



# Financial Stability Report 2007:2



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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 this system's 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 8 and 21 November. The Report uses data available as at 21 November.

Stockholm, December 2007

*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 State 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 the central components of the financial system.** At the same time, banking has a number of special characteristics. The banks borrow from each other, so problems in one bank may easily spread to other banks. 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 have a dominant position, with a combined market share of around 80 per cent. Besides the systemically important 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 supervision.

**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.

**Another aspect involves upholding a proper readiness for crises.** The Riksbank is the authority that is in a position to provide emergency liquidity assistance if problems are so grave that the entire system is threatened. If an institution encounters serious problems, the Riksbank must take steps to minimise the negative consequences.

**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 Riksbank's assessment is that at present, financial stability in Sweden is sound. The banks are very profitable and have a strong capital base. The possibility of coping with unexpected negative events is accordingly favourable. Due to an increase in the banks' risks, however, resilience is somewhat lower than six months ago.

Since the summer, financial markets have displayed considerable turbulence. This has to do with the US subprime market, which caters to borrowers who are less creditworthy. The unrest has affected Sweden but to a lesser extent than many other countries. The main consequences for Swedish banks have been increased costs for wholesale funding, a lower customer activity in the fixed income area and a fall in the value of interest-related assets.

The international financial unrest has given rise to a pronounced reduction of liquidity in markets that are directly or indirectly connected with the US subprime market. Uncertainty about the whereabouts of risks has led many banks to hoard liquid assets and prices for short-term financing have risen sharply. A restoration of market confidence will take time and the risk of greater financial turbulence is not negligible.

Moreover, the unrest in international financial markets accentuates vulnerability to other shocks. The risks associated with Swedish banks' operations in the Baltic countries have grown. The signs of economic overheating in those countries, Latvia in particular, are becoming increasingly clear. At the same time, operations in the Baltic countries have generated a growing share of the profits of the Swedish banks – Swedbank and SEB – with the largest presence there. The Riksbank's stress tests show that a pronounced economic slowdown in the Baltic economies would have an appreciable effect for these banks but that their margins for coping with a deterioration are satisfactory. The tests also confirm the impression that the banks have become more vulnerable to such a development.

This summary begins with the Riksbank's assessment of financial stability in Sweden. It then highlights a number of risks that could result in shocks to or imbalances in the financial system. In connection with the picture of risks, stress tests are presented that have been made to assess how bank resilience might be affected by extreme events. The summary ends with a brief presentation of the article that is included in this issue.

## The Riksbank's assessment of financial stability

The profits of the four major Swedish banks are higher than ever before. Much of the increase in profitability is coming from the growth of lending to both the household and the corporate sector. This growth is particularly strong in the Baltic countries. Increased lending offsets effects of continued pressure on margins. Meanwhile, high stock-market turnover and rising equity prices during much of the year are making a positive contribution to net commission income. Borrowers in general are strong financially and in a good position to meet their commitments with banks.

The Riksbank's assessment is that the bank's resilience to negative and unforeseen events is sound. But resilience has decreased to some extent in the past six months. This mainly has to do with the banks' increased credit risk. A rapid expansion of lending has been accompanied by decreased lending margins. The growth of lending has occurred in particular to borrowers abroad, mainly in the Baltic countries.

### FINANCIAL MARKET UNREST COLOURS THE ASSESSMENT

The external conditions for banks have been altered to some extent by the financial market turbulence that began towards the end of the summer. Six months ago, the previous Financial Stability Report devoted some space to the US subprime market, the segment of the market for housing finance that caters to borrowers with relatively low creditworthiness. The Riksbank warned that in a search for yield, investors have required unduly low compensation for credit market risks and that in many cases loan-to-value levels were alarmingly high. Another cause for concern was the lack of insight into where the risks actually resided.

These circumstances have already given rise to turbulence that was surprising in several respects. The problems in the relatively limited US subprime market spread to a remarkable degree and did so rapidly. The linkage with financial markets has to do with the large proportion of subprime loans that have been securitised and sold on to investors all over the world. When the subprime borrowers encountered debt-servicing problems, securities with these loans as the underlying assets were hard to value. The price of risk rose sharply and the market for these instruments came to a virtual standstill. This was accompanied by great uncertainty about which investors were actually carrying the risks.

A further complication is that many bank-related enterprises that invested in these instruments have tended to finance the transactions

at considerably shorter maturities. So when the growing uncertainty largely closed the market for the latter type of securities, these enterprises turned to the banks, which in many cases had guaranteed liquidity. In order to be in a position to meet commitments, banks have accumulated buffers in the form of high-grade assets and liquid funds. With the strong demand for liquidity, the price of short-term funding has shot up. A number of central banks have chosen to intervene to supply the market with additional liquidity.

The turbulence has affected Sweden but not to the same extent as, for example, the United States, the United Kingdom and Germany. The main consequence for Swedish banks has been the increased cost of market funding. There has also been a fall in the value of certain interest-related assets, while slacker trading has hit earnings. The major banks' exposures to the US subprime market are, however, very marginal.

#### THE RECENT FINANCIAL UNREST POINTS TO EVIDENT SHORTCOMINGS

It is an altered appraisal of risk that underlies what has happened and a lack of liquidity in the short-term funding market has affected international financial stability. The price of risk had been remarkably low for a number of years. It is positive in itself that investors are now requiring higher compensation for risk and it is less likely that risk premia will return to levels as low as those before this summer.

That said, the turbulence has occurred at a time when global economic growth has been strong for several years. Both the United States and the euro area are now moving towards a more subdued phase. Under these circumstances, the financial unrest has added to uncertainty about the economic future and dampened the risk propensity of investors. A marked economic slowdown could accentuate the negative effects of the financial unrest.

Several lessons can be drawn from what has happened. The uncertainty about where the risks are actually located stems from the opacity of banks' exposures. Another problem has to do with difficulties in identifying the risks associated with structured products and valuing them. Many investors have relied too much on the risk-assessment ability of rating companies, instead of producing internal assessments. Authorities and market participants both have reasons for further work on these issues.

Rectifying the underlying problems will take time. As long as the financial unrest continues, it will entail a vulnerability to other shocks.

## DEVELOPMENTS IN THE BALTIC COUNTRIES CAUSE CONCERN

The Riksbank has previously pointed to Swedish banks' vulnerability to developments in the Baltic countries. The growth of lending to firms and households in this region has continued at a high rate in the past six months. Operations in the Baltic countries are accordingly generating an increasingly large share of the total earnings of the banks, Swedbank and SEB, with the greatest presence there.

Estonia, Latvia and Lithuania all have current-account deficits that are still notably high. This is accompanied in each case by growing strains in the domestic economics. Inflation has continued to rise and credit growth is strong, though it has tended to slacken recently. A large and growing proportion of lending in the Baltic countries is arranged in euro. The signs of overheating are clearest in Latvia. All in all, the risk of a pronounced slowdown has increased. Some fiscal and regulatory measures have been taken and more are planned but the effects they will have are uncertain. Fiscal policy is still too expansionary to curb economic expansion sufficiently.

Another of the Swedish banks' major borrower categories is property companies and they are dependent on the commercial property market. The required yield in this market remains comparatively low despite the increased return on alternative and less risky investments such as government bonds. The argument for this is that investors foresee growing income from future rent increases. Rents have in fact risen to some extent and in certain regions. But the Riksbank questions whether rents will continue to rise as much as the market assumes. A slackening of economic growth narrows the scope for further rent increases.

House prices in Sweden have continued to rise rapidly and lending to households is following suit, though both rates are somewhat lower than they were earlier. The Riksbank judges that in time, with higher interest rates and a more subdued economic phase in the coming years, house prices and borrowing will both continue to weaken. The long period of rapidly rising house prices means that many new owners have financed more and more of the purchase price with loans. In many cases, a large part of the household's wealth consists of their dwelling, which makes them vulnerable to house price fluctuations. The risks are particularly great for first-time buyers with high loan-to-value levels.

## Risk scenarios

There are a number of risks that in time could affect financial stability if developments continue in a negative direction. The risk scenarios the Riksbank has identified are listed below in no particular order.

Risks in financial markets	↗
Developments in the Baltic countries	↗
The risk of price corrections for commercial real-estate	→
The risk that for some time to come house prices and household debt continue to rise faster than disposable income	→

The arrows indicate how the risks have changed in the past six months:  
Increased risk ↑ Some increase ↗ Unchanged risk → Decreased risk ↓

### ↗ Risks in financial markets

A new shock could occur before the financial unrest has subsided. That might generate even more turbulence and entail decreased liquidity, thereby leading to a self-propelled spiral. Moreover, an unexpectedly weak economic development would be liable to accentuate the negative effects on financial markets.

### ↗ The risk of a marked economic slowdown in the Baltic countries

A marked economic slowdown in the Baltic countries could ultimately affect borrowers in this region to such an extent that they have debt-servicing problems. That in turn entails a risk of negative effects on the earnings and the credit quality of Swedish banks with operations in these countries.

### → The risk of price corrections for commercial real-estate

The Riksbank perceives a risk that the property market's expectations of increased future income from real-estate are unduly optimistic. If that is the case, commercial property prices may fall, with negative consequences for property owners, who are a major borrower category for all the four large Swedish banks.

### → The risk that for some time to come, house prices and household debt will continue to rise faster than disposable income

If this development continues there is a risk of it leading to imbalances. An abrupt correction of such imbalances could have sizeable effects on the real economy. For individual households, excessive borrowing could lead to debt-servicing problems.

## Stress tests

The Riksbank regularly performs stress tests to assess how bank resilience could be affected by less probable but entirely plausible events. Results from such tests, presented in the Report, show how the banks are affected by a poorer quality of credit as well as by higher funding costs. The results published in earlier Reports cover the four largest Swedish banks: SEB, Handelsbanken, Nordea and Swedbank. The present results for credit quality also include Danske Bank, the fifth largest bank in the Swedish market.

One scenario concerns a marked loss of creditworthiness among borrowers in the Baltic countries. The results show that during the first half of 2007 there was some decline in the banks' resilience to such a development. This was due to the increase in their lending in the Baltic countries and the growing share of their earnings that comes from this region. Still, the stress tests indicate that the banks continue to be in a sound position to cope with such a scenario, albeit with a smaller buffer against other negative events.

Another scenario tests the banks' resilience to a pronounced turn in the credit cycle, similar to what happened in 2000. The results indicate that the capacity of the banks for coping with such a development is marginally worse than the picture in the previous Report. All else equal, the major banks would be entirely capable of coping with such a development.

The third scenario estimates how the four major banks are affected by rising funding costs. Wholesale funding becomes more expensive and to some extent replaces other, relatively cheaper, funding sources. The results indicate that such a development would affect the banks but not critically.

## The Financial Stability Report celebrates its 10th anniversary

With the 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.

*The international financial markets are marked by the turbulence which arose over the summer. Investors have turned to safe investments and the price of risk has increased. Liquidity has deteriorated in the short-term money market and interbank rates have risen sharply. The Swedish market has also been affected, albeit to a lesser extent than markets in many other countries. It may take some time before all problems have been dealt with and before the turbulence gradually dispels.*

Developments in the financial markets affect both banks and their borrowers. This chapter opens with a brief summary of the Riksbank's real economic assessment,<sup>1</sup> followed by a discussion of the most important aspects of developments in the financial markets. In the final section the potential risks associated with the future development are discussed.

### ECONOMIC CONDITIONS

**There have been signals of weaker economic growth abroad, from the United States, among others.** The weaker growth in the United States and the unrest that has arisen in the financial markets is linked to the problems in the US mortgage market, the so-called subprime market.<sup>2</sup> The development means that the conditions for household consumption have deteriorated. At the same time, both households' and companies' balance sheets are stronger than they have been prior to earlier periods when economic activity has declined. The US Federal Reserve's interest rate cuts should also contribute to holding up growth in demand. Overall, US GDP growth is expected to be two per cent both this year and next, after which it is expected to increase by almost three per cent in 2009, to further increase slightly.

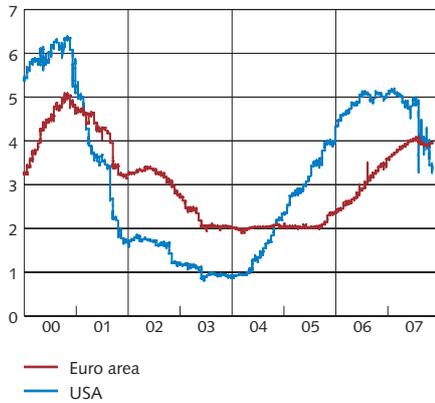
**Growth in the euro area has also slowed down recently.** Growth is assessed to be weaker in the future as a result of the financial turbulence and weaker growth in the United States. Exports are also expected to dampen due to the strengthening of the euro over the past year. But the dampening effect on GDP growth is judged to be relatively limited, however. This is due to the clear improvement in the labour market recently and companies' high profits. In the euro area GDP is expected to increase by 2.5 per cent this year and by some two per cent in the following three years.

**Some of the world's emerging markets are growing more rapidly than was previously anticipated.** In China and India, but also in Russia and the rest of eastern Europe as well as several other areas, growth is expected to remain strong. Although some gradual

<sup>1</sup> The account of real economic development in this report is based on the Riksbank's Monetary Policy Report 2007:3.

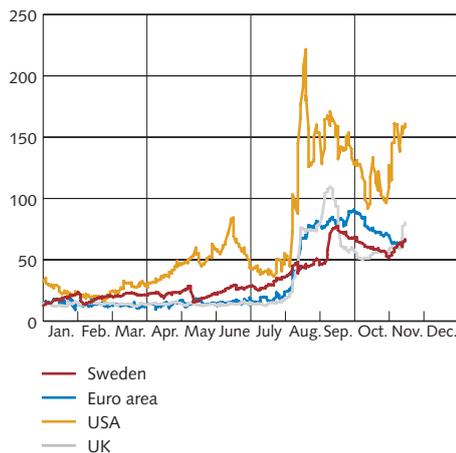
<sup>2</sup> See the box "Payment problems in the US subprime sector for housing finance", Financial Stability Report 2007:1.

**Chart 1:1. 3 month treasury bills interest**  
Per cent



Source: Reuters EcoWin

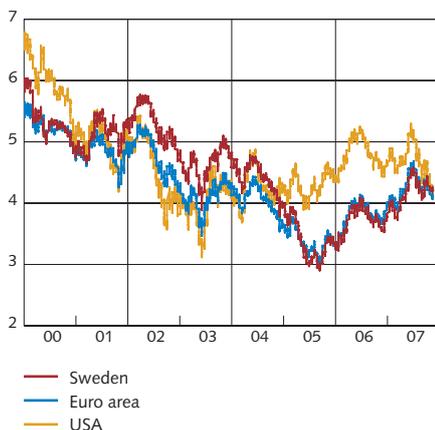
**Chart 1:2. Difference between interbank rates and treasury bills in 2007**  
Basis points



Note. The differential is calculated as the difference between the three-month interbank rate and three-month treasury bill interest rate in respective countries.

Source: Reuters EcoWin

**Chart 1:3. 10-year government bond yield**  
Per cent



Source: Reuters EcoWin

slowdown is predicted in most of these areas, they contribute to continued positive growth in the global economy as a whole.

### The Swedish economy is continuing to show strong growth.

Growth has been fuelled by a strong increase in productivity and high demand. In future, GDP growth is expected to be lower than it has been in recent years. This is due to weaker growth abroad and slower growth in productivity and labour force demand. In addition, a gradually rising interest rate, and a stronger exchange rate contribute to this. Swedish GDP is expected to grow by 3.1 per cent this year, 2.8 per cent next year and 2.3 per cent the following year.

## FINANCIAL MARKET TURBULENCE

### Since July, financial market developments have been turbulent.

As always, when uncertainty increases on the market, investors seek safe investments. Demand for government securities has increased and interest rates have fallen. At the same time, demand for riskier assets has declined and caused higher interest rates. Investors willing to take risk are demanding higher compensation for this than was previously the case. The price of risk, which has been low for a long time compared to history, has returned to more normal levels. For a more detailed description of the course of events see the separate box.

## THE INTERNATIONAL SHORT-TERM FIXED INCOME MARKET

The unrest has been particularly noticeable on the short-term fixed income market. The short-term money market outside of the banks has grown rapidly in recent years. Large credit volumes, for instance, which the banks have placed in specific off-balance sheet vehicles, have been financed here. When questions arose as to the credit quality of some of these vehicles, many investors chose to exit the market and to invest in treasuries instead. This has led to a fall in the interest rate on treasury bills (see Chart 1:1). Expectations of lower policy rates have also contributed to this.

### The interest rate differential between short-term government securities and interbank rates has increased

(see Chart 1:2). At the same time as the interest rate on treasury bills has fallen interbank rates have risen. When investors no longer wanted to finance credit portfolios as they had previously done, the banks were forced to take over large credit volumes from the market. This has created distrust among the banks. The uncertainty that arose in connection with this development has caused the banks to amass more liquid assets than normal, which has led to rising interbank rates. The lack of liquid assets has led several central banks to act and provide the market with additional liquid funds.

**Conditions on the interbank market have gradually stabilised.** In the past two months the spread between interbank rates and treasury bill rates has gradually fallen. But, the interest rate differential in Europe between the three-month interbank rate and treasury bills with the same duration is still some 50 basis points higher than in June. However, there are major differences depending on which bank is borrowing. Major banks which are considered to be associated with low risk can borrow to considerably more favourable rates than small or riskier banks.

#### THE INTERNATIONAL LONG-TERM FIXED INCOME MARKET

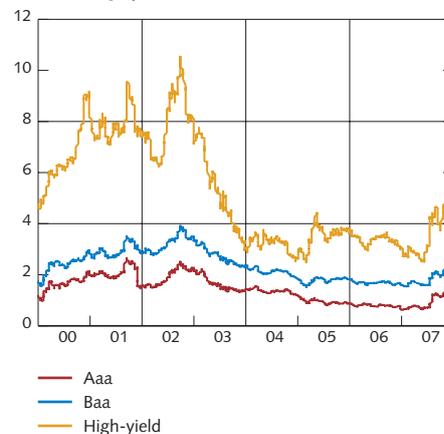
**The yield on government bonds has fallen since the summer.** Bond yields have fallen the most in the United States but the tendency has been the same in Europe (see Chart 1:3). The fact that the government bond yield has fallen is due to a sharp increase in demand for risk-free securities, but also due to expectations of a lower policy rate in the United States.

**In the corporate bond market, it is primarily high yield bonds that have been affected** (see Chart 1:4 and 1:5). It is clear that investors are less inclined to invest in assets with higher risk, such as bonds issued by companies with lower credit ratings. These bond yields have risen sharply. Yield on bonds with highly rated collateral have only risen marginally. However, funding costs on the bond market are still historically low. In connection with the dot com bubble around the turn of the century credit spreads<sup>3</sup> reached significantly higher levels than current levels. That companies' financing costs on the bond market have remained low also reflects the fact that both profitability and balance sheets are strong at present. The number of defaults remains at a historically low level in global terms (see Chart 1:6).

**The spreads for bonds issued by emerging market economies are still historically low** (see Chart 1:7). Emerging market economies have also seen an increase in the price of risk, but to a relatively small extent. Many emerging market economies continue to display improved government finances, and in Asia the current account surpluses continue to grow. In addition, these countries have generally built up large currency reserves as buffers. A number of emerging market economies are today associated with low risk by the market.

**Private equity investors' demand for credit instruments linked to leveraged buy-outs (LBOs) has declined.** This is due to the fact that the majority of larger buyouts made via private equity investors on the international markets, have been postponed. During the third quarter the number of LBOs declined by almost 80 per cent in Europe

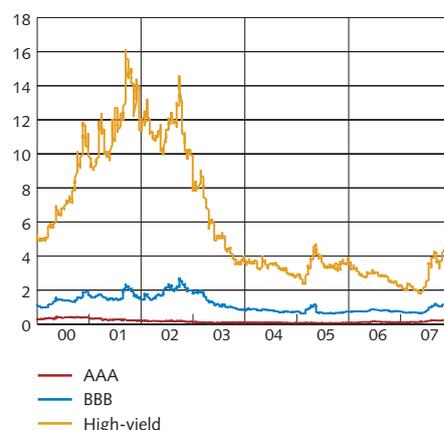
**Chart 1:4. Corporate bond spreads in the United States**  
Percentage points



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

Source: Reuters EcoWin

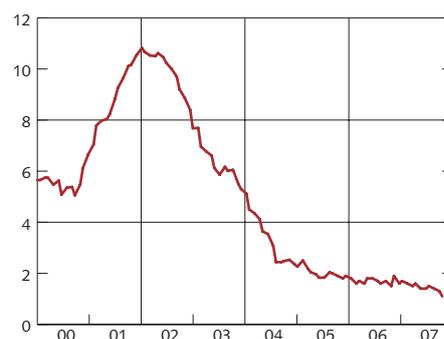
**Chart 1:5 Corporate bond spreads in Europe**  
Percentage points



Note. Definition by J.P. Morgan and Merrill Lynch High-yield is classified by Moody's/Standard & Poor's as Ba/BB or lower.

Source: Reuters EcoWin

**Chart 1:6. Global level of bankruptcies**  
Percentage of all companies

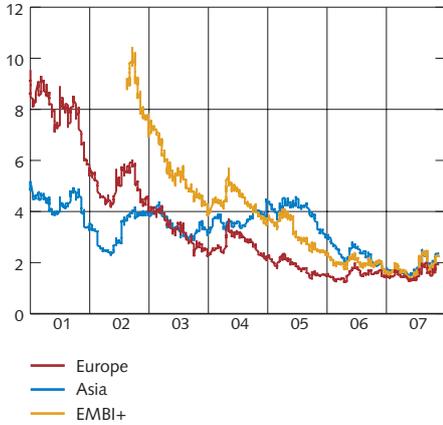


Note. Concerns companies classified by Moody's/Standard & Poor's as Ba/BB or lower. The majority of the number of defaults occurs among companies classified as Ba/BB or lower, which is why we show them.

Source: Reuters EcoWin

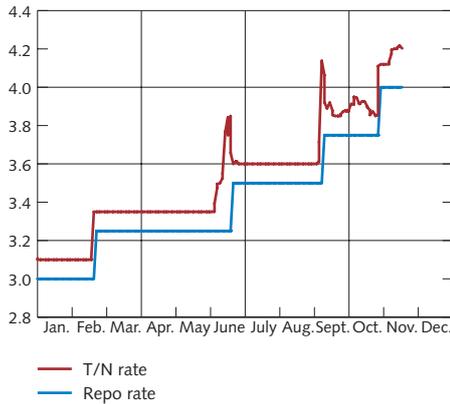
<sup>3</sup> Credit spread denotes the difference between the rate on corporate bonds with a certain duration and the corresponding rate on a government bond.

**Chart 1:7. Credit spreads for bonds issued by emerging market economies**  
Percentage points



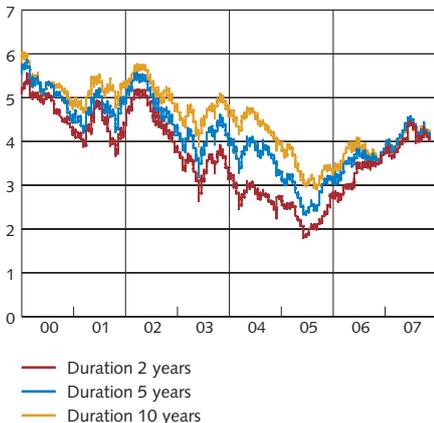
Note. The countries in EMBI+ are graded Baa1/BBB+ or lower by Moody's/Standard & Poor's.  
Source: Bloomberg

**Chart 1:8 T/N rate and repo rate**  
Per cent



Note. Swedish tomorrow/next (T/N) rate, that is, the interbank rate from tomorrow until the day after tomorrow.  
Source: Reuters EcoWin

**Chart 1:9. Swedish government bond yields**  
Per cent



Source: Reuters EcoWin

and the United States.<sup>4</sup> A common feature for all LBOs is that they cost more to finance than before and the loan-to-value ratio is lower.

DEVELOPMENTS IN SWEDEN

**Swedish interbank rates have risen.** The overnight rate at the Swedish interbank market has been close to the repo rate during the entire period since June. The so-called T/N rate (from Tomorrow to the Next day) rose sharply in mid-September by almost 60 basis points (see Chart 1:8). This occurred as a larger volume of mortgage bonds reached maturity, which in the changeover called for short-term financing.<sup>5</sup> Normally the T/N rate is some ten basis points higher than the repo rate and the variations are minor.

**The fact that the rise in interbank rates was sharper than normal in September can be explained by the international turbulence.** As a result Swedish banks faced higher than normal financing costs abroad. The fact that Swedish interbank rates adapt to international market conditions is a natural consequence of a well functioning covered interest rate arbitrage. When Swedish rates are lower than overseas rates, demand for Swedish krona, which can be exchanged for foreign currencies, increases. Which has been the case in recent months. In addition foreign banks have had a need to turn to new markets, since their exposures in other countries were large already. As in other countries, Swedish interbank rates with one to three months to maturity have increased more than the risk-free rates with the same duration.

**Swedish government bond yields have mainly followed international developments** (see Charts 1:3 and 1:9). On the other hand, government bond yields have not fallen in Sweden to the same extent as in the euro area or the United States. This is due to the fact the Riksbank has raised the repo rate on two occasions during the autumn, by a total of 50 basis points, while the US policy rate has been cut by 75 points and the one in the euro area has remained unchanged.

STOCK MARKET

**Equity prices have fluctuated significantly.** However, in periods of financial turbulence equity prices fall in general, particularly for the finance-related companies (see Chart 1:10). Companies in many countries show strong balance sheets and good profitability. When economic activity slackens in future, profit growth is expected to

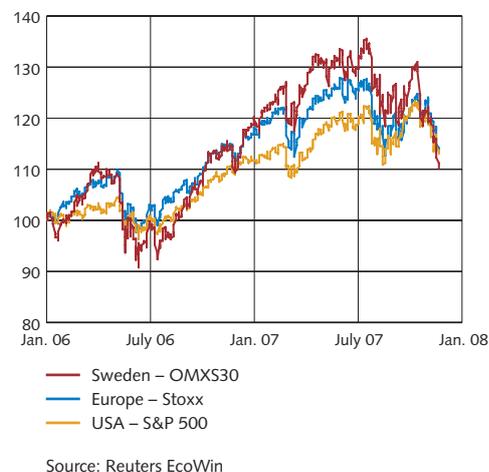
4 At the same time, the share of take overs by other than private equity declined by 28 per cent in the United States and by 60 per cent in Europe. See Capital IQ/Standard & Poor's, "Monthly market observations", October 2007.  
5 This also happened in June when the T/N rate rose to 60 basis points above the repo rate. This time too the upswing was explained by the fact that the banks amassed extra liquidity due to unrest ahead of large numbers of mortgage bonds reaching maturity.

be somewhat lower.<sup>6</sup> Valuations in terms of P/E ratios have been somewhat below the mean value since the mid-1990s and have remained largely unchanged the past four years.<sup>7</sup> Particularly, bank shares have been affected by the financial turbulence, due to uncertainty over a number of banks' balance sheets (see Chart 1:11). In Sweden developments have been somewhat weaker than abroad. In Sweden there is also uncertainty as to how an overheating in the Baltic countries could affect the banks that operate in these countries.

**Stock market uncertainty is expected to continue.** The market's assessment is that in the future share prices will show larger variations than in the period 2005 to 2006. The so-called implied volatility<sup>8</sup> is now around the average for the past ten years (see Chart 1:12). This is in part due to the financial turbulence, but is also probably due to uncertainty as to future economic activity in the United States and Europe.

**To summarise, the financial turbulence has arisen after a long period of strong international economic activity.** Now both the United States and the euro area are moving towards more subdued economic activity. In this situation the financial unrest has increased the uncertainty over future economic developments and reduced investors' willingness to take risk.

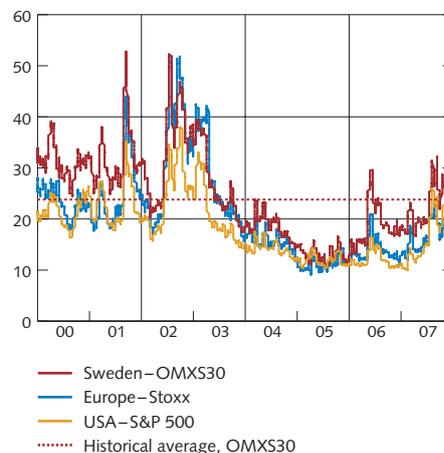
**Chart 1:10. Stock market developments**  
Index, January 2006 = 100



**Chart 1:11. Developments in the bank sector in different stock markets**  
Index, January 2006=100



**Chart 1:12. Implied stock market volatility**  
Per cent



<sup>6</sup> The profits of the 70 largest companies listed on the OMX are expected to rise by around 10 per cent in 2008 and by 8 per cent in 2009, according to the SME database.

<sup>7</sup> The P/E ratio (price/earnings) relate the price of equity to the expected development of profit.

<sup>8</sup> The implied volatility describes the market agents' expectations of future volatility and is calculated from the pricing of share options.

Note. Historical average refers to the period January 1996–November 2007.

Source: Bloomberg

## Credit market turbulence: A review of events in the summer and autumn of 2007

**A** general review of the course of events that has affected international financial stability since the summer, and the background to it, follows below.

Risk premia on most asset markets have narrowed to historically low levels for several years. This has been particularly the case in the credit market. The low risk premia have been partly motivated by a stable macroeconomic development and few corporate defaults. A long period of low interest rates and high risk appetite has also led to a "search for yield". For several years investors have consciously or unconsciously increased the risk in their portfolios and the banks have allowed higher loan-to-value levels. A correction towards more sound risk premia was expected. Nonetheless, it was unclear when it would occur and when it did so the speed and the strength of the adjustment were surprising.

### *The problems stem from subprime loans*

The credit risks have been particularly high in the part of the US home mortgage market which provides subprime loans.<sup>9</sup> These loans are targeted at customers with a poor credit history. In many cases these households also have lower financial margins than households in general. Borrowers' problems began as early as 2005. When interest rates rose and house prices stagnated in the United States an increasing number of customers experienced problems with interest and amortisation payments. Many borrowers with subprime loans were especially severely affected, since their loan rates often had been discounted in the first years. The loans have then been adjusted to the current, higher market rates with an additional increment to compensate for the higher risk. This has entailed substantially higher costs for these borrowers.

### *The unrest spread rapidly*

The problems that arose from the relatively limited subprime sector in the United States spread rapidly during the summer.<sup>10</sup> This is attributable to the fact that lenders often sell the mortgages to investors in the United States and abroad. This happens as the loans are "re-packaged" through the structured credit market into different kinds of products.<sup>11</sup>

At the same time the disadvantage is that in each stage of the "re-packaging" the possibility to assess the risks deteriorates. The products are technically complicated and can often only be valued by theoretical models. Therefore, many investors have placed their trust in credit rating agencies, which classify risk, instead of making their own thorough assessments.

The problems on the subprime market made it increasingly difficult to assess the value of the underlying assets in these products.

### *Several institutions with exposure to subprime experienced problems*

It emerged in June that two of the investment bank Bear Stearns' hedge funds had suffered major losses on assets related to subprime loans. In mid-July the funds collapsed. At the beginning of July Moody's downgraded a number of structured products with subprime content. This resulted in growing unrest over the quality of subprime loans, and considerably lower liquidity in the securitised products. The difference between the prices calculated via valuation models and those listed in the market increased sharply. In many cases there were no price listings at all in the market. At the beginning of August the French bank BNP Paribas closed three of its funds due to difficulties in valuing the underlying assets.

<sup>9</sup> See the box "Payment problems in the US subprime sector for housing finance", "Financial Stability Report 2007:1".

<sup>10</sup> The subprime market corresponds to around 15 per cent of the total housing finance market and approximately 10 per cent of GDP in the United States. The total stock of subprime loans corresponds to USD 1 300 billion in 2006, according to Inside Mortgage Finance. Initially, the problems were mainly concentrated to subprime loans with variable-rate mortgages, that part that corresponds to around 7 per cent of the US housing finance market.

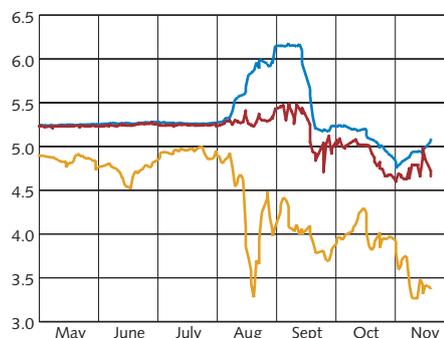
<sup>11</sup> Includes CDO (Collateralised Debt Obligations), CDO's squared and MBS (Mortgage Backed Securities).

The problems spread to the banks' balance sheets, both in the United States and in Europe. The background is that many international banks have set up specific investment vehicles, so called conduits and SIVs (see below). These vehicles have been set up with the purpose to manage special assets, for instance structured credit products. Funding is often arranged by the issuance of commercial papers with short maturities (so-called Asset Backed Commercial Paper, ABCP). At the same time these commercial papers have the vehicles' underlying assets as collateral. In addition, the parent bank has often issued liquidity guarantees to these vehicles. At the end of July the German bank IKB announced that it had suffered huge losses via a conduit that was heavily exposed to the subprime market. A few weeks later Sachsen Landesbank, another German bank, was affected. Of the European banks, these were the two that had the largest liquidity guarantees in relation to their funding.<sup>12</sup> The effect was that ABCP demand declined noticeably and interest rates rose sharply (see Chart B1). In turn, the high rates made it much more expensive to refinance in the ABCP market. The outstanding stock of ABCP fell in the autumn by a fourth, or almost USD 300 billion (see Chart B2).

#### *Problems spread to the interbank market*

The sharp premium increases in the ABCP market created an acute risk that several banks, just like the affected German banks, would be forced to provide liquidity to their investment vehicles. The uncertainty as to which banks had issued such guarantees, and thus which potentially faced huge credit losses, made the banks unwilling to lend money to each other. The general level of uncertainty also meant that many banks chose to increase their reserves of liquid funds, the consequence of which was that interest rates in the interbank market rose sharply.

**Chart B1. Interest on US commercial papers and treasury bills**  
Per cent, duration 3 months

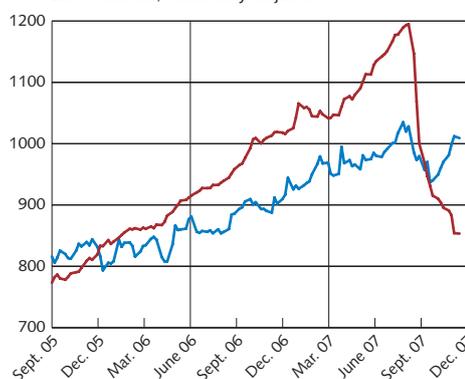


— Financial commercial papers  
— Asset-backed commercial papers  
— Treasury bills

Note. Asset Backed Commercial Papers (ABCP).

Source: Federal Reserve Bank

**Chart B2. Outstanding stock of US commercial papers**  
Billion dollars, seasonally-adjusted



— Asset-backed commercial papers  
— Non asset-backed commercial papers

Note. Asset Backed Commercial Papers (ABCP).

Source: Federal Reserve Bank

#### *Several central banks took action*

Central banks have acted in a variety of ways to facilitate the functioning of the market. The ECB initially chose to allow the banks to borrow at no extra cost to the prevailing policy rate of four per cent. The banks proved to be very interested in doing so and almost EUR 100 billion was lent. The Federal Reserve also provided extra liquidity to facilitate the banks' financing. The Federal Reserve has also chosen to cut the interest rate on two occasions to 4.50 per cent. The ECB has chosen to leave the policy rate unchanged.

On 13 September the British bank Northern Rock announced that it was experiencing acute financing problems and turned to the Bank of England for emergency liquidity assistance. To a large extent Northern Rock had raised funds on the commercial paper and interbank markets and was immediately affected by the lack of liquidity. When the bank's problems became public, it

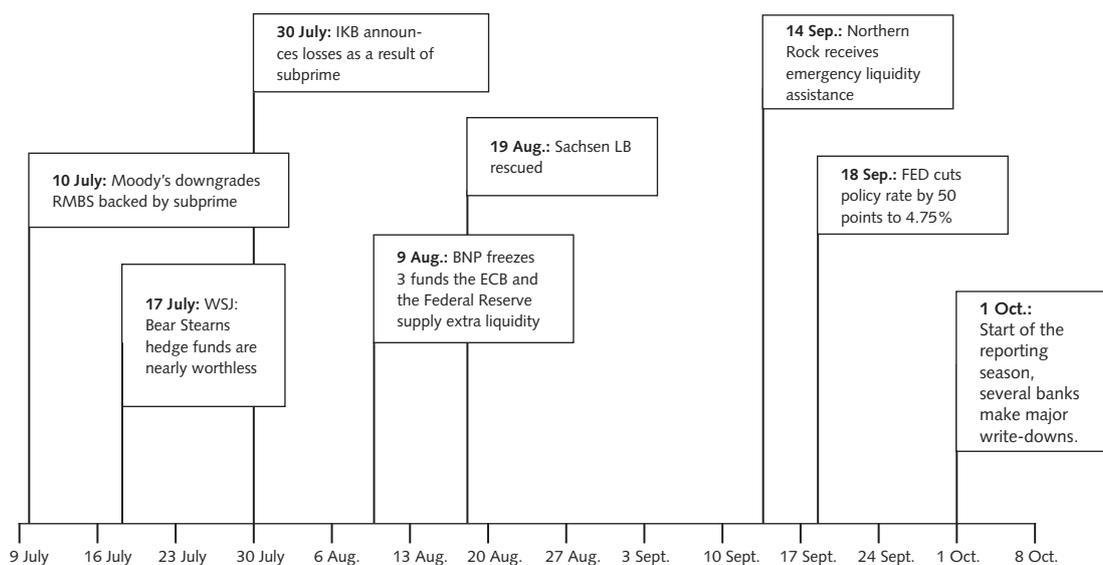
<sup>12</sup> Fitch Ratings, "Asset-Backed Commercial Paper & Global Banks Exposure – 10 key questions", 12 September 2007.

caused a bank run and the share price plunged. As a result, the British authorities issued further guarantees and an extension of the deposit guarantee. Up until the crisis Northern Rock was the UK's fifth largest mortgage lender.

#### *Banks have posted large losses*

During October and November several major banks have reported large write-downs as a result of exposure to the subprime sector. Amongst others, Citigroup, the largest bank in the United States, has written down the value

of its subprime-related assets, corresponding to USD 6.5 billion. Subsequently the bank has indicated that the value may need to be written down by a further USD 11 billion. Other financial agents, including the investment banks Morgan Stanley, Merrill Lynch and UBS have announced similar problems, although the write-downs in these cases have not been quite as high as Citigroup's. Other investment banks have however continued to report sound results and do not appear to be affected by any significant losses.



## SUMMARY – CONDUITS AND SIVS

In principle, banks employ three different types of investment vehicles for investments in securities: conduits, Structured Investment Vehicles (SIV) and SIV-lite. These are off the banks' balance sheets and to a great extent arrange funding in the market for asset-backed commercial paper (ABCP). There are also SIVs and SIV-lites that are non-bank sponsored.

A **conduit** is a vehicle that has been kept off the bank's balance sheet with a view to make money on the bank's securitised assets. Conduits may have a broad spectrum of assets which include various types of credits and structured products. On average, around ten per cent of the conduits' exposure is to mortgages. Conduits have been financed with commercial papers with short maturities, that is primarily ABCP. Conduits have a liquidity guarantee from the parent bank, guaranteeing that ABCP investors will get their money back if the conduit can no longer re-finance on the commercial paper market. Credit ratings for ABCP from conduits have been high because of the liquidity guarantee from the sponsoring bank, for instance. Conduits issue the majority of all ABCP, corresponding to almost 80 per cent of the total stock.

**SIVs** differ from conduits in the sense that they have a significantly higher leverage, often 15 to 20 times their own capital. They are not only financed on the short-term market, but also to a significant extent with corporate bonds with longer maturities, so-called Medium Term Notes (MTN). The debts in a SIV are split into different segments (tranches) which have different ratings. If a SIV makes a loss it first affects the owners of the lower rating segment, then the owners of the higher rating segment. SIVs are exposed to between 20 and 25 per cent against securities with residential mortgages as the underlying asset.

The third variation, **SIV-lites**, have less of a requirement to spread their assets and can, therefore, have far larger concentrations in their holdings. The assets are in principle totally made up of structured products with residential mortgages (including subprime loans) as underlying assets. A SIV-lite raises funding to a greater extent in the commercial paper market compared to normal SIVs and has proven to be more vulnerable to losses related to a lack of liquidity. SIVs and SIV-lites do not have liquidity guarantees from banks to the same extent that conduits do. They have therefore been forced to sell assets in the form of liquid securities with short durations and high ratings, for instance securitised credit card and car loans, in order to be able to finance debt falling due.

## Summary of risks in financial markets

**After a long period of remarkably low risk premiums, it came as no surprise that the price of risk would be adjusted upwards.** What has been surprising, however, is the speed and strength of the correlation. There is still considerable unrest with regard to the factors behind the development. In part, the unrest revolves around the difficulty in valuing financial products with subprime loans as underlying assets, and in part around who is actually carrying the risk in the problematic assets. Lending to the subprime market is limited however in relation to the banks' total assets.

**The most probable outcome is that the market will be able to cope with the situation that has arisen.** It will take time before all the problems surface; as yet not all the losses in the subprime sector are realised. In addition, the extent to which the markets outside the banks will continue to wish to finance securitised loans is not clear. Although there are signs that the interbank market is making a recovery the question is how quickly this will occur.

**The vulnerability for new shocks has increased at the same time.** Should the payment problems in the subprime market spread to other parts of the US mortgage market, unrest over valuation and contagion risks could increase further. In addition, the market is sensitive to other shocks, before it fully recovers.

**To date, the Swedish banks have only been affected marginally.** Primarily they have been affected by the decreased value of credit assets and somewhat more expensive financing. It is unlikely that the Swedish banks would experience solvency problems as a result of the financial turbulence. But the banks' considerable dependence of international financing makes them vulnerable to events that may affect their ability for short-term borrowing.

## ■ The Swedish banks' borrowers

The Swedish banks' borrowers currently have favourable conditions for repaying their loans – this includes companies as well as households, although risks have increased slightly for some groups of borrowers. Lending to the Baltic countries accounts for an ever larger share of the banks' total lending and the overheated economic situation is a source of concern. Commercial property companies are another borrower group linked to higher risks.

Monitoring developments for borrowers from Swedish banks is an important aspect of the analysis of stability because credit risk is much the largest type of risk to which banks are exposed. This chapter opens with a scrutiny of the Swedish household sector, which has 27 per cent of the banks' total loan stock (see Chart 2:1).<sup>13</sup> The corporate sector, with 22 per cent of the banks' total loan stock, is analysed next. Property companies comprise a substantial borrower group and are therefore dealt with in a separate section, together with developments in the property market. An increasing share of the banks' lending is aimed at the international market. The Chapter therefore concludes with an analysis of the borrowers in the markets outside of Sweden where the banks are active.

### The Swedish household sector

To form a picture of risks in the household sector, matters covered in the analysis include households' saving and debt, house prices and households' debt-servicing ability.

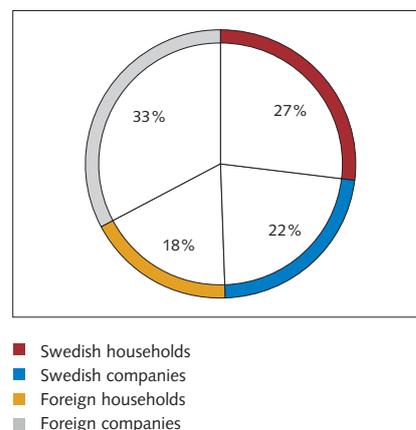
**Households' economic situation has improved further.** Households' real disposable income increased by 4.8 per cent during the second quarter of 2007, compared with the same quarter last year. This is due to a number of factors, such as higher wages, increased employment and tax cuts and abolished taxes. Savings have also increased during this period (see Chart 2:2). Household wealth has grown in recent years.<sup>14</sup> All in all, this means that households' buffers against negative events have increased. In recent years households have chosen to save in deposit accounts with banks rather than to invest in shares and equity funds (see Chart 2:3).

**Household debt has continued to increase at a high rate during 2007.** Since the beginning of the year the rate of increase is almost 12 per cent, which historically is a high rate of increase (see Chart 2:4). The majority of household loans have been obtained to finance house purchases and more than 85 per cent of the loan stock has property as collateral. Mortgage institutions provide the greater part of the loans, while a minor part of the loans are from banks in the

<sup>13</sup> At group level including operations abroad during the second quarter of this year.

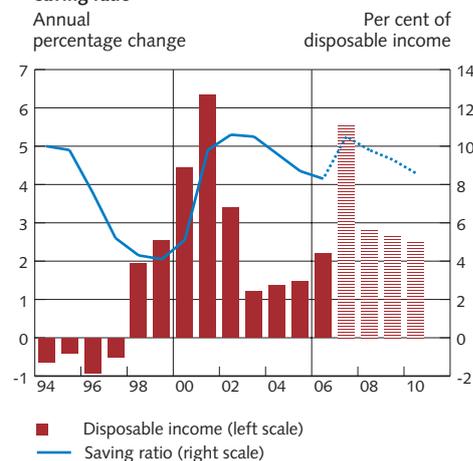
<sup>14</sup> Households' financial assets, which are stated here excluding savings in collective insurance savings and saving in Premium Pensions, have increased from 150 per cent of disposable income in 2002 to 210 per cent in 2006, according to the Financial Accounts. Some of this can be assumed to be liquid assets and may function as a buffer in the shorter term.

**Chart 2:1. The banks' lending broken down into Swedish and foreign households and companies for the second quarter of 2007**  
Per cent



Source: The Riksbank

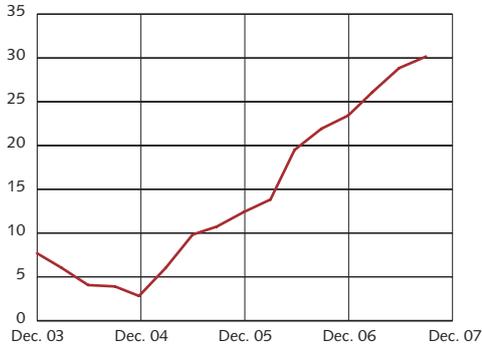
**Chart 2:2. Households' real disposable income and saving ratio**



Note. The broken lines and striped bars show the Riksbank's forecasts as presented in Monetary Policy Report 2007:3.

Sources: Statistics Sweden and the Riksbank

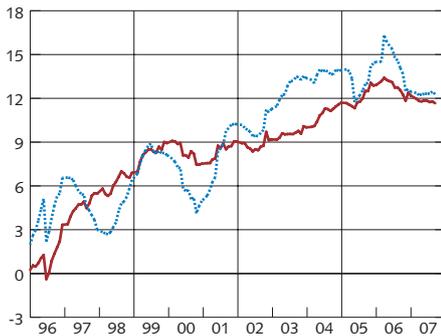
**Chart 2:3. Households' new saving in deposit accounts**  
SEK billion



Note. Households' new saving corresponds to the net amount households put into deposit accounts. Rolling four-quarter average.

Source: Statistics Sweden

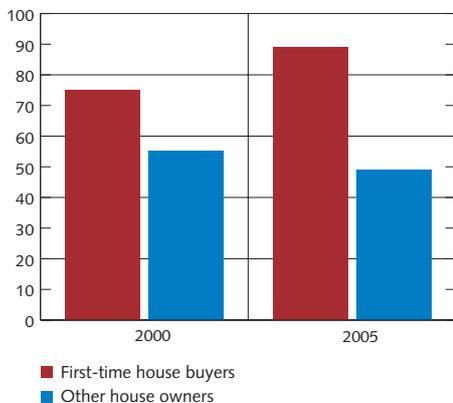
**Chart 2:4. Household borrowing**  
Annual percentage change



— Total  
..... Mortgage institutions

Source: The Riksbank

**Chart 2:5. Households' loan-to-value ratio**  
Per cent



Sources: Statistics Sweden and the Riksbank

form of second mortgage loans and other types of loans. Unsecured household lending also continues to rise. In September, the annual rate of increase was more than 13 per cent. Unsecured household lending amount to almost eight per cent of the total loan stock. Households have in recent years been allowed a higher loan-to-value ratio and also been granted interest-only loans to a greater degree than before.

**For the majority of all households the loan-to-value ratio has declined, but for first-time buyers it has risen rapidly.**<sup>15</sup> A comparison shows that the percentage of first-time buyers rose from two to four per cent of households between the years 2000 and 2005.

At the same time, the loan-to-value ratio rose.<sup>16</sup> First-time buyers were mortgaged to around 75 per cent in 2000, but the loan-to-value ratio for households who bought housing in 2005 was 89 per cent (see Chart 2:5). This means that the risks have increased significantly for the households who entered the housing market at a later stage. However, these first-time house buyers comprise a very limited percentage of all house owners. More than 95 per cent of the households who own their own homes have done so for at least two years and have instead had a reduced loan-to-value ratio (see Chart 2:5).

**The percentage of households lacking a buffer has declined slightly.**<sup>17</sup> The percentage of indebted households that do not have a reasonable standard of living after paying interest and other housing costs comprises just over seven per cent of the mortgaged households. However, the percentage of loans held by households without buffers has increased somewhat in relation to the total loan stock, from five per cent to around six per cent.

**Mortgage interest rates have continued to rise** (see Chart 2:6).

This is partly an effect of the higher policy rate, and partly an effect of the credit market turbulence. Interest on loans with a short duration has risen the most. Since the beginning of August, variable mortgage rates have risen by around 0.5 percentage points. The financial market turbulence has led to the banks facing higher costs of borrowing. However, they have not been entirely compensated for the higher interbank rate, which indicates that mortgage rates will rise further (see Chapter 3). Only 40 per cent of the new loans from mortgage institutions had a variable interest rate, which is historically low (see Chart 2:7).

<sup>15</sup> The Riksbank has used Statistics Sweden's longitudinal individual data base (LINDA) together with information on wealth. See also the box "How vulnerable are indebted households?" in the Financial Stability Report 2007:1

<sup>16</sup> The loan-to-value ratio therefore states the household's total debts (excluding study-loan debts) as a percentage of the value of the house owned.

<sup>17</sup> Statistics Sweden's annual cross-section survey of households' economy has been used for this. As the most recent survey was made in 2005, these data have been achieved with the aid of later outcomes from the Financial Accounts and the National Accounts, up to the end of June 2007, and the Riksbank's forecasts for the second half of 2007. Read more about this in the Financial Stability Reports 2007:1 and 2006:1.

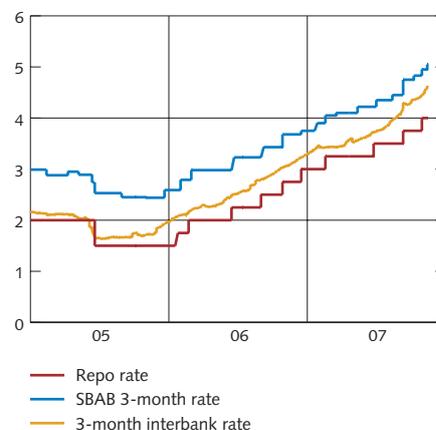
**Households' higher indebtedness has led to increased debt and interest ratios.** So far this year the debt ratio, debt in relation to disposable income, has increased to 147 per cent. For households in metropolitan areas the debt ratio is probably even higher. Rapidly rising debt combined with rising interest rates have also contributed to a higher interest ratio, households' interest expenditure in relation to disposable income. Until June this year the interest ratio was 4.0 per cent of disposable income. From a historical perspective this is still very low (see Chart 2:8).

**Households' debt ratio and interest ratio will probably continue to rise gradually** (see Chart 2.8). As the Swedish economy is expected to remain strong, household borrowing is also expected to continue to increase. But the large increase in borrowing will probably be slightly dampened by higher interest rates and by economic activity entering a slower phase of the cycle. This indicates that debt will increase slightly more slowly and the upturn in the debt ratio and the interest ratio will thus slacken somewhat. However, the forecasts for both the debt and interest ratios have been revised slightly upwards since the previous Financial Stability Report. This is because households have increased their borrowing more quickly than expected in 2007.

**The substantial rise in house prices has slackened during the autumn.** House prices in Sweden have largely remained unchanged since August. On an annual basis, however, the rate of increase is still high. In October, house prices were 11 per cent higher than in the same month last year (see Charts 2:9 and 2:10). Almost all of this increase can be attributed to the first half of 2007. However, price trends vary from region to region. In Stockholm prices have risen slightly more than the average; the annual rate of increase was 16 per cent in October. However, prices in Göteborg and Malmö are around the average.<sup>18</sup> According to estate agents' statistics, square metre prices for tenant-owned apartments have fallen slightly in September and October.<sup>19</sup> This picture is also supported by a survey of estate agents made by SBAB (the Swedish Housing Finance Corporation). According to the survey, estate agents are expecting prices of tenant-owned apartments to fall in some metropolitan regions during the final quarter of the year. However, as with house prices it is too early to interpret these signals as a break in trend (see Chart 2:11), as there was a slowdown in the end of last year as well.

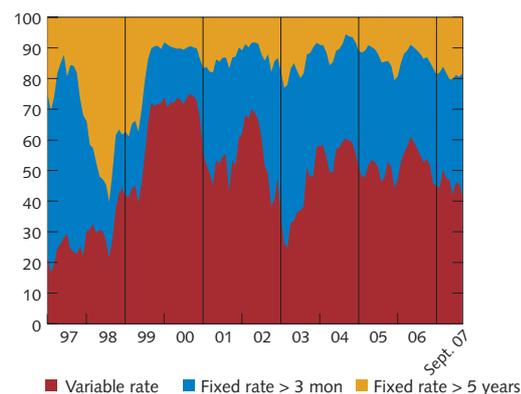
**House prices will probably not increase at such a high rate in the coming years.** One indication that the price increase will not be as high as before is that economic activity is expected to gradually enter a calmer phase. At the same time, the higher interest rates contribute

**Chart 2:6. SBAB 3-month variable rate, 3-month interbank rate and the repo rate**  
Per cent



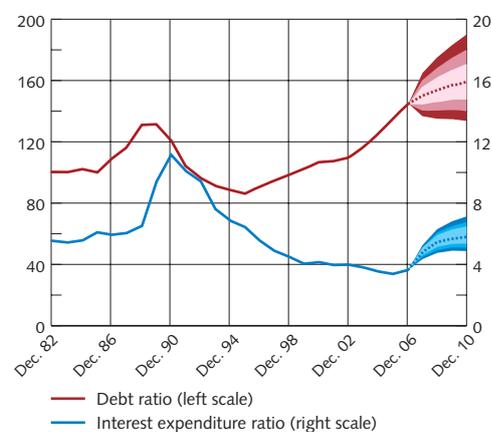
Source: Reuters EcoWin

**Chart 2:7. Duration of fixed interest periods for new house mortgage loans**  
Per cent of new loan stock



Source: The Riksbank

**Chart 2:8. Household debt and post-tax interest expenditure in relation to disposable income**  
Per cent



Note. 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 Monetary Policy Report 2007:3.

Sources: Statistics Sweden and the Riksbank

<sup>18</sup> According to Statistics Sweden

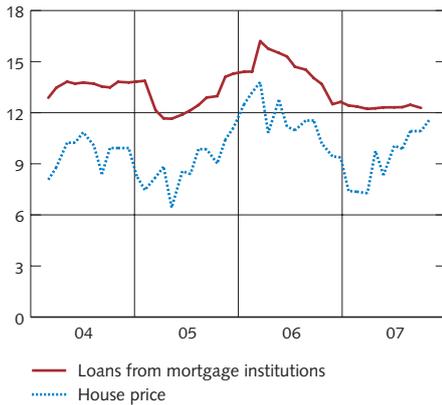
<sup>19</sup> The statistics are based on estate agents' figures regarding the average price per square metre primarily reflect prices in metropolitan areas.

**Chart 2:9 House prices and household debt**  
Index 1986=100



Sources: Statistics Sweden and the Riksbank

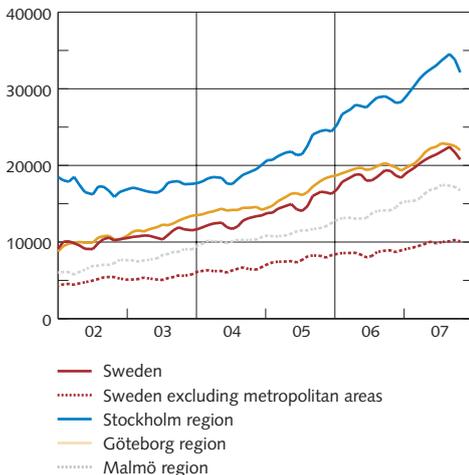
**Chart 2:10. House mortgage debt and house prices**  
Annual percentage change



Note. House prices are represented here by the purchase price coefficient, which is house prices relative to assessed values, also known as the K/T ratio.

Sources: Statistics Sweden and the Riksbank

**Chart 2:11 Tenant-owned apartment prices**  
SEK per square metre



Source: www.maklarstatistik.se

to making loan costs higher than before. Indicators such as SBAB's estate agents survey and SEB's house price indicator also point to a calmer situation in the housing market in future.

**The proposal to abolish real estate tax will come into force with effect from next year.** Instead the Government will introduce an annual municipal charge of 0.75 per cent of the taxation value, but with a maximum level of SEK 6,000 per home. This means that all households who have previously paid more than SEK 6,000 a year in real estate tax will have a lower monthly cost. To finance this the Government has proposed introducing a ceiling for deferment of SEK 1.6 million, and that an interest of 0.5 per cent be paid on the deferment. In addition the capital gains tax when selling a house or apartment will be raised.<sup>20</sup>

**It is difficult to make an estimate of how this affects households and their demand for housing.** In general, the lower municipal charge may lead to house prices rising slightly. A house-buyer who only takes into consideration the regular monthly cost can use the money for higher interest expenditure and thus take a larger loan. At the same time, a temporary effect may be that many people choose to sell their house or tenant-owned apartment before the new rules begin to apply. This type of action increases the supply. To some extent the planned change in property tax may have already affected house prices, as the proposal was presented as early as in the Spring Fiscal Policy Bill.

**In the long term, house prices and household debt should increase at roughly the same rate as households' disposable income.** If households are to be able to pay their loans, debts should not increase more than incomes. However, over the past ten years Statistics Sweden's real estate price index has risen by almost 140 per cent, while disposable income have risen by just over 45 per cent. The explanations for the price upturn during this period include lower interest rates than before and changes in the mortgage market, such as interest-only loans and higher loan-to-value ratios.<sup>21</sup>

**To summarise, the loan-to-value ratios have increased for first-time buyers.** This makes these households particularly sensitive to unforeseen negative events. Despite a sharp increase in indebtedness among households, there is nothing to imply that this borrower group could cause the banks serious loan losses. At the same time, Swedish households' debt-servicing ability is generally good and their buffers against unforeseen events have increased.

<sup>20</sup> With effect from 1 January 2008 capital gains tax on houses will be 22 per cent.

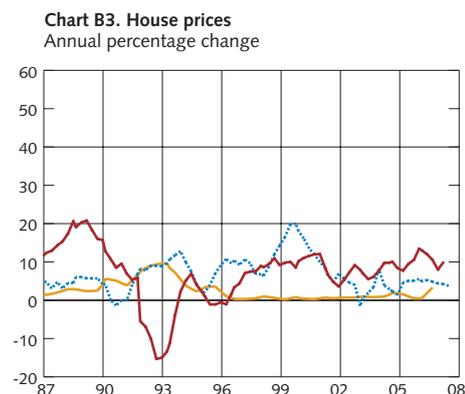
<sup>21</sup> See box "Changes in house mortgage loan terms", Financial Stability Report 2007:1.

## House price trends abroad

**A**s in Sweden, international house prices have risen sharply, with a few exceptions, over the past ten years. A large part of this upturn is due to global factors such as high and stable economic growth and low interest rates. In addition, there are often specific factors in each country that have contributed to a rapid increase in house prices. These can be demographic changes, changes in mortgage markets and various restrictions regarding building permits.<sup>22</sup> In some countries prices are still increasing by around 10 per cent a year. This applies for instance to Sweden, Australia and the United Kingdom (see Charts B3 and B4).

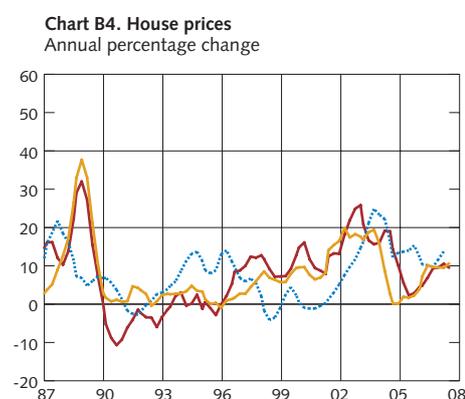
In some countries prices are now increasing at a slower rate than before. In Denmark, Ireland, France, Spain and the United States house prices have slowed down or fallen (see Charts B5 and B6). One contributory factor is the tighter monetary policy which began to be conducted in 2004 and 2005. In addition, Denmark, Ireland, France and Spain are among the OECD countries where house prices have previously increased most in relation to disposable income.<sup>23</sup> This means that the likelihood of corrections of house prices is greater. Furthermore, there could be specific factors in the different countries which have previously caused house prices to increase rapidly, but are now instead contributing to a slowdown. It was for example common in Ireland that houses were bought in order to let. This meant that houses were acquired for investment purposes, which means that there is a greater scope for large price movements when demand slumps. In the same vein there was a high demand for houses in Spain from foreign investors who procured houses as investments.

In the United States house prices began to fall in 2006. Now that more people are experiencing problems in paying their loans, and more houses are being repossessed, this is contributing to a fall in house prices. But there



— Sweden  
 ..... Netherlands  
 — Germany

Source: Reuters EcoWin



— United Kingdom  
 ..... New Zealand  
 — Australia

Source: Reuters EcoWin

are significant regional differences in the US housing market. In some parts of the United States house prices are still rising, but the general downward trend is clear (see Chart B7).

Experiences show that house prices often covary between countries. But as 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 developments in house prices track one another internationally.<sup>24</sup> Firstly, this could reflect changes in the international business cycle. Secondly, the increased global financial integration has meant that households' financial wealth, and thereby ability to pay when buying houses, has become more dependent on development in other countries.

<sup>22</sup> The Committee on the Global Financial System (2006): "Housing Finance in the Global Financial Market", CGFS papers, No 26.

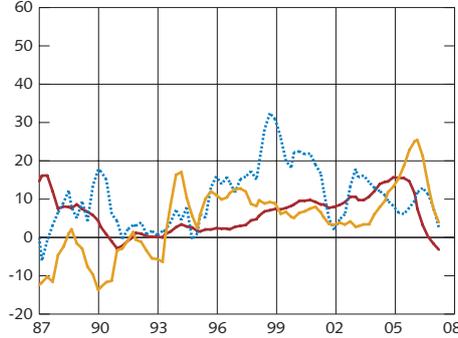
<sup>23</sup> IMF World Economic Outlook, October 2007.

<sup>24</sup> IMF World Economic Outlook, September 2004.

**Chart B5. House prices**  
Annual percentage change

— USA  
- - - Ireland  
— Denmark

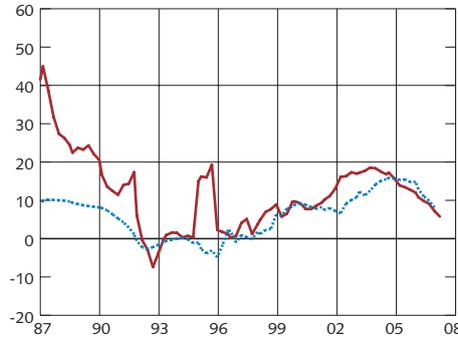
Source: Reuters EcoWin



**Chart B6. House prices**  
Annual percentage change

— Spain  
- - - France

Source: Reuters EcoWin

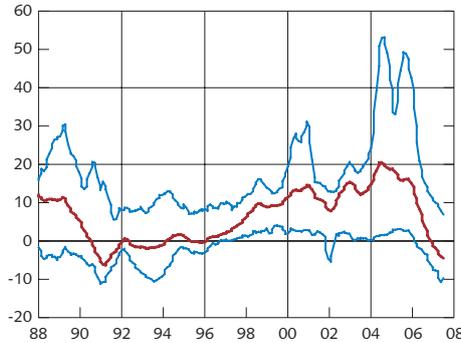


**Chart B7. US house prices**  
Annual percentage change

— Composite index  
— Min/Max

Note. House prices are defined according to S&P / Case - Shiller. The maximum and minimum values show the cities in the index where house prices are increasing the most and the least.

Source: Reuters EcoWin



Thirdly, it is also probable that the national housing markets have become more sensitive to the situation in the international capital markets. The capital markets function as both a source of financing and as a point of sale for the mortgages that have been securitised. If there are shocks to the capital market, this may affect mortgage institutions. During the recent credit market turbulence, risk premiums for lending rose in general. If this leads to permanently higher risk premiums it will be more expensive for mortgage institutions to finance their operations. This could in turn raise the mortgage rates faced by households and thereby also dampen developments in house prices.

## The Swedish corporate sector

Around 22 per cent of the four largest banks' total lending is to Swedish companies. The Riksbank monitors developments in the corporate sector in order to form an opinion at an early stage of how risks in lending will develop. This is achieved by analysing developments in some central key financial ratios. This analysis is then supplemented with an assessment of the cost of capital and the companies' credit quality in the coming years.<sup>25</sup>

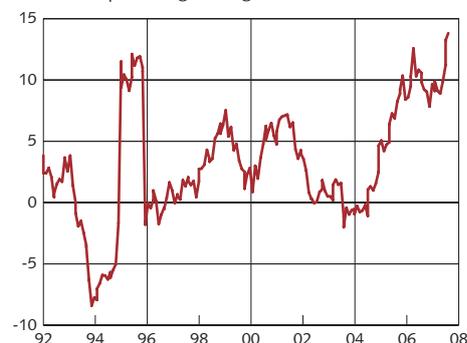
**Corporate borrowing from credit institutions is continuing to increase at a high rate.** In September borrowing rose by almost 14 per cent on an annual basis (see Chart 2:12).<sup>26</sup> The high rate of increase in corporate borrowing may be largely explained by the upswing in investment in recent years. Leveraged buyouts involving private equity investment companies are another factor behind the increased borrowing.<sup>27</sup>

**Companies have gradually increased their profitability and reduced their debt to equity ratio.** The improved finances of the companies is largely explained by several years of strong economic activity. Over the past six months this positive development has continued.<sup>28</sup> The strong growth in profits is reflected in return on assets, which have improved further in recent years (see Chart 2:13). Companies have also succeeded to generate a return on assets which is higher than the average interest required by the lenders. At the same time, the companies have reduced their debt/equity ratios (see Chart 2:14).

**The companies' strong growth has led to the number of defaults continuing to fall** (see Chart 2:15). In September company defaults fell by 10 per cent compared with the same period in 2006. Looking at the first nine months of the year, the number of defaults has declined by 5 per cent compared with the same period in the previous year. This is to be expected, given the strong business conditions. However, the development of default statistics in specific industries and geographic regions does not necessarily follow the trend. The number of defaults has fallen most in the large cities. The same applies to the transport, IT and service industries.

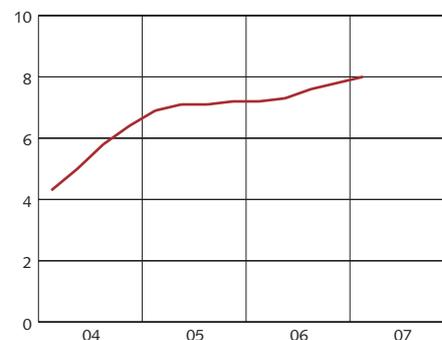
**The companies' cost of capital will probably increase in the future.** This is because of the increased financing costs (see Chart 2:16). The starting point for the assessment of risk in the corporate sector is the weighted capital cost for equity and borrowed capital.<sup>29</sup> The cost of

**Chart 2:12. Companies' borrowing from credit institutions** 29  
Annual percentage change



Source: The Riksbank

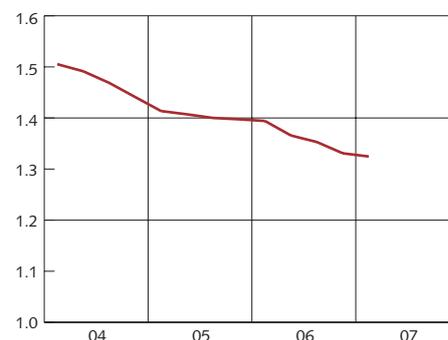
**Chart 2:13. Profitability in Swedish listed companies**  
Per cent



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

Sources: Bloomberg and the Riksbank

**Chart 2:14. Debt/equity ratio in Swedish listed companies**  
Ratio



Note. The debt/equity ratio is defined as debts in relation to equity capital.

Sources: Bloomberg and the Riksbank

<sup>25</sup> The analysis is concentrated on the listed non-financial companies unless otherwise stated.

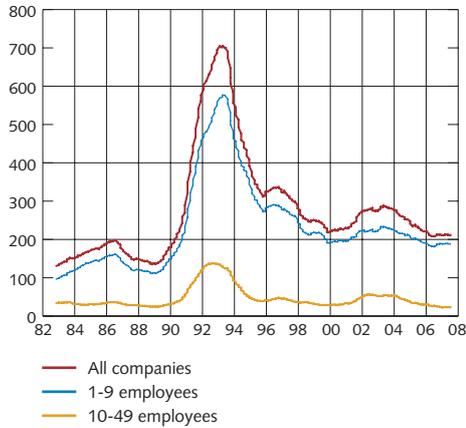
<sup>26</sup> Refers to all companies regardless of organisational form.

<sup>27</sup> In Financial Stability Report 2007:1 the Riksbank made the assessment that around 36 per cent of the banks' new borrowing had gone to finance leveraged buyouts via private equity investment companies.

<sup>28</sup> This is shown in interim reports for the non-financial companies listed on the Stockholm stock exchange.

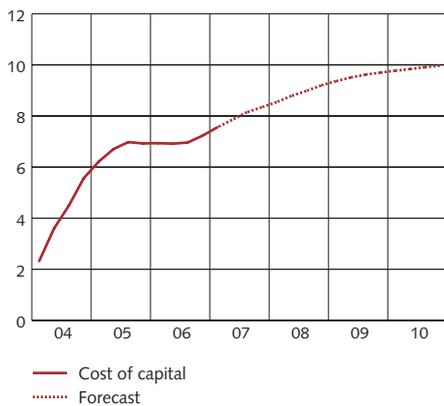
<sup>29</sup> In general, the cost of capital reflects the cost of using capital. The gross return on the marginal investment project must be sufficiently large to cover both the required rate of return by the market and the depreciation of the real capital.

**Chart 2:15. Number of company defaults broken down by company size**  
Twelve-month moving average



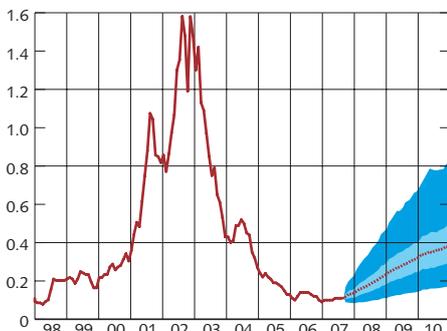
Source: Statistics Sweden

**Chart 2:16. The average cost of capital for the public listed companies**  
Per cent



Sources: Bloomberg and the Riksbank

**Chart 2:17. Expected default frequency, historical outcome 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 Monetary Policy Report 2007:3. The intervals thereby reflect the uncertainty as to how the EDF is affected by changes in GDP, inflation and 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

the net debt is the interest rate, while the cost of equity is the return the shareholders expect to receive on the equity. The Riksbank's assessment is that the repo rate probably needs to be raised over the coming years.<sup>30</sup> As a result of this, one can expect higher market interest rates, higher lending rates and thereby higher interest rates on companies' debts. In addition, the return shareholders expect to receive on equity is expected to increase during the forecast period. Despite the fact that the debt interest rate is expected to increase more than the return expected by the shareholders, the Riksbank's assessment is that it will still be cheaper for companies to finance their investments with borrowed capital. The companies thereby increase their total debts in relation to equity.<sup>31</sup>

**Lenders may require higher financing premiums because of the increased cost of capital.** This is because the increased cost of capital leads to the market value of the companies' assets declining in relation to the acquisition value (that is to say Tobin's q declines).<sup>32</sup> This has a negative effect on investments.<sup>33</sup> Moreover, the fall in asset prices leads to a decline in the market value for equity. The smaller the the market value of equity, all else being equal, the higher the expected default frequency. Higher financing premiums as a result of higher expected default frequencies may in turn subdue the companies' investments even further.

**A continued fall in the number of defaults is foreseen in the coming year, which indicates that the credit quality is sound.** Although the number of defaults is expected to increase over the coming year, it should remain at historically low levels. According to the expected default frequency (EDF)<sup>34</sup> measure the expected default frequency has increased gradually since March (see Chart 2:17). This indicator refers to listed companies but experience shows that it still provides a useful pointer to the likely future developments of defaults. However, the increase is from an initially low level. The Riksbank assesses that the credit quality will deteriorate during the forecast period as economic activity slackens, but that the deterioration will be moderate.<sup>35</sup>

30 See Monetary Policy Report 2007:3.

31 A survey of 151 branch managers at banks around the country indicates some future increase in corporate borrowing. The survey shows that the banks foresee a continued increase in corporate borrowing in both the short and long term.

32 The starting point for the market evaluation of the companies' assets is the operating surplus, that is, what remains for interest and dividends when all other costs have been covered. A separate evaluation of the companies' assets does not mean that one disregards the leverage situation of the companies. These are instead taken into account in the weighted cost of capital. The cost of capital is used to calculate the current value of the companies' future operating surpluses.

33 This development is well in line with the Riksbank's forecast for investments. According to this forecast, investments will slow down over the coming years as the business cycle slackens.

34 Moody's KMV calculates the expected default frequency for listed companies within one year. The EDF is calculated as the likelihood that the market value of the company's assets will be lower than the size of its debts when they fall due for payment.

35 To estimate how the expected default frequency figure develops over time, the Riksbank has developed a model which is based on a few variables representing the macro economy. The model was presented in Financial Stability Report 2007:1.

**To summarise, the corporate sector's financial position remains sound.** Despite the fact that companies have increased their borrowing from credit institutions, companies have reduced their debt/equity ratio and increased their profitability. As a result of the strong developments for companies, the number of defaults has continued to fall. In future, companies' cost of capital is expected to increase, which could increase the financing premiums required by the lenders. However, the credit risk in the corporate sector is expected to remain at a low level over the coming years.

### The commercial property market and the property companies

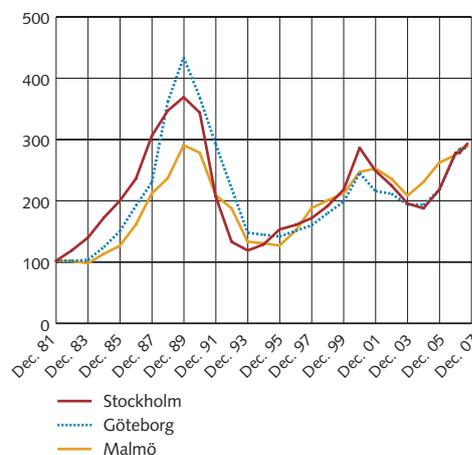
The Riksbank follows the property companies particularly closely as they represent the largest individual branch to which the banks are exposed, accounting for around 40 per cent of the banks' corporate lending. First there is a report on developments in the commercial property market. This is followed by a review of the property companies' debts and credit quality.

#### THE COMMERCIAL PROPERTY MARKET

**Prices of office premises are continuing to rise and activity in the Swedish property market is high.** Although the number of transactions has declined during the first half of the year, the outlays have increased. The interest from foreign investors remains high. During the first half of the year they accounted for 70 per cent of the purchases, which can be compared with just over 40 per cent during the year 2006 as a whole.<sup>36</sup> At the same time, prices of office premises are continuing to rise in all three metropolitan regions. During the third quarter, prices rose by 11 per cent in both Stockholm and Göteborg, compared with the same period last year. This is a slightly lower rate of increase than before. In Malmö the rate of increase was around seven per cent during the third quarter (see Chart 2:18).

**Rents have increased over the past six months.** Real rents increased by four per cent and five per cent in Stockholm and Göteborg respectively, on an annual basis, during the third quarter. In Malmö rents increased by two per cent during the same period. It is only now that rents have begun to increase, despite the fact that prices of office premises have risen since 2005. Prior to this, rents and prices were keeping pace with one another. However, there are considerable differences between different types of premises and locations. For instance, rents for modern offices in central Stockholm seem to have risen much more over the past six months than is visible in the statistics.

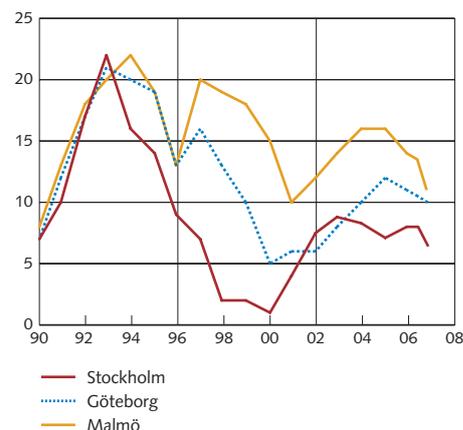
Chart 2:18. Real prices for office premises in city centres  
Index 1981 = 100



Note. Deflated by CPI.

Sources: Newsec AB and the Riksbank

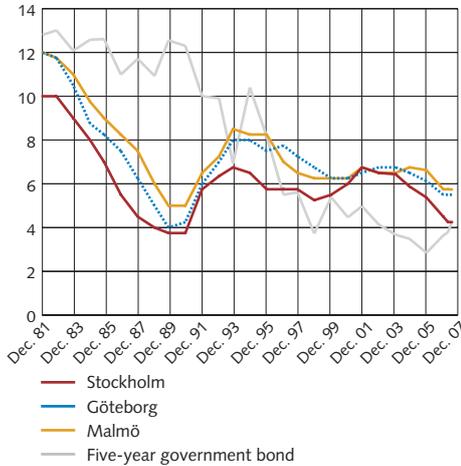
Chart 2:19. Vacancy rate for office premises in city centres  
Per cent



Sources: Newsec AB and the Riksbank

<sup>36</sup> See Newsec, Nordic Report, autumn 2007.

Chart 2:20. Average direct earnings requirements on office properties in city centres  
Per cent



Sources: Newsec AB and Reuters EcoWin

**At the same time, the percentage of unlet premises, the vacancy rate, has fallen.** The lower the vacancy rate, the better the conditions for higher rents. In the central parts of Stockholm, Göteborg and Malmö vacancies have continued to decline somewhat over the year (see Chart 2:19). In Malmö a number of older premises have been converted into accommodation, which has reduced the supply of premises. New construction has begun to accelerate in all of the metropolitan areas, and the amount of new premises is expected to increase over the coming two years. In most cases the office spaces are already rented out, with the exception of a number of office projects in central Stockholm.<sup>37</sup> However, outside the city centre it is more difficult to fill the premises as demand is lower. The property consultants are expecting vacancies to continue to fall as a result of good economic activity and strong employment.<sup>38</sup>

**The risk premiums in the property market are still low.** This means that the property market differs from many other asset markets, where the investors are now to some extent reassessing the risk as a result of the turbulence in the credit market. In Stockholm city centre investors in the property market are not requiring any higher returns than a risk-free five-year government bond provides. This indicates that investors have high expectations of future increases in income (see Chart 2:20). However, it is possible that the compensation for risk has increased in the property market as well, but that it is not yet visible in the statistics.

**However, the picture of future income is uncertain.** Increased employment could contribute to the vacancy rate continuing to fall. Employment has increased substantially since 2006, primarily in the services sector, which is an office-intensive branch. But so far it has had limited effect on rent increases, with the exception of modern premises in attractive locations. As economic activity slows down, the scope for higher rents is reduced.<sup>39</sup>

## THE PROPERTY COMPANIES

**The property companies increased their borrowing by almost nine per cent during the first six months of the year.**<sup>40</sup> This has taken place at the same time as companies have invested substantially. Looking at the listed property companies, those with the best available statistics, interest-bearing liabilities have increased gradually since 2004.<sup>41</sup> On the other hand, debts in relation to equity have continued to fall for

<sup>37</sup> See Newsec, Nordic Report, autumn 2007.

<sup>38</sup> See Newsec, Nordic Report, autumn 2007 and Jones Lang LaSalle, Nordic City Report, autumn 2007.

<sup>39</sup> See the Riksbank, Monetary Policy Report 2007:3.

<sup>40</sup> Refers to the property-related lending including loans to tenant-owner associations from three of the four major banks, as one of the banks has not reported lending to property management in its interim report 2007. The corresponding average rate of increase for these three major banks was 12 per cent during the year 2006 as a whole and 10 per cent for 2005.

<sup>41</sup> As the banks' property-related lending also includes lending to tenant-owner associations, there is not information on how large a percentage of the lending is to the listed property companies compared with the others.

these companies during the first half of 2007, from an already very low level.<sup>42</sup> At the same time as the debt ratio is falling for the listed companies, their earnings are also increasing. The operating surplus, that is, the difference between rents and costs, has continued to improve during the first half of 2007 for 15 out of 17 listed property companies. The improvement is often due to rents increasing, rather than to costs declining.

**Weaker economic activity will reduce the scope for higher income.**

Earnings in property companies are largely due to rent trends, which in turn are governed by economic activity. The expected default frequency indicator points to the risk of default among property companies increasing slightly over the coming year.

**The Swedish banks' borrowers abroad**

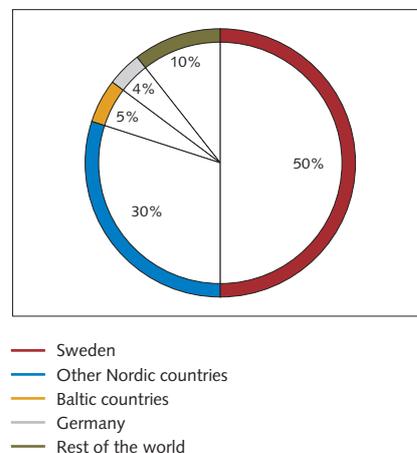
**The Swedish banks are becoming increasingly active outside of Sweden.** At present, almost half of the loans granted are to other countries (see Chart 2:21). This justifies a special analysis of the borrowers in the markets outside of Sweden where Swedish banks are active. The major part of the banks' lending abroad is to other Nordic countries, Germany and the Baltic countries. Lending to borrowers in the Baltic countries represents a growing share of the banks' total lending, and in particular their earnings.

**OTHER NORDIC COUNTRIES**

**Economic activity in the other Nordic countries, as in Sweden, has been strong in recent years.** In Denmark, Finland and Norway the upswing has been driven by strong domestic demand. At the same time, rising profits in companies have contributed to a broad increase in investment. Global growth has also resulted in exports developing strongly in all three countries. During the first half of 2007, however, economic activity in Denmark slackened. In Norway and Finland, too, economic activity is expected to gradually slow down in the coming years.<sup>43</sup>

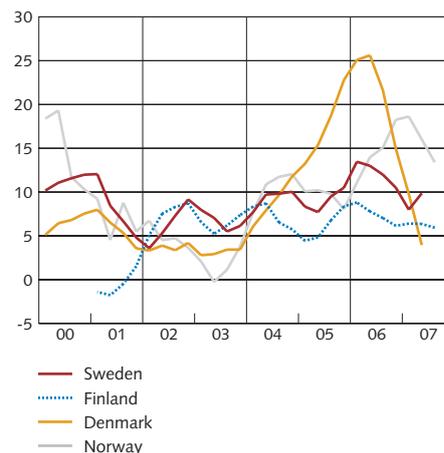
**Household borrowing continues to rise.** So far this year borrowing has increased by around ten per cent on an annual rate in Norway, Finland and Denmark. Households' debt-servicing ability is assessed as still good in the Nordic countries, despite a rapid increase in debt. The explanation for the good ability to pay is a strong growth in income.

**Chart 2:21. Geographical breakdown of the major banks' lending 2006**



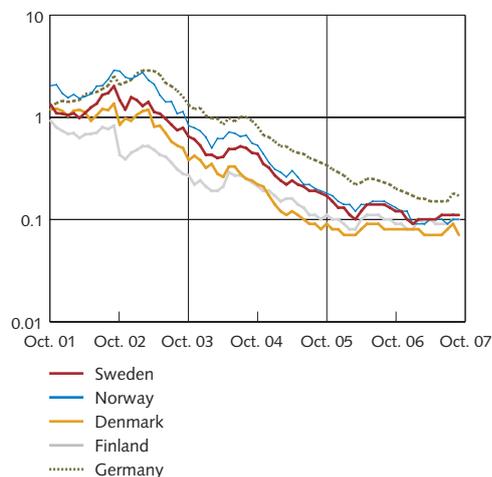
Sources: The banks' reports and the Riksbank

**Chart 2:22 House prices in the Nordic countries**  
Annual percentage change



Sources: Statistics Sweden, the BIS and Reuters EcoWin

**Chart 2:23. Expected default frequency for listed non-financial companies in the Nordic countries and Germany**  
Per cent

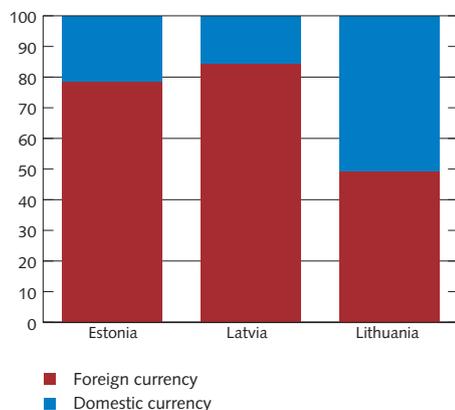


Note. The scale in the chart is logarithmic.  
Source: Moody's KMV

<sup>42</sup> From the listed property companies' annual reports. The debts refer to interest-bearing liabilities or debts to credit institutions.

<sup>43</sup> See Denmark's Nationalbank; Monetary Review 2007:2, Bank of Finland; Bulletin 2007:2 and Norges Bank; Monetary Policy Report 2007:2.

**Chart 2:24. Proportions of lending to the private sector in foreign currency and domestic currency respectively, September 2007**  
Per cent



Sources: National central banks

**House prices have nevertheless diverged in 2007.** In Norway, house prices are still rising at a high rate, while developments in Finland are below the Nordic average. In Denmark the housing market has slowed down and recent statistics are now indicating lower prices (see Chart 2:22). The reason why the Danish housing market is now cooling down is the higher mortgage rates.

**Corporate borrowing is also rising in the Nordic countries.** During the first half of 2007 borrowing increased by around 9 per cent in Finland, 16 per cent in Denmark and 22 per cent in Norway. At the same time, companies' profitability has improved. As a result of the strong economic performance, the number of defaults has continued to fall in these countries (see Table 2:1). The expected default frequency (EDF) indicator shows that the risk of default will remain at an unchanged low level over the coming year (see Chart 2:23). The same indicator also shows that the default risk for property companies will increase, albeit marginally.<sup>44</sup>

**Table 2:1. Number of companies financially insolvent per 10000 companies in each respective country**

	2003	2004	2005	2006
Denmark	137	125	132	109
Finland	144	111	88	97
Norway	176	112	72	60
Sweden	299	157	127	97
Germany	136	135	130	106
EU-17	79	81	77	65

Source: Creditreform Economic Research Unit

## GERMANY

### **In Germany growth has slowed down somewhat over the year.**

This reflects both weaker private consumption and a weakening in investment, particularly in the construction industry. However, compared with 2006 investment has increased. Exports remain good and employment has picked up, which could mean that household consumption will recover.

**German households' indebtedness has increased more slowly than households in the Nordic countries.** The relatively high borrowing from mortgage institutions in 2006 appears to have been temporary. The fact that debt is increasing relatively slowly is largely explained by low activity on the German housing market. House prices have remained largely unchanged in recent years. The debt-servicing ability in the German household sector is assessed to be good on the whole.

<sup>44</sup> See further Financial stability 1/2007, Norges Bank, Financial stability – 2007, Denmark's Nationalbank and Financial stability, special issue 2006, Finlands Bank.

**Corporate borrowing increased in 2006, after having declined for several years.** The relatively strong growth in Germany in recent years has been evidenced in the drop in the number of defaults (see Table 2:1). The expected default frequencies indicate that the risk of default will remain at an unchanged low level over the coming year both for the corporate sector as a whole and for property companies (see Chart 2:23).

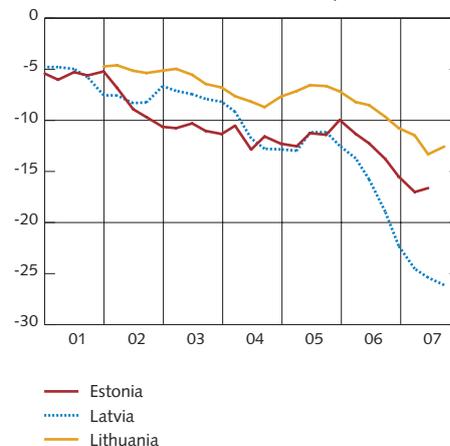
### THE BALTIC COUNTRIES

**In the previous Financial Stability Report the Riksbank highlighted the economic imbalances in the Baltic countries as a source of concern.**<sup>46</sup> Although the economic situation in some ways differs between the three countries, Latvia, Estonia and Lithuania all show symptoms of overheating, which are most evident in Latvia. In brief, the Baltic countries have enjoyed strong economic growth for several years. Their economies have changed from being strictly regulated to being deregulated market economies. At the same time, the strong growth has entailed rising imbalances in the form of large deficits in the current account, high wage growth and high inflation. In addition, lending to the private sectors has increased rapidly. A complicating factor is that credit growth has largely occurred in foreign currencies (see Chart 2:24).

**The imbalances have continued to increase.** Credit growth remains high, although there are indications that it is slowing down by varying degrees in all three countries. However, the current account deficits remain substantial, while inflation has continued to rise (see Charts 2:25 and 2:26). Fiscal policy is still expansionary in Latvia and Lithuania. In Latvia the government has adopted a stabilisation plan to cool down the overheated economy. At present it is uncertain what the final effects of the stabilisation plan will be.

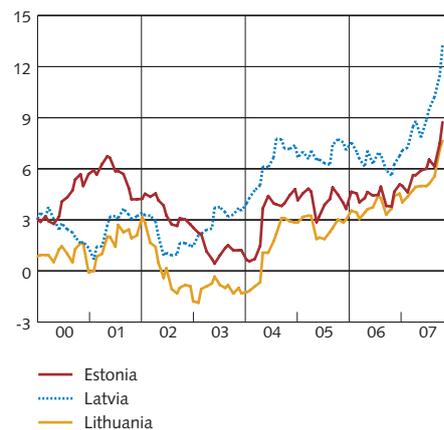
**In addition to the immediate overheating tendencies, the Baltic countries are facing demographic challenges.** Despite the fact that wages are increasing rapidly and unemployment is low, many people have chosen to move abroad. This has led to a decline in the population (see Chart 2:27). If the labour market and the economic situation deteriorate, this negative trend may be reinforced. This would be an adverse development, for many reasons. Firstly, a shortage of skilled labour may arise, and these people are needed in the export sector to turn around the current deficit in the trade balance. Secondly, in the slightly longer term it could entail major strains on the social insurance system when the number of persons of working age falls in relation to the number of old age pensioners.

**Chart 2:25. Current account**  
Per cent of GDP, totalled over four quarters



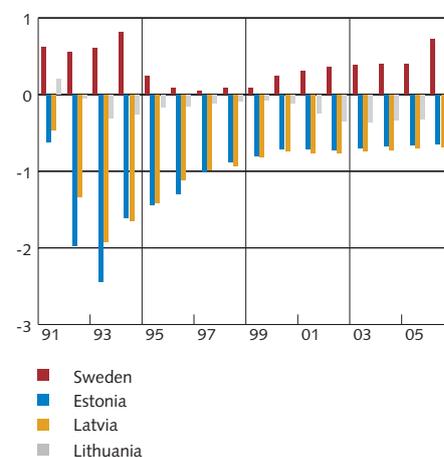
Source: Reuters EcoWin

**Chart 2:26. Harmonised index for consumer prices**  
Annual percentage change



Source: Reuters EcoWin

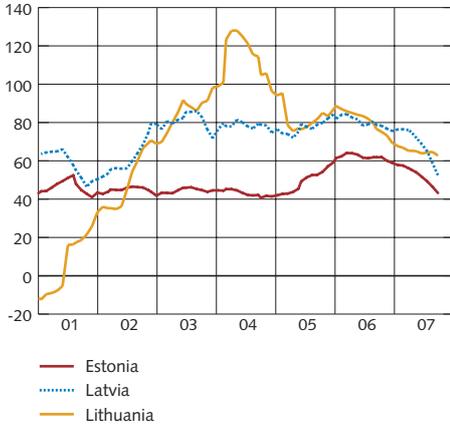
**Chart 2:27. Population**  
Annual percentage change



Sources: Reuters EcoWin and Statistics Sweden

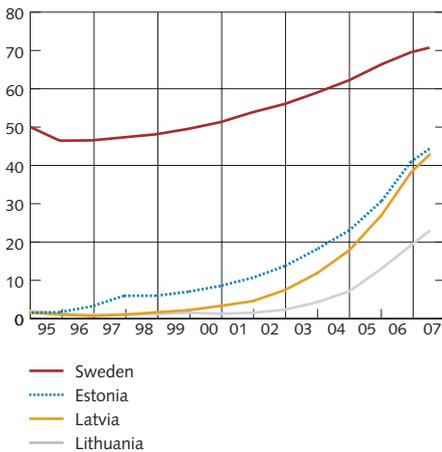
<sup>45</sup> The background to the economic situation and accompanying overheating tendencies is well-known and described in the box "Overheating in the Baltic countries?" in Financial Stability Report 2007:1. See also the Chapter "Developments in the banks" in this report.

**Chart 2:28. Household borrowing in the Baltic countries**  
Annual percentage change



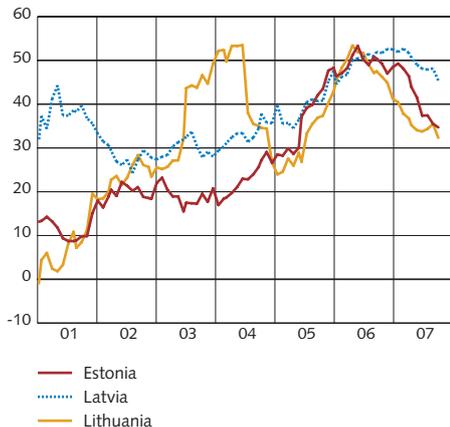
Sources: National central banks

**Chart 2:29. Household debts in relation to GDP in Sweden and the Baltic countries**  
Per cent



Sources: National central banks

**Chart 2:30. Companies' borrowing from credit institutions in the Baltic countries**  
Annual percentage change



Sources: National central banks

**Household indebtedness has increased at a rapid rate in the Baltic countries.** So far this year lending has increased by almost 45 per cent in Estonia, which despite the high rate of increase is a reduction of around 15 percentage points since last year. In Latvia, lending to households has increased by just over 50 per cent, and in Lithuania lending has increased by more than 60 per cent up to September this year. Nevertheless, the rate of increase in lending has slowed down since last year in all three countries (see Chart 2:28). In Lithuania, however, household indebtedness is still relatively low in relation to the other countries in the region. A large proportion of lending to households is in euro.

**The majority of households' loans in the Baltic countries has been obtained to finance house purchases which has contributed to a sharp rise in house prices.** Up to June, house prices in Lithuania have increased by just over 40 per cent on an annual rate. It is noteworthy that house prices in Estonia have risen much more slowly than before; 2 per cent on an annual rate during the first half of this year compared with 50 per cent during the first half of 2006. There are also indications of slower growth than before in Latvia. Although both indebtedness and house prices are increasing from low levels, the adjustment is very rapid. Households' vulnerability has increased through the greater indebtedness, but households' debt-servicing ability is nevertheless judged as sound as a result of the high growth in income. Traditional indicators of stability such as debt ratios and interest ratios are still relatively low in the Baltic countries, compared with Sweden (see Chart 2:29).

**Corporate borrowing in the three Baltic countries is continuing to increase rapidly.** In August, borrowing in Estonia increased to almost 36 per cent on an annual basis. In Latvia and Lithuania borrowing increased by 48 per cent and 35 per cent respectively during the same period (see Chart 2:30). Since the previous Financial Stability Report was published, companies' debts in relation to GDP in the Baltic countries have increased further. In the case of Estonia, companies' debts are now higher than those in Sweden (see Chart 2:31). However, some slowdown can be distinguished in the rate of increase. The high rate of increase in corporate borrowing may be largely explained by the increased investment in recent years. This has largely been aimed at property. Credit risk in the corporate sector is expected to increase as economic activity slackens.

## Summary of risks in the borrower sector

On average the banks' borrowers have a good ability to pay; this applies to both companies and households. But there are a number of risk scenarios, which may in different ways affect different groups of borrowers.

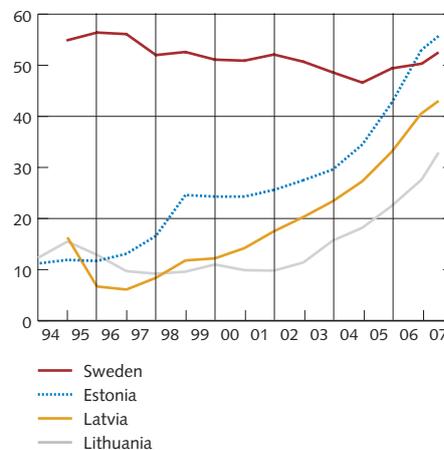
**A smooth cooling down of the economies in the Baltic countries may take place.** Domestic factors could lead to the economy slowing down. This situation could occur when neither households nor companies are willing to increase their borrowing. Higher risk premiums on lending in the Baltic countries could also contribute to such a situation. Given the economic situation in the Baltic countries, credit growth may remain relatively high, higher than in Sweden, for example. However, the remarkably high growth rates of recent years are not sustainable.

**But there is a risk of a more sudden slowdown.** Developments in the countries need not be independent of one another. A severe downswing in one of the economies could lead to investors re-assessing their views of risk in the entire region. A large decline in economic activity would affect the creditworthiness of both companies and households. Such a development would be aggravated if property prices fell at the same time. A significant deterioration in creditworthiness in the Baltic countries would tangibly affect the Swedish banks with substantial operations in these countries – SEB and Swedbank.

**For Swedish households the risks concern a more rapid increase in debts and house prices than in incomes.** This cannot continue in the longer term. Otherwise imbalances will arise, which will need to be adjusted sooner or later. Falling house prices would not in themselves give rise to substantial loan losses in the bank sector, but could entail financial losses for individual households. This risk is highest for the most mortgaged households. These are usually young households who have recently bought a house.

**Among Swedish companies the primary risks lie with the property companies.** The demand for yield is still low in the commercial property market, despite a rise in the risk-free interest rate. This indicates that the investors are expecting further rent increases. It is uncertain whether these expectations will be met. The strong economic activity and the increase in employment have so far had only limited effects on rents. The demand for premises has increased slightly, but this has primarily been focused on modern city centre premises. If the supply of completed area at the same time increases in future, the vacancy rate may remain relatively high. The scope for further rent increases also declines when the economic cycle enters a calmer phase.

Chart 2:31. Companies' outstanding credit volumes in the Baltic countries and in Sweden in relation to GDP  
Per cent



Sources: National central banks



## ■ Developments in the banks

The Swedish major banks continue to report healthy profits and low loan losses. There are however concerns in the form of increased credit risks and rising funding costs. The fact that credit risks have increased is due, amongst other things, to higher exposures to the Baltic countries. There is also a risk that income will be negatively affected by the turbulence in the financial market. Moreover, for the first time since 2003 the major banks have had a declining return on equity during the last four-quarter period. Resilience in the event of unforeseen negative events continues to be high but the Riksbank considers that it has decreased slightly since the previous Report.

The Riksbank's analysis focuses on the four major Swedish banks – Handelsbanken, Nordea, SEB and Swedbank. These banks are of key importance to the Swedish financial system's stability and together account for around 80 per cent of the market. The major banks are becoming increasingly dependent on markets other than the Swedish one and a significant part of their risk exposure lies abroad. The Riksbank therefore analyses the entire bank groups and not just their Swedish operations.<sup>46</sup>

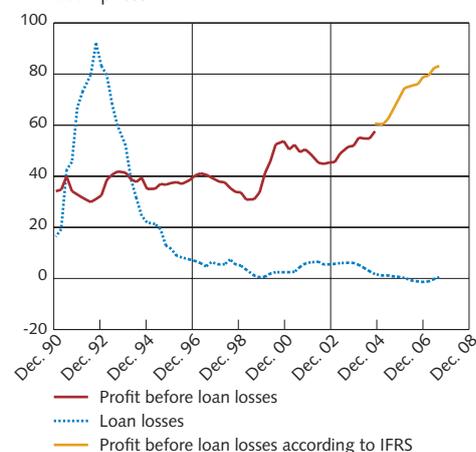
The different risks to which the banks are exposed are considered in turn. The account begins with the development of profitability, which can indicate a bank's strategic risk. This is followed by an evaluation of asset quality, which provides an illustration of credit and market risks. The development of bank equity which reflects their financial strength is then analysed. The bank's funding structure provides an indication of potential liquidity risks. In conclusion, the Riksbank presents the results of several stress tests that have been carried out and which illustrate the banks' resilience to unlikely but plausible risk scenarios.

### Profitability and earnings – strategic risk

Bank profitability is a crucial factor for stability. As a rule, sound profitability enhances a bank's capacity for coping with unforeseen negative events.

The major banks have been profitable in recent years mainly due to the fact that income has increased sharply. Besides the fact that the banks have expanded their businesses to growth regions abroad, the structure of earnings has also changed. Net interest income is still the largest income item and now accounts for half of the major banks' income. It has, however, merely increased by an average of 3.5 per cent a year in the past three years. On the other hand net commission income rose by an average of 11.5 per cent a year during the same period and now accounts for 30 per cent of total income.

**Chart 3:1. Profit before loan losses and net loan losses in the major banks**  
Totalled over four quarters, SEK billion, 2007 prices

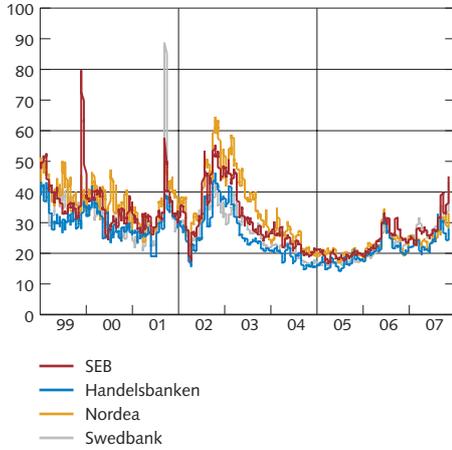


Note. Net loan losses refer to provisions for actual and probable loan losses less recoveries and reversals.

Sources: The banks' reports and the Riksbank

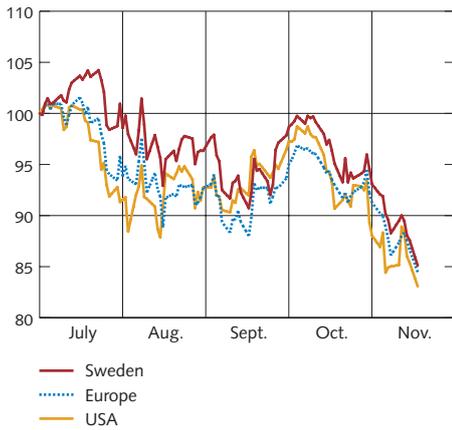
<sup>46</sup> Unless otherwise stated, the term major banks refers to the bank groups.

**Chart 3:2. Bank shares' implied volatility**  
10-day moving average, per cent



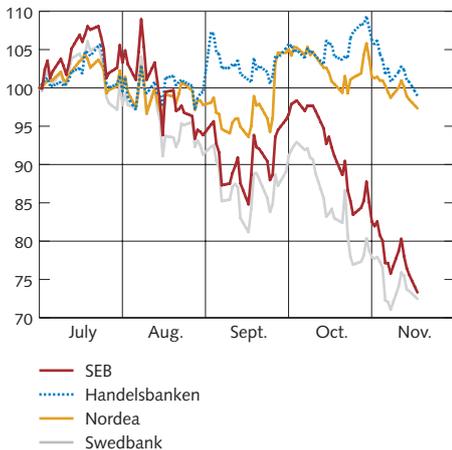
Sources: Bloomberg and the Riksbank

**Chart 3:3. Share price development in the financial sectors on various stock markets**  
Index: 1 July 2007 = 100



Note. OMX, Dow Jones and STOXX financial indices.  
 Source: Reuters EcoWin

**Chart 3:4. Swedish major banks' share price developments**  
Index: 1 July 2007 = 100



Source: OMX

**During the latest four-quarter period the major banks' profitability remained high.**<sup>47</sup> The major banks' profit before loan losses increased to more than SEK 80 billion during the four-quarter period (see Chart 3:1). Loan losses were low but did increase compared with the previous period. At the same time, the return on equity declined somewhat and is now at 18 per cent. Developments in the European banking sector are similar to those of the Swedish major banks. The trend of high profitability, low loan losses, higher efficiency and a sharp growth in loans (see the lending section) is thus not unique to the Swedish banks.

**The Swedish major banks' operations abroad expanded during the four-quarter period.** A large part of the profit has been generated from foreign operations. The major part of the foreign operations is in other Nordic countries. SEB also has a substantial part of its operations in Germany. The Baltic countries is the region in which operations are growing the most. Both income from and lending to operations in these countries constitutes an ever larger share of SEB's and Swedbank's total income and lending. During the third quarter of 2007 SEB's operations in the Baltic countries accounted for 22 per cent of the bank's operating profit. Hansabank, Swedbank's subsidiary in the Baltic countries, accounted for 35 per cent of the operating profit during the quarter. Nordea also has operations in these countries, which are increasing substantially, but the bank is less dependent on the region.

**The financial turbulence has heightened the uncertainty about the banks' future earnings.** The fact that the uncertainty has heightened can be seen in the implied volatility of the banks' equity (see Chart 3:2).<sup>48</sup> The Swedish major banks do not have any direct exposure to the US subprime market, which was where the financial turbulence began. However, they are affected by the fact that the credit spreads have become higher which has contributed to higher funding costs (see the respective sections on funding and income). At the same time the expected profitability has declined somewhat.<sup>49</sup> In the wake of this autumn's financial turbulence bank shares have had a negative development. Swedish bank shares have followed the development in the United States and Europe (see Chart 3:3). The differences between the Swedish banks are large, however (see Chart 3:4).

<sup>47</sup> The latest four-quarter period runs to the end of the third quarter 2007. Unless stated otherwise, comparisons are made with the preceding four-quarter period. All performance data have been adjusted for sizeable one-off effects.

<sup>48</sup> Implied volatility represents the market's expectations of future volatility and is calculated by the pricing of equity options.

<sup>49</sup> This is reflected in the development in the expected profits of the major banks which during the autumn declined for 2008 and 2009. Source: SME Direkt, 21 November 2007.

## INCOME AND EXPENDITURE

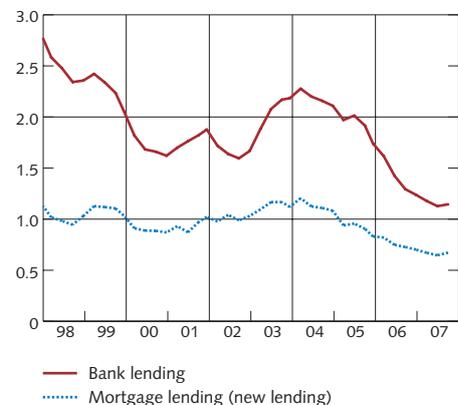
**Net interest income rose by almost 9 per cent during the four-quarter period.** Net interest income constitutes primarily of interest income from lending less costs for wholesale funding and deposits. The contribution to net interest income is effected by volume and margin changes in lending and deposits.<sup>50</sup> For the first time in four years net interest income grew stronger than net commission income. The most important explanation for the sharp increase is the growth in the major banks' lending (see the lending section). Larger deposit margins, as a result of higher interest rates, also provided a positive contribution. In contrast, lending margins continued to come under further pressure, as a result of the stiff competition. In principle, lending margins in Sweden have halved in the past three years (see Chart 3:5). At the end of the four-quarter period, however, lending margins have stabilised which may suggest that the pressure is abating.

**The new capital adequacy rules, Basel II, have contributed to the pressure on lending margins.** As of the first quarter of 2007 the major Swedish banks are reporting in accordance with the new rules. For several types of lending, the new rules mean that the banks do not need to have such a high proportion of equity as before. If the proportion of equity declines, so does the cost to finance lending. Lenders can thus cut their lending margins and thus the interest rate paid by customers, without the return on equity being affected. The change in the capital adequacy rules that affects margin pressure in the Swedish banks the most is the one concerning lending to private individuals with property as collateral. Historically, this form of lending has given rise to very limited loan losses. However, capital requirements have fallen not just for mortgages, but also for corporate sector loans.<sup>51</sup>

**Lending growth will probably continue to fuel the increase in net interest income.** According to the borrower analysis, both corporate and household sectors will continue to increase their demand for credit (see Chapter 2). Deposit margins will also make a positive contribution. However, it is difficult to see any major future increase in lending margins due to the competition between lenders. Moreover, the effects of the market turbulence will increase the banks' funding costs. According to the banks the increased funding costs will gradually be transferred to borrowers.

**Net commission income rose by just over 8 per cent during the four-quarter period.**<sup>52</sup> This was mainly due to the rise in the stock markets

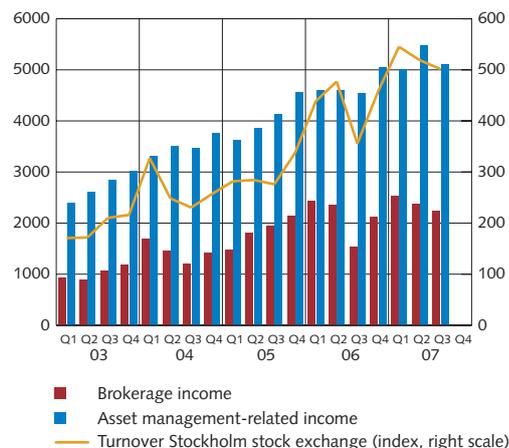
**Chart 3:5. The major banks' interest rate differential on Swedish bank and mortgage lending**  
Four-quarter moving average, per cent



Note. Interest rate differential = average bank rate – 6-month government bond respectively, average mortgage lending rate – 3-month government bond.

Sources: The banks' reports and the Riksbank

**Chart 3:6. The major banks' securities-related commission income and Stockholm Stock Exchange turnover**  
SEK million and index: 1997=100



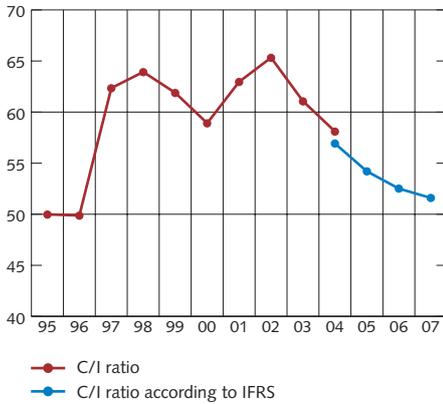
Sources: The banks' reports, Reuters EcoWin and the Riksbank

<sup>50</sup> Simplifying somewhat, the bank's lending margin is the spread between the lending rate and the risk free rate. The deposit margin is in a comparable way the spread between the deposit rate and the risk free rate.

<sup>51</sup> An estimated decrease in capital requirement amounts to 76 per cent for household lending and 28 per cent for corporate lending according to the Report (2006:6) by Finansinspektionen (Swedish FSA).

<sup>52</sup> The four major bank's net commission income is exclusive of Handelsbanken's insurance sub-item and Nordea's life insurance sub-item.

Chart 3:7. Cost efficiency at the major banks  
Per cent



Note. 2007 refers to the past four quarters. The C/I ratio stands for costs divided by income.

Sources: The banks' reports and the Riksbank

and the high turnover, taking into account the entire four-quarter period, which increases the banks' securities related income (see Chart 3:6). High turnover normally increases the banks' brokerage income. High share prices also have a direct effect on the banks' income from asset management, since they are dependent on the size of the assets under management.

**Net commission income will probably increase at a lower rate than before.** The rate of increase has already begun to fall. The market turbulence has contributed to falling stock prices which further on can give negative effects on the major banks' securities-related net commission income. Moreover, stock broking competition has increased. New agents have begun to press down brokerage prices and to some extent this could reduce the major banks' brokerage income. A corresponding downward pressure cannot be seen in fund fees.<sup>53</sup>

**Unrealised changes in the value of equity and currencies contributed positively to the major banks' results.** The income statement item "financial items at fair value" increased by almost 13 per cent during the four-quarter period. This item is wholly or partially dependent on market valuations, and thus impacts on the result. However, interest-bearing securities gave a negative contribution to the result as they were valued lower due to the credit market turbulence.

**The major banks' expenditure rose by just over 4 per cent during the four-quarter period.** The number of employees rose by 5 per cent and staff costs accounted for the largest part of the increase. Other administrative costs also rose slightly. Despite cost increases the banks became more cost effective. This can be seen in the cost to income relation (C/I ratio) which fell to under 52 per cent (see Chart 3:7). The major banks appear to have partially abandoned attempts to maintain cost levels. Instead increased costs are now permitted where there is opportunity for higher income.

### Assets and capital – credit and market risk

The stock of loans to the general public makes up as much as 60 per cent of the bank's assets. This makes credit risk the largest single risk in the banks' operations. The banks also have assets exposed to market risk, which is usually a minor component of total risk. The Riksbank also analyses the banks' capital, since it mirrors their capacity to withstand unexpected negative events.

<sup>53</sup> Despite low-price alternatives, relatively few customers switch fund company. This may be a result of lock-in effects, i.e. customers do not wish to realise changes in value due to tax effects.

## MARKET RISK

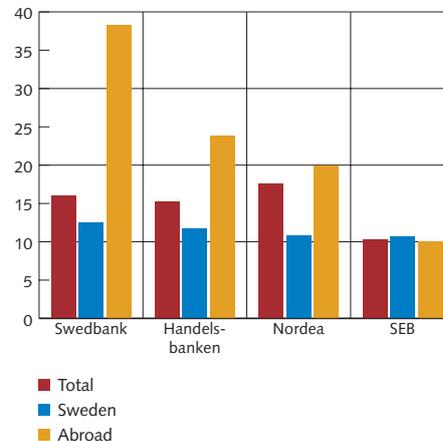
**Financial market turbulence has affected interest rate risk.** Market risk is loss risk as a result of unfavourable developments in the financial markets mainly for interest rates, equity and currencies. Normally, the largest market risk for the banks is their interest rate risk. The interest rate risk has been noticeable during the market turbulence as, for instance, the banks' assets, in the form of interest-bearing securities, have been affected negatively (see the income section). There are indications of some increased market risk in the banks. The reported market risk calculated as VaR<sup>54</sup> increased somewhat during the third quarter of 2007.<sup>55</sup> One of the banks states that the increase reflects greater volatility and correlations between asset prices rather than increased position taking.

## LENDING

**Total lending by the major banks rose by just over 15 per cent in annual terms up until September 2007.** Lending to borrowers abroad accounts for approximately half of the major banks' lending (see Chart 2.21 in Chapter 2). Generally speaking, lending abroad rose more sharply than the Swedish lending (see Chart 3:8). Since August, corporate lending has increased more than lending to households. This is the first time this has happened since the end of the 1990s (see Chapter 2).

**The banks have continued to expand their lending operations outside Sweden** (see Chapter 2). The strongest lending growth is in the Baltic countries where SEB and Swedbank have a relatively large share of their lending, just over 15 per cent. In addition, the major Swedish banks have a dominant position in these countries and have market shares of between 55 and almost 90 per cent of the countries' total lending. Swedbank's high growth in foreign lending is explained by its operations in the Baltic countries. Nordea also has some lending in the Baltic countries, but its main position is in the Nordic markets. SEB has almost a third of its lending in Germany where growth in lending is substantially lower, which is mirrored in the rate of growth in the bank's total lending abroad. The greater part of Handelsbanken's lending is to the Swedish market but the bank has branches in the other Nordic countries and the UK. The banks have also expanded their operations to Russia, Poland and Ukraine, amongst others. All of which have a higher growth rate than that of Sweden at present.

**Chart 3:8. Lending to the general public in Sweden and abroad**  
Annual percentage change up to end of September 2007

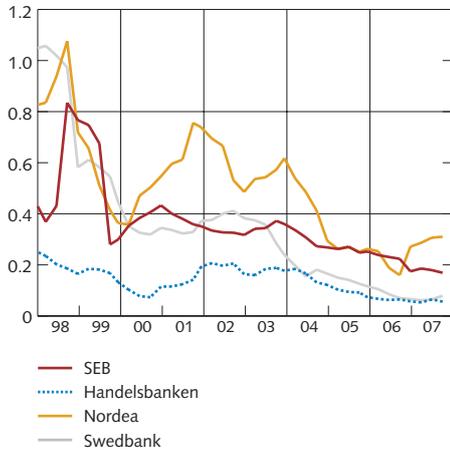


Sources: The banks' reports and the Riksbank

<sup>54</sup> VaR is a statistical method that expresses the maximum potential loss that can arise at a particular probability level during a given period.

<sup>55</sup> In the two banks that continuously report VaR, the measure indicates increased market risk for the third quarter of 2007.

**Chart 3:9. Provisions for incurred and probable loan losses**  
Totalled over four quarters, per cent



Sources: The banks' reports and the Riksbank

## CREDIT QUALITY

**The level of impaired loans is still very low.** In the four-quarter period, impaired loans amounted to 0.5 per cent of the major banks' lending, which is marginally less than at the time of the previous stability report.<sup>56</sup>

**The major banks had small loan losses during the four-quarter period.** The banks have had five quarters in a row with positive loan losses which means that reversals and recoveries of earlier provisions were larger than new provisions for loans losses.<sup>57</sup> But loan losses have now increased and during the four-quarter period they were 0.01 per cent of the banks' lending. Provisions for new and probable loan losses increased compared with the previous four-quarter period (see Chart 3:9). This is, however, mainly due to accounting effects.<sup>58</sup>

**Major Swedish banks' dependency on operations in the Baltic countries has continued to increase during the year.** At the same time the macroeconomic imbalances remain and domestic conditions are becoming increasingly strained (see Chapter 2). A severe economic downturn in these countries could, therefore, have a notable impact on the Swedish banks (see further under the section on stress tests). The banks do however state they have become more cautious in their lending. This applies in particular to borrowers with high risk, for instance certain types of commercial property and unfinished construction projects. The banks have also reviewed their credit processes.<sup>59</sup>

**Margins when lending to the Swedish corporate sector appear to be decreasing, which suggests banks are taking higher risk.** To some extent the lower margins can be explained by good economic outlook, together with stiff competition. At the same time the credit growth is very high which raises the question as to whether the banks charge enough for risk, that is if they price for a possible future deterioration of credit quality. It is especially important to follow margin growth in lending to property companies since the sector accounts for almost 40 per cent of the major banks' corporate lending. Properties, which constitute collateral for these loans, are also linked with a raised risk. The Riksbank has identified the development in the property market as a risk (see Chapter 2).

<sup>56</sup> Impaired loans are claims on which potential losses have been identified, thereby leading to loss provisions. They are calculated here as gross lending volume.

<sup>57</sup> Loan losses are calculated as provisions for actual and probable loan losses less recoveries and reversals.

<sup>58</sup> Nordea has re-entered group provisions in Denmark and instead they have made provisions for the same sum at group level which means that net losses are kept constant.

<sup>59</sup> At the end of the four-quarter period, the banks' interim reports confirm that the more conservative credit assessment has resulted in lower lending growth in the Baltic countries.

**The risk is moderate in the banks' lending to LBOs.** Leveraged buyouts (LBOs) account for a marginal portion of the banks' total lending. The major banks' exposure to hedge funds and private equity companies corresponds to around just two per cent of total lending.<sup>60</sup>

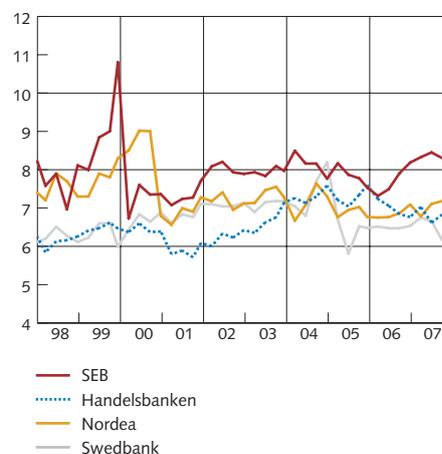
**Loan losses are likely to be moderate during the coming four-quarter period.** The risk of higher loan losses remains in the Baltic countries however. With expectations of relatively high GDP growth in the coming year, it is hard to see that total loan losses would increase markedly because of weaker economic activity.<sup>61</sup> Moreover, households are expected to maintain a sound debt-servicing ability. Corporate sector bankruptcies are expected to increase gradually, but to remain at a low level (see Chapter 2).

## CAPITAL

**The Tier 1 capital ratios of the major banks averaged 7.5 per cent at the end of the latest four-quarter period** (see Chart 3:10). The capital adequacy ratio was 10.8 per cent.<sup>62</sup> As of Q1 2007 the major banks have begun reporting applying the new capital adequacy rules (Basel II), which has affected both the Tier 1 capital ratio and the capital adequacy ratio. A large segment of the major Swedish banks' credit portfolios consists of loans to households which carry a low risk and under Basel II therefore require less capital.<sup>63</sup> Given the same Tier 1 capital and capital adequacy this leads to increasing Tier 1 capital ratio and capital adequacy ratio, compared with the old rules. This is due to reduced risk weighted assets.

**The banks have so far used their growing capital mainly to expand operations.** The high profitability in the major banks has made it possible for them to build up their own capital. Moreover, the new capital adequacy rules means that the banks can reduce capital or increase assets without reducing the capital adequacy relationship. The banks have estimated the possible reduction of capital to around 30 per cent, given current assets. There are no indications of extra or increased dividends, however.<sup>64</sup> In light of the growing financial uncertainty, a decrease in capital or a high lending growth without increased capital could be questioned by the market.

Chart 3:10. Tier 1 capital ratios  
Per cent



Sources: The banks' reports and the Riksbank

<sup>60</sup> See Finansinspektionen's (the Swedish FSA's) report, *Hedgefonder och private equity (Hedge funds and private equity)* (2007:13).

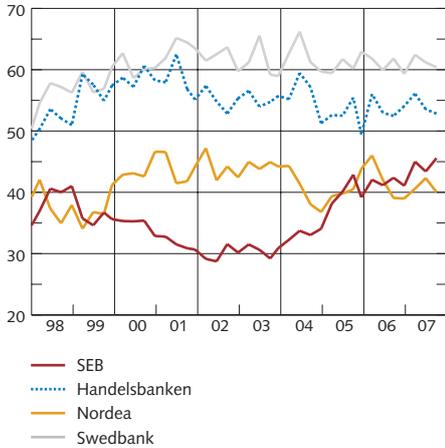
<sup>61</sup> The scenario of economic activity in this report is based on the Riksbank's assessment in the *Monetary Policy Report 2007:3*.

<sup>62</sup> Tier 1 capital and capital adequacy ratios are defined as Tier 1 capital and the capital base respectively, in relation to risk-weighted assets. Simplifying somewhat, Tier 1 capital is the bank's own equity less, for example, investment in insurance operations and goodwill. Subject to supervisory approval, it can also include certain types of debenture (supplementary to Tier 1 capital and supplementary hybrid capital). The capital base is the total of Tier 1 and supplementary capital. An example of supplementary capital is debentures. Risk-weighted capital is calculated by weighting assets and even off-balance sheet items for assessed risk.

<sup>63</sup> In the first three years, however, there is a maximum permitted reduction of capital requirements each year, which means that the banks cannot lower the capital under a certain level even though their internal models so permit. Compared with Basel I, a 5 per cent reduction of risk-weighted assets is permitted in the first year.

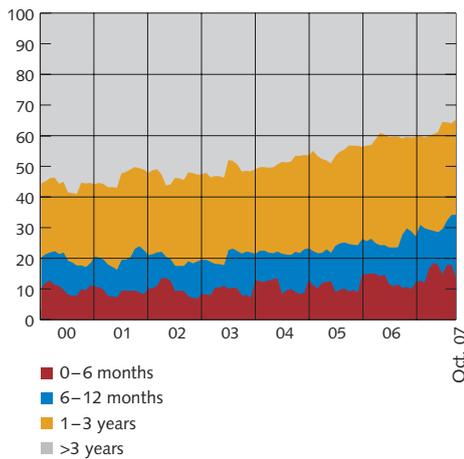
<sup>64</sup> A hypothetical numerical example shows that the change enables an increase in lending of just above SEK 2 000 billion, given today's average risk weight for credit risk.

**Chart 3:11. The banks' issued securities**  
Per cent of lending



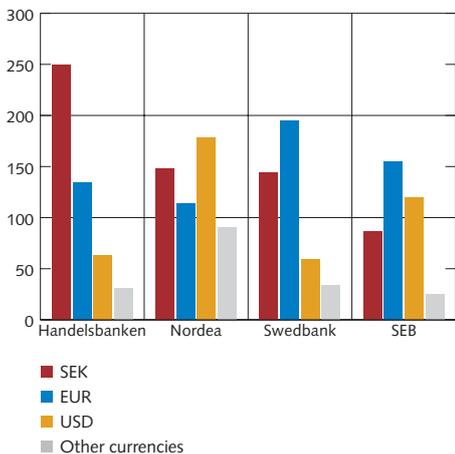
Sources: The banks' reports and the Riksbank

**Chart 3:12. The banks' issued securities' maturity structures**  
Per cent



Source: Bloomberg

**Chart 3:13. Share of issued securities in different currencies, November 2007**  
SEK billion



Source: Bloomberg

## Funding – liquidity risk

One of the banks' major functions is the conversion of deposits to lending. The banks' debts are liquid in the form of deposits and wholesale funding while their assets are illiquid in the form of lending. This involves a liquidity risk. Deposits from the public account for approximately half of the four major banks' total funding. Wholesale funding accounts for the other half and mainly consists of issued securities and, to a lesser extent, interbank borrowing.

**Market turbulence has led to increased funding costs for the major Swedish banks.** Despite the fact that the Swedish banks are not exposed to the US subprime market, they have been indirectly affected by the recent market turbulence. Lower liquidity on some markets and higher risk premiums have led to higher funding costs (see Chapter 1). More expensive funding will probably affect the banks' profits negatively in the short term.

**To a large extent, the Swedish banks are dependent on securities-related borrowing.** As lending has increased so have the four major banks' issued securities, in the form of issued bonds and commercial paper. Total issued securities in relation to lending have varied but there is a gently rising trend (see Chart 3:11). Swedbank together with Handelsbanken has a slightly larger proportion of issued securities than SEB and Nordea. The difference is due to the fact that Swedbank and Handelsbanken have a large share of mortgage lending in their operations, compared with the other two banks.

**The proportion of the banks' issued securities with short durations has gradually risen in the past few years**<sup>65</sup> (see Chart 3:12). At the end of October, 14 per cent of the banks' total issued securities were to mature within six months, which corresponds to approximately SEK 280 billion. Primarily, it is the proportion that falls due beyond three years that has fallen in favour of securities with shorter durations.

**A large part of the Swedish banks' issued securities are in other currencies** (see Chart 3:13). SEB and Swedbank fund a large part of their lending by issuing securities in euro. Nordea is the bank that has the largest funding in other currencies, particularly Danish krone. In contrast, Handelsbanken mainly obtain funding in Swedish krona. One of the reasons for the difference between the banks is that they are operative in different countries. To the extent the banks do not lend in currencies that correspond to the borrowing, they can hedge the currency risk in the derivatives market. More than half of the Swedish banks' funding is in currencies other than Swedish krona, which can be seen as positive as it reduces dependence on one single market. Nonetheless, obtaining funding on markets other than the

<sup>65</sup> Data information for issued securities, which comes from Bloomberg, does not take buybacks of bonds and commercial paper into consideration. Moreover, not all commercial paper are included in the statistics.

domestic market does also involve risk. If unrest arises that concerns the Swedish banks, foreign investors' interest in buying Swedish issued securities may disappear, temporarily at least.

**Three of the Swedish banks have shorter issued securities durations than European banks on average** (see Chart 3.14). They are Swedbank, SEB and Handelsbanken. However, Nordea is above the six year average, due to the fact that the bank is active in the Danish market, where mortgage loans generally have a longer fixed term than in Sweden, for example. From a European perspective, the Swedish banks' issued securities as share of lending is somewhat higher than the average which is almost 50 per cent, but the picture is not clear-cut. Swedbank and Handelsbanken are above the average and SEB and Nordea are just below.

**The interbank market is mainly used for balancing liquidity, but also as a source of funding.** During certain periods deposits and securities-related borrowing to fund the banks' lending portfolios does not suffice. The banks are to some extent also dependent on the interbank market to fund their assets. The extent to which the interbank market is used as a source of funding varies between the banks. SEB and Handelsbanken are interbank market net borrowers (see Chart 3.15).<sup>66</sup> However, Swedbank is a net lender in the interbank market and thus less dependent on it as a source of funding. However, not all net borrowing on the interbank market is used to fund the lending portfolio but is also used as a liquidity reserve.

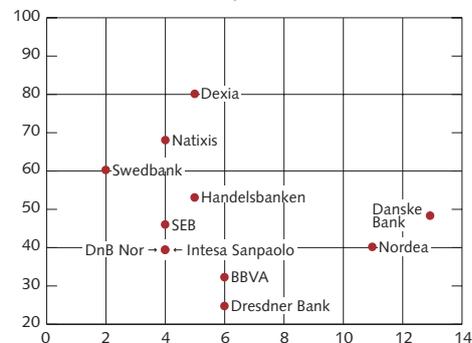
**Deposits from the public are an important and inexpensive source of funding.** Deposits constitute some 50 per cent of the four major banks' total funding. Primarily, deposits from the public are a cheaper form of financing than wholesale funding. At the end of September 2007, deposits from the general public in the Swedish major banks amounted to nearly SEK 2 900 billion.

## Counterparty exposures – risk of contagion

The major banks' central role in the financial system entails considerable claims, mutually and to other market participants, so-called counterparty exposures. Counterparty exposures can give rise to a direct risk of contagion, the risk of problems in one bank spreading to other banks. A risk of contagion can also arise indirectly in the event of general unrest. A situation in which there is a lower risk propensity and higher liquidity premiums hits banks in general, regardless of the origin of the unrest. This became evident during the autumn, when the UK mortgage lender Northern Rock experienced refunding problems.

**Chart 3:14. European banks' issued securities in relation to lending and average time to maturity, October 2007**

Per cent (vertical axis), year (horizontal axis)

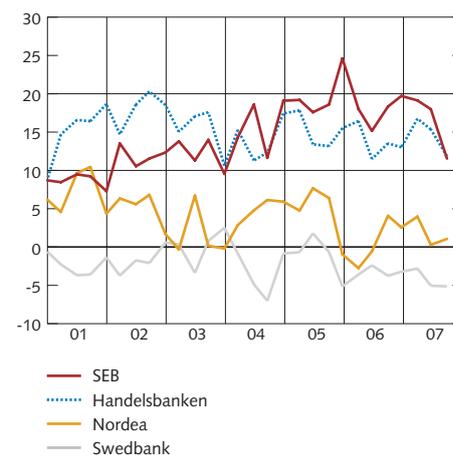


Note. The sample consists of the major Swedish banks and some of the major European banks.

Sources: The banks' reports and Bloomberg

**Chart 3:15. Banks interbank market net borrowing as share of lending portfolio**

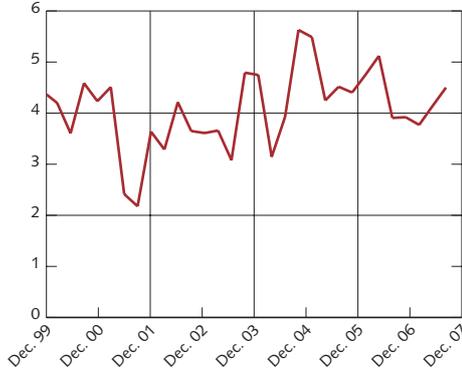
Per cent



Sources: The banks' reports and the Riksbank

<sup>66</sup> By net borrower is meant that borrowing from credit institutions is larger than lending to credit institutions.

**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

Unlike indirect risk of contagion, the banks can actively affect direct risks of contagion by means of counterparty limits and collateral. In this section the direct risk of contagion in and to the Swedish banking system is assessed using the Riksbank's data on the major banks' counterparty exposures.

**The size of the banks' largest exposures has been relatively unchanged since the middle of year 2000.** During the same period Tier 1 capital has increased by just over 50 per cent, which indicates that with time the banks have become more resilient to direct risk of contagion. However, data for counterparty exposure are only collected at the end of each quarter and are therefore point-in-time views. This means they do not necessarily show the development during the quarter.<sup>67</sup>

**The Riksbank's tests show lower direct risk of contagion between the major banks compared to the previous report.** The tests are based on the assumption that a bank fails and that 75 per cent of the other three banks' exposures to the failing bank are lost. It is assumed that 25 per cent may be recovered since part of the exposure is covered by collateral.<sup>68</sup> In the first half of 2007, no interbank exposure has caused the Tier 1 capital ratio to fall below the regulatory requirement of 4 per cent. In the previous report, the same test resulted in two of the banks having a Tier 1 capital ratio under 4 per cent.

**The tests show that the direct risk of contagion to the major Swedish banks from large companies or foreign banks is moderate.** The banks' largest counterparty exposures do not necessarily need to be made up of exposures to other Swedish banks. The banks also risk being affected by problems if a large company or a foreign bank suspends payments. Given the same assumptions as in the test above, the counterparty is a large company or a foreign bank in half of the cases when a bank's Tier 1 capital ratio fell below 4 per cent. From the second half of 2004 up to the first half of 2007, however, in no case would the failure of a large company or foreign bank have led to a Tier 1 capital ratio below 4 per cent for any major Swedish bank.

### Stress tests of the major banks' resilience

An account of several of the stress tests carried out by the Riksbank is given in this section. The banks' resilience in the event of deterioration in the credit quality is tested in two different scenarios. The third scenario tests how they are affected by higher funding costs.

<sup>67</sup> The Riksbank has been collecting data on the 15 largest counterparty and settlement exposures of the major banks since 1999.

<sup>68</sup> This effect represents a situation where a major bank or large company suspends payments with immediate effect and no prior warning, and the recovery rate is judged to be low. The calculated levels of Tier 1 capital ratios should therefore be seen as outcomes of an extreme stress test.

## CREDIT QUALITY

It is crucial to the banks' resilience that they are adequately capitalised. By far the single largest risk in the banks is credit risk. The stress tests therefore focus above all on the banks' resilience in the event of deterioration in the credit quality of the borrowers. The Riksbank's method is based on a readily-available portfolio model and on information from the banks' reports.<sup>69</sup>

Two measures are used to quantify the loan losses the banks may face. One measure reflects expected losses. The measure shows how much the bank can expect to lose on average in the coming year, given its portfolio and risk profile. The expected losses should correspond to the provisions made by the bank. Unless something unforeseen occurs, during the year the bank will make losses that correspond approximately to their provisions. On the other hand, if an unforeseen negative event were to occur it is likely that the loss will be larger than the expected loss. The second measure that is used reflects the capital the banks need to hold in order to manage unexpected loan losses. This measure is called capital requirement for credit risk.<sup>70</sup>

It is important to analyse both these measures in order to obtain an idea of the banks' resilience in case of a negative event. The expected loss is put in relation to the profit. If the profit is not enough to cover the expected loss, the bank's capital will decrease. If the capital decreases in relation to the capital requirement for credit risk, the bank's resilience will be reduced. This could result in a poorer credit rating and higher funding costs.

In the tests the bank's Tier 1 capital<sup>71</sup> is put in relation to the capital requirement for credit risk. In this way, it is possible to obtain a ratio one can call credit risk cover.<sup>72</sup> The level of credit risk cover a bank requires is dependent on its operations. Banks with large mortgage institutions in relation to other operations, and thus a large share of credit risk, need less of a buffer for other risks. Examples of other risks to be covered by Tier 1 capital are market risks, operational risks and credit risks off balance. These differ greatly between different banks. To have a credit risk cover of 100 per cent means in principle that Tier 1 capital covers the credit risk. A credit risk cover above 100 per cent means that the bank has a buffer.

The calculations are based on the composition of the banks' lending portfolios at the end of June 2007 compared with the end of 2006. It is assumed that the size and composition of the portfolios

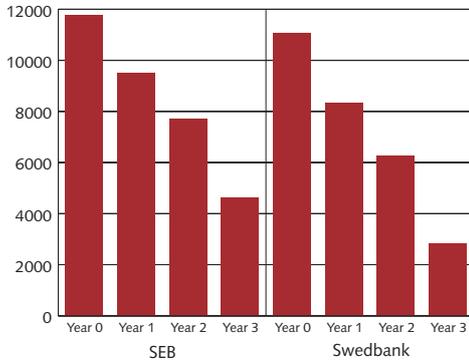
<sup>69</sup> For a more detailed description see the article "Using external information to calculate credit risk", Financial Stability Report 2006:1 and the section on stress tests in Financial Stability Report 2006:2.

<sup>70</sup> The Swedish banks have chosen to define their capital requirement for credit risk so that it covers 99.97 per cent of all loan losses that may occur in a bank's credit portfolio. The default risk would therefore be 0.03 per cent at the highest one year ahead. The choice of tolerance levels reflects the credit rating the bank receives from the credit rating agencies. A tolerance level of 99.97 corresponds to an AA rating. In the Riksbank's analysis the capital requirement for credit risk is calculated at a level of 99.9 per cent.

<sup>71</sup> Simplifying somewhat, Tier 1 capital is the bank's own equity less, for example, investment in insurance operations and goodwill.

<sup>72</sup> Credit risk cover = Tier 1 capital / capital requirement for credit risk.

**Chart 3:17. Bank profits with the scenario for the Baltic countries**  
Expected profit minus change in expected loss  
SEK million



Sources: The banks' reports and the Riksbank

is unchanged in the scenarios. Since the last report the analysis has been extended to include Danske Bank. The reason is that they have expanded in Sweden and are now the fifth largest bank in terms of lending, with a market share of around five per cent. The banks' credit risk cover is studied in two difference scenarios.

- Scenario 1 concerns a general deterioration of the creditworthiness of exposures in the Baltic countries.
- Scenario 2 concerns a cyclical downturn that leads to a loss of creditworthiness for all borrowers.

#### SCENARIO 1: IMPAIRED CREDIT QUALITY IN THE BALTIC COUNTRIES

**The effects on the banks' resilience to a deterioration in creditworthiness among borrowers in the Baltic countries are studied with a scenario that runs for three years.** The scenario assumes that a negative event occurs which affects all borrowers in the Baltic countries.<sup>73</sup> Borrowers' creditworthiness in the Baltic countries is assumed to deteriorate during three years at the same time as the banks' earnings from this operation decline. In the first year the probability of default increases to 5 per cent, in the second year to 10 per cent and in the third year to 20 per cent. An increased probability of default means higher expected losses and a greater capital requirement for credit risk. The pre-tax profit is assumed to halve in the first year, to decline by a further 25 per cent the following year, and to fail to materialise at all in the third year. Year three represents an extreme situation with high default frequency and no earnings. The creditworthiness for other borrowers in the banks' lending portfolios and earnings from other operations is assumed to be unchanged. The scenario is applied to Swedbank and SEB,<sup>74</sup> the two banks with substantial lending operations in the Baltic countries.

**According to the outcome of the tests, the banks display a positive result all three years, despite the deterioration in developments.** This is due to the fact that earnings are higher than the new provisions for loan losses (see Chart 3:17).<sup>75</sup> The fact that the profit falls in the first year of the scenario is on average as much due to increased provisions as the assumption of falling earnings. In the last year increased provisions on average made up two-thirds of the decline in the expected profit. Each year a positive result is added to the Tier 1 capital, which grows accordingly.<sup>76</sup>

<sup>73</sup> If the borrowers were affected by a systematic negative event, diversification effects would play little or no role.

<sup>74</sup> Danske Bank and Nordea also have operations in the Baltic countries but, since their lending operations in these countries constitute a far smaller component of their portfolios, they have been excluded from the scenario.

<sup>75</sup> Since expected losses rise between the years, the provisions for loan losses increase.

<sup>76</sup> No dividends are paid in the scenario.

Besides leading to increasing provisions, the scenario entails a growing risk in the loan portfolios and the banks therefore need more capital. Chart 3:18 shows each bank's existing Tier 1 capital in relation to the calculated capital requirement for credit risk in each of the three years. The banks' credit risk cover is above 100 per cent in every year. The main reason Swedbank has somewhat lower credit risk cover than SEB is that they have a lower Tier 1 capital to start with. The reduction in credit risk cover in the scenario, compared to the starting point, is roughly the same for both banks.

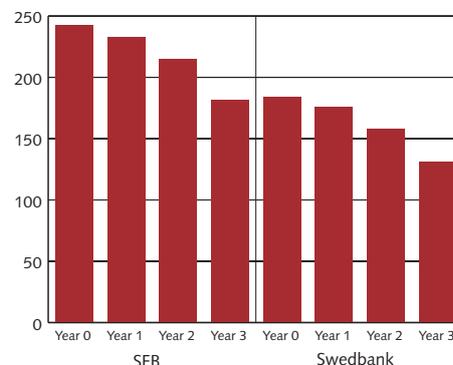
**Resilience in the event of deterioration in the Baltic countries has weakened somewhat in the first half of 2007.** In the first half of 2007 the banks have further increased lending in the region and an ever larger share of earnings comes from the Baltic countries. However, at the same time, the Tier 1 capital of both banks has increased compared with the end of 2006. Thus, the effects of higher exposure to the Baltic countries are partly neutralised.

#### SCENARIO 2: IMPAIRED CREDIT QUALITY FROM A TURN IN THE CREDIT CYCLE

**This scenario illustrates how a turn in the credit cycle and hence a deterioration in creditworthiness affects the major banks.** The historical relationship between GDP growth and default probabilities can be used to form a picture of creditworthiness for the banks' borrowers in different phases of the business cycle.<sup>77</sup> In the period from June 2000 to September 2001, GDP growth dropped from over 5 per cent to less than half of one per cent. The marked slowdown meant that in this period the average corporate default probability more than doubled during the same period. In March 2003 the average corporate default probability level was four times higher than in 1999. In this scenario the default probability for all borrower categories in the portfolio increases in the three years at the same time as earnings decline. The default probability doubles in the first year, trebles in year two and quadruples in year three. During year one the pre-tax profit declined by 25 per cent and continued to decline by a further 25 per cent in year two and three.

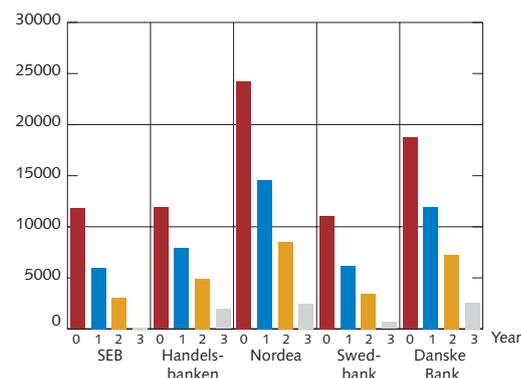
**The test shows that the banks have a healthy resilience in the event of an economic slowdown similar to the one in 2000.** None of the banks showed a loss in the three years (see Chart 3:19). The lower profit in the first year is on average some 60 per cent due to the assumption of falling earnings. The remainder is due to increased provisions. In the last year of the scenario, lower earnings contributed on average around five times as much as increased provisions to the deterioration in profits. Since the expected result is positive all years,

Chart 3:18. Cover for credit risk with the scenario for the Baltic countries  
Per cent



Sources: The banks' reports and the Riksbank

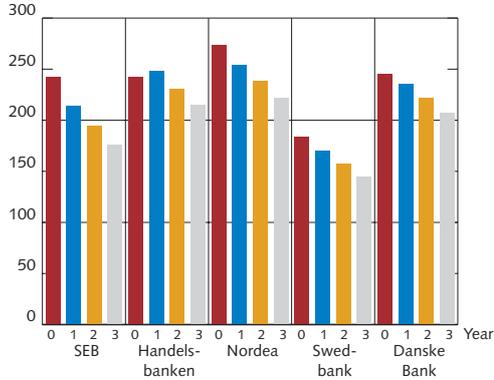
Chart 3:19. Bank profits in the scenario with a turn in the credit cycle  
Expected profit minus change in expected loss, SEK million



Sources: The banks' reports and the Riksbank

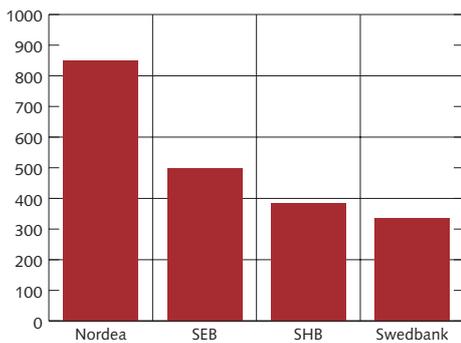
<sup>77</sup> GDP growth for Sweden is compared with the average default probability for the Swedish banks' loan portfolios.

**Chart 3:20. Cover for credit risk in the scenario with a turn in the credit cycle**  
Per cent



Sources: The banks' reports and the Riksbank

**Chart 3:21. Increased funding costs in a 3-month liquidity crisis**  
SEK million



Sources: The banks' reports and Bloomberg

it is assumed that it will be added to Tier 1 capital at the end of the year.<sup>78</sup>

Chart 3:20 shows each bank's existing Tier 1 capital in relation to the calculated capital requirement for credit risk in each of the three years. The five banks' credit risk cover is above 100 per cent in all the years and they therefore cope with a quadrupling of default probabilities. The credit risk cover is however reduced in every case and so, therefore, is the banks' capacity to withstand further negative events.

**The banks' resilience in the event of such a weakening in economic activity is marginally worse compared with the end of 2006.** A larger share of loans in the portfolios has contributed to a somewhat higher capital requirement for credit risk in the banks. This effect has been balanced however, partly by improved profits, partly by the majority of the banks increasing their Tier 1 capital.<sup>79</sup>

FUNDING COSTS

This test estimates how the four major Swedish banks are affected by increased funding costs. Among other things they can increase as market rates rise, or by the need to replace a relatively cheap source of funding with the more expensive wholesale funding.

SCENARIO 3: INCREASED FUNDING COSTS FOR THREE MONTHS

**The third scenario tests how the banks are affected by higher funding costs.** The test assumes that the banks normally borrow in the securities market to 3 months STIBOR but that they must borrow to 3 months STIBOR + 40 basis points during a three-month period. Moreover, it is assumed that the costs for 10 per cent of the banks' cheapest funding double. It is assumed that the banks will not compensate by raising lending rates. The scenario is very extreme, but not unimaginable. The results show that more expensive funding costs would have an impact on the banks, but not in a critical way (see Chart 3:21). For example, the cost increase corresponds to some 10 per cent of the banks' quarterly results.<sup>80</sup>

<sup>78</sup> No dividends are paid in the scenario.

<sup>79</sup> Danske Bank has reduced its Tier 1 capital compared with the end of 2006 due to its acquisition of Sampo Bank.

<sup>80</sup> Approximately in line with the Q2 2007 result for the four major banks.

## Summary of risks for the major Swedish banks

**To summarise, the Swedish banks are financially strong and profitable.** Moreover, their borrowers in general have a good basis for repaying their loans – this includes companies as well as households. The Riksbank's assessment is thus that the banks have high resilience to negative and unforeseen events.

**However, the resilience has declined slightly over the past six months.** This is mainly because the credit risks in the banks have increased. Lending has risen sharply, while margins on lending have fallen. The main increase has been in lending to foreign borrowers, primarily borrowers in the Baltic countries. Also, the stresstests confirm the picture of good, but slightly impaired resilience.

**Greater exposure in the Baltic countries entails a higher risk for the major banks.** At the same time as the economic conditions in these countries become more strained, the banks' dependence on the region has increased. The stress test the Riksbank has carried out shows that the major banks have a healthy resilience in the event of negative shocks but that this has diminished since the previous stability report.

**One of the risks facing the banks is that the market turbulence will have a more long-term effect.** The banks' profits will be affected in the short term as a result of the negative effects of the market turbulence mainly on funding costs but also on income. In the longer-term however the banks will transfer this to borrowers by raising lending rates, for instance. Should the financial unrest continue, or even increase, the effects could be even more extensive.

**There is also a risk that the banks have not adequately compensated for the risk in corporate lending.** Lending to the corporate sector, including property companies, is rising sharply at the same time as the new loans margin to this sector has continued to be pressed down. This poses the question as to what extent the banks are charging enough for risk. That is, if they price a possible future deterioration in borrowers' credit quality.



■ PART 2. ARTICLE



## ■ Financial stability – new challenges

*Ten years have passed since the Riksbank first published a report on financial stability. In the meanwhile much has happened in the financial sector. Changes in the financial landscape have increased the difficulties in surveying risks. This is evident not least from the recent unrest in international financial markets. Additional risk factors pose new challenges for authorities that are responsible for the financial system's stability.*

The crisis that hit the Swedish banking system in the early 1990s exposed a number of serious shortcomings among the banks as well as in the readiness of the authorities. A culture was lacking for handling the risks associated with the rapid expansion of lending that a pent-up borrowing requirement had generated when credit controls were eased in the 1980s.<sup>81</sup> It was also clear that authorities such as Finansinspektionen,<sup>82</sup> the Finance Ministry and the Riksbank did not have a sufficient grasp of banking system risks to enable them to foresee the crisis. Neither had any of these authorities been given the task of producing such an overall perspective.

### THE ANALYSIS NEEDS CONTINUOUS RENEWAL

After the bank crisis it was therefore evident that a reinforcement of readiness was called for. This applied, not least, to the need for a systematic analysis of vulnerabilities and sources of risk in the financial system. The Riksbank has a central function in the payments system, as well as a possibility of providing financial enterprises with emergency liquidity assistance. It was therefore natural for the Riksbank to take the initiative for such an analysis in the mid 1990s. For ten years now the reports on financial stability have been a vital element in the Riksbank's work for stability and a major basis for dialogues with the banks and other participants.<sup>83</sup>

The analysis of stability, which is presented to the public twice a year in *Financial Stability Report*, has hopefully enhanced the authorities' ability to survey and assess vulnerabilities in the financial system. To some extent it has probably also contributed to greater awareness among the financial sector's participants.<sup>84</sup>

The financial sector is one of the economy's most dynamic components. New instruments, techniques and institutions are being introduced continuously. This means that the spectrum of risks also changes continuously. The authorities therefore need unceasingly to develop their methods for stability work and consider the best ways of adapting supervision and regulation. It is not least the growing transnational operations of the banks and their increased market dependence that pose new challenges for authorities that are responsible for the financial system's stability.

81 For accounts of the origins and subsequent handling of the bank crisis, see e.g. Petterson (1993) and Ingves & Lind (1996).

82 Sweden's Financial Supervisory Authority, which was formed in 1991 by merging what were then the Bank Inspection Board and the Private Insurance Supervisory Service.

83 A retrospective article on the development of the Riksbank's stability work is planned for a forthcoming issue of Sveriges Riksbank Economic Review.

84 For an independent assessment of the Riksbank's stability work, see Allen et al. (2004).

This article aims to describe some major tendencies and discuss their implications for the ongoing work on financial stability. It starts below with an account of some principles that have served as a basis for the Riksbank's stability analysis. That is followed by a section on some notable changes in the financial landscape and the driving forces behind them. Some of the new risk factors associated with the new landscape are then presented, followed by a discussion of the new challenges they represent for the authorities and the attendant adjustments in stability work. The final section presents the Riksbank's conclusions.

### To publish or not to publish ...

Having initiated systematic analyses of stability in the mid 1990s, the Riksbank had to decide whether or not to publish the results. This matter was by no means uncontroversial at that time and many other central banks were still sceptical. Many considered, for instance, that publication might be more likely to have a destabilising effect in that the central bank explicitly pointed to the existence of risks and threats to stability.

Fairly soon, however, publication was seen as desirable. The Riksbank judged that it would be more likely to facilitate a dialogue with financial market participants about the vulnerabilities that might need to be corrected. Regular publication would also sharpen the analytical work and give it a clear focus. Moreover, it would make it easier for the Riksbank to report back to the Riksdag on its responsibility for promoting a safe and efficient payments system. Furthermore, publication would be in line with the renewal in those years of the Riksbank's general approach, above all as regards monetary policy. The traditional view of the Riksbank as a closed, almost mysterious, institution was being transformed into an image with greater openness and transparency as important epithets, not least for working methods.

The Riksbank published its first report on stability, *Financial Market Report*, in November 1997 and was thus one of the pioneers in this field. A year earlier the Bank of England had issued its first *Financial Stability Review* but that was devoted to separate articles on the subject of financial stability and did not include an assessment of stability. In June 1997 Norges Bank had published a thirteen-page stability analysis (*finansielt utsyn*) in its periodical *Penger og Kreditt*, which also presents monetary policy.

Today, stability reports are published regularly by central banks in some fifty countries.<sup>85</sup> The same is true of a number of major international organisations, for example the International Monetary Fund (IMF) and the European Central Bank (ECB).

<sup>85</sup> For surveys of how stability reports are used, see e.g. Cihák (2006) and Oosterloo *et al.* (2007).

## The Riksbank's analysis of financial stability

### FOCUS ON THE PAYMENTS SYSTEM

A meaningful stability analysis calls for a sound analytic foundation and that was the starting point when the Riksbank initiated its stability work in the mid 1990s. The work also needed a firm anchorage in the Bank's function in society. The Riksbank is required by law to promote a safe and efficient payments system, an objective that stems from a central bank's traditional importance for various functions of this system. Besides issuing notes and coins, central banks commonly set up systems that facilitate large inter-bank payments – they act as a “bank for banks”. In Sweden, the Riksbank owns and operates the system for the clearing and settlement of payments between Swedish banks. The inter-bank market is also of major importance for the Riksbank's implementation of monetary policy. These circumstances are a sufficient reason for the Riksbank's interest in the proper functioning of the payments system and in the stability of the participant banks.

There is also a more fundamental public interest in the payments system's stability. In that payments are a central feature of all economic activity, a disruption of the payments system would exact large socioeconomic losses, with negative consequences in the form of weaker growth and lower employment. This was evident not least from the banking crisis in the early 1990s. The reasons why it is socially important that roads, telecommunications and the supply of electricity function properly also apply to payments. The increasingly large flows that are channelled through systems for payments and the clearance and settlement of securities transactions have made these systems even more critical than they were a decade ago.

### THE CENTRAL ROLE OF BANKS

Banks have a key position in the payments system. This has to do with the importance of the payments that are made in the form of transfers between the banks' deposit accounts. A crisis in the banking system could therefore seriously impair the payments system's performance. At the same time, banking is inherently unstable because bank assets, above all in the form of loans, are considerably *less liquid* than bank funding in the form of deposits and short-term loans in securities markets.<sup>86</sup>

<sup>86</sup> A bank's assets mainly consist of loans to the corporate and household sectors. Besides being associated with credit risk, these loans are often hard to value, particularly for those outside the lending institution. The difficulty in valuing loan assets makes them illiquid in the sense that they cannot be sold at short notice without a considerable discount on their true value. Loan repayment can also be difficult at short notice because this generally depends on the borrower being able to obtain another loan elsewhere. A large part of a bank's funds, on the other hand, consists of deposits that can be withdrawn without notice. Another part consists of other short-term credit, for example loans from the inter-bank and securities markets. Much of the borrowing from securities markets is arranged with short maturities. Thus, funding, unlike assets, is extremely liquid.

In addition, there are considerable risks of contagion if problems were to arise somewhere in the banking system. Banks participate in a range of payments systems and at times their mutual exposures are very large. This means that a problem in one bank is liable to spread to other parts of the financial system. Moreover, it is not only the banks' large mutual claims that entail a risk of contagion. Just the suspicion of problems or considerable uncertainty about a bank's exposures may suffice. Even unfounded rumours can, in the worst case, be self-fulfilling. Risks that can give rise to contagious effects throughout the financial system are commonly known as *systemic risks*.

As a rule, individual participants in financial markets have sufficiently strong incentives to value risks in their own operations and ensure they are suitably protected. Systemic risks, however, extend beyond a particular participant and include costs for other institutions as well as for society in general. In a social context the private incentives to avoid these risks are not sufficient; economists see systemic risks as being associated with *negative externalities*. The State therefore has strong grounds for supervising financial enterprises and enacting specific laws and regulations for their operations. It follows that systemic risks are a central aspect in the Riksbank's function of promoting a safe and efficient payments system.

The Riksbank's stability analysis accordingly focuses in large measure on the largest banks and on the markets and players that are most relevant for the banks' earnings, funding and risk management. That was the starting point when the Riksbank initiated stability work and it still is today. However, changes in how the financial system functions have given rise to new sources of risk and new channels in which they can spread through the system. In order to cope with this, the Riksbank has to adapt its analyses and other work on stability.

Besides the Riksbank, important roles in stability work are played by Finansinspektionen and the Finance Ministry. Among other things, Finansinspektionen contributes to financial system stability by supervising the capital strength and risk management of individual financial enterprises (stability supervision).<sup>87</sup> The Finance Ministry in turn is the authority that drafts legislation for the financial sphere and also the one that would be most closely involved if a crisis in the financial system were to have consequences for the government budget. The ongoing changes in the financial sector also affect the roles of these authorities in stability work.

The next section outlines some of the main trends that are affecting the financial landscape.

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<sup>87</sup> Besides promoting the financial system's stability in accordance with official requirements, Finansinspektionen is responsible for contributing to the system's efficient functioning and for promoting consumer protection.

## A new financial landscape

Many of the changes that have occurred in the financial sector stem from progress in technology. Improvements in the capacity for advanced calculations have stimulated academic research and this has given rise to numerous financial innovations. Applications of these innovations – financial engineering – have resulted in a range of new financial instruments that have reduced the cost of managing and trading financial risks. Moreover, lower transaction costs and technical improvements stimulate each other, generating a continuous search for further innovations, a phenomenon that Robert Merton dubbed “the financial innovation spiral”.<sup>88</sup>

Another important factor is the far-reaching changes in financial rules and regulations. The first round of changes, which began more than two decades ago, involved extensive deregulations that led to the liberalisation of the financial sector in many countries. More recently, regulatory changes have often been driven by endeavours to facilitate the cross-border supply of financial services.

The striking progress in information and communication technologies, together with purposeful political efforts to harmonise rules and regulations, have rendered the financial sector increasingly international, just as the economy in general has become more globalised. This in turn has contributed to a fundamental transformation of the global financial landscape. Some specific examples of this are presented below.

### FINANCIAL MARKETS INCREASINGLY IMPORTANT

One general international trend is towards a market orientation. Traditional intermediaries, such as banks, are becoming more and more dependent on financial markets for their funding, earnings and risk management.

The standard perception of a bank is an enterprise primarily involved in lending in return for payment in the form of interest, funded mainly with deposits from the general public. Banks are experts above all in the valuation and monitoring of credit risks. By acting as an intermediary and an overseer of credit risk, banks can make matters safer and simpler for savers as well as borrowers, which facilitates the mediation of capital in the economy. In recent years, however, the picture of a bank has become more complex.

- The operations of many bank groups have become more and more diversified. Today, the share of earnings that comes from fields such as life assurance and asset management is substantial. These earnings are mainly in the form of commissions and are dependent in turn on how the markets in which the assets are traded develop.

<sup>88</sup> See Merton (1992, 1995).

- The share of funding that consists of deposits from the non-bank public has become successively smaller. This has been offset by a growing share for funding in financial markets. The interest and exchange risks associated with these markets are managed in derivatives markets.
- In recent years, new techniques and instruments have been introduced for extensive trading in credit risks, thereby providing new ways of managing such risks. One of these techniques is the *securitisation* of parts of the loan stock. This usually involves the transfer of loans to a special vehicle created for this purpose and funded by issuing bonds, often representing different degrees of risk.<sup>89</sup> Another type of instrument for transferring and trading credit risks is *credit derivatives*.<sup>90</sup> These new techniques have become more and more common internationally.<sup>91</sup> As a result, many banks and other credit institutions around the world correspond less and less to the traditional picture of a credit-risk overseer. Instead, they are increasingly involved in originating loans and immediately distributing the associated credit risks to risk-prone investors in financial markets.

#### INCREASED IMPORTANCE OF NEW PLAYERS

The banks have become not only more market-dependent but also more important as market participants. However, there are other players that are also of increasing importance in the financial system.

Examples are institutional investors such as insurance companies and pension funds. Calculations by the International Monetary Fund indicate that in the decade up to 2005 the global total of capital managed by insurance companies and pension funds grew from USD 21 trillion to USD 53 trillion.<sup>92</sup> Much of this increase has to do with a rising life expectancy in many countries, which is leading to a greater dependence on private pension saving and an increased demand for investment assets.

There are also new participants, such as hedge funds and private equity companies, that have become substantial players in financial markets.<sup>93</sup> On the whole, investors represent a broad base and comprise increasingly large and less homogeneous groups throughout the world.

<sup>89</sup> See the summary box on page 21 of *Financial Stability Report 2007:2*.

<sup>90</sup> For a more detailed description of credit derivatives, see e.g. Sveriges Riksbank (2006b).

<sup>91</sup> For various reasons, Swedish credit institutions do not yet use securitisation and credit derivatives on a sizeable scale.

<sup>92</sup> See International Monetary Fund (2007a).

<sup>93</sup> For an account of hedge funds, see e.g. Sveriges Riksbank (2006a) and for a description of the operations of private equity investment companies in Sweden see Sveriges Riksbank (2005b).

## MARKETS ARE BEING LINKED UP

Besides stimulating new financial instruments, technical innovations have paved the way for virtually instantaneous long-distance communication and information exchange. Electronic facilities are used to provide links between a large number of financial markets. Many of the biggest international financial institutions are active in practically every financial market and in principle market linkage makes it possible to trade twenty-four hours a day.

This worldwide integration is no longer confined to traditional fixed-interest and currency markets. Equity trading has also undergone a wave of cross-border consolidation in recent years. The traditional national stock exchanges have been linked together to form extensive networks for global trading. This integration started early in the Nordic-Baltic region. Today, the OMX Group owns the stock exchanges in Copenhagen, Helsinki, Reykjavik, Riga, Stockholm, Tallinn and Vilnius; they are linked together in the Nordic Exchange, which functions as a common platform with a uniform system and shared rules for trading in Nordic and Baltic equity. There are signs, in autumn 2007, that this integration is on the way to being taken a step further, with the OMX Group being incorporated in a larger consortium of international exchanges. A similar example of integration in equity trading is NYSE-Euronext, which links up a number of European bourses with the New York Exchange.

In Europe, financial market integration is also influenced by the harmonisation of financial rule books. The Directive on markets for financial instruments (MiFID), applicable in EU member states since November 2007, harmonises stock-exchange legislation and removes many barriers to the cross-border supply of investment services. For instance, a home-country permit suffices for investment services in other EU member states. This will further simplify the cross-border integration of market places in the EU. At the same time, the new rules make it easier for new players to compete with traditional exchanges for the flow of orders.<sup>94</sup>

Integration is also in progress for other infrastructure that is required for post-trade stages of securities trading, for instance clearing, settlement and registration. For a long time now the trend has gone towards straight-through processing (STP), whereby the entire process from orders (to buy or sell) to clearing and settlement is arranged with virtually no manual operations. Combining the steps in the process generates economies of scale and thereby lowers costs. In many places, close cooperation and in some cases even mergers between companies in the different stages of the infrastructure have been used to achieve this kind of *vertical* integration.

94 One manifestation of increased competition for orders is Turquoise, a pan-European platform for equity trading that is being developed jointly by seven international investment banks. Turquoise makes it possible to trade in European equities away from the exchanges on which the equities were originally registered. Transactions in Turquoise are cleared and settled in EuroCCP, a subsidiary of the American company DTCC.

The increasingly close connections between international finance markets have also accentuated the need for *horizontal* integration of the infrastructure. The growing number of transactions and expanding cross-border flows underscore the need to make payment and settlement systems for securities more efficient. There have therefore been a number of initiatives to consolidate various systems for payments and settlements.<sup>95</sup> One example of far-reaching cross-border integration is CLS Bank, which was set up jointly by some seventy banks around the world and now handles over half of all the world's clearing and settlement of foreign exchange transactions.

#### BANKS INCREASINGLY INTERNATIONAL

In recent years there has been a wave of cross-border acquisitions involving large international banks. Moreover, the amounts involved in such acquisitions have grown. The following are some examples. In 2004, Spanish Banco Santander acquired British Abbey National. In 2005, Italian Unicredit took over German HypoVereinsbank and its subsidiaries in Austria and Poland, while Dutch ABN Amro acquired the Italian bank Antonveneta. In 2006, French BNP Paribas took over Italian BNL. Since March 2007 Dutch ABN Amro has received various takeover proposals from international interests. In the Nordic area and the Benelux countries the wave of cross-border takeovers had already got under way in the mid 1990s and the cross-border integration of banks in these regions has therefore come a long way.

These developments are a combined result of several factors, for example the harmonisation of capital adequacy rules (Basel II<sup>96</sup> and CRD<sup>97</sup>), the difficulties in expanding in home markets that are small and mature, and the growing economies of scale as IT costs account for a rising share of banks' expenditures.<sup>98</sup>

#### New risk factors

While the evolution of this new financial landscape confers a number of benefits in terms of efficiency and financial system stability, it also entails new risk factors, some of which are discussed in the following.

<sup>95</sup> A number of initiatives are coming from authorities. One example is the Code of Conduct for Clearing and Settlement, an industry agreement that the EU Commission initiated; it aims to increase the integration of post-trade infrastructure. Another example is Target2 Securities (T2S), an initiative by the ECB with the aim of creating a pan-European platform for the settlement of sight trades in a single system, closely integrated with the ongoing developments in euro in the Target2 System.

<sup>96</sup> *Basel II: International Convergence of Capital Measurement and Capital Standards: a Revised Framework*, Bank for International Settlements, Basel, June 2004. Basel II is an agreement between the G10 countries and contains detailed recommendations for bank capital adequacy requirements.

<sup>97</sup> The European Parliament's and Council's Directive 2006/48/EG on the right to establish and operate credit institutions (amended), also called the Capital Requirements Directive (CRD). CRD belongs to the EU legislation on capital adequacy and is largely based on Basel II.

<sup>98</sup> For a fuller description and discussion of the growing cross-border consolidation of banking operations, see Sveriges Riksbank (2007).

## LESS TRANSPARENCY

The possibility of spreading risks over a larger number of players has been accompanied by greater difficulties in locating risks. In other words, markets have become less transparent.

One explanation for the loss of transparency has to do with the complexity of many of the new instruments and techniques for trading credit risks. Customer-tailored solutions and a lack of standardisation result in a plethora of structures and asset classes, each with its particular conditions, pricing properties and other characteristics. The special vehicles that are used in the securitisation of credit risk also tend to carry various guarantees and other undertakings that are not included on banks' balance sheets and may not be easy to comprehend.<sup>99</sup> Moreover, when the risks are re-packaged and sold on several times, it becomes increasingly difficult to tell in which balance sheets the end risks actually reside.

Complexity is also troublesome in the valuation of instruments, which often calls for advanced models. Unfortunately, the reliability of these models cannot always be taken for granted when markets are turbulent. Large price fluctuations tend to upset the models' underlying assumptions. Difficulties in the valuation of instruments can make it difficult in turn for companies to report their exposures correctly. This contributes to a further loss of transparency.

## GROWING DEPENDENCE ON LIQUID MARKETS

A market is liquid if a position can be taken or left quickly and simply without the price being affected.<sup>100</sup> To be liquid, a market needs continuously to attract a sufficient number of sufficiently large buyers and sellers. For various reasons, however, there may be times when an asset's value becomes so uncertain that there are considerably more potential sellers than buyers, which may, of course, result in a drastic fall in the price. The problem is not that the price adjusts to a new, perhaps more realistic, level but that many players want to sell simultaneously,<sup>101</sup> in which case the propensity to buy may not be sufficient to cater to all those who want to sell. The gap between demand and supply may be so large that for a time there are no trades whatsoever. When trading comes to a standstill in this way, there is usually said to be a "liquidity black hole".<sup>102</sup>

Non-functioning markets and price mechanisms have various consequences. Market participants may encounter problems with other financial positions and asset valuations, making it more

99 See also the summary box on page 21 of *Financial Stability Report 2007:2*.

100 See e.g. O'Hara (2004).

101 While it may have been rational for investors to sell, investment regulations and internal bonus systems can influence the behaviour of large investors, such as insurance companies and pension managers, so that a downward spiral is accentuated (see e.g. Schiller, 2000). Moreover, many companies use the same or similar models as a basis for risk management and while the risk management techniques may be highly beneficial for each company, a widespread use of much the same approach is liable to reinforce a market tendency.

102 See e.g. Persaud (2002).

difficult for them to manage assets and risks. Companies that have obtained funds by issuing securities in the market in question may face problems when the securities mature and it is time to re-fund. Thus, the liquidity of secondary markets can have a bearing on the possibility of funding in primary markets. The banks' increased market-dependence for funding and risk management means that they also become more vulnerable to disruptions in the liquidity of these markets.

In the past, liquidity black holes have arisen on a number of occasions. Examples are the stock-market crash in 1987, the failure of the hedge fund LTCM in September 1998, and in connection with the terrorist attack on the World Trade Center on 11 September 2001. As recently as in the summer and autumn of 2007, developments in the US subprime market led to great uncertainty.<sup>103</sup> The associated loss of confidence meant that for a time, liquidity in segments of the fixed-interest market was severely strained. When banks encountered liquidity problems, the ECB, the Federal Reserve and the Bank of England chose to act by aiding the inter-bank market.

#### MARKETS MOVE FASTER AND ARE LESS PREDICTABLE

The interlinkage of financial markets and their infrastructures has increased the capacity for handling larger and larger volumes more and more quickly. This has enhanced international capital mobility and, under normal circumstances, improved market liquidity. That in turn contributes to more efficient markets in which financial flows and prices adjust more quickly to new information, which improves price formation. At the same time, however, market dynamics have become less predictable and more abrupt.

The interconnectedness of financial markets is not confined to electronics. To a high degree it is also a financial phenomenon as assets traded in one market are used for the active management of risks in other markets. Problems in one market are therefore liable to have sizeable, unexpected repercussions in other markets. Prior to Russia's suspension of payments in 1998, perceptions of a strong correlation between Russian and Brazilian credit risks induced many investors in Russian securities to cover their exposures with short forward positions in the Brazilian market, which at that time was highly liquid. This was such a widespread strategy that the turbulence in the Russian market spread to Brazil.<sup>104</sup>

Another illustration of this phenomenon is the financial market unrest in 2007 – many of the institutions that have been hardest hit by the problems in the US subprime market are located in other parts of the world.

<sup>103</sup> The financial market turbulence in the summer and autumn of 2007 is considered in a box on page 18 of *Financial Stability Report 2007:2*.

<sup>104</sup> See e.g. Schinasi (2006).

It also looks as though financial market ups and downs have become more frequent and pronounced. Examples are the turbulence in bond markets in 1994 and 1996, the Mexican crisis in 1997, the Russian crisis in 1998, the LTCM crisis later that year and the dot-com bubble that hit stock markets around the world in the early 2000s.<sup>105</sup> These examples can now be augmented with the global financial market unrest in the summer and autumn of 2007.

#### GROWING RISK OF CRISES SPREADING ACROSS BORDERS

Extremely serious crises in the financial system are fortunately relatively rare but unfortunately cannot always be prevented. And as the major financial institutions become increasingly international, there is less possibility of confining a crisis to a single country. There is thus an increased risk that a crisis in one of the major cross-border institutions will have serious effects in a number of countries.

#### EXPANDING MARKETS HEIGHTEN OPERATIONAL RISKS

When markets for new, complex instruments grow as rapidly as in recent years, there is a risk that routines for administration and control, as well as clearing and settlement arrangements, lag behind. This can, for instance, lead to delays in the documentation and other post-trade handling of transactions. International institutions that were active early on in these new markets were often affected initially by delays or back-logs before their transactions were confirmed. That in turn can entail considerable legal and other operational risks.<sup>106</sup>

In new markets there may also be an initial lack of routines for unravelling transactions in the event of a counterparty's failure. It is then often necessary to arrive at the net positions between counterparties before the positions can be closed (close-out netting). Legal and other uncertainties about how this is to be done can complicate and delay the management of a failure and that in turn can set off domino effects in the financial system with consequences that are hard to foresee. It was partly the uncertainty about what a close-out would lead to that motivated the measures for resolving the crisis when the hedge fund LTCM failed in 1998.

The rapid development and the complexity of the new instruments can also be a challenge for companies' internal risk controls. This applies to routines for identifying and compiling exposures at company level and ensuring that risk levels in different types of operation are in line with the company's overall risk target.

<sup>105</sup> At the same time, the real economy seems to have become less volatile (see e.g. Rogoff, 2006).

<sup>106</sup> See Committee on Payment and Settlement Systems (2007).

## Major challenges for authorities

In the new financial landscape, authorities responsible for financial stability face a number of challenges. The increased interdependence of different markets and the growing cross-border element mean that many of these challenges have to be tackled jointly by authorities in numerous countries. Several knotty but fundamental issues have been brought to a head, not least, by the financial unrest that has prevailed in 2007.

### CHALLENGE NO. 1: IMPROVE BANK TRANSPARENCY

The financial market unrest that arose in the summer of 2007 stemmed in part from uncertainty about the location of risks. Not knowing where risks exist is not necessarily a major problem; it normally suffices that the investors know about the risks they are taking and can obtain the appropriate protection. Moreover, the dispersion of risk that is a natural feature of markets with numerous participants generally makes the financial system more robust. It has transpired, however, that banking risks have not been reduced as much as had been expected. As a result of guarantees and other commitments, in many cases the risks which banks tried to dispose of have bounced back into their balance sheets.<sup>107</sup> The uncertainty about the banks' actual exposures has contributed in turn to the loss of confidence in certain markets. The lack of transparency has therefore been a genuine problem in that both private and official interests have found it more difficult to assess liquidity risks and counterparty risks, for example. *A central issue is how bank transparency can be improved.*

- Some private sector initiatives have already been announced, for instance a project for producing new industry guidelines in response to events in the wake of the subprime crisis.<sup>108</sup>
- Even so, authorities may need to review regulations. One reason for the growing use of structured products for credit risk is that the long-standing international agreement on capital adequacy, Basel I, provided room for rule arbitrage. Banks have been able to dispense with some costly capital cover by securitising part of the credit risk.<sup>109</sup> This regime is being replaced by a new agreement from 2004, Basel II, but the new rules have not yet been adopted in every country. Basel II imposes a considerably finer mesh on, for example, securitisation arrangements, with much stricter requirements for banks to reduce the risk of unexpected legal claims in connection with

<sup>107</sup> See also the box on page 18 of Financial Stability Report 2007:2.

<sup>108</sup> See Callan et al. (2007).

<sup>109</sup> The agreement applies to the authorities in the G10 countries that participate in the Basel Committee for Bank Supervision. This Committee meets and has its secretariat in the Bank for International Settlements (BIS), which is located in Basel in Switzerland, hence the Committee's name.

securitisation. Moreover, a bank is required to hold full capital cover for the risks associated with each tranche in companies dedicated to securitisation that they support financially. Basel II also contains tighter standards for the transparency of banks' risk management and equity. To a large extent it was such information that was sought during this autumn's turbulence.

*While a broader implementation of Basel II can be expected to ameliorate problems of the kind that have arisen during 2007, it is possible that further adjustments to the capital adequacy rules will be needed. Another matter that should perhaps be considered is whether the requirements for stress tests and continuity plans in the context of liquidity crises need to be even more explicit. Neither can one rule out a need to supplement the international accountancy standards.*

- The lack of transparency is also a challenge for financial supervisors. The supervision of stability that financial supervisors have practiced is clearly incapable of penetrating the risks to which banking systems are exposed. Basel II tightens the requirements for information. At the same time, unduly far-reaching demands for reporting by investors such as insurance companies and hedge fund managers would entail using resources to collect and process vast amounts of data that would soon be obsolete. That would hardly be particularly useful for stability supervision.

*This suggests that in the first place stability supervision should rather focus on ensuring that companies have reliable risk management systems in place.*

#### CHALLENGE NO. 2: DEALING WITH THE INSTRUMENTS' COMPLEXITY

Another circumstance behind the problems during 2007 is that the instruments are so complex and disparate that those involved have not always known or been fully aware of the risks they have acquired or retained on the balance sheet. The monitoring of credit risks has normally been a matter for banks but in many cases this role has been abandoned. Instead, credit rating agencies have tended to become the providers of risk assessments for specific instruments. Their services have become valuable for investors, particularly when the development of internal methods for risk assessment is costly, as it is for many of the new, complex products. These agencies' credit ratings have served as a relatively simple indication of the level of risk investors were prepared to accept when they purchased the instrument.

At the same time, credit ratings are unidimensional; they measure the probability of default or expected loss but do not allow for covariations between risks or their distribution in other respects. Neither do they take liquidity risks into account. This means that their picture of risks is not complete. This can lead – particularly in the case of the new structured credit-risk products, which are bundled to represent different classes of risk (tranches) – to a considerable underestimation of the “unexpected loss”. A change in the default probability for one of the more risky tranches quite often leads to drastic changes in the credit ratings for the adjacent tranches. There are now many indications that investors have been unduly prone to disregard the limits to the usefulness of credit ratings.

*This suggests that credit rating institutions may need to consider a greater differentiation of credit ratings and that authorities and investors may need to review the use of credit ratings in regulations and investment rules.*

A greater degree of standardisation would also have helped to avoid many of the problems that have arisen during 2007. A clearer and more uniform structure and content of contracts would have made things easier. In certain cases, more standardised products would even be tradable on exchanges based on a clearing house.

A key aspect of most financial arrangements is an assurance that all parties will meet their commitments. On an organised exchange, the clearing organisation can provide such an assurance in a number of ways. By acting as the central counterparty, the clearing house reduces the contracting parties' counterparty risks. The clearing house in turn reduces its risks by requiring margins that mirror the day-to-day value of the contracts. At the same time, the collateral functions as a buffer against potential losses in much the same way as the capital requirements for banks. Exchange trading also presupposes standardised securities, which enhances transparency; buyers and sellers both know what they are trading. The monitoring function of banks and other intermediaries can then be replaced by the market.

Today, futures are often traded on an exchange, whereas interest-rate swaps, for example, are still traded over-the-counter in the interbank market, with bilateral settlement. As the markets for a particular instrument develop and turnover grows, both the instrument and trading in it tend to become more and more standardised. The instrument's technical, legal and administrative infrastructures also become more streamlined as industry standards are refined and entrepreneurs offer automated solutions. However, it should be possible to speed these processes up.<sup>110</sup>

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110 See e.g. Cechetti (2007).

Even so, there will always be instruments that are in a stage of development that makes them too advanced for exchange trading. The propensity to invent still more exotic and tailor-made solutions is underpinned not least by the large margins that investment banks can charge for such special solutions.

*Even if trading arrangements are not primarily a matter for the authorities to decide, they should be able to promote the tendencies towards increased standardisation. There are grounds for an international discussion about how this should actually be done.*

### CHALLENGE NO. 3: HANDLE BANKS' INCREASED DEPENDENCE ON MARKET LIQUIDITY

Prior to the financial market turbulence in 2007, banking systems had had hardly any sizeable problems with financial market liquidity. It was rather the case that banks had functioned as stabilisers by acting as a buffer to the liquidity shocks that occur in financial markets from time to time. Strong balance sheets enabled banks to attract surplus liquidity to their transaction accounts at the same time as they were able to lend liquid funds to those in need via agreed credit lines.<sup>111</sup> In this way they contributed to an orderly withdrawal from financial positions without unduly serious socioeconomic problems.<sup>112</sup>

Today, however, banks are, as mentioned, increasingly tending to sell a part of the risks in their loan stock, so that these risks are spread over risk-prone investors. Banks retain the remaining risks, which are often those that are most volatile and complicated to manage. In this way, banks have become increasingly dependent on liquid markets for funding and for managing the risks associated with many of the complex products they have created and the guarantees they have issued.

During 2007 it has been evident that banks are becoming increasingly vulnerable to liquidity shocks. Hardly ever before have market problems spread back to the banking system so markedly. As a result of uncertainty about the value and composition of the structured credit-risk products banks had issued, as well as about banks' actual risk exposures, liquidity dried up in secondary markets for certain securities and bank refunding in primary markets became more difficult and expensive. This was accompanied by heavy pressure to draw on banks' credit lines. The problem grew serious for a number of institutions that either were dependent on short-term funding in markets where liquidity problems were greatest or had large counterparty exposures to structured credit-risk products.

Swedish banks were fortunately not all that exposed to structured credit-risk products and their solvency was, and still is, sound. Still, they could not avoid being affected to some extent by

111 See e.g. Gatev & Strahan (2003) and Kashyap et al. (2002).

112 Rajan (2005).

the strained liquidity situation in segments of the fixed-interest market in the summer and autumn of 2007.

The question is whether the banks' generally greater market dependence would make their balance sheets seem less robust in a future crisis and thereby render the financial system less stable.

*Central banks around the world need to consider whether they possess the instruments that are needed to handle future liquidity crises. The issue of when and how emergency liquidity assistance can be provided and how such a decision is to be communicated may call for fresh ideas.*

#### CHALLENGE NO. 4: MANAGE CROSS-BORDER CRISES

The cross-border consolidation of banking operations leads to enhanced competition, whereby small companies and private customers benefit from lower financing costs and a larger supply of financial services. Such gains in efficiency should ultimately favour economic growth.

But there is also an increased risk of a bank crisis spreading over national borders, with potentially serious simultaneous consequences in more than one country. Managing such a crisis is more complicated than one which is solely national. The latter calls for the coordination of *one* country's authorities, which can be difficult enough if there are substantial differences in the authorities' goals, perspectives and working methods. In a cross-border crisis it is also necessary to coordinate the supervisors, central banks and finance ministries of all the countries concerned. Besides involving more authorities, such a crisis introduces a number of legal and practical complications. This can be a severe test of the ability to coordinate the exchange of information and decision-making.

Certain arrangements are in place to mitigate these problems. At EU level there is a Memorandum of Understanding (MoU), a general agreement on crisis management that includes central banks, supervisory authorities and finance ministries in every member state. There are also a number of regional and bilateral agreements between authorities in different countries. Agreements of this kind are valuable because they provide orderly forms for cooperation, established networks and, not least, a shared terminology that can be most important in the management of a crisis. But they also have shortcomings; they tend to be loosely worded and normally are not legally binding.

The most serious shortcoming, however, is that they do not take account of the conflicts between national interests that can occur in a crisis. Such conflicts of interest can be particularly obvious if the economic costs of a crisis in a transnational institution are spread unevenly between the countries in question. In certain situations this can affect the will to contribute to a constructive solution and there is a clear risk that a resolution of the crisis will be jeopardised by political bargaining games. It is therefore highly uncertain to what extent

the current MoUs would suffice to ensure that crisis management is efficient.<sup>113</sup>

A valuable instrument for testing the capacity to manage crises is exercises with financial crisis scenarios. A number of these exercises have been arranged in recent years, at EU as well as national and regional levels. A Nordic-Baltic crisis exercise was carried out in the autumn of 2007, with participants from the central banks, supervisory authorities and finance ministries in all five Nordic countries and from the central banks in the Baltic States. Lessons can be drawn from such exercises about how cooperation can be further developed to ensure that it functions properly in a tight situation.

*Developing structures for the management of cross-border crises is thus one of the most important challenges authorities face. This is not just a matter of solving the practical and legal problems. There is also a need to reduce the risk that the management of a crisis is complicated and delayed by conflicting national interests. To provide a better setting, mechanisms need to be developed for sharing the socioeconomic burdens of a crisis. This may ultimately call for institutional solutions at a supra-national level.*

## The Riksbank's stability work – the way ahead

The new financial landscape accordingly presents authorities around the world with tough challenges and complex issues. For the Riksbank, too, the changes mean that stability work needs to be adapted by degrees to meet the challenges.

### GROWING COMPLEXITY REQUIRES A BROAD ANALYSIS

- Sweden's financial stability is affected by the growing complexity and the proliferation of channels whereby problems can spread to banks and the payments system. This means that the Riksbank needs a successively broader analysis and more in-depth knowledge of various fields. The latter applies, for instance, to greater familiarity with banks' risk-management strategies and the development of their involvement in structured products, etcetera. As banks' off-balance-sheet commitments become more significant, it becomes increasingly important to grasp how they are developing.
- It will also be of growing importance to keep an even closer eye on and analyse developments in certain financial markets, not least the international credit market, which is playing an increasingly prominent role in bank funding and risk management.
- Banks still have a central function in the payments system and are therefore the focus for stability work. But their greater market dependence makes it increasingly important to monitor their counterparties in these markets as well.

113 See e.g. Sveriges Riksbank (2005c).

- Today, the four largest Swedish banks have over half of their combined assets abroad. The share of their combined operating profit that is generated abroad is almost as large. That makes it increasingly important to follow developments in the countries where Swedish banks have large commitments, such as the other Nordic countries and the Baltic States.

#### NEW APPROACHES AND DEVELOPED CHANNELS FOR INFORMATION

The need for a broader analysis and extended knowledge calls for new approaches and more developed channels for information.

- The Riksbank has had Finansinspektionen as a natural partner for a dialogue for a long time. The exchange of information with Finansinspektionen becomes increasingly important as financial institutions and their operations grow more complex and difficult to penetrate. The cooperation with Finansinspektionen should therefore be further deepened.
- It will also be more important to develop networks and the exchange of information with other countries where Swedish banks have a presence.
- Market information will need to be fed into the stability analysis more systematically. The forms for gathering information from market participants may also need developing.
- The Riksbank has been to the fore in the development of practical stress tests and scenario analyses. These analytical methods need further development so that they also catch indirect effects of changes in the circumstances under which financial institutions operate. This is important for developing the capacity to analyse risks of contagion.

#### HIGH STANDARDS FOR FINANCIAL INFRASTRUCTURE

It is perhaps market participants that have the most important role when it comes to constructing systems for trading, clearing and settlement. Rapidly expanding markets accentuate the demands on them. The Riksbank and other authorities can contribute by monitoring and encouraging the financial sector's development of the financial infrastructure. Authorities can act as a catalyst for change by drawing attention to deficiencies and driving the development of industry standards. When major systems are consolidated and cross-border flows grow, there is of course an increased need for cross-border cooperation between authorities. The role of catalyst must accordingly be played together with authorities in many other countries.

## IMPORTANCE OF INFLUENCING REGULATIONS

An appropriate regulation of the financial sector is a prerequisite for financial stability. Sound regulations favour efficiency and counter undue risk-taking, for example. An important starting point is that rules and regulations should promote a balance between the financial system's stability and its efficiency.<sup>114</sup>

The Riksbank has pointed, for example, to defects in the Swedish rules for the management and closure of distressed institutions. These defects were highlighted by the course of events connected with the failure of Custodia, a credit market company.<sup>115</sup> The ongoing intensive work in the Government Offices will hopefully emanate in a bill with new legislation for the public administration of banks in distress. An enquiry is also in progress on how the deposit guarantee system could be made more efficient.

Today, a growing proportion of the legislation and other regulations that affect Swedish financial institutions is initiated at the EU level. Moreover, many rule changes stem from new standards and recommendations that come from other international contexts, for example the G10 cooperation. The growing internationalisation of Swedish banks makes it increasingly important for the Riksbank to assist in strengthening Sweden's input to the joint work on EU legislation and other international fora for financial standards.

## CRISIS READINESS REQUIRES INCREASED COOPERATION

Readiness for dealing with crises in the financial system has been reinforced since the bank crisis in the early 1990s. The Riksbank's crisis organisation and the forms for crisis cooperation with other authorities have been developed. For some years now, for example, there has been an agreement between the Riksbank, Finansinspektionen and the Finance Ministry on cooperation and the exchange of information in the event of a financial crisis. Moreover, the scale of Swedish banks' operations abroad has prompted the Riksbank to conclude agreements with the central banks in the other Nordic countries and the Baltic States. Today, there is also, as mentioned, an overriding agreement at EU level.

In a crisis it is vital that the authorities in different countries understand each other's assessments and preferably reach a consensus. The efficient coordination of any liquidity assistance and disbursements of deposit guarantee funds must also be feasible, as must a reasonable allocation of the socioeconomic costs in the wake of a transnational crisis. This calls for a further development of cooperation. It is therefore important for the Riksbank to continue to promote this work internationally.

114 For an account of the Riksbank's view of the economic reasons for regulating the financial sector, see Sveriges Riksbank (2005a).

115 The background to the failure and the legislative shortcomings it highlighted are considered in Sveriges Riksbank (2006c).

## Conclusions

The bank crisis in the early 1990s was an alarm signal that alerted the Riksbank and other authorities to the serious consequences that a lack of financial system stability could have for society. The lessons from the crisis led the Riksbank to develop a capacity for financial stability analysis. The first issue of what has become the regular *Financial Stability Report* was published by the Riksbank ten years ago. It openly discussed vulnerabilities and risks in the financial system. The Riksbank's energetic advocacy of this open approach has probably contributed to a development whereby the practice of publishing stability reports has spread to many other central banks around the world.

The stability report is, however, only one item in the Riksbank's stability work. The insights from the bank crisis have also led to a reinforcement of the crisis organisation, as well as to the development of forms for cooperation between authorities involved in financial crisis management. The Riksbank has also worked actively in the European and international arenas to improve rules and the joint arrangements for strengthening crisis readiness, besides acting as a driving force to set up transnational MoUs and crisis exercises. So in many respects the Riksbank and other authorities are probably better equipped to counter and handle a financial crisis than they were a decade ago.

Meanwhile, however, the financial landscape's topography has continued to change. Financial flows have grown very much larger and the system has become increasingly complex and difficult to assess. Internationalisation has continued. Financial markets have become more and more important and increasingly interdependent. This means that crises are liable to involve a larger number of economies much more quickly and harshly than they could a decade ago. The proper functioning of financial markets and the stability of systems and institutions are therefore still more important. This means that financial stability work is of greater importance but also more difficult. A number of major challenges for authorities are evident not least from the unrest that many financial markets have displayed during 2007. They are challenges that will have to be tackled jointly at the international level.

The changes also entail a need for the Riksbank to develop its stability work in several respects. For example, the analysis needs to be broadened in certain directions and new approaches and information channels will have to be developed in order to cope with the greater complexity. It will be increasingly important to monitor developments in the financial infrastructure, influence the construction of financial rules and participate actively in the international cooperation on crisis management.

The chief means of achieving success in these respects is to contribute well-founded analyses and sound arguments.

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Sveriges Riksbank (2006c). Can Swedish authorities handle distressed institutions?, *Financial Stability Report*, 2.

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## ■ Articles in previous stability reports

### ■ 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.*

### ■ 2006:2

#### **Can Swedish authorities handle distressed institutions?**

*Swedish authorities do not have sufficient possibilities of handling distressed institutions. The complications connected with the credit institution Custodia were a clear reminder of this. The problems are by no means confined to the small savers whose assets were locked up for a remarkably long time. By far the most serious aspect is that the current rules and regulations hamper the handling of acute problems, such as a future bank crisis, that threaten the financial system. The Riksbank considers there is a great need of new legislation.*

#### **Trading activity in credit derivatives and implications for financial stability**

*The tremendous increase in credit derivatives trading in recent years has given rise to an intensive debate about possible risks for the financial system. The Riksbank considers that at present the combined risks in this trading are limited. There is, however, some cause for concern about the lack of transparency in the market and the possibility of risks being concentrated. The article presents reasons for the Riksbank's assessment.*

### ■ 2006:1

#### **Using external information to measure credit risk**

*A model for measuring and assessing the banking system's resilience has been developed by the Riksbank, using a readily-available portfolio model and information from banks' annual reports. The article presents this model, which can be used for stress testing and analysis of various scenarios.*

#### **Hedge funds and the financial system**

*The rapid growth of hedge funds in recent years has led to an international debate on potential threats to the financial system and a possible need of regulation. The article describes the development of hedge funds, in Sweden as well as internationally, and their possible consequences for the financial system.*

