the purpose of monetary policy. In Sweden, they are the repo rate and the deposit and lending rates. The repo rate is the most important.

**Liquidity:** A measure of a company's or an organisation's short-term ability to pay. Also the ease with which an asset can be bought or sold.

**Market risk:** The risk that fluctuations in market prices, mainly for interest rates, shares and currencies, will result in losses.

**Markets in Financial Instruments Directive (MiFID):** EU directive for markets in financial instruments, in force in EU member states since 1 November 2007.

**Monetary policy:** Aims to influence inflation, the exchange rate and/or economic activity by altering the amount of money in circulation and adjusting policy rates.

**Money market:** A market for trading with instruments that give a fixed return (interest) with a maturity of less than one year. One of the money market's most important functions is to manage liquidity for banks and other financial institutions. Instruments traded on the money market include treasury bills and certificates.

**Monoline:** A company that provides insurance by guaranteeing interest and principal payments on the bond in return for a premium.

**Moral hazard:** The risk that knowledge of a safety net (for example insurance) affects behaviour in a way that increases the probability of an unfavourable outcome.

**Mortgage-backed securities (MBS):** A variant of securitisation whereby the return on the security is secured by interest payments from a portfolio of several different mortgages.

**Net commission income:** Income less cost of services sold (apart from interest), e.g., services related to payments, share trading, asset management and card operations.

**Net interest:** Consists primarily of interest income less interest expenditure for funding and deposits.

**Net operating income:** The difference between rent income and the operating and maintenance costs for a property or property company.

**Net wealth:** Assets minus liabilities. Net wealth may therefore be negative.

**New issue:** An offer of new shares by a limited company, which thereby strengthens its restricted equity.

**Operational risk:** The risk of losses due to inadequate or failed internal processes, failed systems, or external events.

**Over the counter (OTC):** Transactions arranged directly between a buyer and a seller without the participation of an exchange.

**P/A ratio:** See purchase price coefficient.

**Payments system:** The system in which all payments are made and settled centrally. The payments system in Sweden consists of 14 large credit institutions, the Swedish National Debt Office, the Riksbank and four clearing organisations which all participate in the Riksbank's RIX system.

**Preference shares:** Give precedence over other shares to the profits and assets of a company.

**Present value:** The current worth of a future amount. Calculated mainly in connection with investment appraisals.

**Price/Earnings (P/E) ratio:** The price of a share in relation to expected earnings.

**Primary market:** The market in which a security is sold for the first time (on issue).

**Private equity investment company:** Company that invests or acts as an intermediary in the provision of risk capital.

**Public administration:** Public takeover of a company for orderly liquidation.

**Purchase price coefficient (P/A ratio):** The purchase price of a property in relation to its assessed value.

**Repo rate:** The Riksbank's primary key policy rate.

**Return:** The difference between the amount invested and the amount received as repayment; that is, the profit on invested capital.

**Return on equity:** Concept used to assess profitability; the same in principle as return.

**Risk capital:** Equity or own capital. Also referred to as venture capital. The term indicates that the risk is greater than that on borrowed capital.

**Risk capital requirement:** The capital required to cope with unanticipated losses.

**Risk-free assets:** An asset that provides a return which is certain without exposing the investor to any form of risk. Approximated in practice by government bonds.

**Risk premium:** The additional return an investor requires as compensation for additional risk.

**Secondary market:** Second-hand market for trading with issued securities.

**Securitisation:** A financing process whereby a number of loans (e.g., mortgages or credit card loans) are bundled together and sold on to a company created for the purpose and financed by issuing securities in the market.

**Settlement:** Final regulation of debt when money or securities are transferred from one party to another, usually payment from one account to another.

**Settlement risk:** The risk of any of the parties involved in the final settlement of debt not being able to perform their commitments.

**Short selling:** The practice of selling shares one does not own. Short selling is a way of speculating in a fall in the price of a share. The shares are borrowed from an institution and sold on the market; the seller then buys back the shares at a later date, hopefully at a lower price.

**Solvency:** A company's ability to pay its debts as they fall due.

**Spread:** Usually the difference between two interest rates. In the bond market, spread is measured in basis points (see basis point).

**Standing facilities:** The lending and borrowing facility which the Riksbank provides for the purposes of monetary policy and which eligible institutions may use on their own initiative in accordance with certain terms and conditions.

**Stigmatisation:** During the ongoing financial crisis, financial institutions have not always used the extra liquidity facilities provided by central banks. One reason has been misgivings that by showing a need to use the facilities, the institution will be considered "weak".

**Stress test:** Analysis of scenarios to test the resilience of banks and households to unexpected and negative events.

**Structured Investment Vehicle (SIV):** A company that is not required to appear on a bank's balance sheet and is used for securitisation.

**Structured products:** Pools of securitised loans. The most common products are collateral debt obligation (CDO) and mortgage-backed securities (MBS).

**Subprime:** The segment of the US mortgage market for borrowers with low credit ratings – often first-time borrowers with less than the average household income.

**Swap:** A bilateral agreement to exchange a specific currency/interest rate in return for another currency/interest rate for a predetermined period and according to specific conditions.

**SWIFT (Society for Worldwide Interbank Financial Telecommunication):** A message system used worldwide by financial market participants.

**Systemic risk:** The risk that problems in one or more institutions will spread to other institutions via exposure and/or loss of confidence.

**Target 2 Securities:** An ECB-planned infrastructure for settlement of securities transactions.

**T/N rate:** A standardised interest rate in a deposit contract that allows deposits and loans without underlying collateral; the rate is determined in advance (the T/N rate) and so is maturity (T/N, from Tomorrow to the Next day).

**Transaction cost:** Costs associated with trading in addition to the purchase price; for example finding a buyer/seller, negotiations, legal costs, etc.

**Transparency:** In this context the availability of information about risks, assumptions, calculations and other aspects of a financial product.

**Vacancy rate:** A property market term for the proportion of unlet units.

**Value at Risk (VaR):** A statistical method that describes the maximum potential loss, given a particular probability during a particular period of time. Used by investors to measure the risk of a specific asset or portfolio of assets.

**Write down:** Accounting term for reducing an asset's book value to correspond to its market value.