



Financial Stability Report 2003:2

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■ Foreword

One of the Riksbank's two primary functions is the promotion of safe and efficient payments. The Riksbank's analysis of financial stability comprises financial companies as well as the financial infrastructure in the sense of the systems that are required for making payments and for trading and delivering financial products. The analysis of financial companies concentrates on developments for the four major Swedish banking groups because they are of crucial importance for the payment system's stability. These banking groups are referred to as the banks.

The assessment begins with the external factors – developments in the real economy as well as events in financial markets – that can affect the risks in the financial system. The first chapter of this report therefore discusses how the environment for bank operations has developed since the publication of the Riksbank's previous Financial Stability Report.

Chapter two presents a survey of how the banks' borrowers have been affected and whether they may act in such a way that the banks become more vulnerable.

The banks' own actions can also affect payment system stability and the third chapter therefore analyses developments in the four banks more closely. Profitability trends can indicate the extent to which banks are exposed to strategic risks. The quality of bank assets is assessed as an indicator of how credit risks might develop, while the banks' funding capacity provides a picture of the liquidity risks that could arise. If problems in one bank were to spread to other market participants via inter-bank exposures, the payment system could be affected immediately. The third chapter therefore concludes with an assessment of the banks' counterparty and settlement exposures.

The functions of the financial infrastructure are analysed in the fourth chapter.

Two articles conclude the report. The role of the Riksbank as lender of last resort is analysed in the first, while the second discusses financial integration and the responsibility for financial stability in the European Community.

The Executive Board of the Riksbank discussed this report at its meetings on 22 October and 20 November 2003.

Stockholm, November 2003

Lars Heikensten
GOVERNOR OF SVERIGES RIKSBANK

■ Summary and conclusions

Bank profitability is increasing again after a period of stagnant results. This makes the banks more capable of coping with unexpected losses. Given the economic recovery that the Riksbank foresees, there are no indications that exposures to borrowers will exert substantial future strains on the banks. The household consumption propensity has recently been an important growth factor and is also one of the prerequisites for a future increase in corporate investment and profits. If further signs of an imminent recovery fail to materialise, so that households become less optimistic, there would be a risk of borrowers becoming less able to pay, so that the banks' loan losses become substantial.

The Riksbank's assessment of stability

THE BANKS

After a period when global economic growth prospects have been revised downwards repeatedly, there are now increasing indications that economic activity has strengthened in Sweden as well as elsewhere, though to some extent the picture varies. The uncertainty that coloured financial markets at the time of the previous Financial Stability Report has therefore decreased. In the October Inflation Report, the Riksbank assumes a relatively moderate economic recovery both in Sweden and in the rest of the world.

Total borrowing by *non-financial companies*, the largest category of borrowers from the Swedish banks, is no longer falling as it has been in the past year. A marginal increase in corporate borrowing from banks is accompanied by little change in borrowing from other sources. However, companies seem to be borrowing mainly for short-term financing, not for investment. The signs of a tentative increase in bank lending to the corporate sector imply some enlargement of the banks' credit exposures at a time when the financial position of companies is still relatively weak.

There are no strong signs that the ability of companies to pay has become better. The increase in the number of defaults has tended to slacken and listed companies' profits have improved, but their level remains low. However, leading indicators derived from expectations do suggest that the ability to pay will improve. Equity prices are rising and the risk of default in the coming year has decreased for the corporate sector as a whole. For construction and services companies, however, the risk of default is still rising and it remains high for IT and telecom companies.

The picture of price and rent trends in the *commercial property sector* is still about as varied as it was six months ago. Prices for office and industrial properties are still falling, due to low demand, accompanied by rising prices for shop premises and apartment blocks.

The downward trend for office prices and rents is now showing up in the profitability of property companies, with some reduction of the operating surplus for the largest companies here. But corporate debt is moderate and earnings continue to be well above interest expenditure,

so there is no reason to suppose that property companies as a group will have any serious decline in debt servicing capacity.

Households in Sweden are increasing their borrowing at an undiminished rate. A favourable development of income, low interest rates and high turnover in the housing market are inducing households to borrow more. This implies a further increase in households' debt ratio; but as the ratio of interest expenditure to income is still relatively low, households will be able to carry the debt. A rapid increase in interest rates without an accompanying growth of income could lead to payment difficulties for households. These problems would hardly threaten the financial system's stability and do not seem to be particularly likely.

Loans to borrowers abroad, mainly in the other Nordic countries and Germany, add up to half of the four major Swedish banks' total lending to the general public. The situation in these countries is broadly the same as in Sweden: household borrowing is rising rapidly, while the growth of lending to the corporate sector is considerably more moderate. The ability to pay seems to have deteriorated among companies in Norway and Germany. In Estonia, Latvia and Lithuania, the picture differs somewhat from that in the Nordic area and Germany. Companies as well as households are borrowing at a high rate in the former countries. This development seems to be sustainable at present but the rapid growth of credit could entail a build-up of risks that might lead to loan losses for the banks in a future economic slowdown.

Thus, the indebtedness of borrowers from the Swedish banks is rising without any unequivocal indication of an improvement in their ability to service debt. The survey of borrower categories shows that households and market players have become more optimistic about the future. Given the cautious economic recovery the Riksbank foresees, there are no indications that exposures to borrowers will exert substantial future strains on the banks. The household consumption propensity has recently been an important growth factor and is also one of the prerequisites for a future increase in corporate investment and profits. A risk scenario for stability would be a lack of further signs that a recovery is on the way, so that households become less optimistic. If the slowdown were then to be prolonged, there would be a risk of borrowers being less able to pay, so that the banks' loan losses become substantial.

The performance of the *four major Swedish banks* shows that, notwithstanding the weak economic activity, their loan losses are still low. The level of loan losses in September this year is only marginally higher than in September last year.

The banks' ability to absorb loan losses seems to have improved in the past six months. Bank profitability is now rising for the first time since 1999. This is partly due to a continued increase in interest income from lending but the main explanation is that earlier economies by the banks are now beginning to lower costs.

The banks' growing dependence on interest income in recent years is to some extent a natural consequence of market developments and does not necessarily imply an increased strategic risk. There are several

indications that bank income is nevertheless more diversified now than in the mid 1990s. In periods with a declining stock market the banks have generated net interest income from lending operations, while net commission income has contributed to total earnings in periods when the stock market has been strong and lending has been rising less rapidly.

The Tier 1 capital of the four major banks has risen gradually in the past two years and the level in September this year was just over 7 per cent. Considering the economic situation and how earnings and loan losses have developed, this level seems to be satisfactory.

As the Riksbank noted in the previous Report, the banks have managed to cope with the protracted economic slowdown. In relation to the economic situation, loan losses have been moderate. The gradual erosion of resilience earlier has now turned into an improvement in that bank profitability is rising. This means that the banks have strengthened their ability to absorb unexpected losses.

THE FINANCIAL INFRASTRUCTURE

In the previous Financial Stability Report, the Riksbank concluded that the RIX system for settlement of large-value payments is used in such a way that the system in some aspects is not sufficiently efficient. Liquidity utilisation is high and at times the demands on the system are heavy. In this Report the Riksbank simulates a number of possible changes to the RIX system against the background of these efficiency problems. These simulations show that liquidity requirements could be reduced markedly if the system were to be designed differently. A change in the payment behaviour of participants that spreads the load more evenly would also enhance efficiency.

During 2003 the Riksbank has assessed the Swedish system for securities settlement in accordance with international principles for efficiency and safety. The Riksbank judges that with the new settlement routines that were introduced on 17 November, VPC meets the requirements for securities settlement.

Articles

In this Financial Stability Report the Riksbank continues its discussion of crisis management that was initiated in the articles in the spring Report. Experiences from the Swedish banking crisis show that it is important to lay down clear rules for how to manage a potential crisis. The first article – *The Riksbank's role as lender of last resort* – discusses principles for the circumstances and conditions under which the Riksbank could provide emergency liquidity assistance (ELA).

The Riksbank should be able to provide ELA to individual institutions if the failure of one of them risks threatening stability in the financial system. ELA should only be given to solvent banks, however, in other words to banks that are capable of surviving in the long run and that require liquidity to come through a crisis that has been caused, for exam-

ple, by information-related or technical problems. Unprofitable banks should be reconstructed or wound up, preferably without government intervention.

The Riksbank will also assess the systemic risks. If a default by an insolvent institution is judged to threaten system stability, the Riksbank will leave it to the government to decide on financial support, in accordance with the current delineation of responsibilities. The government should therefore only intervene when an insolvent institution threatens to seriously damage the functioning of the financial system.

In order to avoid a situation where a problem institution takes advantage of its systemic importance to force the Riksbank or other public authorities to provide ELA, it is important that the responsibilities are clearly delineated between the relevant authorities and that there are regulations for crisis management. Such legislation is currently being prepared by the Ministry of Finance.

The second article – *Financial integration and responsibility for financial system stability in the EU* – discusses the challenges facing regulation, prudential supervision, oversight and crisis management in view of the integration of banking systems and given that this integration has implications for system stability.

The current structure for prudential supervision and system oversight is showing some signs of weakness as regards managing a more integrated banking system. The principle applied at present is that of home country supervision, which means that the country in which a bank is legally domiciled is responsible for prudential supervision. However, this could prove to be insufficient in the event of deeper integration, and home countries may find it difficult to take stock of potential stability problems in other countries where the bank operates; they may also show less interest in doing so.

Crisis management is more difficult to formalise than the other aspects of stability work. The need to manage crises seldom arises. As crises often differ from one another in many ways, there is no particular model that can be developed in advance to manage them. Thus, coordination problems may ensue. This means that crisis management will be particularly difficult in the case of cross-border banks. With the growing integration of financial sectors, European cooperation needs to focus on these problems. The Riksbank intends actively to promote such a focus.

Two possible courses of action are presented in the article. The first is to continue to cooperate on the basis of agreements, common principles and framework regulations. The second is to move towards a more supranational form of crisis management. It is hard to say which of these is preferable. Most likely, a combination of greater cooperation and increased supranationalism will be required.

The Riksbank's view of financial stability

THE FINANCIAL SYSTEM performs important tasks that are vital for the overall functioning of the economy. These tasks are to convert savings to financing, to contribute services for risk management and to supply efficient instruments of payment. The financial system's importance to the economy means that the government has a particular interest in overseeing the functioning of the system.

The most important objective of the government's oversight of the financial system is to achieve *system stability* and prevent systemic crises, in other words to ensure that the financial system is not hit by such serious disturbances that it is unable to continue its functions. Risks of a systemic crisis occurring exist primarily in the payment system. The breakdown of a vital function in the payment system could entail large efficiency losses in the economy, with potential long-term damage in the form of poorer growth and lower employment. The main participants in the payment system are the banks, as payments in a modern economy are essentially made in the form of transfers between bank accounts. Thus, a crisis in the banking system could seriously impair the functioning of the payment system.

System stability came under serious threat during the banking crisis at the beginning of the 1990s. The government was then forced to intervene, partly by giving a general guarantee for the banks' liabilities and by establishing a special committee for dealing with problem banks – *Bankstödsnämnden*. The banking crisis has radically influenced the Swedish authorities' view of the financial sector. For the Riksbank, the experiences from the crisis have been important because they brought greater focus onto financial stability, not least through the regular publication of a financial stability report.

Financial system oversight is essentially carried out in three ways. The first is a *regulatory framework*, consisting of laws and regulations, which establishes the bounds within which financial companies must operate. The second is the *day-to-day oversight*, which comprises supervisory authorities' supervision of both risks and regulatory compliance in individual companies, and central banks oversight of the risks in the financial system as a whole. The third component is *crisis management*, which concerns government measures designed to deal with crises in the financial system.

With regard to the regulations in this field, the Riksdag is responsible for legislation on financial

operations, while Finansinspektionen (the Swedish Financial Supervisory Authority) issues more detailed instructions and ensures compliance with these through its supervisory activities. The Riksbank's main work here involves responding to matters submitted to it for comment. However, regulations are developed internationally to a great extent within the Basel Committee and the EU. The Riksbank often participates directly in this work. In Sweden, the experiences of the banking crisis have resulted in government bills on new banking legislation and special banking crisis regulations that have come into force in recent years, as well as the recent review of Finansinspektionen's work.

In the Riksbank's view, the regular oversight of system stability rests on three pillars:

- The first pillar is the supervision of *individual banks*. The reason for supervising individual banks is that they risk becoming unstable due to the fact that their funding is usually short term in nature and can be rapidly withdrawn, while their assets have long maturities and cannot be realised as quickly. Finansinspektionen is responsible for banking supervision in Sweden.

- The second pillar is the oversight of *system stability*. When one institution encounters problems, there is a greater risk that other institutions also have, or will develop, problems. This systemic risk is the main cause of financial system instability and is the principal reason for system supervision. There are several reasons why systemic risk arises. One is that the institutions have credit exposures to one another through, for instance, loans or securities trading. Another is that the institutions participate in the payment system and thus have liquidity exposures to one another. Finally, financial institutions (the banks) have similar exposures and operations and thus risk being affected by the same problems at the same time if these stem from macroeconomic developments or other external factors. A further explanation for systemic risk is that economic agents are aware of its existence and thus tend to behave as though other institutions were also affected when problems arise in one institution, whether or not this is the case. This behaviour reinforces systemic risk and can prove self-fulfilling. The Riksbank's analysis of the stability of the banking system focuses on systemic risk. Finansinspektionen also has the task of safeguarding system stability.

■ The third pillar comprises oversight of the *financial infrastructure*. The infrastructure consists of the systems for trading, clearing and settlement of payments and securities trading. Well-designed systems reduce the risk of problems spreading from the financial markets or between institutions, or of the infrastructure itself causing problems through, for instance, operational disturbances. The Riksbank's responsibility for the oversight of the financial infrastructure is based on the fact that the Riksbank, as Sweden's central bank, is the lender of last resort in Swedish kronor. When the banks make payments to one another they use the central RIX payment system and their accounts with the Riksbank, which means that the Riksbank acts as bank to the banks. Through the design of the RIX system and by making demands on the important adjoining parts of the financial infrastructure, the Riksbank can work to ensure that the infrastructure becomes resistant to various types of disruption, the most important of which would be a default by a central infrastructure figure. Finansinspektionen also plays a role here by supervising the institutions that comprise the financial infrastructure.

The need for the third part of government supervision, crisis management, arises because the government may need to act to prevent a crisis that threatens system stability. The primary threat is of one or more institutions that are central to the payment system encountering financial difficulties. Crisis management therefore involves assessing the consequences of a problem company going bankrupt and possibly taking measures to mitigate these consequences. In some cases these measures may consist of contributing to an orderly liquidation of the company; in other cases the government may need to provide financial support, as was done during the banking crisis through the

issuance of the general bank guarantee. The Riksbank's task with regard to crisis management is to provide emergency liquidity assistance to financial companies with liquidity problems. However, this should primarily be provided if the stability of the financial system is under threat. In addition, it should only be given if the company is solvent. If the company is insolvent, the Riksdag must decide on possible financial support, as this risks giving rise to costs for taxpayers. In addition to the task of providing emergency liquidity assistance, the Riksbank has the task of providing information in a financial crisis situation; informing the markets about whether or not a particular disturbance constitutes a threat to the stability of the financial system.

Day-to-day oversight and crisis management are closely interlinked. Oversight of system stability is a precondition for being able to assess whether stability is threatened in the event of a financial crisis. The analysis of the banks provides a foundation for making assessments of solvency and liquidity problems in a crisis situation. In addition, any crises would be identified principally in the payment system, which means that the Riksbank's proximity to the payment system through RIX would be central in crisis management.

The Riksbank's tasks with regard to financial stability are thus concentrated on system stability, partly through regular oversight of the banking system and the financial infrastructure and partly through a preparedness to act in the event of a financial crisis. In its analysis of the banks the Riksbank focuses on the four major banks, partly because these make up a significant part of the banking system and partly because a default by one of them is the primary threat to system stability.

■ Macroeconomic developments

After a period when global economic growth has been revised downwards repeatedly, there are now increasing indications that a recovery has begun, though the situation is not clear-cut. The uncertainty that coloured financial markets last spring has decreased. Pending an upturn in investment, a recovery in Sweden presupposes a sustained increase in private consumption. If households become less optimistic and save more, the recovery may be delayed, with a risk that the banks become less resistant and that loan losses rise.

The basis for the Riksbank's assessment of financial stability consists of the macroeconomic factors – tendencies in the real economy as well as in the financial markets – that can affect the risks faced by the Swedish banks and their borrowers. The assessment starts from the economic appraisal in the Riksbank's Inflation Report in October. Some topical factors of relevance for developments in the bank sector are also discussed.

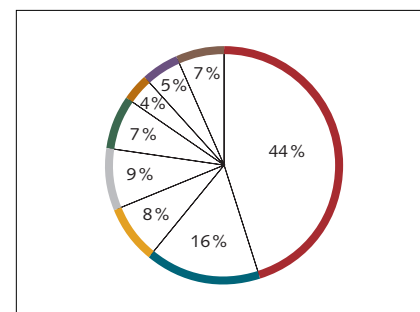
More than half of the banks' assets are located outside Sweden (see Figure 1:1) and a large proportion of their funding is arranged abroad. In that they are based abroad or have customers or suppliers there, the banks' borrowers are likewise dependent on developments in the rest of the world.

Economic growth in Sweden, Europe and the USA has been weak for a number of years but since the time of the previous Financial Stability Report there have been more and more signs that economic activity is becoming stronger, particularly in the USA.

All in all, growth in Sweden as well as elsewhere has been in line with what was foreseen in the previous Report. The assessments at that time contained a high degree of uncertainty but conditions now look more stable. The growth forecasts have been revised slightly upwards. The Riksbank considers that there are favourable prospects of a continued acceleration of growth in the USA and a number of important emerging markets in, for example, Asia, Latin America and Eastern and Central Europe, while in Western Europe, not least in Germany and France, the picture continues to be more uncertain. Sweden and the other Nordic countries, as well as the Baltic states, have stood up comparatively well to the consequences of the international slowdown. The Riksbank judges that conditions for higher growth are favourable in all the Nordic countries. In Norway, however, growth has been weak since the end of last year; oil-related industries are doing well in general but many other industries have problems. It is domestic consumption that has helped to maintain growth in Sweden as well as in the USA. Consumption is assumed to go on contributing to a positive trend in the near future. A recovery in investment is expected to contribute to growth in 2004 and 2005 in Sweden. This has already happened in the USA.

The US dollar has gradually weakened in recent years. A weaker exchange rate does provide an impetus to the US economy but it also impairs the competitiveness of Swedish and European exports which may delay an economic recovery there. This effect is not yet dramatic but a

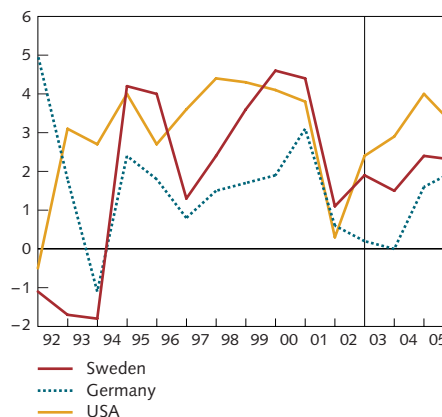
Figure 1:1. Assets in the major banks, geographical breakdown, December 2002.
Per cent



■ Sweden
■ Denmark
■ Germany
■ Finland
■ Norway
■ UK
■ USA
■ Other countries

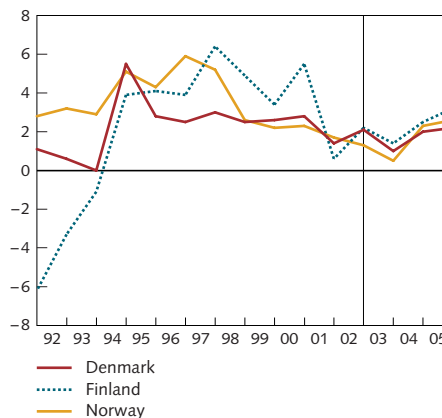
Source: The Riksbank.

Figure 1:2. GDP growth and forecast.
Per cent



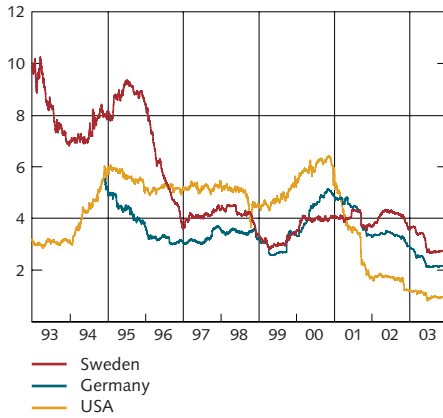
Source: The Riksbank.

Figure 1:3. GDP growth and forecast.
Per cent



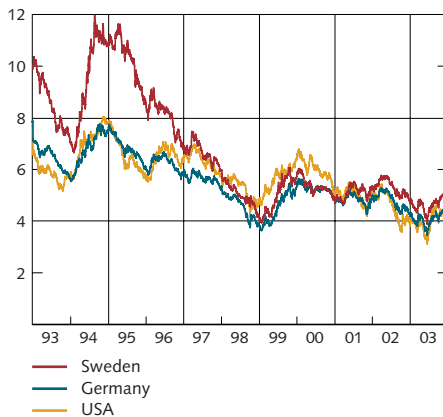
Source: The Riksbank.

Figure 1:4. Three-month treasury bill rates in Sweden, Germany and the United States.
Per cent



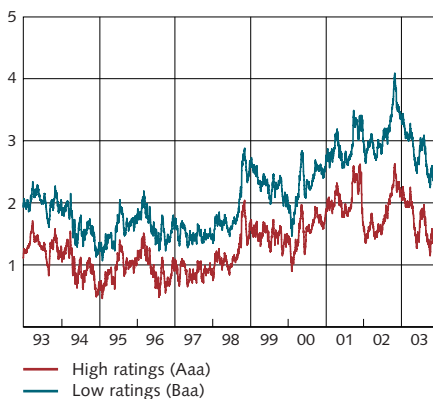
Source: EcoWin.

Figure 1:5. Ten-year reference interest rates in Sweden, Germany and the United States.
Per cent



Source: EcoWin.

Figure 1:6. Credit spreads for US companies with high and low ratings.
Percentage points



Source: EcoWin.

sharper depreciation of the dollar could have a considerably greater negative impact on the recovery. For Swedish banks, the consequences of the dollar's exchange rate come indirectly via any general economic repercussion. The direct effect is limited in that the banks aim to minimise exposure to exchange risks.

Long-term interest rates have risen since the time of the previous Report, though their level in a historical perspective is still low; the short-term rates have remained very low (see Figures 1:4 and 1:5). While an increased borrowing requirement in connection with larger public budget deficits in many countries has contributed to the higher long-term rates, the main factor is probably the hope that growth will now pick up. To some extent, the upward tendency in US long-term interest rates also represents a readjustment from the extremely low levels to which these rates had dropped in the first half of this year. One explanation for that was investor concern about deflation. Another was that the semi-public mortgage institutions¹ had previously re-weighted their asset portfolios to neutralise the interest-rate risks from the low short-term rates. These adjustments had pushed the long-term interest rates down. When interest rates began to rise and the mortgage institutions adapted to this, the upward tendency was accentuated. The actions of the house mortgage institutions have recently had a growing impact on interest rate formation in the US market and probably contributed to the increased volatility.

The perceived risk on corporate loans, measured as the spread between government and corporate bond rates, has gone on falling since the high at the end of 2002 and is now comparatively low (see Figure 1:6). One likely explanation is stronger expectations that a global economic recovery is underway. Moreover, an expected economic upturn probably makes creditors more prepared to carry credit risks. The interest rate spread between countries with high and low ratings has also narrowed.

Equity prices in the USA, Europe and Sweden have risen substantially since the time of the previous Report. Increased earnings in the first half of 2003 compared with the corresponding period a year earlier are reported by American as well as Swedish companies, though the latter's improvement is marginal. In Q3 there has been a further increase in profits. The reported improvements seem to have come mainly from rationalising costs and to only a lesser extent from increased sales. This has been accompanied by some strengthening of corporate solvency in the USA as well as in Sweden. A consolidation of corporate balance sheets is in itself positive for the corporate sector.

One explanation for the worldwide increase in equity prices is that stock markets count on increased corporate profits. Moreover, stock market uncertainty has decreased considerably since the beginning of this year (see Figure 1:8). Today the implicit volatility in both the USA and Sweden has fallen to much the same level as before the economic slowdown; in Germany, on the other hand, implicit volatility remains high, reflecting market uncertainty about the German economy's recovery and its fundamental strength.

¹ The Federal Home Loan Mortgage Corporation (Freddie Mac) and the Federal National Mortgage Corporation (Fannie Mae), which undertake a large share of housing finance in the USA.

During the autumn there has been an increasingly lively debate about the problems of Swedish life insurance companies. In earlier Reports the Riksbank has noted that while these problems are serious because they affect policy holders, they do not constitute a threat to the stability of the banking system.² This assessment has not changed.

Low-inflation economy significant for debt ratios

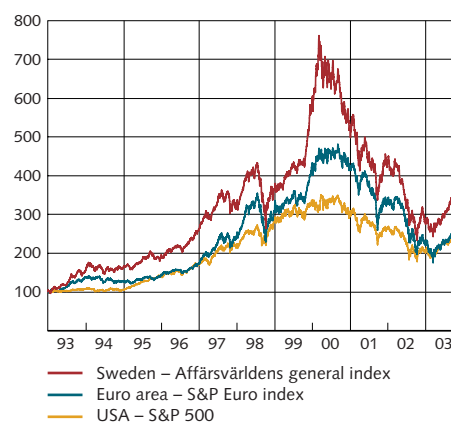
The inflation target's credibility has been established by degrees since Sweden relinquished the fixed exchange rate and the Riksbank adopted an inflation target for monetary policy. In an environment where inflation is expected to be lower, future inflation and thereby interest rates are generally perceived as more stable and predictable. Greater uncertainty about future inflation and higher inflation expectations normally cause creditors to require compensation in the form of a higher interest rate. Low and more stable inflation and interest rates also imply more stable financial predictions, making it easier for creditors to judge the ability of borrowers to service their debts. Less uncertainty accordingly makes creditors more willing to provide loans and to charge smaller risk premiums. Borrowers in turn will be more prepared to obtain new loans with a longer duration since the future costs for this are less uncertain. Borrowers will then be capable of carrying more debt. Moreover, the low nominal interest rates associated with low inflation expectations affect real estate prices in that a low interest rate implies lower financing costs; this paves the way for higher prices and thereby a larger financing requirement, particularly for households, and this has also contributed to increased debt.

Against this background, the increased debt in Sweden as well as in other industrialised countries, particularly in the household sector, could be seen as a natural adjustment to new, more stable economic conditions. But higher debt does entail greater vulnerability. A shift in inflation expectations and higher interest rates could have a major impact on the household sector's ability to service and repay debt.

The recovery presupposes strong private consumption

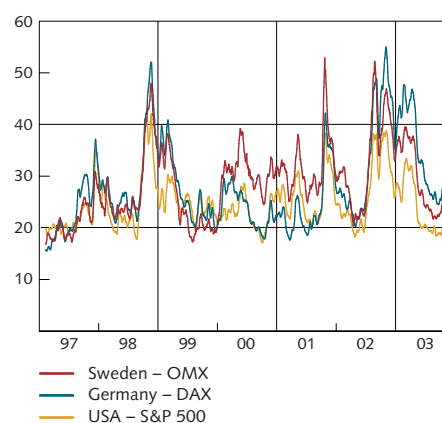
The growth of household debt has been one of the factors behind private consumption's steady increase in recent years. The household consumption propensity has been a major driving force behind economic growth in Sweden in recent years and the Riksbank's main scenario envisages a continuation of this in the current year. The scenario does not count on corporate investment contributing to growth until next year. To some extent, it is rising house prices that have enabled households to increase their debt. If house prices were to fall, thereby limiting the borrowing capacity of households, or if consumers' expectations of future income were to falter, household consumption might not rise at

Figure 1:7. Equity prices.
Index: 1993 = 100



Source: EcoWin.

Figure 1:8. Implied volatility based on OMX, DAX, and S&P 500.
Index



Sources: Datastream, Bloomberg, and the Riksbank.

² Financial Stability Report 2002:2 and 2003:1.

the same rate or could even fall. If firms sense that households' consumption propensity is weakening, the investments that are assumed to contribute to growth in the coming two years might be postponed even further.

Although there is uncertainty about how household consumption and corporate investment will develop, all the leading indicators point to an acceleration of growth. Equity prices and long-term interest rates have risen and the spread between government and corporate bond rates has narrowed. Moreover, the uncertainty is much less pronounced than a year ago, which strengthens this impression. But as yet there are no unequivocal signals of a robust economic recovery. If developments deviate from expectations, market assessments will naturally be revised. A prolonged slowdown would affect the banks in several ways. Demand for bank loans would slacken if firms refrain from investment and households become more cautious. Decreased lending would hit net interest income and might force the banks to lower their margins in order to maintain market shares. Revised market expectations would no doubt also lead to falling equity prices, which would hit the banks' commission income. Another conceivable consequence of a delayed recovery is increased bankruptcies, with a risk of larger loan losses for the banks.

The management of Resona's failure

The fifth largest Japanese bank, Resona, announced on 17 May this year that it did not comply with the statutory capital adequacy ratio and accordingly failed to meet the requirements for conducting banking operations.

Although Resona is of no consequence for the Swedish bank sector or the Swedish economy, the management of the bank's problems is relevant because it illustrates how a crisis in a major bank can be handled.

In order to limit the effects of problems in individual banks, since 1997 Japan has successively introduced a specific set of rules for the management of banks with problems. The rules – designed to both enable and force the authorities to act when a bank shows signs of financial difficulties – specify certain measures the authorities are to take when a bank's capital cover falls below certain levels. These measures include requiring the bank to produce a plan of action and a moratorium on share dividends and new branch offices. The authorities have also been given certain powers for managing banks in a crisis, among them the options of nationalisation and dismissing a bank's management. Moreover, a state institution for the purchase of non-performing loans has been created so that bank balance sheets can be consolidated. Another measure closely connected with the new rules is the funds the government has earmarked for use if the stability of the financial system is threatened.

As stability was judged to be at risk if Resona were to fail, the Japanese government approved a capital contribution, equivalent to over SEK 130 billion, from state funds for Resona in exchange for equity in the

bank. This made the state the bank's largest owner. At the same time, the bank's management was forced to resign and was replaced internally. Thus, management had to take the consequences of the bank's economic problems, while the capital contribution benefited shareholders as well as creditors because otherwise the equity would most probably have become worthless and loans might have been written down. One consequence of the intervention was that prices rose for equity in other banks with financial problems. The authorities plan to sell Resona's non-performing loans to the state institution mentioned above.

The management of Resona's failure also illustrates the large sums a country may be prepared to provide to avoid risking the functioning of the financial system. The appropriateness of making a capital contribution (whereby existing shareholders only suffer a dilution) instead of requiring an owners' contribution or taking over the equity, is debatable. The state's part-ownership can be taken as an implicit guarantee that the state will side with the bank, which can lead to problems of moral hazard.³ The price rise for equity in other banks with financial difficulties when the decision was announced indicates that those shareholders also count on obtaining support. The handling of Resona also demonstrates the importance of the state having clear legal powers to intervene when a bank collapses. In Swedish law there are no such capabilities at present. Work in this field is in progress in the Ministry of Finance on the basis of the final report from the Banking Law Committee. New legislation is highly important for the conditions for managing any future banking problems in Sweden.

³ Such problems are discussed more fully in the article in this issue on the Riksbank's role as lender of last resort.

Does the outcome of the euro referendum affect the financial system's stability?

THE OUTCOME OF THE EURO REFERENDUM will not have any sizeable consequences for Sweden's financial sector, according to the Riksbank. The financial market reactions do not suggest that the referendum's result will have any sizeable direct negative effects. The conceivable effects are more indirect, as discussed below. This is because the development of the Swedish financial market is driven in the first place by other, more general trends such as economies of scale, specialisation, technology and a new regulatory framework. These trends are international and largely independent of the euro. Some of the major consequences of these trends are:

- Diminishing settlement risks for banks in currency trading, mainly since the Swedish krona is a CLS (Continuous Linked Settlement) participant as of September this year. At the national level, moreover, VPC's new settlement system, NewClear, helps to reduce settlement risks.
- The consolidation of international securities trading, primarily through economies of scale.
- Foreign banks' slight interest in establishing operations in Sweden combined with Swedish banks setting up establishments abroad; this has more to do with Sweden being a small country with a relatively competitive banking sector than with the choice of currency.
- All EU countries are equally affected by the harmonisation of the rules for financial operations in the EU area; the new capital adequacy standards and the new accounting standards are also independent of the euro.

Still, there are respects in which Sweden's outsider position will have visible effects, though these should not be exaggerated. In some contexts there is a difference between waiting to join and having declined. Having previously been a potential partner for various structural issues, there is a risk that foreign authorities and other entities will be less interested in cross-border cooperation with Sweden. At the same time, Sweden will be obliged to develop parts of its infrastructure on its own. With the euro it would have been natural in several cases to adopt the euro countries' solutions. Instead, the Swedish financial sector will have to design new Swedish systems independently. This perhaps applies most clearly to the central payment system (RIX) but in time also to the system for retail payments. It also concerns the structure

of the securities markets, in the first place the market for fixed-income securities and VPC's clearing and settlement operations. This consumes resources and may leave the financial sector with less scope for alternative investments.

In some respects a change to the euro might have led to some changes that will now not occur or perhaps take place more slowly:

- Product development and structural adjustment in Sweden's financial sector would probably have accelerated. This may be true of the development of new instruments for the home mortgage market, for securitisation and perhaps for credit and other derivatives as well as for saving (e.g. mutual funds). Without the euro, foreign banks are likely to be less interested in competing in certain segments of the Swedish market. To some extent this also means that Swedish banks are under less pressure to develop and enhance efficiency.
- The considerable counterparty exposures in the Swedish interbank market at present could possibly have been spread over a larger number of banks.
- The costs for issuing corporate bonds would probably have fallen. There is a higher degree of concentration among the banks that provide this service. More financial muscle and a broader network of institutional investors enable them to offer customers better terms. Different currencies and the attendant costs for borrowing in this market no doubt mean that borrowing costs for Swedish companies are higher than for equivalent companies abroad.
- Companies still have certain costs for the management of exchange risks. This is beneficial for the banks because they derive earnings from these operations.

Thus, in certain respects the financial sector is clearly affected by the result of the euro referendum, though the areas in question are relatively few. In addition, there are a number of aspects where retaining the krona may lead to changes being slower and more costly than if Sweden were a part of a sizeable monetary union. Still, the general conclusion is that Sweden's outsider position is not crucial for the financial sector's stability. There are mainly other aspects affecting this sector's stability and efficiency.

■ The Swedish banks' borrowers

Total corporate borrowing has stopped falling and since the summer the increase in the number of corporate defaults has slowed. Market indicators point to more positive expectations for developments in the corporate sector but actual developments to date do not show a clear improvement in the ability to pay. In the market for office premises, falling prices and rents have led to somewhat smaller operating surpluses for property companies but their financial position has not deteriorated. The gradual increase in household debt has continued, accompanied by some improvement in the financial position of households due to the stock market recovery and a further increase in house prices.

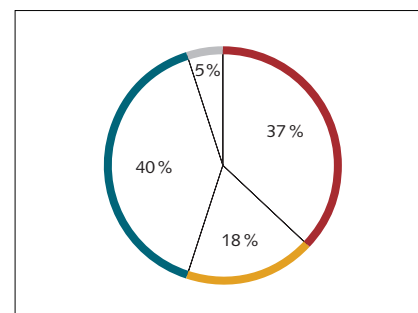
The risk of loan losses in the banking system is determined by the borrowers' indebtedness and ability to service debt. Loans to non-financial companies make up about half of the Swedish bank system's total lending to the Swedish non-bank public and loans to households about 40 per cent. The real estate sector warrants separate consideration: property companies are major borrowers – with one third of the corporate loan stock or almost one-fifth of total bank lending to the Swedish general public – and a large proportion of bank loans have real estate as collateral. The section on commercial property therefore looks at the role of property companies as borrowers, besides considering how the value of pledged collateral is developing. Finally there is a discussion of the risks in the other countries where lending by the Swedish banks is fairly substantial.

The corporate sector in Sweden

Total corporate borrowing stopped falling in the first half of 2003. A slight increase (around four per cent in annual terms) in borrowing from the four largest banks was accompanied by little change or some fall in borrowing from other agents (see Figure 2:2). The downward trend for corporate borrowing from mortgage institutions still holds but the tendency for companies to make more use of the securities markets seems to have ceased after 2001. Borrowing in the Swedish bond market fell in the first half of 2003 and borrowing in bond markets abroad was broadly unchanged. This means that corporate borrowing is now more concentrated to the bank sector. Non-financial companies obtain almost half of their loans from the four major banks.

The slow economic recovery, with a weak development of investment and earnings, indicates that companies are borrowing from the banks for short-run funding rather than to investment. It is foreseen that a sustained economic recovery abroad, combined with less uncertainty, high productivity growth and low interest rates, will lead to stronger

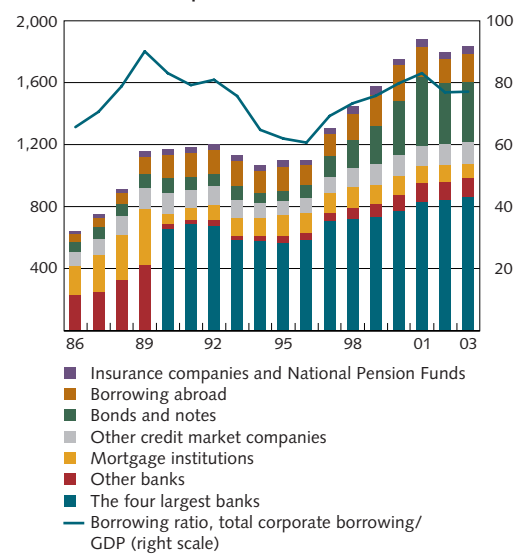
Figure 2:1. Lending by the major banks to the general public, sectoral breakdown. December 2002



■ Non-financial companies (excl. property management companies)
 ■ Property management companies
 ■ Households
 ■ Other lending

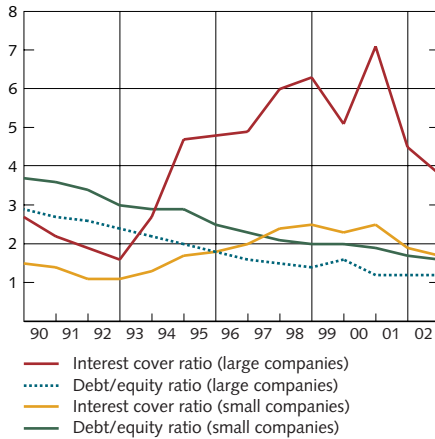
Source: Bank reports.

Figure 2:2. Corporate borrowing and borrowing ratio. SEK billion and per cent



Source: The Riksbank.

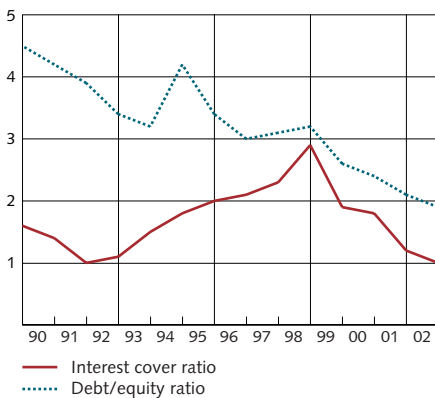
Figure 2:3. Interest cover ratio and debt/equity ratio in small and large companies.
Ratio



Note. The interest cover ratio is defined as operating profit/loss plus financial income divided by financial costs. The debt/equity ratio is defined as debt divided by equity.

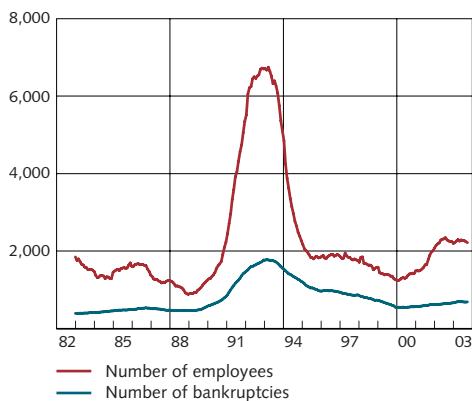
Source: UC AB.

Figure 2:4. Interest cover ratio and debt/equity ratio in new companies.
Ratio



Source: UC AB.

Figure 2:5. Number of company bankruptcies and number of employees in companies going bankrupt. 12-month moving average



Source: Statistics Sweden.

domestic demand and rising capacity utilisation. That should cause investment to pick up next year.⁴ The Riksbank concludes that corporate borrowing will then grow again.

It is the ability of companies to repay debt that is crucial for whether or not risks are building up in corporate lending by the banks. A look at annual reports for 2002 and earlier, broken down into large, small and new enterprises, shows a downward trend for corporate debt ratios in the past decade. This should imply that the risks in corporate loans have decreased (see Figures 2:3 and 2:4).⁵ In recent years, however, the ratio of corporate interest expenditure to earnings has fallen faster than the debt ratio.⁶ For new enterprises, the interest-expenditure ratio is as low as it was during the slowdown in the early 1990s. It is mainly the weak profit trend that lies behind the deterioration of the corporate interest-expenditure ratio in a period with moderate corporate borrowing and comparatively low interest rates. The signs of a tentative increase in bank borrowing by the corporate sector indicate some enlargement of the banks' credit exposures at a time when the financial position of the corporate sector has weakened.

Since May the stock market's assessment of the corporate sector has become somewhat more positive. A recovery of equity prices and lower implied volatilities point to a slightly more favourable and less uncertain assessment of the corporate profit trend. Interim reports up to end Q3 this year show some improvement in the profit trend for listed companies but the return on equity remains low.⁷

The tendency towards a somewhat more positive stock-market assessment of the corporate sector has been accompanied by a slower increase in the number of corporate defaults. In the first ten months of this year the number of corporate defaults was about 7 per cent higher than in the corresponding period last year (see Figure 2:5). In this period the number of employees affected by failures was broadly unchanged, which indicates that bankruptcies are not rising among large corporations. There is a clear concentration of bankruptcies to small companies and above all to construction, followed by services and transport by road and rail. Companies with fewer than 20 employees account for over 95 per cent of all corporate failures.

A leading indicator of corporate sector bankruptcies is the expected default frequency (EDF) for listed non-financial companies, calculated on the basis of stock-market information and data from financial statements.⁸ According to this indicator, since January this year the risk of

4 In Inflation Report 2003:3 the Riksbank judges that investment will pick up during 2004 and then continue to accelerate in 2005.

5 Small/large companies are those with a turnover of less/more than SEK 5 million; new enterprises are those that are less than two years old.

6 The interest-expenditure ratio is defined as operating profit/loss plus financial income divided by financial expenditures; the debt ratio represents liabilities divided by equity capital.

7 While 54 per cent of 254 companies improved their earnings, only 28 per cent also report an increased turnover, which suggests that a large part of the observed improvement in profits has been achieved by cutting costs.

8 Moody's KMV calculates the probability of bankruptcies in limited companies within a given time horizon – the expected default frequency (EDF) – on the basis of share prices and financial statements. EDF is calculated as the probability of the market value of a company's assets falling below the size of its debts at the time when the debts mature and provides an estimate of the risk of a listed company being unable to meet its commitments. The market value of the company's assets and the volatility of the assets are derived in turn from the company's stock-market value, using option pricing methods.

default in the coming year has decreased in the corporate sector as a whole. This is mainly a consequence of the stock market recovery and lower volatilities, not of a decisive improvement in corporate earnings.

In the industries to which the banks are most exposed – property management and manufacturing – the risk of bankruptcy is broadly unchanged or has tended to fall (see Figure 2:6). For IT, telecom and services companies the risk of bankruptcy in the coming year remains relatively high.

SUMMARY

- Total corporate borrowing has stopped falling.
- The four major banks provide a growing proportion of all corporate loans; corporate borrowing in the securities markets is stagnant.
- Corporate earnings remain weak.
- The main indication of an improvement in the ability to pay comes from expectations. A stock-market recovery and lower implicit volatilities contribute to a smaller risk of bankruptcies in the coming year for the corporate sector as a whole.
- The risk of bankruptcies among IT and telecom companies remains high, however.

The commercial property sector in Sweden

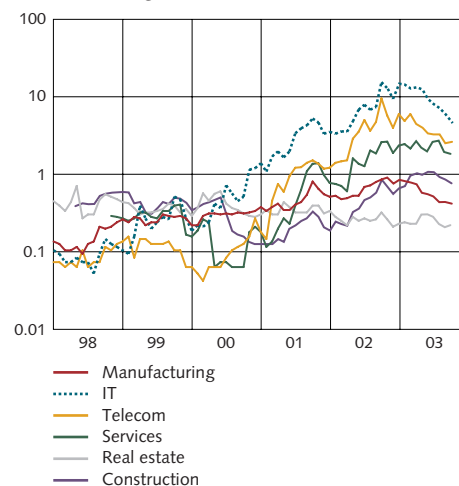
The commercial property market refers here mainly to real estate that is rented out on commercial terms. The focus is on office properties and residential buildings, which dominate the holdings of the listed property companies. The market for shop and industrial premises, which make up over a tenth of the holdings, is considered briefly. The development of property companies is also discussed with reference to whether they are liable to generate loan losses for the banks. The discussion focuses on the listed property companies as well as some of the major unlisted property companies; the latter as a category hold around one-fifth of Sweden's stock of commercial real estate.

THE COMMERCIAL PROPERTY MARKET

The Swedish market for *office buildings* has been characterised since 2000 by falling prices and rents and rising vacancies. During 2003 the price fall in real terms has tended to accelerate (see Figure 2:7). Since the beginning of the year, prices have fallen 18 per cent in Stockholm, almost 13 per cent in Göteborg and 17 per cent in Malmö.

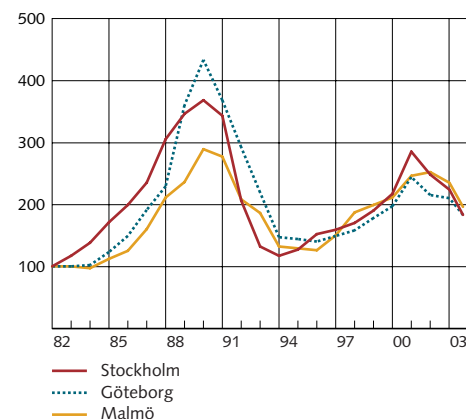
The price trend since 2000 is mainly a consequence of lower rents and thereby lower income for property companies. Since 2000 rents for new contracts in Stockholm have fallen by a total of almost 25 per cent, while the figures for Göteborg and Malmö are 8.5 and 17 per cent, respectively. Rents have gone on falling this year in Stockholm, though

Figure 2:6. Expected default frequency (EDF) by industry for listed non-financial companies. Per cent (logarithmic scale)



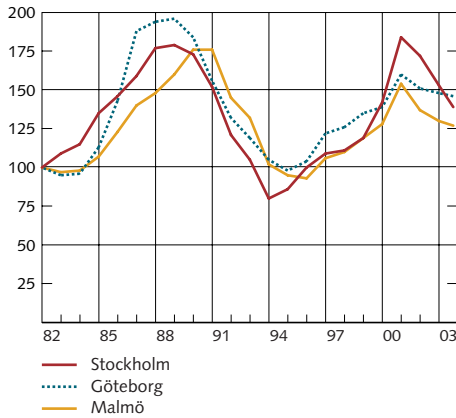
Source: Moody's KMV.

Figure 2:7. Real prices of centrally located office premises. Index: 1981 = 100



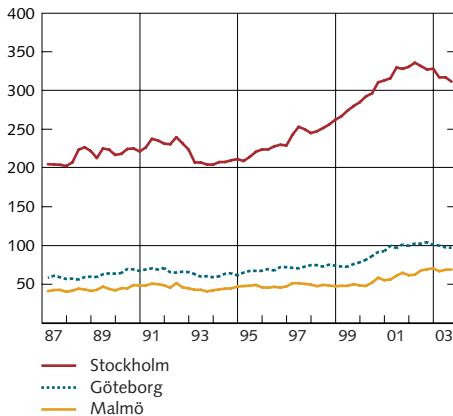
Sources: NewSec AB and the Riksbank.

Figure 2:8. Real rents of centrally located office premises.
Index: 1981 = 100



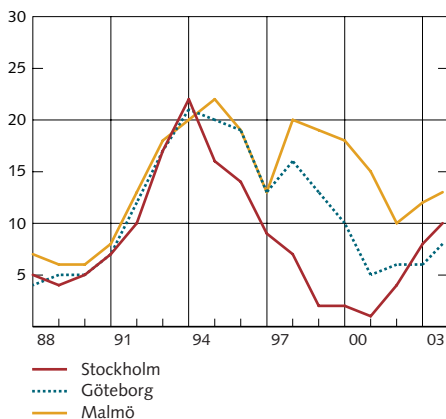
Sources: NewSec AB and the Riksbank.

Figure 2:9. Number of office employees in local labour markets in Stockholm, Göteborg and Malmö.
Thousands



Source: Statistics Sweden.

Figure 2:10. Vacancy rates for centrally located office premises.
Per cent



Source: NewSec AB.

not as rapidly as before, while in Göteborg and Malmö there has been some stabilisation of rents in Q2 and Q3 (see Figure 2:8).

The rent trend has to do with the economic slowdown and the cutbacks in the IT and financial sectors, which had previously contributed to increased office employment.⁹ These two sectors have been most prominent in Stockholm, which has therefore been hit most severely. In September this year the number of office employees in Stockholm was almost 5 per cent lower than in October 2002 (see Figure 2:9). In Göteborg, the number of office employees decreased 7 per cent, whereas in Malmö the fall was just marginal.

The declining demand for office premises has led to an increased number of vacancies. The vacancy rate in Stockholm has gone up from 1 per cent at the end of 2000 to around 10 per cent this September; the vacancy rate in Göteborg is 8 per cent and in Malmö it is 13 per cent (see Figure 2:10). Since the beginning of this year the vacancy rate has gone on rising in Stockholm as well as Göteborg, while the increase in Malmö has slackened.

The supply of new office premises is expected to slacken during 2003 according to real-estate consultants Jones Lang LaSalle (see Figure 2:11). The reduction is particularly notable in Malmö. In 2004, the supply of new office space is expected to go on falling, above all in Stockholm.

The future paths of property prices and rents are dependent on economic development in general and on the office-intensive sectors in particular. There seems to be a general tendency at present for companies to cut their office space per employee in order to adjust costs to new, tighter economic conditions. The rising demand in the Riksbank's main scenario should lead in time to a renewed increase in prices and rents, though the development of bankruptcies in the services sector may mean that demand for office space does not recover at the same rate. But although corporate expectations do point to some improvement, there are still no clear signals of a recovery. Consequently, there is a risk of prices and rents continuing to fall, albeit more moderately. Still, the Riksbank judges that this year's small supply of new office premises will not generate a further sizeable fall in prices and rents. Moreover, the appreciably lower supply that is foreseen in 2004 should help prices and rents to stabilise.

Investors abroad have displayed a strong interest in Swedish commercial real estate this year. Data from real-estate consultants NewSec indicate that in the first nine months, real estate in Sweden was purchased by foreign investors for over SEK 35 billion, which is more than 70 per cent of total purchases; the corresponding figure for foreign purchases in 2002 was around SEK 16 billion. However, in relation to the total stock of commercial premises and apartment blocks, the proportion sold abroad is just a little more than 2 per cent.¹⁰

⁹ Office employees are defined as employees in banks, other credit institutions, insurance companies, service companies for financial operations, property companies and property management companies, computer consultants and computer service agents, R&D institutions, other business services companies, civil authorities and professional and industrial organisations.

¹⁰ Based on estimates by the Swedish Property Federation of the total supply of residential and office premises in the Swedish rental market. Tenant-owned housing associations have been excluded here.

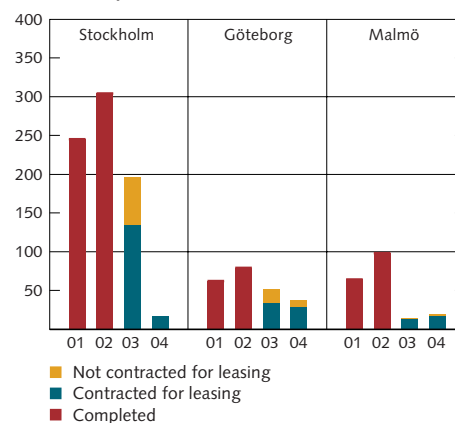
A number of factors lie behind foreign investors' increased interest in Swedish real estate. One is that moderate demand in the Swedish market for rented premises has led to prices that are low compared with elsewhere in Europe. Moreover, Swedish real estate is perceived as a liquid market in that, for example, transaction costs are low and the availability of market information and uncomplicated laws make the market transparent. The market should also be attractive in that, compared with other countries in Europe, the supply of new office premises in Sweden is expected to be low, so that in time, prices can be expected to rise. The increased interest from abroad can therefore be an indication that, in relation to other European countries, Sweden's real estate market is not over-valued.

Compared with the office market, the market for *shop premises and industrial property* has been less affected by the economic slowdown. The SFI/IPD index¹¹ shows changes in value in 2002 of 1.5 per cent for shops and –1.1 per cent for industrial premises, as against a figure of –6.0 per cent for offices. The value of shop premises depends primarily on the development of retail trade, which has been relatively strong this year. According to Jones Lang LaSalle, the new construction has consisted mainly of shopping centres and low-price outlets, which tend to be out-of-town operations with lower rents. The continued increase in the growth of consumption in 2004 that is foreseen in the Riksbank's main scenario suggests that demand for shop premises will remain stable.

Prices for *apartment blocks* have risen in recent years, in contrast to the fall for office premises. The upward price trend since the mid 1990s mainly reflects the conversion of rental properties into tenant-owned apartments. However, the comparatively strong real price rise has slackened. So far this year, prices in Stockholm have risen little more than 1 per cent; in Göteborg and Malmö, on the other hand, the rates of around 13 and almost 7 per cent, respectively, imply that the real increase is continuing (see Figure 2:12).

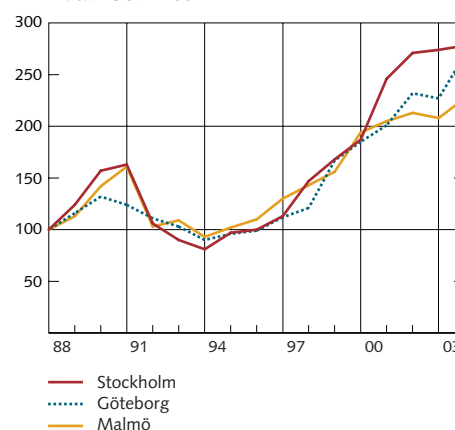
Price formation of apartment blocks is primarily governed by regulations, such as those concerning utility value, and the central rent negotiating system. Rents in apartment blocks are therefore relatively stable but are susceptible to altered conditions in the form of, for example, a greatly increased supply of new apartments or steeply falling demand. At present, however, residential construction is low in relation to demand. The imbalance between supply and demand is primarily a consequence of the rent regulations; rents are not high enough to make new production profitable. In order to stimulate the construction of new rental apartments, at the beginning of this year the Swedish Union of Tenants, the Property Federation and the Association of Municipal Housing Companies concluded an agreement whereby new apartments can have higher rents. As the effect of this will take time to materialise, the imbalance between supply and demand is assumed to continue, in which case the number of vacancies is unlikely to rise in the short run.

Figure 2:11. Supply of office premises, completed and estimated. 1,000 square metres



Source: Jones Lang LaSalle.

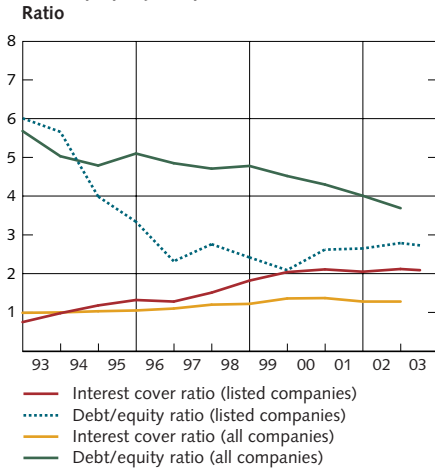
Figure 2:12. Real prices of centrally located apartment blocks. Index: 1987 = 100



Sources: NewSec AB and the Riksbank.

¹¹ For this index, change in value is defined as the change in market value between two consecutive valuations, net of investment and partial sales, divided by capital employed during the year.

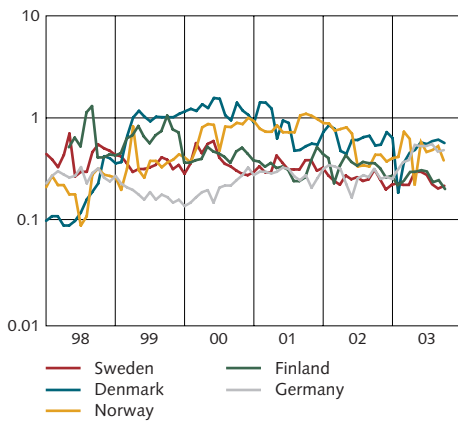
Figure 2:13. Interest cover ratio and debt/equity ratio in property companies.



Note. The debt/equity ratio for all property companies is defined as: (short- + long-term liabilities + 0.3 x untaxed reserves + allocations) / (equity + 0.7 x untaxed reserves).

Sources: UC AB and the Riksbank.

Figure 2:14. Expected default frequency (EDF) for listed property companies.
Per cent (logarithmic scale)



Note. For a description of EDF, see note 8 on page 22.

Source: Moody's KMV.

PROPERTY COMPANIES

The economic slowdown and the attendant weakening of the office market have lowered the profitability of property companies. The operating surplus for the large property companies¹² in the first half of 2003 was marginally smaller than in the corresponding part of last year; this can be compared with an annual increase of 6 per cent in 2002. The interest cover ratio for all property companies remained at much the same level as before (see Figure 2:13). The debt/equity ratio tended to fall, which is an indication of a cautious attitude in this sector. Moreover, the debt/equity ratio is very much lower than in the early 1990s.

The number of bankruptcies among property companies in the first eight months of this year was almost 9 per cent higher than in the corresponding period in 2002. However, the number of bankruptcies is still low compared with the mid 1990s.

Additional light on the position of property companies is provided by expected default frequencies (EDF), calculated on the basis of stock market information and financial statements. The data show that the expected probability of failures among listed property companies continues to be low.¹³ The Swedish property companies and their counterparts in Finland have a lower probability of default than property companies in the other Nordic countries and Germany.

There are several reasons why the weakening of the office market has not had a greater effect on the earnings of property companies. One is that these companies are still in a position to renew some contracts at higher rents because contracts signed before rents rose in the late 1990s tend to have rents that are even lower than the current market level. Another explanation for the comparatively good earnings of property companies is that office premises are only one component of their holdings. The price fall for office premises has been offset to some extent by the price trend for apartments and shops. Finally, the weaker development mainly applies to the major cities and regional diversification has made property companies less vulnerable to what happens in particular regions and sectors.

However, the more rents fall, the less room there will be for rent increases when contracts are renewed. To some extent this is already evident in the somewhat lower operating surplus. Even so, the stable debt/equity ratio and interest cover ratio gainsay the notion that property companies will have serious payment problems.

SUMMARY

- Office prices and rents have gone on falling since the time of the previous Financial Stability Report and vacancies have risen. But the level of rents is tending to stabilise.
- The rising demand in the Riksbank's main scenario should lead in

¹² The listed property companies plus Akademiska Hus, AP Fastigheter and Vasakronan.

¹³ See the section on the corporate sector.

time to a renewed increase in prices and rents for office premises, given that the supply remains relatively unchanged. However, the development of bankruptcies in the services sector may mean that demand for office space does not recover at the same rate as demand in general.

- The negative tendency in the office market has had some effect on property companies in that their net operating surplus has worsened. But their financial position has not deteriorated appreciably. The persistently stable debt/equity ratio and interest cover ratio gainsay the notion that property companies may face payment difficulties that can have negative effects on the banks.

The household sector in Sweden

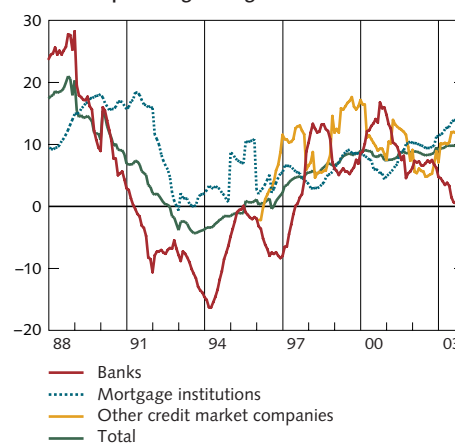
Households in Sweden are continuing to borrow at an undiminished, high rate. Total borrowing by households rose by almost 10 per cent in September, compared with slightly more than 8 per cent in September 2002. Bank lending has virtually stopped rising in recent months but this has been accompanied by increases of slightly more than 14 per cent for lending by house mortgage institutions and just over 11 per cent for other credit market companies (see Figure 2:15).

The group of other credit market companies includes finance companies. The comparatively strong growth of lending by these institutions is probably due in part to the recent increase in household expenditure on durable goods and cars. However, a quarter of the loans from these institutions are tied credits for agriculture and forestry, with no link to household consumption. Excluding loans of this type, household borrowing from other credit market institutions has risen at an annual rate of almost 6 per cent. Note, moreover, that total credit from other credit market institutions represents a very small share of the total stock of loans to households (see Figure 2:16).

The household consumption propensity has recently been the main driving force in the Swedish economy. The assessments in the Riksbank's latest Inflation Report point to a continuation of the stable development of income, wealth and employment, so that households will go on consuming at a favourable rate. Moreover, households have become considerably more optimistic again about their own as well as the Swedish economy in the year ahead, although there was a fall in households' optimism in October (see Figure 2:17).

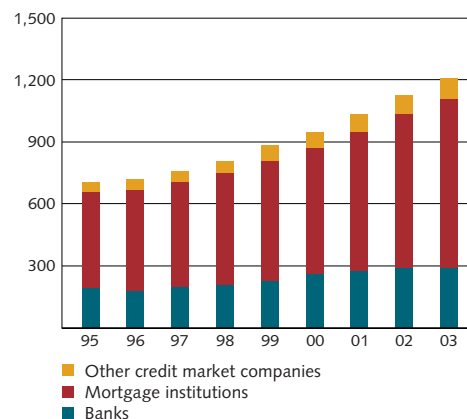
The growing optimism of households and their expectations that income will go on rising suggest that the development of consumption and borrowing will be largely unchanged in the near future. Another factor which points to a continuation of the household borrowing trend is the marked increase in prices for houses and tenant-owned homes since 1997 (see Figure 2:19). When house prices have risen strongly for a long time, debts and financial assets can continue to increase even though house prices have stabilised, given that turnover remains high. This is because in most cases those who purchase a house after a long

Figure 2:15. Household borrowing from different institutions. Annual percentage change



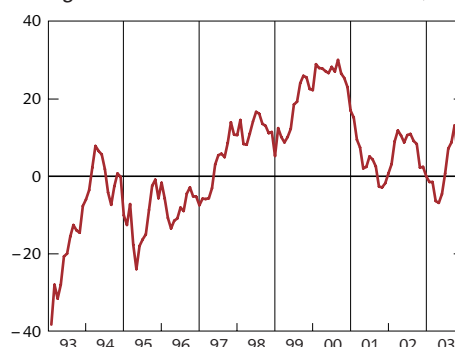
Source: The Riksbank.

Figure 2:16. Household borrowing broken down by institutions. SEK billion, as of December (2003, as of September)



Source: The Riksbank.

Figure 2:17. Household confidence indicator (CCI).



Note. The curve represents a weighted combination of households' expectations of their own economy and the Swedish economy.

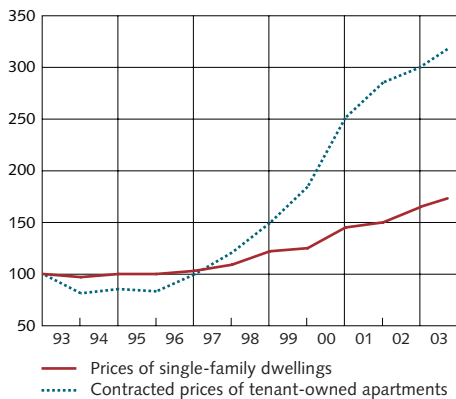
Source: National Institute of Economic Research.

Figure 2:18. Lending to households by credit institutions and prices of single-family dwellings. Annual percentage change



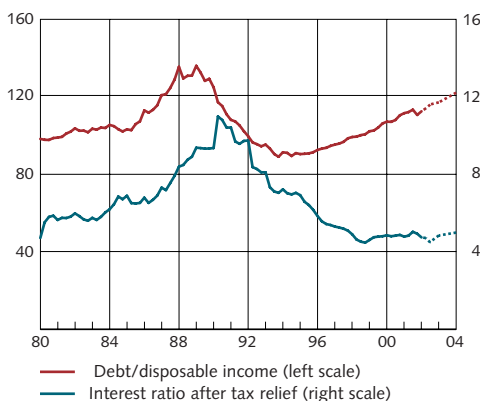
Sources: Statistics Sweden and the Riksbank.

Figure 2:19. Prices of single-family dwellings and contracted prices of tenant-owned apartments. Index: January 1993 = 100



Sources: Statistics Sweden, Svensk Fastighetsförmedling, and the Riksbank.

Figure 2:20. Households' debts in relation to disposable income and households' interest ratio. Per cent



Note. The interest ratio is defined as interest expenditure after tax relief divided by disposable income.

Sources: Statistics Sweden and the Riksbank.

price rise need to mortgage it for a larger amount than the previous owner. At the same time, the capital realised by the seller is available for consumption, investment in financial assets or reinvestment in another home. Against this background the Riksbank considers that households will continue to add to their liabilities.

The rapid growth of borrowing together with the lower increase in household disposable income means that the ratio of debt to disposable income has risen this year and is currently 115 per cent. Thanks to falling interest rates, the interest ratio (households' interest expenditure after tax relief as a percentage of disposable income) has not risen; the low average level just under 5 per cent has hardly changed since 1998. Given an unchanged level of interest rates, the prospect of debt rising faster than income implies that both the debt and the interest ratio for households will move up (see Figure 2:20).

Although household income is rising considerably more slowly this year than before, the growth of consumption to date has been higher than last year. In the Riksbank's assessment of growth in 2004 in the latest Inflation Report, household consumption will continue to show a smooth growth. If a clear economic recovery were not to materialise and this led to a drastic fall in the household consumption propensity, growth could become still more subdued and result in increased unemployment. Household disposable income might then decline and the ability to pay would be impaired.

An earlier Riksbank study shows that both debts and assets are unevenly distributed among households.¹⁴ The lowest income group has the heaviest relative burden of debt and interest expenditure but the amount of debt here is small. For the banks, payment problems among high-income households – due, for instance, to increased unemployment – would be more serious in that these households have the largest debts and the percentage loss of income in the event of unemployment would be greater for them. The latter is a consequence of the system being constructed so that unemployment benefit is calculated as 80 per cent of monthly wages up to around SEK 15,000; thus, a person earning over SEK 30,000 who becomes unemployed loses more than half of the post-tax income as against less than one-fifth for someone earning less than the cut-off figure.

About half of households' new borrowing from mortgage institutions in September was arranged at fixed rates, which is the same level as in September 2002. However, flexible-rate loans still make up around 55 per cent of the total stock of household debt. A large proportion of flexible-rate loans and increased indebtedness accentuate sensitivity to interest rate movements. This sensitivity can be illustrated with the following example: the average price of a house is SEK 1.2 million at national level and SEK 2.4 million in Stockholm;¹⁵ assume that the house is mortgaged to 80 per cent and the loan is arranged at a flexible rate.

¹⁴ See Financial Stability Report 2003:1.

¹⁵ Price data from Statistics Sweden and Lantmäteriet (House survey, October).

Given that the interest rate rises 75 basis points, the monthly interest expenditure after tax would rise 420 kronor for a house priced at the national average and 840 kronor for an average house in Stockholm. Although such an increase in costs probably would not entail a sizeable increase in the banks' loan losses, such an eventuality could dampen consumption and thereby economic development in general.

The financial assets of households can serve as a buffer in the fairly short term because realising them is comparatively simple. With the stock market fall in recent years, household financial wealth has shrunk. Together with greatly increased debt, this meant that household net wealth decreased up to Q1 this year. Marked price increases for houses and tenant-owned homes tended to counter the fall. The recent stock market recovery has led to a renewed increase in household net wealth. The improved financial situation makes households somewhat better equipped to cope with any loss of income, for example through unemployment or illness.

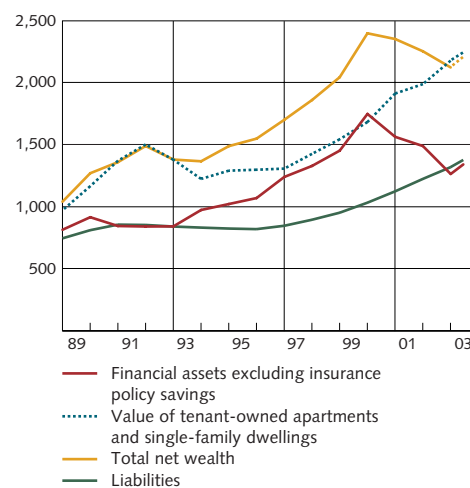
In the previous Financial Stability Report it was judged that house valuations were relatively reasonable. In October, the average national level of house prices had risen 8 per cent in annual terms but there were large differences between Greater Stockholm and the other two metropolitan regions: Greater Stockholm had a low rate of 1 per cent in annual terms, while average house prices in Greater Göteborg and Greater Malmö had risen 12 and 11 per cent, respectively.

A household's primary asset is the value of its house; at the same time, around two-thirds of total household debt consists of house mortgage loans. The marked increase in house prices has obliged buyers to finance a larger proportion of the purchase price with loans. Meanwhile, property is good collateral. In that the increased debt has to do with higher house prices, the ratio of debt to the value of households' holdings of houses and tenant-owned homes has been comparatively stable at just over 60 per cent in aggregate (see Figure 2:22).

SUMMARY

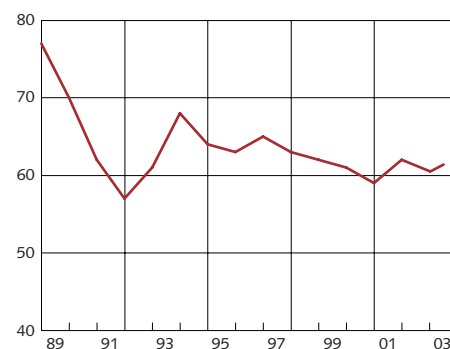
- The increase in household borrowing is expected to continue for a time in that activity in the house market remains high and the price trend is stable. Rising disposable income and persistently high consumption are also expected to help sustain the growth of borrowing.
- A rising debt ratio and an expected increase in the interest-expenditure ratio – even with an unchanged level of interest rates – indicates that households are becoming more vulnerable.
- At the same time, an improved financial position makes households somewhat better equipped to cope with a temporary loss of income or unexpected interest rate hikes.
- The overall assessment is that the household sector's ability to pay has weakened to some extent since the time of the previous Report but that this does not constitute a threat to financial stability.

Figure 2:21. Households' holdings of financial assets, tenant-owned apartments and single-family dwellings.
SEK billion



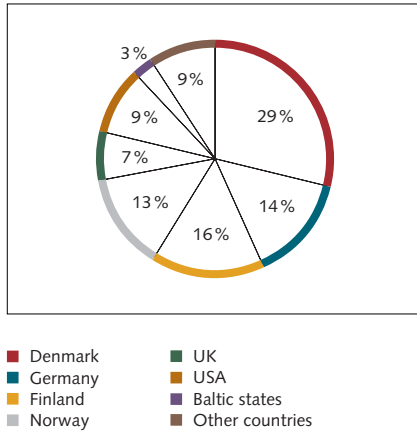
Sources: Statistics Sweden, Ministry of Finance, and the Riksbank.

Figure 2:22. Ratio of total household debt to the value of single-family and tenant-owned dwellings.
Per cent



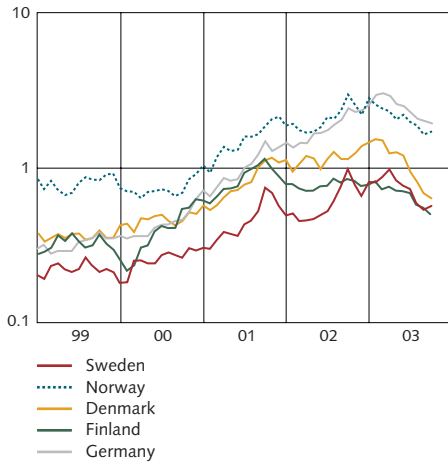
Sources: Statistics Sweden, Ministry of Finance, and the Riksbank.

Figure 2:23. Geographic distribution of foreign claims of the major banks, December 2002. Per cent



Source: The Riksbank.

Figure 2:24. Expected default frequency (EDF) for non-financial companies in the Nordic countries and Germany. Per cent (logarithmic scale)



Source: Moody's KMV.

Borrowers in other Nordic countries, Germany and the Baltic states

Increased participation and purchases of banks in other Nordic countries, the Baltic states and Germany have led to the Swedish banks being exposed to a high degree to credit risk in loans to borrowers abroad. Just about half of these banks' lending to the general public now goes to borrowers abroad and half to borrowers in Sweden. This warrants a brief survey of borrower categories in the countries where the operations of the Swedish banks are most extensive, namely companies and households in the other Nordic countries and Germany.

Developments in the other Nordic countries and Germany broadly resemble the picture in Sweden. The trend in household sectors is stronger than in corporate sectors and the underlying factors are also much the same as in Sweden. As mentioned in the previous Report, the risk of bankruptcy continues to be relatively high among German and Norwegian companies. The situation in the Baltic states differs somewhat from the Nordic area and Germany; growth there is relatively high and is driven not just by household consumption but also by rapidly rising investment.

DENMARK

Economic growth in Denmark has stagnated in the first half of this year, mainly due to the weak international developments and decreased investment. Growth is being sustained mainly by household consumption, which is growing due to rising disposable income and low interest rates. But even the increase in household consumption has slackened, mainly in the form of a fall-off in demand for capital goods. Even so, low interest rates and the ongoing increase in house prices are contributing to increased household debt, accompanied by a marked fall in households' interest expenditure. The appreciation of Denmark's currency in 2002 and 2003 has tended to impair the competitiveness of Danish companies, above all in Asia and the USA. The number of corporate defaults reached a seven-year high in 2002 but since then the increase in corporate bankruptcies has slowed. Expected default frequencies for Danish listed companies indicate that the risk of bankruptcy in the coming year has decreased for all categories since January 2003. However, the picture for manufacturers of machinery clearly differs, with a rising risk of default in the coming year. Financial reports for 2002 indicate that the financial position in the corporate sector is unchanged. But corporate earnings did tend to weaken last year

NORWAY

Growth in the Norwegian economy has been unchanged, as in Denmark, and is being maintained above all by rising household consumption. However, a recovery is judged to be on the way, partly thanks to the central banks' reduction of the instrumental rate from 4.5 per cent last

December to 2.5 per cent at present. The economic dichotomy, with rapidly rising household income and weak corporate earnings, is mirrored in the development of lending to these sectors. Here, too, low interest rates and rising house prices are helping to maintain the increase in household consumption as household borrowing grows at an annual rate of about 10 per cent. Thus, an increased debt burden for households is accompanied by falling interest expenditure. In the corporate sector, on the other hand, borrowing is rising at the considerably lower annual rate of about 2 per cent. The weak economic development in Norway last year has contributed to a relatively sharp increase in the number of corporate defaults. Between the first halves of 2002 and 2003 the number of defaults rose 29 per cent; however, the increase between the second quarters of these years was slower, 18 per cent. The number of employees hit by default is rising faster than the number of defaults, which implies that bankruptcy is affecting comparatively large companies to a growing extent. A decreased expected probability of default in the coming year for all industries since May indicates a decreased credit risk in lending to Norwegian companies one year ahead. It should be added, however, that both rents and prices for office premises are falling from the peak levels in 2001. This indicates a worsening of conditions for the commercial property sector, where the stock of bank loans represents around 30 per cent of all corporate credit from Norwegian banks.

FINLAND

The economic slowdown in Finland began in 2001 and has resulted in some redundancies and smaller work forces in the corporate sector this year. In the coming two years, however, the Finnish economy is expected to recover. Demand for household credit remains high and is rising by around 13 per cent in annual terms for the same reasons as in the other Nordic countries. House prices are also continuing to rise but the economic slowdown is mirrored in the subdued price trend for commercial property since 2002. In that house prices have risen despite the economic slowdown, it seems that the price trend mirrors other factors than general economic developments. So the expected economic recovery is not likely to lead to a sudden increase in house prices. In contrast to the picture in the other Nordic countries, the growth of lending to the corporate sector in Finland has not slackened but remains at an annual level of around 7 per cent. Still, there are no clear signs that the weak economic trends have led to an increased credit risk in the domestic corporate sector, though there has been a slight increase in the number of company defaults. Expected probabilities of default suggest that since May this year the risk of bankruptcy one year ahead has decreased for all industries except the production of office equipment, for which the risk of default has risen instead.

GERMANY

Corporate sector borrowing in Germany in Q2 this year was around 2 per cent lower than in 2002 Q2, mainly due to decreased investment. The Bundesbank's survey of bank lending indicates that banks are continuing to tighten their terms for credit to companies in Germany. The banks state that the main reason for the tighter conditions is an increased risk in corporate loans on account of the general economic uncertainty, sector- and company-specific factors and a decreased value of the companies' collateral. There has been some easing, on the other hand, of the terms for household credit and lending to households is still rising; the Q2 increase from the same quarter last year was around 3 per cent. The main factor behind the growth of household borrowing is lower interest rates. Lending to companies is judged to go on falling, accompanied by unchanged lending to households. A subdued rate of investment, decreased demand for manufactured products and a weak labour market, with cuts in employment in construction and manufacturing in particular, all suggest that the situation in both the household and the corporate sector in Germany will continue to be weak.

ESTONIA, LATVIA AND LITHUANIA

The Baltic states' economies are characterised by high GDP growth, low interest rates and rising disposable incomes together with rapidly rising investment and high private consumption. This contributes to a strong expansion of lending to companies as well as households in all three countries. However, the growth of lending started from a low level. In Estonia, the increase in lending to property companies and manufacturing is most marked. Estonia's central bank expresses some concern that the risk in the banks' exposures to the commercial property sector has risen through the rapid increase in lending by domestic banks and a greatly increased supply of foreign capital to these companies. The risk in household credit has presumably risen, too, in that in 2003 Q1, lending and leasing to households in Estonia rose as much as 43 per cent and house mortgage loans by even more, or 53 per cent. But although household borrowing is rising rapidly in Estonia, the ratio of household debt to disposable income is only 27 per cent, which can be compared with 115 per cent for households in Sweden. In Latvia, the growth of lending in annual terms is around 29 per cent to companies and around 79 per cent to households. Corporate and household borrowing in Lithuania is rising by around 36 per cent.

An expansion of credit is naturally essential for economic growth but in a risk scenario, the comparatively strong increase in the Baltic states could contribute to overheating there. The currency board arrangement precludes using the interest rate to subdue growth when signs of overheating appear. If fiscal policy were also to be incapable of restraining growth, the economies might overheat, leading to price and wage increases that erode competitiveness. There would then be a risk of the strong growth turning into a recession, with increased defaults and rising

unemployment. Such a situation would hit the banks with increased loan losses and decreased earnings. There are no signs of such a development at present but a rapid expansion of credit is liable to make the Baltic banking system more vulnerable.

Experience from other countries shows that when credit is rising rapidly, there is a major risk of shortcomings in the banks' credit assessments and of the banks not obtaining adequate compensation for the increased credit risks.

SUMMARY: BORROWERS ABROAD

- Weak economic tendencies and a low rate of investment are tending to subdue or reduce corporate borrowing in every country, whereas household borrowing is rising, mainly due to low interest rates and high housing prices.
- Credit risk has decreased in every country where Swedish banks have major affiliates but can still be said to be relatively high in the coming year among Norwegian and German companies.
- The ability of companies and households to repay debt may deteriorate in Germany and Norway.
- In the Baltic countries, the growth of household and corporate borrowing is comparatively strong; this could contribute to economic overheating in these countries, with a risk of banks incurring increased loan losses. However, there are few signs of this at present.

■ Developments in the banks

The four major banks have achieved some recovery in earnings in recent quarters, accompanied by just a marginal increase in loan losses. The recovery is mainly due to a further reduction of costs and improved insurance earnings, while income from banking operations was largely unchanged.

The Riksbank's analysis of developments in the banking system concentrates on the four major Swedish banks – Föreningsparbanken, Handelsbanken, Nordea and SEB – because it is primarily these banks that are crucial for systemic stability.¹⁶ The analysis focuses on the strategic risk in profitability, on asset quality, and on the structure of funding and capital.

In recent months the growing expectations of an economic recovery have clearly reduced the uncertainty about the banks' future earnings. This is reflected in the fact that the implied volatility of bank equity has returned to the historical average levels, as is the case for the stock market as a whole.

Profitability – strategic risk

The underlying earnings of the major Swedish banks, measured as profit before losses in constant prices, rose 15 per cent in the most recent reporting period to over SEK 49 billion (see Figure 3:2).¹⁷ Loan losses in the same period amounted in real terms to nearly SEK 6 billion, an increase of almost 14 per cent. There has been something of a trend break in recent quarters. After little change since mid 2002, underlying earnings have risen markedly in the past two quarters and are now approaching the peak from the end of 2000. Loan losses have also risen in recent quarters but this tendency started from a low level, so the absolute difference between earnings and loan losses has widened for the first time in three years.

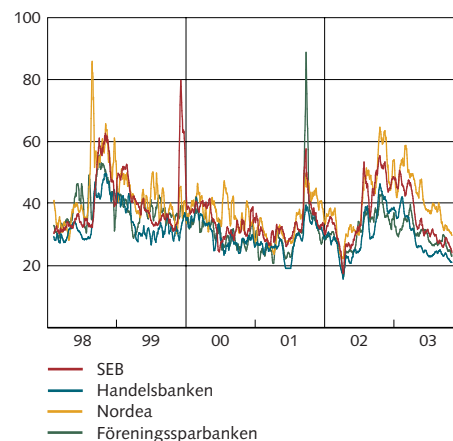
Profitability, measured as the return on equity after tax, has also improved to 13 per cent in the latest reporting period, which can be compared with 10 per cent for 2002 (see Figure 3:3). Just as the weakening of profitability in 2001–02 was largely due to decreased valuations and activity in the stock market, so is much of the recent improvement attributable to the stock market recovery in the past six months. Rising valuations have meant that pension deficits and losses on the banks' insurance operations are no longer reducing profits. This accounts for more than half of the improvement in profitability. The rest of the improvement in profitability comes from a markedly increased profit on the banks' core operations, chiefly due to cost-cutting and a further increase in net interest income (see Figure 3:4).¹⁸

¹⁶ The term major bank denotes the bank group as a whole, that is, including subsidiaries, Swedish as well as foreign. The reason for this perspective is that risks can be taken in various legal entities and it is the consolidated risk exposure of the banking system that is most relevant for financial stability.

¹⁷ The most recent reporting period comprises the four quarters through 2003 Q3; all results have been adjusted for sizeable one-off effects and unless stated otherwise, all comparisons are with the preceding four-quarter period.

¹⁸ The profit on core operations is defined as net interest and commission income less total costs and loan losses.

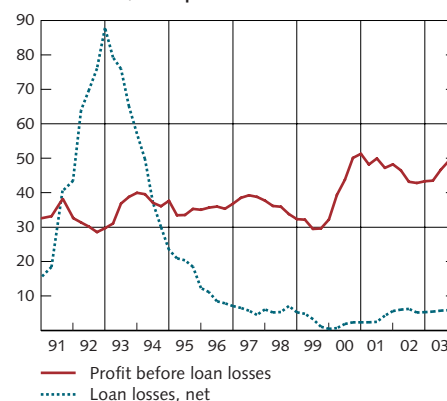
Figure 3:1. Implied volatility of bank equity. 10-day moving average. Per cent



Note. The implied volatility has been calculated from bank options with a maturity of three months.

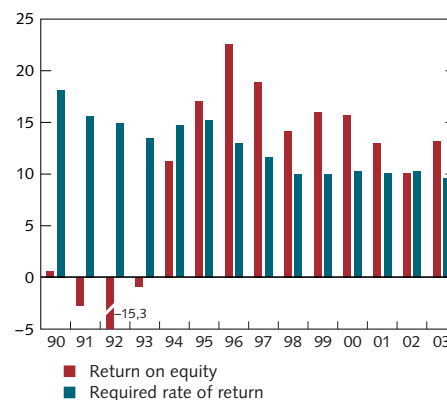
Sources: Bloomberg and the Riksbank.

Figure 3:2. Profit before loan losses and net loan losses in the major banks, accumulated over four quarters. SEK billion, 2003 prices



Sources: Bank reports and the Riksbank.

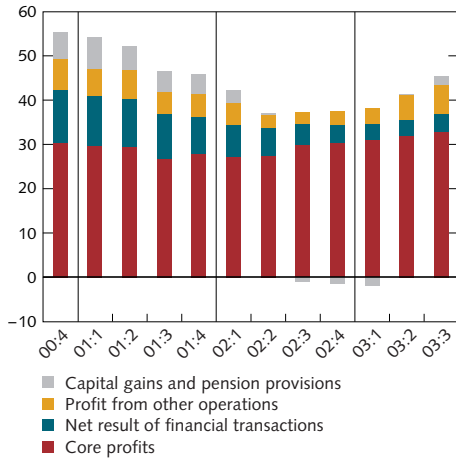
Figure 3:3. Return on equity after tax in the major banks and the market's required rate of return. Per cent



Note. The market's required rate of return is defined as the sum of risk-free interest and a risk premium; risk-free interest is represented by the ten-year government bond rate and the risk premium is assumed to be 5 per cent over the entire period. The data for 2003 refer to the latest reporting period.

Sources: Bank reports and the Riksbank.

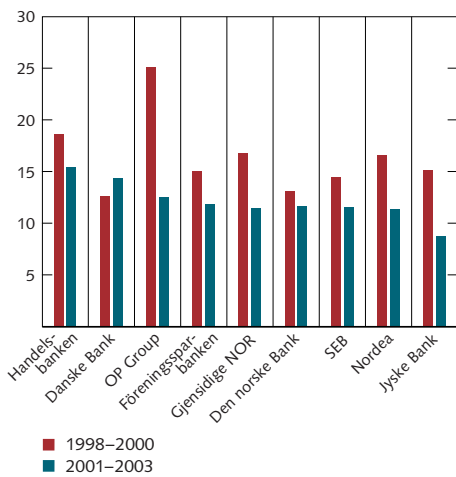
Figure 3:4. Core profit, profit from other operations, financial transactions and capital gains in the major banks, accumulated over four quarters. SEK billion



Note. Figures are pro forma adjusted for acquisitions. Core profit consists of net interest income and net commission income less costs and loan losses. Profit from other operations consists of other income, profit from associated companies, and net insurance income.

Sources: Bank reports and the Riksbank.

Figure 3:5. Return on equity after tax. Average over period. Per cent



Note. Not adjusted for extraordinary items.

Source: Bloomberg.

A Nordic comparison shows that in the past three years the profitability of the major Swedish banks has been evenly distributed around the average (see Figure 3:5). This is something of a change from the preceding three-year period, when three of the four most profitable banks and none of the three least profitable were Swedish. To some extent this reflects strategic decisions at the firm level, but it is also the case that the weak stock-market trend in recent years has been a relatively harder blow to certain Swedish banks' profitability in that they are more exposed to the stock market than other Nordic banks.

INCOME

The income of the major banks rose 3 per cent in the latest reporting period. The growth of interest income continued, albeit at a diminishing rate, and the long decline in net commission income began to level out. Net financial transactions continue to fall, while the largest change occurred in other income, which more than doubled.¹⁹ This broke the trend that began when the stock market collapsed at the end of 2000 and net interest income generated a growing share of total earnings (see Figure 3:6). Interest income now contributes almost two-thirds of total earnings, while the share from commission income has shrunk from a high of 32 per cent in 2000 to 27 per cent in the latest reporting period. The combined share from financial transactions and other income has contracted even more, from between 15 and 20 per cent in the late 1990s to just over 8 per cent in the latest reporting period.

In the 1990s income became increasingly diversified as a result of strategic decisions as well as the long stock-market boom. While a greater diversification of income may not be desirable for shareholders, all else equal it does reduce the risk in an individual bank's earnings, which creditors and authorities tend to appreciate. The tendency has ceased in recent years but the earnings of the major banks continue to be more diversified than in the mid 1990s.

The second half of the 1990s was a period of falling interest rates, relatively moderate credit growth and declining margins on deposits and lending, with the result that the growth of net interest income was weak and sometimes negative. To a large extent, however, this was offset via a strong stock-market trend and increased private saving, so the banks' commission income from asset management, life insurance and investment banking rose. This meant a growing exposure of earnings to the stock market instead of to the credit market. In recent years the greater exposure to the stock market has naturally been negative for earnings at the same time as net interest income has had a stabilising effect. While it is not clear to what extent equity and credit markets actually co-vary over time, these two sources of income have had favourable complementary effects in the past ten years. Considering that the share of earnings that comes from net commission income is still almost twice as large as in

¹⁹ Other income is defined here as the sum of dividends received, other operating income, profits from associated companies and operating result of insurance operations.

1995 and the banks have not discontinued such operations as asset management, this diversification will continue.

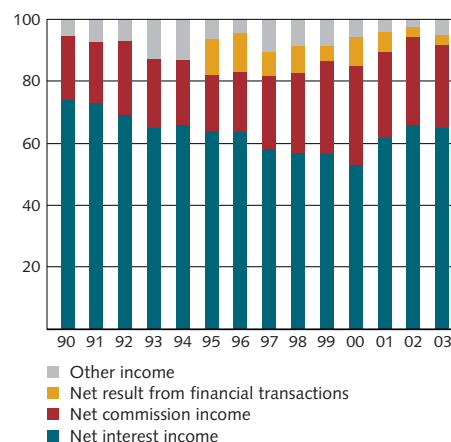
The dramatic drop in net income from financial transactions has hardly contributed to an impaired diversification of income. Instead of reflecting a particular line of business, this item mirrors the market risk in the banks' total operations and is dependent on, for example, funding strategies and the banks' functions as intermediaries and market makers. So in the present context, net income from financial transactions should not be considered separately from net interest and commission income. Furthermore, a number of the major banks have deliberately tried to reduce the market risk in their portfolios and this naturally tends to lower the average level of net income from financial transactions.

Net interest income's increase of almost 3 per cent conceals differences between the banks. The increase for Handelsbanken amounted to 10 per cent, as against an average of less than 1 per cent for the other three major banks. However, much of the difference is explained by Handelsbanken's relatively large proportion of securities-based funding in the United States. In that the costs for hedging this funding are booked under net income from financial transactions, net interest income is inflated in periods when the US dollar depreciates. The operational net interest income of the major banks, which does not include Handelsbanken's short-term exchange rate movements, rose less than 1 per cent. The growth of net interest income in recent quarters has come to a large extent from large corporate and market divisions, while the trend for retail is very weak for all the banks except Handelsbanken (see Figure 3:7).²⁰

The tendency for the growth of net interest income to slacken in the latest reporting period is explained by a lower growth of credit and some weakening of margins (see Figure 3:8). The downward interest rate trend in this period exerted pressure on deposit spreads and this was only partly offset by rising lending spreads. Although a rising interest rate environment would strengthen deposit margins in the short run, there is little prospect of margins improving more permanently. Thus, a larger increase in volume is required for a stronger growth of net interest income. A development in line with the main scenario is more likely to result in an unchanged growth of lending, which implies that the growth of net interest income will remain low.

Net commission income fell more than 3 per cent on account of declining stock-market prices and turnover (see Figure 3:9). However, the Q2 and Q3 equity price rise, in the Nordic area as well as the rest of Europe, meant that net commission income was reinforced with increased fees from stock broking and asset management. Securities commissions rose in annual terms in Q3 for the first time in three years (see Figure 3:10). Payment commissions went on rising by more than 10 per cent, partly supported by some minor acquisitions, and other commission

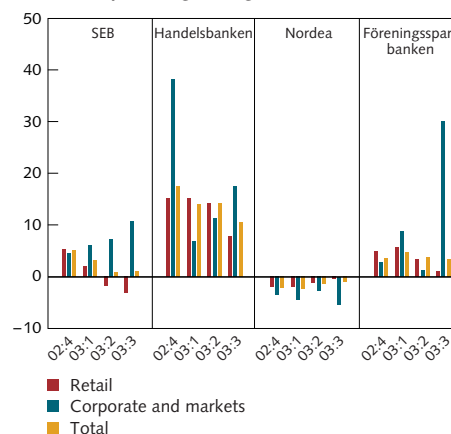
Figure 3:6. Income breakdown in the major banks. Per cent



Note. The data for 2003 refer to the latest reporting period.

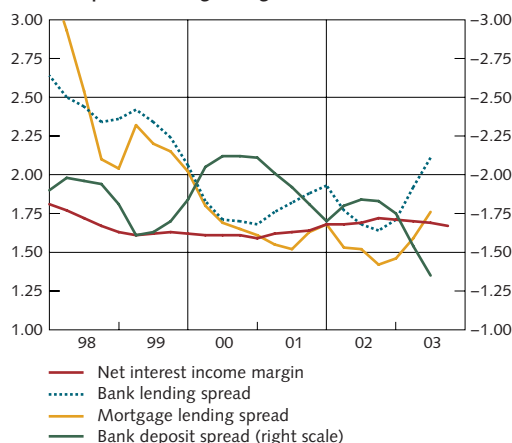
Sources: Bank reports and the Riksbank.

Figure 3:7. Operational net interest income, accumulated over four quarters. Annual percentage change



Sources: Bank reports and the Riksbank.

Figure 3:8. Net interest income margin and spreads on bank deposits, bank lending and mortgage lending, four quarter moving average. Per cent

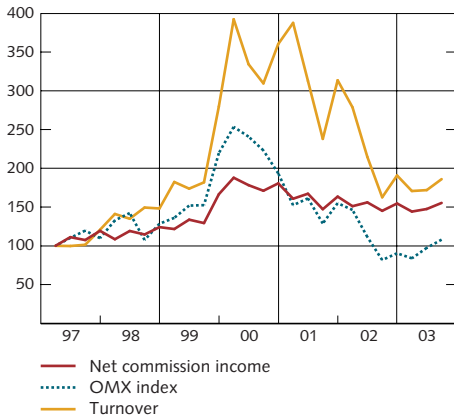


Note. The spread is calculated as the difference between the average lending and deposit rate of interest and a 6-month treasury bill.

Sources: Bank reports and the Riksbank.

²⁰ Note, however, that differences in how the banks define their lines of business make inter-bank comparisons of this type hazardous. Handelsbanken's branch offices, for example, includes operations that the other banks would assign to their corporate divisions.

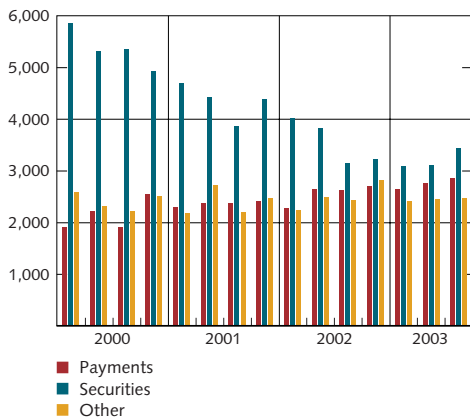
Figure 3:9. Net commission income in the major banks together with equity prices and turnover on the Stockholm Stock Exchange. Index: March 1997 = 100



Note. The income figures are pro forma adjusted for acquisitions.

Sources: Bank reports, Stockholmsbörsen, and the Riksbank.

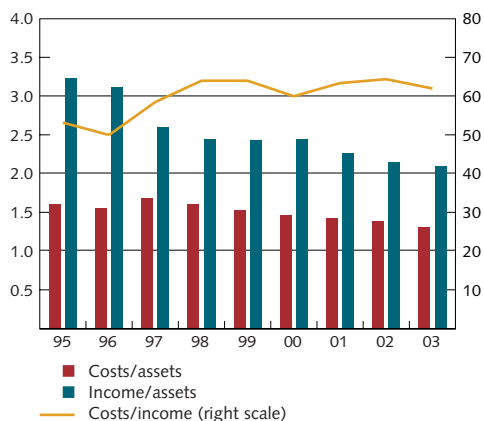
Figure 3:10. Net commission income in the major banks, by category. SEK million



Note. The figures are pro forma adjusted for acquisitions.

Sources: Bank reports and the Riksbank.

Figure 3:11. Ratios of costs and income to assets and of costs to income. Per cent



Note. The data for 2003 refer to the latest reporting period.

Sources: Bank reports and the Riksbank.

income grew by over 6 per cent. While growth is high in the two latter commission categories, a continued stock-market recovery is needed to generate a total annual increase of more than 5–6 per cent.

Net income from financial transactions dropped 17 per cent in the latest reporting period. Equity and interest income both developed positively, supported by the stock market recovery and falling long-term interest rates, but this did not make up for the negative effect of exchange rate movements. As mentioned earlier, the negative exchange rate effect, which had to do with the Swedish krona's appreciation against the US dollar and the euro, should largely be seen together with net interest income.

COSTS

The costs of the major banks fell almost 4 per cent in the latest reporting period. The measures taken last year by a number of the banks are now beginning to result in lower costs. But although the number of employees was reduced by 4 per cent in this period, the level of staff costs hardly changed. The fall in total costs came instead from a 7 per cent reduction of other costs, which amount to almost half of the total and consist of, for example, IT, administrative and marketing costs, rents and depreciation. Rationalisation affects these kinds of cost more quickly than staff costs, which instead are liable to rise initially in connection with severance agreements.

As incomes have been stable, the reduction of costs has yielded some improvement in cost efficiency (see Figure 3:11). The cost-income ratio is just now just below the average level for the latest five-year period. During this period, costs and income have both fallen almost 20 per cent in relation to assets. The cost cutting has accordingly been successful as a defensive strategy for coping with decreased income but has not sufficed for a more permanent improvement in cost efficiency. The average cost efficiency (C/I ratio) of the major Swedish banks is on a par with that of other Nordic banks (see Figure 3:12). In relation to assets, however, the costs of the major Swedish banks are very low, which strengthens the impression that a relatively weak generation of income is more of a problem than high costs.

Assets – credit risk

The assets of the major banks rose 3 per cent during the latest reporting period to SEK 5900 billion in September. The growth of interest-bearing assets, apart from interbank claims, was weak, accompanied by somewhat stronger growth for insurance assets and other assets.

LENDING

Historically, credit problems in the bank sector have often arisen after a rapid expansion of lending. Credit growth is therefore frequently used as an approximate indication of how bank risk is developing.²¹ In September

the growth of lending by the major Swedish banks amounted to less than 2 per cent in annual terms, which is clearly below the average level in the past two years. The Nordic market is still characterised by a relatively strong expansion of 6–10 per cent in lending to households and a slight increase in corporate borrowing. Q3 credit growth in the Baltic countries ranged from 25 to 50 per cent, while lending in Germany was broadly unchanged. In terms of lending growth over the entire reporting period, the major banks are fairly similar, with rates between 3 and 6 per cent, but the factors behind the growth differ. Föreningsparbanken, with the highest credit growth, is expanding relatively slowly in the Swedish market; but its Baltic subsidiary, Hansabank, is achieving a rapid increase in credit, though it still accounts for only 5 per cent of the group total. In contrast, for the other three major banks, growth in Sweden is higher than abroad because their foreign lending is mainly directed at the Nordic and German markets, which are growing more slowly.

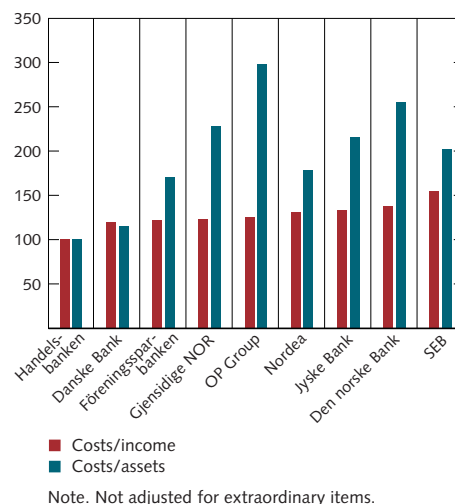
A point worth noting is the considerable differences in the major banks' development in the Swedish market. The average level of lending to Swedish companies in the past year was almost unchanged for SEB, Föreningsparbanken and Handelsbanken, while in Nordea it rose 7 per cent (see Figure 3:13). The growth of lending to households has become gradually stronger during the past year from all the major banks except Handelsbanken, for which there has been a clear slowdown (see Figure 3:14). Nordea and, above all, SEB stand out with rates of 10 and 15 per cent, respectively, that come entirely from growth in their mortgage lending operations. A partial explanation for the latter is that Nordea's and SEB's shares of the household market are small compared with those of Föreningsparbanken and Handelsbanken, but it also has to do with differences in strategies and pricing.

CREDIT QUALITY

Impaired loans and loan losses as percentages of total lending are indicators of a bank's credit quality.²² In both cases the deterioration in credit quality has already occurred, so no information is provided about the probability of further losses.

The proportion of impaired loans in lending by the major banks has in principle been unchanged during the latest reporting period (see Figure 3:16). Meanwhile, loan losses have risen 15 per cent, mainly due to decreased recoveries and reversals of earlier provisions. Provisions for new loan losses have risen only marginally in recent quarters. Except in periods of deep and widespread recession, the development of loan losses has more to do with the composition of the banks' exposures than with macroeconomic factors. The economic slowdown in recent years has been clearly linked to major declines in certain industries, such as IT, telecom and media, but they represent just a limited part of the major

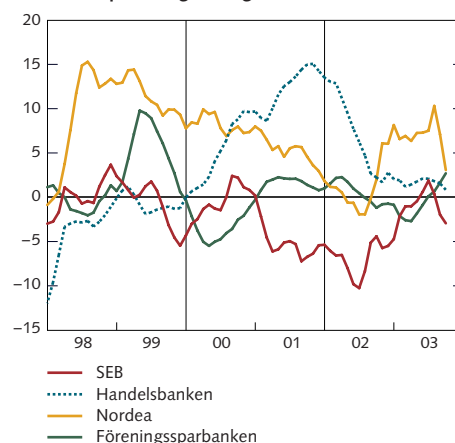
Figure 3:12. Ratios of costs to income and assets. Average 2001–2003. Index: Handelsbanken = 100



Note. Not adjusted for extraordinary items.

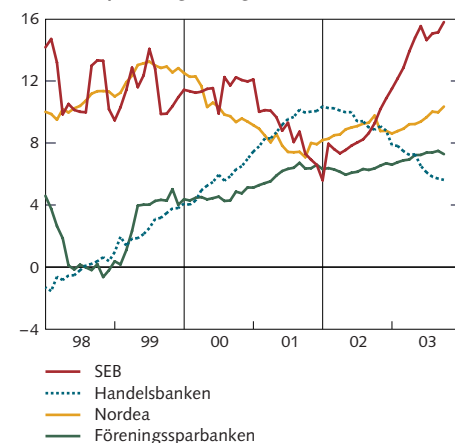
Source: Bloomberg.

Figure 3:13. Bank and mortgage lending to companies in Sweden, moving 3-month average. Annual percentage change



Source: The Riksbank.

Figure 3:14. Bank and mortgage lending to households in Sweden. Annual percentage change

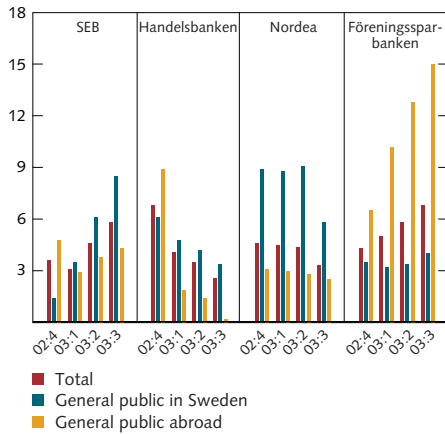


Source: The Riksbank.

21 See the article on credit expansion in Financial Stability Report 2002:2.

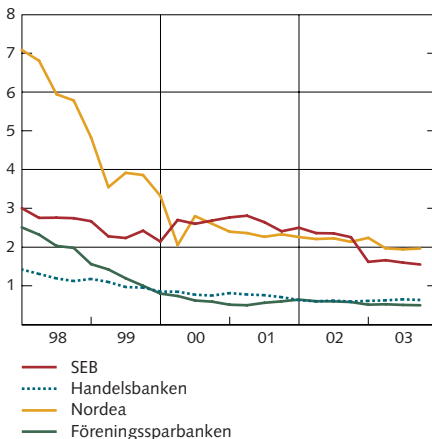
22 Impaired loans are gross before accumulated provisions; loan losses are net provisions for incurred and probable loan losses after recoveries and reversals.

Figure 3:15. Lending to general public in Sweden and abroad, accumulated over four quarters. Annual percentage change



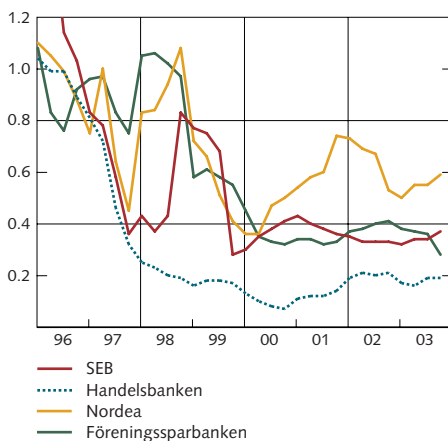
Sources: Bank reports and the Riksbank.

Figure 3:16. Impaired loans, gross. Per cent of lending



Sources: Bank reports and the Riksbank.

Figure 3:17. Provisions for incurred and probable loan losses, accumulated over four quarters. Per cent of lending



Sources: Bank reports and the Riksbank.

banks' exposures. So to date the effect of the slowdown on loan losses has been only marginal. The minor increase that Nordea has nevertheless incurred this year illustrates the significance of exposures to a particular industry, in this case the crisis-ridden Norwegian fish-farming industry. Although credits to this industry amounted to less than 1 per cent of Nordea's total credit exposures, they occasioned a considerable share of this year's provisions. Apart from this, there is nothing in the accounts to suggest that credit quality has deteriorated in recent quarters.

The level of loan losses in the major Swedish banks is fairly close to the average for comparable Nordic banks (see Figure 3:18). The generally low levels indicate that during the economic slowdown in recent years the quality of Nordic credit has not deteriorated more than marginally.

A development in line with the Riksbank's main scenario, with a slight acceleration of growth in the year ahead, should not lead to markedly higher loan losses. But as loan losses usually follow the business cycle with some lag, a minor increase is not unlikely. The main source of uncertainty in this assessment is the corporate sector in Norway and Germany, where the recovery looks somewhat more fragile than in Denmark, Finland and Sweden (see Chapter 2). Market prices in the Nordic area as well as Germany imply expectations of a clear improvement in credit quality in the coming year. According to an illustrative calculation with an unchanged quality of household portfolios, where bankruptcies in the corporate portfolios of the major banks follow expected default probabilities (EDF), provisions would decrease by around one quarter.²³ In relation to total lending, that would result in a level around 0.3 per cent, which is in line with the low levels at the beginning of 2000.

COUNTERPARTY EXPOSURES

The central role of the major banks in the Swedish markets for currency, deposits, securities and derivatives results in considerable exposures to counterparties and settlements.²⁴ As these exposures are primarily to other financial institutions and large non-financial companies, the risk of default is admittedly small as a rule. But if a default were to occur, the exposures are so large that the consequences for systemic stability could be serious. In the context of stability, these risks are particularly relevant when the counterparty is a bank or some other financial institution since that entails the risk of a problem in one of these institutions spreading to the others.

The counterparty and settlement exposures of the four major banks rose more than 18 per cent during the first half of this year. The increase between the first halves of this and last year was 16 per cent. Strong increases were noted above all for exposures via currency settlements

²³ See the discussion on p. 24. EDF is based on information about listed companies; as its composition by industries differs from that of the banks' corporate portfolios, it should be interpreted with caution.

²⁴ For a more detailed account of the Riksbank's analysis of counterparty and settlement exposures, see Financial Stability Report 2002:2 and Blåvarg, M. & Nimander, P., (2002), "Inter-bank Exposures and Systemic Risk", Sveriges Riksbank Economic Review, no. 2.

and securities. Riksbank data indicate that the credit ratings of the counterparties are satisfactory and have not changed.

If one of the major banks were to lose the whole of its exposure to its largest counterparty, that would probably result in problems with solvency. The magnitude of the solvency problem from a counterparty failure would depend in practice not just on the size of the exposure but also on how much of the original claim the bank finally manages to recover.²⁵ Given that the bank recovers 25 per cent of the exposure, in 3 cases out of 8, a counterparty failure in the first half of 2003 would have led to the tier 1 capital ratio falling below the statutory requirement of 4 per cent (see Figure 3:19).

The risk of contagion between the major banks must be said to be moderate. In only 13 per cent of the reported exposures in the first half of this year would a suspension of payments by one of the major banks have meant that the exposed bank did not meet the solvency criterion (see Figure 3:20).

All in all, the relatively good credit quality of the counterparties indicates that the probability of a sudden default is low. In the event of a failure and even assuming low recoveries, there are only a few cases where contagion from one bank to another would occur. But compared with the corresponding period a year earlier, there has been some increase in the major banks' exposures to each other. An important caveat when interpreting the calculations above is that, as exposures tend to be reduced for the end of quarters, the banks' counterparty risks are probably larger in the periods between quarter ends.

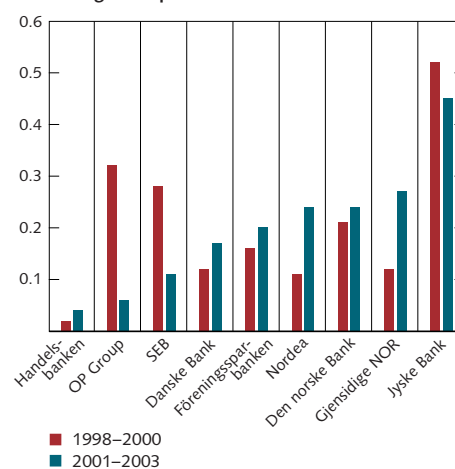
Liabilities – liquidity risk and capital

The banks' combination of predominantly illiquid assets (loans) and liquid liabilities (short-term deposits and borrowing) make them vulnerable to problems with funding. The structure of the banks' funding is therefore a central issue for stability. The most volatile source of the major banks' funding is presumably the international interbank and certificate markets. Funding in these markets is mostly at short maturities and the investors are sensitive to changes in credit ratings and confidence. If for some reason a bank's solvency is questioned, it is these sources of funding that would most probably disappear first.

For a long time now the major Swedish banks have been net borrowers in the international interbank market. Moreover, in recent years a

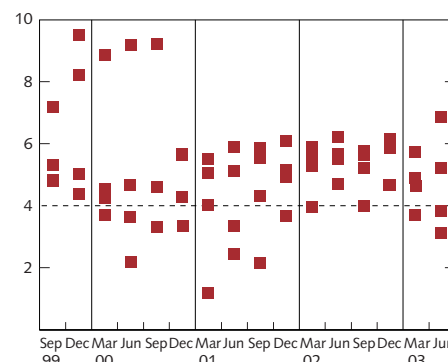
In Figures 3:19 and 3:20, the Tier 1 capital of each of the major banks has been reduced in each period by 75 per cent of the amount of the bank's largest corporate and interbank exposure, respectively. The reduction is limited to 75 per cent to allow for the existence of collateral for a part of the exposure. The effect accordingly represents a situation where the bank's largest counterparty (a large company or another major bank) suspends payments with immediate effect with no advance warning and the possibility of recovery is judged to be comparatively small. The resultant levels of Tier 1 capital in the figures should therefore be seen as outcomes of an extreme stress test.

Figure 3:18. Loan losses as a share of lending. Average over period. Per cent



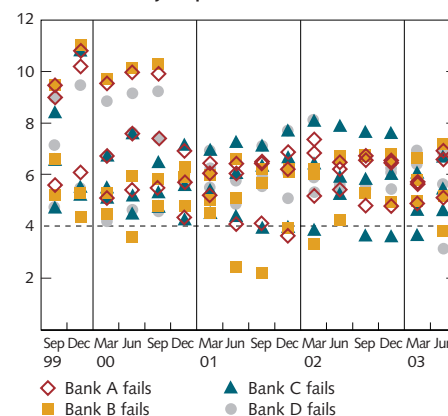
Note. Not adjusted for extraordinary items.
Source: Bloomberg.

Figure 3:19. Tier 1 capital ratio in the four major Swedish banks after a default of their largest counterparty. Recovery 25 per cent. Per cent



Source: The Riksbank.

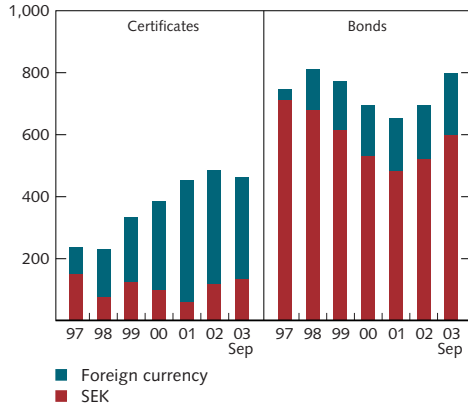
Figure 3:20. Tier 1 capital ratio in the four major Swedish banks after the default of a major Swedish bank. Recovery 25 per cent. Per cent



Note. Given that Bank A fails, the tier 1 capital ratio is calculated for banks B, C and D at the end of each quarter. This enables tier 1 capital ratios in each period for the three surviving banks to be observed after a specific bank has defaulted.
Source: The Riksbank.

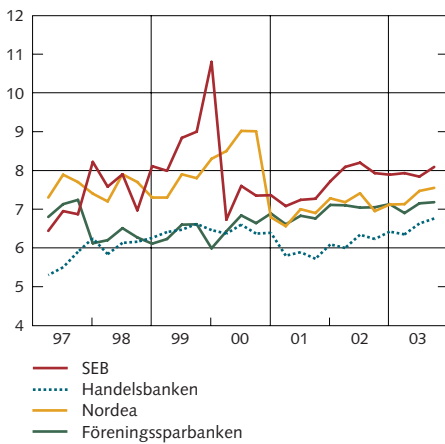
25 The proportion recovered depends primarily on the bank's collateral; it also differs between sectors.

Figure 3:21. Certificate and bond borrowing from the Swedish parent banks and mortgage institutions of the four major banks, broken down by currency. SEK billion



Source: The Riksbank.

Figure 3:22. Tier 1 capital ratio. Per cent



Sources: Bank reports and the Riksbank.

growing proportion of borrowing against certificates and bonds is in foreign currency (see Figure 3:21). This means that credit to the domestic market is financed to some extent by borrowing on markets abroad. Still, the major banks are not exposed to exchange risk here because swap agreements are used to match the currency composition of funding and assets (though there is a certain counterparty risk). Moreover, lending in foreign currency to the Swedish general public is relatively limited.

CAPITAL

In September 2003 the capital adequacy and Tier 1 capital ratio of the major banks were 10.1 and 7.4 per cent, respectively. Tier 1 capital rose during the latest reporting period, with basically no change in risk-weighted assets and supplementary capital. The levels of capital have been very stable during the past two years, though all the major banks have gradually built up their Tier 1 capital ratio from the levels in 2001 (see Figure 3:22). Considering the economic situation and the development of earnings and loan losses, this level appears to be satisfactory.

Summary assessment

The profitability of the major banks has improved since the previous Report. The stabilisation of underlying earnings during the second half of 2002 has now been followed by a minor increase. This has been accompanied by only marginally higher loan losses. Much of the increase in earnings comes from improved profits in the banks' insurance operations. The reinforcement of core profits has been achieved above all by a notable reduction of costs in a number of banks. The development of income in banking operations remains weak. The assessment in the previous Report that an appreciable improvement in profitability requires a stronger economic recovery than envisaged in the main scenario still holds. However, the Riksbank considers that in recent quarters the ability of the major banks to absorb unexpected losses has been strengthened to some extent.

■ The financial infrastructure

This chapter contains a discussion of some efficiency problems arising from the way in which the Swedish system for large-value payments, the RIX system, is used by its participants. These consist of the need for high levels of liquidity and the heavy demands on the system during peak periods. Simulations carried out by the Riksbank show that the liquidity necessary could be reduced significantly if the system were redesigned. A change in payment behaviour that would result in a more even flow of payments would also increase efficiency. At the end of the chapter, there is a report of the availability statistics for the RIX system and the Riksbank's assessment of the Swedish system for securities settlement.

The Riksbank's analysis of financial stability also includes an analysis and assessment of the financial infrastructure, that is to say, the systems needed to enable payments as well as trading and settlement of financial products.²⁶ The oversight of the stability of the infrastructure involves identifying structural weaknesses that could lead to contagion risks via the payment system. However, the Riksbank's oversight responsibility does not just include the stability of the payment system; it also covers the system's efficiency. The first part of this chapter contains a discussion of the efficiency problems that have been identified in the use of the Swedish system for large-value payments and various possibilities for improving efficiency. The Riksbank also analyses here disruptions that have occurred in the RIX system, to help to identify the system's weak points and prevent problems which can arise from these areas of vulnerability.

Part of the Riksbank's oversight work entails regular assessment of each component of the infrastructure in accordance with international principles. This report contains an evaluation of the Swedish system for securities settlement.

Efficiency problems in the use of RIX

The Riksbank concluded in its previous Financial Stability Report that the RIX system for settlement of large-value payments was not efficient enough.²⁷ The banks choose to borrow considerable amounts during the day from the Riksbank to make their payments. As these loans are granted against collateral, the banks must pledge large quantities of securities, often government bonds or other securities with a high credit rating. Holding securities entails a cost for the banks and the use of considerable sums of liquidity entails an efficiency problem. Another efficiency problem is that the system is used in a way which causes it to be overloaded at certain times.

²⁶ For a more detailed discussion of the oversight responsibility, see "The Riksbank's oversight of the financial infrastructure", Sveriges Riksbank Economic Review 2001:3.

²⁷ The Riksbank's complete assessment "Assessment of RIX in accordance with the Core Principles for SIPS" can be obtained from www.riksbank.se. The IMF also pointed out the same efficiency problems in its assessment of the financial system – IMF Country Report 01/161, Sweden. Financial System Stability Assessment.

HIGH LIQUIDITY UTILISATION²⁸

The RIX system is based on the principle of real-time gross settlement – the payments are processed one by one at the rate and in the order they are received by the system. If a bank does not have enough funds in its account to complete a payment, its transactions are placed in a queue. When the bank has received sufficient liquidity, it can complete the transaction that is first in line.

The banks can meet their liquidity requirement by intraday borrowing from the Riksbank. These loans are made against collateral and the banks may borrow up to an amount corresponding to the value of the collateral pledged, minus a haircut. During 2002, a system for automatic pledging was introduced. This system allows the participants to pledge and release various types of securities very quickly.

The advantage of real-time gross settlement is that the participants have no exposures and therefore no risks. The disadvantage is that this type of settlement requires more liquidity than net settlement and thereby that the banks hold more collateral. Many countries have therefore developed systems that combine the characteristics of net settlement systems with those of real-time gross settlement systems. In this way the need for liquidity can be reduced without increasing risks.²⁹ Examples of combination systems are the Bundesbank's RTGS+, a real-time gross settlement system with the capability to settle queued payments on a net basis, the Federal Reserve's NewChips and Banque de France's PNS, which are net settlement systems with continuous net settlement (which in practice means that many payments are settled in real-time).

When the RIX system was launched at the beginning of the 1990s, a large part of the payments was made in the middle of the day, which was connected to the settlement time of 12 noon for the manual payment system that applied earlier. The Swedish banks have worked together, by setting up a settlement schedule, to try to reduce the problems ensuing from a large part of the payments being made during a brief time slot by agreeing to send related payments at several different times during the day. The fact that they still choose to have pre-determined times for settlement is due to a desire to match outgoing and incoming payments. If this were not done, there is a risk that banks would hold onto their payments to save liquidity. This could mean that banks sending payments early would suffer a liquidity shortage. The banks' settlement schedule means that payments arrive in batches. The largest batch consists of payments related to foreign transactions that shall be sent to RIX at 9.30 a.m. Despite the fact that payments have been spread over several different times, there is still a heavy load on the system and high liquidity requirements at peak periods.

²⁸ The RIX system actually consists of two separate systems and a number of ancillary systems; K-RIX for settlement in Swedish kronor and E-RIX for settlement in euros. The latter came into operation in 1999 and is linked to the ESCB's payment system, TARGET. Our analysis here is limited to K-RIX.

²⁹ For a review of developments in the design of payment systems, see James McAndrews and John Trundle, *New payment system design: causes and consequences*, BoE Financial Stability Review December 2001.

In practice the banks choose to have more liquidity in their accounts than absolutely necessary. This enables them to make payments continuously. At the same time, it entails increased costs.

A bank's holding of collateral can be financed either through the bank borrowing money or refraining from making alternative investments. In both cases an alternative cost for the collateral arises. If the bank chooses to borrow, the cost will be the difference between the borrowing rate and the return on the collateral. If the bank instead chooses to refrain from making alternative investments, the cost will comprise the difference in yield between the alternative investments and the collateral, adjusted for risk-taking. The alternative cost is zero in the case of the borrowing rate being the same as the expected return on the collateral or if the alternative investments provide the same expected risk-adjusted return as the collateral.

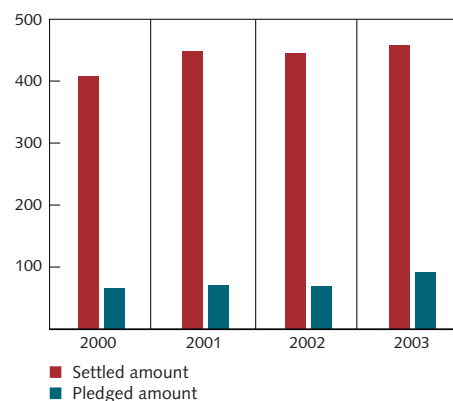
There is a trend for the banks to increase their use of collateral when borrowing in the market and to show a deposit deficit. The first of these means an increase in the holdings of collateral and the second that the holdings must to a greater extent be financed through borrowing. The trend towards increased pledging when borrowing in the market could therefore, if demand increases, affect the price of certain types of collateral.

In the central payment systems of some other countries, less collateral is held than in RIX. There is nothing in the design of the RIX system as such that motivates this difference. Based on the current payment flows, liquidity need of approximately 10 per cent of the average daily payment value in the system would be reasonable.⁵ The collateral the banks have pledged with the Riksbank currently are valued at SEK 91 billion on average. This corresponds to 20 per cent of the total payment value and is therefore more than the estimated requirement. It is also higher than in previous years (see Figure 4:1). Assuming that the alternative cost is within the interval 0.1–0.3 per cent of the nominal value of the collateral, the alternative cost of this collateral should be within the interval SEK 91–273 million per year. This is a cost for the banks, but also for the economy as a whole. The costs must ultimately be covered by the banks' customers and this entails higher costs for financial services in general.

The banks thus have a higher pledging level than they need and do not appear to be actively attempting to minimise it. They have the possibility to adjust their collateral by means of a simple, split-second transaction, but only make ten or so changes to their collateral mass per day. The banks' pledging indicates that they perceive the alternative costs to be negligible or simply non-existent. However, not all of the banks manage their liquidity in the same way. Some of them perceive the present situation with a high liquidity requirement and a perceptible alternative cost to be a problem. The banks' agreement on a settlement schedule and the existence of intraday loans between the banks within the system are signs that all of the banks have a basic interest in reducing their pledging.

Both the liquidity requirement and the possibilities to manage liquid-

Figure 4:1. Average settled and pledged amount per day in RIX. SEK billion



Source: The Riksbank.

ity will change in the late autumn with the introduction of VPC's new clearing and settlement system. A number of payments will be made at certain times of the day, while liquidity will be transferred to the VPC system. This is because VPC administers its participants' accounts with the Riksbank. The banks participating in both systems may be able to move liquidity between their different accounts, which means that some liquidity will be transferred from RIX to VPC. It remains to be seen to what extent the amount of collateral pledged will increase further

There is a possibility that the banks' views of their alternative costs will change and that more banks will perceive the high liquidity requirement to be an unnecessary cost, which they should try to reduce. It would then be reasonable for the Riksbank to examine why the banks act differently and what causes lie behind the high liquidity requirements.

PERIODIC HIGH DEMANDS ON THE SYSTEM

The participants' possibilities of implementing payments in real time depend on the system's capacity to cope with the flow of payments entered at any time. Previously, the RIX system has been excessively strained in peak periods. This gave rise to the risks which the real-time function is meant to reduce.

The capacity problems were partly due to the technical capacity of the system, but perhaps mostly to the actions of the participants. The settlement schedule established by the banks meant that many payments were made simultaneously at certain points during the day and there was therefore considerable strain on the system at these points. Queues arose every day when the payments arising from correspondent bank relations and foreign exchange trading were settled early in the morning. The system's capacity was then insufficient to process all the incoming transactions in real-time. There is a function in the RIX system that allows participants to prioritise especially important payments that are settled before the others. In addition, liquidity can be reserved for certain payments. In May 2003, the Riksbank increased the technical capacity of the system and thereby reduced the problem. As a result processing speed is high enough to handle the settlement peaks which arise. Gradually adapting the system to manage higher payment peaks is, however, a costly process. In the end, the system risks becoming over-dimensioned and burdening participants with higher costs than are motivated by the actual payment flows.

However, conditions have recently changed in a number of aspects, which makes it difficult to assess the extent to which the problem still remains. One change is that the Swedish krona has been introduced into CLS.³⁰ This has meant that the settlement schedule has been changed and that the payments have been spread out more. Payments for foreign exchange transactions largely go via CLS and correspondent bank payments have been moved to the slightly later time of 9.30 a.m.

³⁰ CLS Bank offers a system for settlement of certain currencies, which significantly reduces the risk normally associated with foreign exchange trading. CLS was the initiative of a large number of international banks at the instigation of the G10 countries' central banks and began its operations in 2002. See further under the heading News. For a more detailed presentation of CLS, see Financial Stability Report 2001:2.

Another change that might act in the opposite direction is that a new communications system, SWIFTNetFIN, will come into operation Q1, 2004. RIX will thereby have the same system as large parts of the rest of the world. However, the disadvantage is that this system will temporarily reduce the RIX system's process capacity to manage payments compared with today. The fact that the number of payments is increasing constantly in RIX, from around 1,500 payments a day in 1999 to today's figure of 5,100, could also aggravate the problem.

POSSIBLE SOLUTIONS

The Riksbank has simulated various designs for the RIX system and how it can be used to systematically study possible solutions to the existing efficiency problems.

The Riksbank has used real payment data as a basis for its analysis, in this case all of the payments settled in RIX on 9 September 2003. The payments have then been settled in a model version of RIX.³¹ Changes in the design of the model version make it possible to study how alternative designs for the system could affect the liquidity requirement and how quickly settlement can be made. The average time during the day when the payments are settled is used as a general measure and provides a rough estimate of how much the settlement has shifted in the various simulations.

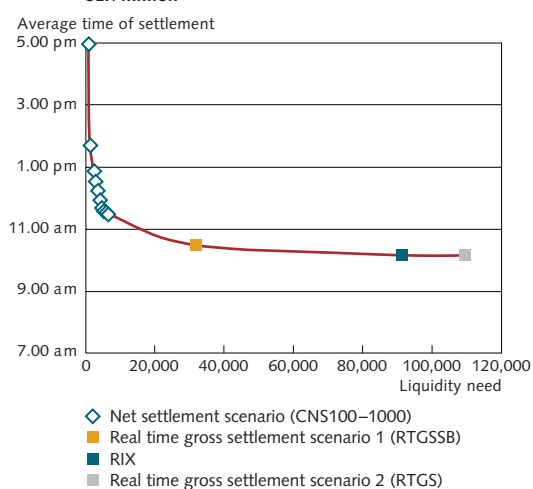
The parameters the Riksbank has experimented with are the form of settlement, that is to say, real-time or net settlement or combinations of these, and credit restrictions for the participants. In this way the Riksbank can study how rapidly the payments flow through the system and how much liquidity, and thereby pledging of collateral, is required. Rapid settlement gives low risks, which is the reason why we now have a real-time gross settlement system. On the other hand, the real-time gross settlement system often leads to a higher liquidity requirement. The aim is to find an efficient balance, from the society's point of view, between the costs and risks.

The following simulations have been made:

1. *Real-time settlement*: The payments are settled directly when received by RIX in that liquidity is debited from the participant's account. The simulation is made under three different assumptions. In the first scenario, (RTGS), all of the participants have access to unlimited credit. They therefore do not have any liquidity restrictions

³¹ This simulation program was developed by the Bank of Finland and has been used by them to assess liquidity effects caused by the introduction of a new payment system. Approximately a dozen central banks around the world have used this program. The Central Bank of Iceland compared different types of payment system and determined credit limits with the aid of this program. The Federal Reserve Bank in New York studied the queue management system. Various methods of resolving a gridlock in the payment system have been investigated by Danmarks Nationalbank. The Bank of Japan has simulated different solutions for dealing with gridlocks and various types of queue management system. In South Korea, the Bank of Korea has simulated the effects of different ways of supplying liquidity. See also Morten L. Bech & Kimmo Soromäki, Gridlock Resolution in Interbank Payment Systems, Danmarks Nationalbank, Monetary review – Q4, 2001.

Figure 4:2. Simulation results.
SEK million



Source: The Riksbank.

Figure 4:2 shows different settlement simulations as combinations of the average hour for settlement and the requirement on participants' liquidity. Increased use of liquidity allows for an earlier average settlement hour and thus a shorter average risk exposure. This is indicated by the graph, which exemplifies a range of potential applications and uses of the central settlement system.

in this scenario. The purpose of the simulation is to create a reference case to be used to compare the other simulations. In the second scenario (RTGSSB), the credit limit is set individually for each participant at an amount corresponding to their largest payment during the day. This simulation is aimed at showing that it is possible to reduce the liquidity requirement for the system as a whole using gross settlement by changing participants' behaviour. The scenario does not assume any system changes, but can be used to discuss how the need for liquidity can decrease if participants change their behaviour.

2. *Continuous net settlement:* A payment is finalised when there is liquidity in the bank's account or the participant can entirely or partly set off its outgoing payment against an incoming payment. The simulation was implemented under ten different assumptions of how much collateral is deposited, from SEK 100 million up to SEK 1 billion. The amount of collateral was increased by one hundred million kronor per scenario. The purpose of these simulations is to study the possibility of reducing the liquidity requirement in RIX.

Figure 4:2 shows each modelled settlement system and the actual RIX system as a combination of average settlement time and liquidity requirement. As mentioned above, liquidity is linked to costs for participants and the average settlement point of time reflects to some extent the risk in the system. Each point of the figure therefore symbolises a balance between risks and costs.

The figure shows that real-time settlement and unlimited credit for the participants creates a liquidity requirement of SEK 110 billion, or around 23 per cent of the total payment value. This is slightly more than the actual pledging in RIX, which was SEK 91 billion that day. The difference is due to the model system's liquidity requirement being the total of the individual participants' maximum liquidity requirement during the day, while the need in practice is lower, as the participants do not all experience their maximum liquidity requirement at the same time. Both systems have the same risk level, as the average settlement time remains almost unchanged.

Real-time gross settlement scenario two, where the credit limit corresponds to the participant's largest payment, shows that the liquidity requirement can be lowered to SEK 32 billion. The cost, in terms of slightly increased risk, arises in that the average settlement time is postponed approximately 20 minutes.

With net settlement of payments, the liquidity requirement can be limited considerably to the price of a higher risk level through a clear shift in the average settlement time in comparison with the reference scenario of real-time settlement. An example that can be mentioned here is that the net settlement scenario with a credit limit of SEK 800 million required SEK 5 billion in liquidity and gave a one-hour delay in comparison with the reference scenario.

The real-time gross settlement scenarios give an indication that the liquidity requirement in RIX may be reduced by changing the regulations

and agreements between the participants. If the Riksbank and the participants were to accept the 20-minute delay, which arose comparing the two real-time settlement scenarios, they could theoretically agree that all participants should pledge collateral to the Riksbank corresponding to the day's largest payment. This measure gives an indicated reduction in the liquidity requirement from SEK 91 billion to SEK 32 billion kronor. In this way, the liquidity risk would decrease but the duration of exposures would increase. Although the simulations are a substantial simplification of reality, the liquidity saving is so large that it gives good cause for continued investigation and discussions.

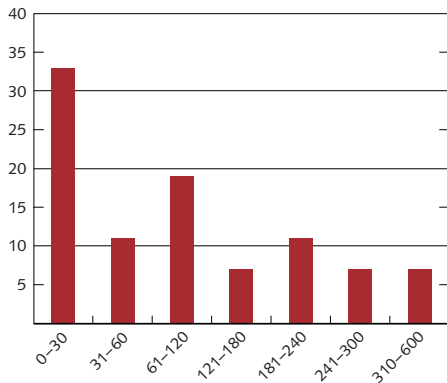
If the problems connected with the periodically high level of demand on RIX continue, they could be solved, at least in the short term, by spreading out payments more over the day. There are a number of points of time during the day when payments arising from netting processes outside of RIX are carried out, for instance, flows stemming from VPC, BGC and CLS. These are difficult to move as they require that all participants in these systems implement their payments at the same time. Other types of payment are easier to spread out. If designed in the right way, an increased spread of the payments could also give the banks continued opportunities to utilise meeting payments to save liquidity.

Figure 4:2 shows that the supply of liquidity has a decreasing marginal effect on the time factor. However, the time of the settlement is critical for certain types of payment. We have pointed out earlier that the cost of liquidity can vary from bank to bank and over time. A system that offers both net settlement and real-time gross settlement would give banks with a high liquidity cost the opportunity to choose to settle a greater part of their payments net, while giving an opportunity to settle payments where timing is critical with real-time gross settlement. A combination system would give greater freedom of choice and allow for greater dynamics and better optimisation possibilities for participants. An estimate based on the simulations indicates that the liquidity saving could amount to around SEK 70 billion if a combination system were introduced. Assuming an alternative cost for this collateral of between 0.10 and 0.30 per cent reduces the costs by between SEK 73 million and SEK 218 million a year. A change in the settlement schedule for the payment system and a change in RIX should be discussed with the participants, taking into account the economy as a whole. The simulations indicate that continued studies in this field and discussions between the Riksbank and RIX participants would be useful.

Availability in RIX

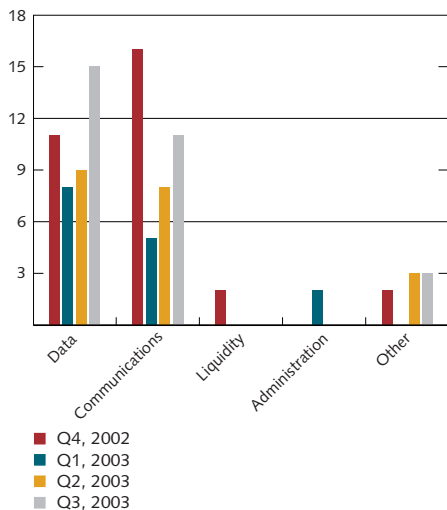
A high level of security and efficiency in the payment system assumes that it is available for regular operations during virtually all its open hours. If this is not the case, the participants cannot implement their payments as intended and the risks increase. The risks that arise depend on the underlying transactions which generate the payments. If the credit and liquidity risks increase, it is particularly serious, as the financial risks can thus spread from one institution to another.

Figure 4:3. Disturbances broken down by duration.
Number of incidents and duration in minutes



Source: The Riksbank.

Figure 4:4. Disturbances broken down by cause.
Number



Source: The Riksbank.

For this reason the Riksbank has begun to systematically follow availability in the Swedish payment system. Availability statistics are gathered both for the RIX central settlement system and for participants connected to the system. Indeed, a payment requires not only that the central settlement system functions, but also that the participants are able to send and receive information. A regular compilation and analysis of disturbances and their causes can enable the Riksbank to identify weak points in the payment system and prevent problems due to these weaknesses.

STATISTICS

Disturbance is here defined as problems experienced by participants in sending or receiving payments in RIX or in executing payment instructions received. On each occasion the participant is to complete an "incident report" which states how long the disturbance lasted, what consequences it had, what it was caused by and what measures were taken. The causes can, somewhat simplified, be divided into five categories:

- Computer problems, both software and hardware problems
- Communications problems
- Liquidity problems
- Administration errors
- Other

The gathering of these statistics from all RIX participants began in October 2002, for the purpose of measuring disturbances in both the RIX system (E-RIX and K-RIX) and the participants' connections to the system. Prior to this only statistics on disturbances in the RIX system were compiled.

Data on disturbances among all RIX participants, including the main system, are reported in Figures 4:3–4:5. There were a total of 95 disturbances that together lasted for 178 hours from October 2002 through September 2003. On average, each participant, including RIX, suffered a breakdown of 9 hours, which corresponds to an availability level of 99.39 per cent. Of these 95 disturbances, 10 were in the actual main system. For these, the time of the breakdown was a total of 9 hours and 43 minutes when either E-RIX or K-RIX, or both at once, were not accessible to participants. This gives an availability figure of 99.34 per cent for the central system. Disturbances in the central system are naturally more serious than disturbances in participants' connections because contingency measures are simpler and easier to initiate in the latter case.

Figure 4:3 shows the disturbances broken down according to duration. Of the total disturbances, 44 lasted for less than one hour and 51 for longer. Some of the disturbances were due to factors beyond the participant's control. Of the 10 disturbances that affected the RIX system, four stemmed from problems in the technical infrastructure and three from disturbances in the SWIFT communications. One example of a disturbance in the SWIFT communications is the event that occurred in E-RIX on 1 September 2003, when the Riksbank's access rights were mis-

takenly disconnected for almost 3 hours by one of SWIFT's international centres. This made it impossible to execute some payments at the given times. There were also 9 disturbances in the RIX system that did not result in reduced availability. One example is the disturbance arising in connection with a production launch on 18 November 2002, when 270 payments were wrongly booked and had to be corrected afterwards.

Most of the 95 disturbances were due to either communications problems, which accounted for 42 per cent, or computer problems, which accounted for 45 per cent of the disturbances (see Figure 4:4). 60 per cent of the computer problems could be attributed to software, 33 per cent to hardware and 7 per cent had other causes.

The high level of dependence on information processing and communications technology means that reserve routines must be robust, but also indicates the payment system's dependence on a few sub-contractors for electricity, telecommunications, programming and certain other communications services. In addition to the SWIFT example mentioned above, there was a telecommunications breakdown on 27 August. Payments could be sent and received as usual via SWIFT communication, but the participants were unable to follow their account balance or reprioritise payments.

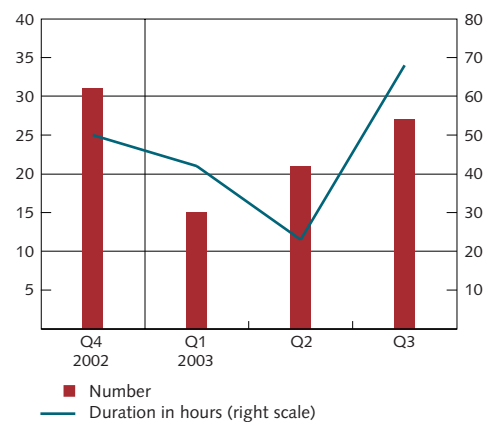
As the payment system is very dependent on computers and communications technology, the Riksbank is working actively on surveying and preventing weaknesses in the payment system. The Riksbank intends to continue gathering statistics on availability and in the long-term to expand the statistics gathered to include all important areas of the payment system. The availability of the payment system as a whole not only affects the extent to which payments can be settled in the RIX system, it also affects the extent to which other hubs of the infrastructure such as BGC and VPC are accessible.

The Riksbank's assessment of the Swedish system for settlement of securities

During 2003, the Riksbank has assessed the system for securities settlement in Sweden on the basis of its own requirements and international standards issued by CPSS/IOSCO.³² The assessment has been limited to trade in shares and debt securities. Derivative trading has not been assessed. The purpose has been to assess the laws, market practice, computer systems and institutions that affect the transaction chain once a transaction is entered into until the buyer has received the securities and the seller has received payment. However, the focus of the assessment is on the system for securities settlement operated by VPC AB (VPC), that is to say, the central settlement system for equity and debt securities in the Swedish market.

Settlement in VPC's system has changed significantly with the introduction of new settlement routines in November 2003. This assessment

Figure 4:5. Disturbances broken down by number and duration.



Source: The Riksbank.

³² CPSS stands for Committee on Payment and Settlement Systems and is a committee within the Bank for International Settlement (BIS). IOSCO stands for International Organization of Securities Commissions.

refers to the system with these new settlement routines and is based on plans and simulations of how the routines will function. However, it has not been possible to analyse the long-term effects of the system in operation. The Riksbank may therefore have good reason to reassess the system at a later stage.

The securities settlement process begins after the market participants have entered into a contract, either on an organised stock market or in OTC trading when a number of checks are made. The contract has to be confirmed, matched and cleared.³³ Through the Swedish Securities Dealers Association, the market participants have agreed on times and methods for implementing these checks. The Riksbank has assessed the rules for confirmation and matching and judges that they meet international requirements.

All securities transactions in Sweden are settled three banking days after the contract date, apart from transactions in short-term interest rate instruments, which are settled after two days. During the period between trade and settlement, the parties run the risk that the counterparty will not meet its obligations. This is usually termed the replacement cost risk, as the participants do not risk the entire transaction sum. The risk actually consists of having to replace the original transaction with another, possibly less advantageous one. This risk is particularly interesting in the Swedish equity market, as trading is anonymous and participants cannot choose their counterparties. There are two means of managing these risks. One is to shorten the settlement cycle and the other is to introduce a central counterparty. According to international recommendations, each market should investigate the possibility of applying these risk management methods. The Riksbank notes that the participants in the Swedish market have come to the conclusion that conditions are not right at present for unilaterally shortening the settlement cycle or implementing straight through processing. On the other hand, both Stockholmsbörsen and VPC are running projects to develop a central counterparty. At present they are closely investigating the costs of the proposed solutions. The Riksbank has earlier expressed a positive opinion on central counterparty clearing.³⁴

Settlement takes place in the VPC system. In addition to running the VPC system, VPC is the central securities depository in Sweden. VPC is authorised by Finansinspektionen and comes under its supervision. In addition, the Riksbank oversees the system, as the Riksbank's opinion is that VPC is a systemically important system. The reason for this is its central role in clearing securities and the large amounts involved, which mean that a breakdown could create problems of a systemic nature. In addition, the system is necessary for clearing the Riksbank's monetary policy operations and for the transfer of securities for intraday credit in the payment system.

As a central securities depository, VPC keeps computerised records of all securities with Swedish issuers and offers related services. The VPC

33 For a more detailed description, see Financial Stability Report 2001:2.

34 Financial Stability Report 2002:2.

system settles securities transactions continuously on a gross basis, but concludes the settlement procedure at four specific times during the day. Transactions in debt securities and equity are managed in two similar, but separate, systems. In addition, participants in the VPC system can choose real time settlement when the transaction is submitted to the VPC system.³⁵

According to the Riksbank's assessment, the VPC system has a sound and transparent legal basis. The participation requirements for the system permit fair and open access and make it clear that all who meet the requirements for financial strength, technical systems and administrative conditions can participate.

The design of the system, its rules and routines reduce the financial risks connected with securities clearing. Clearing is in central bank money through special Riksbank accounts administered by VPC. In addition, clearing follows the DVP principle (Delivery vs. Payment) on a gross basis.

The system has a high level of security. VPC's plans and preparations for various potential crises and breakdowns meet international standards. Availability was 99.98 per cent during 2002.

The Riksbank has found two minor elements in the construction of VPC's settlement routines, which affect its efficiency and the ability of its members to manage their risks associated with securities settlement. Today, the VPC system checks and clears transactions continuously, while settlement is only completed at four specific times during the day. This routine is used despite the fact that the system is designed to manage continuous settlement. A continuous completion of the settlement process would increase the efficiency of securities settlement, as liquidity would not be locked into the system but could be used more efficiently. Intraday repos would also be facilitated. As settlement is completed only four times a day, customers and clearing members that are not settlement banks have exposures to their settlement banks during the process until final settlement has taken place. This entails unnecessary risks. However, changing the system over to continuous settlement would require internal system changes among the participants. The Riksbank considers that VPC should continue the dialogue with market participants regarding when it is appropriate to implement continuous settlement.

All in all, the Riksbank considers that VPC, with its new routines, fulfils the requirements made by the Riksbank and CPSS/IOSCO regarding securities settlement. According to international recommendations, a securities settlement system should, however, allow its participants to use internationally established standards for communication. VPC currently uses its own standard. However, the system has the technology to receive international standard messages but has not yet implemented this function.

³⁵ Real-time settlement is RTGS. For a more detailed description of VPC's new clearing routines, see the assessment on the Riksbank's website.

Premiere for krona in CLS³⁶

The Swedish krona was introduced into the CLS foreign exchange settlement system on 8 September, at the same time as the Danish krone, the Norwegian krone and the Singapore dollar. This system, which has been in operation for seven large currencies since September 2002, is aimed at eliminating settlement risks stemming from time differences between payment and delivery, also known as the Herstatt-risk.³⁷ CLS follows the principle of payment vs. payment, that is to say, the two sides of a foreign exchange transaction are linked together. The participants therefore only need to pay a net amount in the different currencies. Between 29 September and 3 October the settlement of foreign exchange transactions in CLS amounted to an average of SEK 150 billion per day. The net amounts paid in were on average 6 per cent of the total amount settled in kronor. While CLS has reduced the total liquidity requirement for participants, the need to be able to pay at certain fixed points in time has increased. However, the participants have the possibility to reduce the net amount paid in by signing swap agreements with one another. The Nordic banks can also use collateral they hold with one central bank in Scandinavia to obtain payment capacity in another Scandinavian country. This arrangement, known as Scandinavian Cash Pool, is based on the central banks in Sweden, Norway and Denmark acting as correspondent banks for one another.

³⁶ See special topic on CLS, Financial Stability Report 2001:2. CLS is the abbreviation for Continuous Linked Settlement.

³⁷ The seven currencies concerned are the US dollar, the euro, the Japanese yen, the British pound, the Swiss franc, the Australian dollar and the Canadian dollar.

■ The Riksbank's role as lender of last resort

To safeguard the stability of the financial system, the Riksbank has the opportunity to act as "lender of last resort", or to provide guarantees to banks and other financial companies under the supervision of Finansinspektionen. The Riksbank has a unique capacity to create means of payment in Swedish krona and can therefore act as "lender of last resort", that is to say, when an institution cannot acquire means of payment in another way it may turn to the Riksbank. This article describes the Riksbank's views on its role as lender of last resort. There is a need to discuss the principles regarding which situations and which conditions shall apply for granting emergency liquidity assistance.

Introduction

The Riksbank's role as "lender of last resort" should be viewed in the light of the bank's objective of promoting a safe and efficient payment system. This task falls naturally to the Riksbank, which has a unique capacity to create means of payment in kronor. Both banknotes and coins, and funds in accounts with the commercial banks and the Riksbank function as a means of payment.³⁸

The Riksbank supplies the banks with means of payment in several different ways. To enable interbank payments to be executed efficiently, the Riksbank offers an account and settlement system (the RIX system) in which the major banks participate. The banks that are not members of RIX and thus have no account with the Riksbank have accounts with the member banks and settle their payments via them. RIX is a real-time gross settlement system, which means that payments are settled as they are made.³⁹ This means that payments flow into and out of the banks during the day. As inward and outward payments are not usually of equal size, varying imbalances arise in the banks' liquidity, that is to say, the banks sometimes have surpluses or deficits in their accounts with the Riksbank. A bank has permission to have a deficit in its RIX account on condition that it has pledged collateral in the form of certain approved securities which will cover the deficit. In this way the Riksbank supplies the banks with means of payment during the day. These short-term loans, known as intraday loans, are interest-free.

The banks that are members of the RIX system can also borrow from the Riksbank against collateral overnight (the lending facility), but then they must pay interest. As this interest rate is higher than the interest rate on deposits with the Riksbank (the deposit facility), the banks have an incentive to balance liquidity amongst themselves on the interbank market. In this market, moreover, it is possible to borrow without collateral.

³⁸ Means of payment are also created outside of the banking system, for instance, by independent credit card companies, but these companies are not dependent on a lender of last resort in the same way as the banks and are therefore not included here. For further information, see the Banking Law Committee report SOU 1998:160.

³⁹ See the Riksbank's website www.riksbank.com for information on the RIX system.

The Riksbank also supplies the banks with notes and coins. The banks can collect as much cash as they need from the Riksbank's subsidiary SKAB, on condition that they can pledge approved collateral. Payment for the cash collected by the banks is exacted in the form of debiting their RIX accounts with the corresponding amount. To ensure that the banking system as a whole does not have a deficit with the Riksbank, the Riksbank issues what are known as monetary policy repos, which in principle mean that the Riksbank provides loans against collateral. However, these loans are not aimed at specific institutions.⁴⁰

A bank participating in the RIX system thus always has access to means of payment as long as it can pledge collateral that will be accepted by the system. Other banks are dependent on the banks participating in RIX for their supply of means of payment. A bank with a means of payment deficit, and which cannot for some reason borrow on the inter-bank market or otherwise obtain means of payment on its own, for instance, by selling securities, or borrow from another party in the economy, must turn to the Riksbank. In this sense the Riksbank is the lender of last resort (LOLR).

The Riksbank can remedy a bank's liquidity problems in several different ways. For instance, the Riksbank can grant credit on special terms, what is known as emergency liquidity assistance (ELA). By lending against other collateral than those normally required (or to other institutions than those normally permitted to borrow in RIX) the Riksbank can rapidly increase the amount of means of payment in the economy and thereby avert liquidity crises. An alternative means for the Riksbank to increase liquidity quickly is to issue guarantees that enable an institution lacking collateral to borrow in the market. This guarantee option may be preferable at times, as it enables the distressed institution to maintain its normal contacts in the market, but it is also emergency liquidity assistance and calls for the same type of decision as credit.⁴¹

The purpose of this article is to describe the Riksbank's view on its role as LOLR. The question of how transparent a central bank should be in this respect is rather controversial. Some central banks appear unwilling to even discuss the possibility of possible LOLR operations for fear that this could have a negative effect on financial institutions' behaviour, that is to say, that moral hazard could lead to a deterioration in risk management and to greater risk-taking in the banking system. The Riksbank, on the other hand, sees openness as a means of reducing moral hazard. This difference in views is probably based on differing historical experiences. Sweden, which as recently as ten years ago issued general guarantees to mitigate a crisis in the banking sector, sees openness that provides the clearest possible guidelines as to how a crisis will be managed in the future as a way of reducing expectations that similar rescue actions will be taken in all crisis situations. An open attitude, which establishes

⁴⁰ See Mitlid and Vesterlund, Sveriges Riksbank Economic Review, 2001:1 for a description of the Riksbank's monetary policy steering system.

⁴¹ According to the Sveriges Riksbank Act, in exceptional circumstances, the Riksbank may, with the aim of supporting liquidity, grant credits or provide guarantees on special terms to banking institutions and Swedish companies that are under the supervision of Finansinspektionen, the Swedish Financial Supervisory Authority.

boundaries and game rules within the framework of a well thought-out crisis management system is therefore best for Sweden. A well reasoned stance on the issue of ELA reduces the risk of granting assistance unnecessarily, while clear principles for emergency liquidity assistance can serve as a defence against strong pressure that the Riksbank shall act as lender of last resort in less appropriate situations.

The need for a lender of last resort

The main reason for a central bank to need to act as lender of last resort is that a payment default by an individual financial institution, particularly a bank, can threaten the financial system's capacity to function. The financial system fulfils a number of important functions in society. These include supplying payment services, facilitating the supply of capital and enabling rational management of different risks. A payment default that leads to a bank being declared bankrupt can cause a systemic crisis, if the bank – because of a dominant position – is important for a certain function, for instance, the payment system. However, a payment default in a bank can also threaten the functioning of the financial system in that it gives rise to contagion effects in the rest of the financial system. It could be very costly to society if one of the financial system's vital functions were put at risk. The risk of disruptions to the system thus motivates both special regulations and supervision of banks and is the most important motive for a central bank needing to provide ELA. The existence of systemic risks is also the reason why the Riksbank monitors and analyses the stability of the financial system.⁴²

CONTAGION EFFECTS FROM A PAYMENT DEFAULT

Contagion effects can arise both as a result of indirect and of more direct economic links between banks and between banks and other financial institutions. Direct links between the institutions can arise, for instance, when they borrow from one another or via the exposures arising in trade in the financial markets. Indirect links can arise through large sell-offs from one distressed institution negatively affecting other institutions through a fall in the value of their assets. However, contagion effects can above all arise as a result of banking operations suffering stability problems, which mean that it suffices for the bank's financiers to distrust the bank's ability to pay in order for the bank to experience payment problems.

Banks' assets consist mainly of loans to companies and households. These loans are often difficult to evaluate – particularly for persons outside of the lending institution – and they are connected with credit risks. The difficulty in evaluating a bank's loan assets makes them *illiquid* in the sense that they cannot be sold quickly without having to make substantial discounts in relation to their actual worth. Borrowers may also experience difficulty in repaying their loans at short notice, as this usually

⁴² The Riksbank regularly publishes its views on financial stability in the Financial Stability Report.

requires them taking out loans elsewhere. The banks' *financing*, on the other hand, largely consists of deposits, which the depositors can withdraw at immediate notice, or other short-term credits, such as loans on the interbank market. This financing is therefore – unlike the assets – extremely *liquid*. Financing long-term projects with short-term funding and converting illiquid assets (loans) to liquid assets for the banks' financiers (deposits) is one of the banks' most important functions in the economy. However, it means that banking activities have certain inherent stability problems.

The differing natures of a bank's assets and liabilities with regard to risk and liquidity comprise no problem as long as there is confidence in the bank's ability to pay. It is then sufficient that the bank has a buffer of liquid funds⁴³ to manage fluctuations in withdrawals as well as other commitments. However, if the bank's ability to pay its debts is called into question for some reason, the differences in nature of the assets and liabilities could be a threat to its survival. The bank's financiers will then wish to withdraw their financing as quickly as possible to avoid being the last in line and thus risk the bank no longer having the ability to pay its debts. To meet all of the payment demands made upon it, the bank may need to realise assets on a large scale and at a rapid rate. As its assets can only be divested quickly if sold at a large discount, selling them off may mean that the bank's asset value falls below its liabilities, thus the bank becomes insolvent. In this way, even unfounded suspicions regarding a bank's ability to pay may become a self-fulfilling prophecy.

The stability problems in banking operations can lead to contagion effects arising merely because of uncertainty over the links between the institution in crisis and other institutions. If the financiers suspect there are financial links between the institutions, they may withdraw their financing from other banks as well, which can in turn lead to a domino effect. The risk of domino effects in the financial system is the main motive for the Riksbank to act as lender of last resort. By creating confidence in the bank's ability to pay, the Riksbank can avert a financial crisis.

BANK RUNS BY DEPOSITORS AND OTHER STABILITY PROBLEMS

The central bank's role as lender of last resort is originally connected to its capacity to issue banknotes and coins that are generally-accepted means of payment and the risk that depositors in the banks will wish to convert their deposits into cash.⁴⁴ Bank runs by depositors have occurred in most countries.⁴⁵ However, the risk of these has been reduced in Sweden, as in many other countries, through the introduction of a *deposit guarantee*. As the depositors can withdraw at least part of their deposits

⁴³ This buffer may consist, for instance, of cash and liquid securities, as well as credit limits with other companies. However, the latter may be an uncertain liquidity asset in a crisis situation.

⁴⁴ Originally, the need of a lender of last resort was not merely connected to deposits. During a large part of the 19th century, private banks issued their own banknotes in Sweden. These banknotes could be redeemed for Riksbank notes or gold. As the banks' cash supply did not cover the notes they issued, there were bank runs to redeem the notes when confidence in the bank was shaken.

⁴⁵ See, for instance, Gorton, G. (1988) "Banking Panics and Business Cycles", *Oxford Economic Papers*, 40, 751–781 for a description of bank runs in the United States.

even if the bank becomes insolvent, they do not have the same reason to rush to the bank and withdraw their money if confidence in the bank's ability to pay is shaken.⁴⁶ In this respect, banking operations have become more stable. Moreover, in recent years bank runs have been observed primarily in countries suffering a general economic and political crisis, such as Argentina at the beginning of 2000.

In other aspects, banking operations have become less stable. Banks also have other short-term funding than guaranteed deposits. In particular, they borrow large amounts from one another in the overnight market. Swedish banks are also borrowing increasingly in the international interbank market.⁴⁷ Furthermore, the banks make use of several financial markets to manage their liquidity. The banks' liquidity management is thus dependent on both the interbank trade and on other financial markets functioning efficiently. Both real cases and economic research have shown that this is not always the case.⁴⁸

Interbank trading is largely based on trust. The participants do not have complete information on one another and confidence can be shaken as a result of actual disturbances or simple rumours. For instance, confidence in all of the Swedish banks was shaken during the Swedish bank crisis, *including* the banks that did not need a capital infusion from the central government, as foreign investors did not have sufficient information to discern the problems in the Swedish banks. If suspicion arises against one participant, this institution will not be able to obtain financing in the interbank market, unless it can provide adequate collateral. This can be sufficient for the bank in question to suffer an acute liquidity shortage, as it has assumed in its liquidity planning that it will be able to borrow without collateral.

If an individual bank suffers liquidity problems as a result of lack of coordination between participants in the interbank market, the Riksbank can try to assist by supplying the market with information. However, one problem is that liquidity problems may need to be solved very quickly to prevent a payment default, which means there may not be time to coordinate market participants.

The banks' liquidity management is also dependent on technical systems and technical problems can lead to an acute liquidity shortage. This happened to, for instance, the Bank of New York in 1985, when a technical problem meant that the bank was unable to accept payment for securities the bank had purchased on behalf of customers, which led to the bank accumulating a gigantic liquidity deficit that could not be financed in the market. The bank was given credit by the Federal Re-

46 The way the Swedish guarantee is designed, bank depositors still have some incentive to withdraw their deposits if there is a risk of bankruptcy; this is because it can take several days (in exceptional cases up to six months) before the compensation is paid and because it only covers deposits up to SEK 250,000 in a bank.

47 See the article on financial integration in this report.

48 See, for instance, "Lender of Last Resort: What have we learned since Bagehot?" *Journal of Financial Services Research* 18:1, pp. 63–84, 2000, by Freixas et al for a review of the economic literature and "Financial Crisis, Payment System Problems and Discount Window Lending", *Journal of Money, Credit and Banking*, 28, pp. 804–824 for an analysis of the liquidity problem in the market. However, this conclusion is rather controversial. For instance, Goodfriend and King argue that sophisticated interbank markets have made emergency liquidity assistance an unnecessary instrument ("Financial Deregulation, Monetary Policy and Central Banking", in *Restructuring Banking and Financial Services in America*, Haraf W. and R.M. Kushmeider eds., AEI Studies, 481, Lanham Md, USA).

serve, the central bank of the United States, until the technical problem was resolved.⁴⁹

It may seem that the risk of technical faults should decline over time as systems are further developed, but this is not self-evident as the systems are also becoming increasingly complicated and integrated. There is also a risk that increased internationalisation and integration of the financial markets, which usually leads to more efficient markets with greater depth and better liquidity, could increase information problems in times of unrest, and thereby the risk that liquidity will not be allocated efficiently.

The conclusion is thus that there is still a need for a lender of last resort, even with sophisticated financial markets and technical systems. Problems can still arise that prevent the market from allocating liquidity efficiently – market failures occur. One practical difference from before is that ELA will not usually be paid out in banknotes; rather the bank will be allowed to have a deficit on its account with the Riksbank without the usual collateral requirement.⁵⁰ A real difference is that the problems tend to spread much more quickly the more the financial system develops. In an undeveloped system, the depositors need to physically go to the bank to withdraw their deposits, but in a technically advanced system large sums can be withdrawn in a very short period of time.

EMERGENCY LIQUIDITY ASSISTANCE PRIMARILY FOR BANKS

It is primarily if a *bank* suffers liquidity problems that the Riksbank has reason to intervene. The banks' operations are essential to the functioning of the financial system and thereby to the economy as a whole, while banking operations are characterised by inherent stability problems, which mean that liquidity shortages can rapidly lead to solvency problems.

Operations in financial infrastructure companies (VPC, Bankgirocentralen and Stockholmsbörsen) are of course also essential to the functioning of the financial system. However, these companies do not have any inherent stability problems that could lead to acute liquidity problems. This is connected with the fact that they, with the exception of Stockholmsbörsen's role with regard to clearing derivatives, only intermediate payments and supply financial instruments.⁵¹

Although it is primarily the banking system as a whole and the financial infrastructure companies in themselves that are essential to the functioning of the financial system, other companies than banks can give rise to contagion risks in the financial system, which could threaten its ability to function. For instance, contagion effects can arise via market prices. A company with liquidity problems that cannot obtain credit must sell assets. This pushes down the price of these assets. The price comes

⁴⁹ See also a special topic in Financial Stability Report 2001:1 on incidents in Sweden that could lead to liquidity problems and Chapter 4 on Liquidity and liquidity risk in the same edition.

⁵⁰ Possible emergency liquidity assistance to institutions that are not members of RIX will be paid out through a bank that is a member.

⁵¹ If and when a central counterparty is introduced for other financial assets than derivatives, this situation may change.

under further pressure due to the uncertainty over how large the sales of these assets will be. In the worst case, the market may cease functioning. As the financial markets are linked together by various financial instruments, problems in one market may also affect efficiency in other markets. One example of this type of contagion is the LTCM crisis in 1998. LTCM (Long Term Capital Management) was a hedge fund that had very large positions linked to the US interest swap market. LTCM was prevented from going bankrupt by 14 banks agreeing to supply funds to continue operating LTCM and to achieve a controlled settlement of its positions. In this way the functioning of the financial system was saved. The agreement was the initiative of the Federal Reserve, although it did not contribute any funds. It is uncertain what would have happened if an agreement had not been reached. Many banks had large exposures to hedge funds, whose financial positions were negatively affected by the severe price fall. In addition, many banks had positions similar to LTCM. There was thus a risk that confidence in the banks would be shaken if the crisis had continued. The crisis was triggered by the fact that the fund suffered large losses and was therefore in need of capital support rather than liquidity support. However, a general market breakdown could make it necessary for the central bank to ease its collateral requirement and also lend to other institutions than banks.

The cost of emergency liquidity assistance – moral hazard

Although the really serious costs to society arise if a crisis in an individual institution gives rise to contagion effects in other parts of the financial system so that one of its vital functions is put at risk, there is also a cost to the economy if economically-sound companies are forced into liquidation as a result of pure liquidity problems. There may therefore be situations where a motive exists for providing ELA even where a payment default would not comprise a systemic threat. However, in each emergency liquidity situation it is necessary to weigh the benefit to the economy of providing the assistance against the negative incentive effects the measure might have.

The possibility for a bank to receive ELA from the Riksbank functions as a liquidity insurance for the bank and like all other insurances this risks having a negative effect on the bank's behaviour, what is known as moral hazard. It is important not to reduce the bank's incentive to plan and manage its liquidity. The purpose of this article, as pointed out earlier, is to reduce moral hazard by making clear the circumstances and conditions that apply for ELA.

Liquidity problems can arise as a result of a bank actually lacking sufficient ability to pay; that is to say, the distrust of the bank is well-founded. This is probably the most common reason for a bank suffering liquidity problems, even if banking operations are safeguarded by extensive regulations and supervision to reduce the risk of a bank experiencing solvency problems. To avoid the unnecessary retention of inefficient banks and distorting bank behaviour, *the Riksbank should not support*

banks that lack long-term survival capacity. If a bank's shareholders assume that the central bank will come to the rescue in the case of problems, this not only reduces the incentive to plan and manage liquidity, it also increases the incentive to take risks, which is a much worse moral hazard problem. In addition, the bank's financiers' incentive to monitor the bank's risk-taking and management is weakened. This in turn leads to poorer pricing of risk, which can further increase risk-taking. *Emergency liquidity assistance should thus only be given to overcome liquidity problems arising as a result of inefficient market allocation of liquidity.*

However, decisions on ELA are almost never made on the basis of perfect information. In actual fact, there may be great uncertainty with regard to both the actual financial condition of the institution affected and to the extent of the risk that the problems will spread to other parts of the financial system – systemic threat. The assessments of systemic risk contain a significant element of psychology, for instance; they involve predicting how market participants – both domestic and external – will react to certain events. Moreover, the decision usually needs to be taken under great pressure to avoid the institution defaulting on its payments.

In general, those making the decision on ELA run the risk of making two types of error: firstly intervening when it is unjustified and secondly failing to intervene when an intervention is really warranted. Often the immediate costs (in particular the political costs) of not intervening to assist a solvent bank can be subjectively perceived as higher than the costs of assisting a bank that is not solvent. At the same time, it is almost unavoidable that the tendency to refrain from granting liquidity assistance declines where systemic risk is substantial, even if the assessment of the institution's ability to pay is uncertain. In this situation, there is thus an increased risk of intervening when an intervention is unwarranted. Combined with the difficulties of determining both the bank's financial position and the systemic threats in a liquidity crisis, this risks seriously aggravating the moral hazard problem. It is essential, in order to manage this problem, that the roles of the various authorities are clearly defined and that the authorities are well-prepared and coordinated prior to a crisis.

Cooperation and allocation of responsibilities between the relevant authorities in a crisis situation

The ever more rapid course of financial sequences of events increases the demands on the authorities' capacity to react in a financial crisis. This means that they must be able to rapidly analyse a situation, which in turn underlines the need to have reliable information to hand at an early stage. In practice, the quality of the crisis management depends to a great extent on the access to rapid and reliable information and on earlier assessments of how systemic threats can arise and develop.

Making good analyses also requires, in addition to direct contacts with the banks, far-reaching cooperation agreements between authorities, both within Sweden and between Swedish and international authorities. A memorandum of understanding was recently established by the

Riksbank and Finansinspektionen (the Swedish Financial Supervisory Authority). The banking groups increasingly cross-border activities have also led to greater efforts at cooperation between authorities in different countries. In particular, Nordea's pan-Nordic development has led to increased cooperation and a consultation agreement between the Nordic central banks and supervisory authorities. However, it is also essential that there is a clear allocation of roles between *government* and *central bank*.

The central bank should not provide ELA to banks with solvency problems, for the reasons mentioned above. Unprofitable banks should be reconstructed or liquidated. However, the general regulations on insolvency cannot always be appropriately applied to banks; a systemic crisis could be triggered through the direct and indirect links between institutions in the financial markets.⁵² A bank may therefore need to be reconstructed or liquidated under other forms. This should preferably be done without intervention from the central government. However, to increase the likelihood of a private solution, the Riksbank or Finansinspektionen can function as a "mediator" between the problem institution and potential financiers.

The Riksbank also has the possibility to reduce systemic risks connected with the general regulations by providing liquidity assistance to banks suffering liquidity problems when a problem institution is declared bankrupt. In this way the general regulations can be applied in several situations.

If government capital infusions are nevertheless necessary to prevent a failure causing a systemic crisis, the responsibility lies with the government and parliament. The Riksbank can of course provide assistance in the practical implementation and in the form of analyses in cases where institutions must be reconstructed. The Riksbank can execute the decisions, but should not take them.⁵³

In acute liquidity crises, where there is no time to await a decision by parliament, the government must be able to make a decision on a government guarantee. To avoid the government and the Riksbank facing a blackmail situation, where an institution suffering problems utilises its systemic importance to demand support on favourable terms, it is essential to have a well-developed and credible crisis management system similar to that proposed by the Banking Law Committee in its final report.⁵⁴ This type of system could reduce the moral-hazard problem by making it clear that it is primarily the bank's shareholders and after them other creditors who would bear any losses. The possibility for

⁵² See the Banking Law Committee's final report for an analysis of the problems in applying the general insolvency legislation to banks.

⁵³ This allocation of labour is described in the preparatory documents for the prevailing emergency credit provision in the Sveriges Riksbank Act. There it is stated that the Riksbank may not provide liquidity assistance out of hand to an evidently insolvent institution. A potential problem with this statement is that whether or not an institution is insolvent in the *legal* sense may depend on whether emergency credit is granted. It must therefore be assumed that in the preliminary work insolvency means in the sense of English-language *economic* literature, i.e. *unsound* (see the Banking Law Committee's final report, SOU 2000:66) and to avoid misunderstanding it is here termed *non-solvent*. With this interpretation, the Riksbank's view of how emergency liquidity assistance should be applied agrees with the present system.

the Riksbank to provide emergency liquidity assistance to other banks in a situation where an insolvent bank cancels its payments, in order to reduce contagion effects and to avoid the system as a whole being threatened, may also reduce the risk of the central government being blackmailed.

Finansinspektionen has an important task with regard to detecting problems in systemically important institutions in good time to enable them to be managed without government support or emergency liquidity assistance. In this way the costs for crisis management can be limited. Finansinspektionen is also the authority that holds the most information on individual institutions. When the Riksbank receives a request for ELA, it will contact Finansinspektionen with regard to assessing the institution's financial position.

According to the present laws, the Deposit Guarantee Board is unable to assist in averting financial crises; deposit guarantee funds can only be used to pay out compensation in the case of bankruptcy. A change in the regulations in the manner proposed by the Banking Law Committee⁵⁵ would mean that these funds could be used for reconstruction, if this would entail lower costs for the guarantee system. Such a system would reduce the need to use tax revenue for reconstruction of systemically-important banks.

Important assessment factors – solvency and systemic risk

The Riksbank should not, as mentioned earlier, provide emergency liquidity assistance to institutions lacking long-term survival capacity, that is to say, insolvent institutions. The Riksbank must therefore assess an institution's solvency. It must also assess the *systemic risk*. In a case where a insolvent institution comprises a systemic risk, the government and parliament will, in accordance with the above distribution of labour, decide on financial support. This section provides an account of the principles that will form the basis for the Riksbank's assessment of an institution's solvency and the systemic risk.

THE INSTITUTION'S SOLVENCY

Emergency liquidity assistance is aimed at avoiding costs to the economy by helping an otherwise vital company out of liquidity problems caused by market failures. The solvency assessment should therefore be primarily aimed at an assessment of the institution's long-term survival capacity. It is therefore not merely the risk of the Riksbank suffering loan losses that determines whether or not a bank shall receive liquidity assistance. A bank will not become more solvent because the central bank's credit risk is reduced, for instance because the central bank's claims have the highest priority. However, the institution's capacity to pledge collateral should be a good indication of its solvency in many cases.

⁵⁴ See SOU 2000:66.

⁵⁵ See SOU 2000:66, Chapter 9.

An evaluation of the institution's assets forms the basis for an assessment of its long-term survival capacity. This assessment is made more complicated by a large part of a bank's assets lacking a secondary market and are particularly difficult to evaluate in a crisis situation, particularly if this has been caused by macro-economic shocks. The Riksbank makes regular assessments of the major banks' portfolios, but in a crisis situation it would be necessary to have updated information directly from the institution. The possibility to gain a good understanding of the banks' portfolios will probably increase with the introduction of the Basel Committee's proposal for new capital adequacy rules, as these make greater demands of both the institutions and the supervisory authorities to measure portfolio risks.

However, it is not sufficient that the value of the assets is greater than the liabilities (given a "fair" evaluation) for an institution to be solvent. It is also necessary that the bank has the capacity to generate future profits. To assess the institution's long-term survival capacity it may therefore be necessary to make in-depth analyses of the company's business model, in addition to an assessment of the asset values. In this context, the definition of long-term is determined by how far into the future it is in practice possible to survey the company's cash-flows, not usually longer than one to two years. The Riksbank makes regular assessments of the major banks' operations in order to assess the future stability of the banking system and these can be used as a basis for evaluating a problem bank's survival capacity.

One complicating circumstance is the fact that banks have a capital adequacy requirement. The purpose of the capital adequacy requirement is to reduce the risk that a bank will suffer solvency problems; this capital shall function as a buffer against losses. A company is not allowed to maintain its licence to conduct banking operations if it fails to fulfil the capital adequacy requirement. The bank has a limited period in which to restore the capital. If it does not succeed, the banking licence will be withdrawn and the bank will be liquidated, which risks leading to capital losses. There is therefore a risk that a bank which has positive equity capital and is solvent, but which has suffered losses and therefore fails to meet the capital adequacy requirement, will experience liquidity problems. As it is important that the capital can function as a buffer against losses and that a solvent bank is not forced into liquidation as a result of liquidity problems, there may be reason to provide ELA to a bank that does not meet the capital adequacy requirement. A decisive factor in the decision on ELA is whether the bank has the capacity to resolve its capital problems on its own. If the institution needs help to solve its capital problems, but is assessed to otherwise have a long term survival capacity, credit should only be given as part of a credible and sustainable reconstruction package.

It is very difficult to determine *for certain* in the short-term whether or not an institution is solvent. Accounting data is not usually collected or updated more often than once a quarter and capital adequacy is retrospective, like all accounting, which means that a bank can fulfil the capital adequacy requirement although its assets are actually worth less

than its liabilities. At the same time as the possibility to provide liquidity support gives the Riksbank an important tool to prevent pure expectations-driven bankruptcies and to safeguard system stability, there is good reason for the Riksbank to be aware of the moral-hazard problem and try to counter it, as already pointed out. The Riksbank therefore has reason to take into account the uncertainty in assessing the institution's solvency when deciding on ELA and to be more *restrictive* when the assessment is more *uncertain*.

SYSTEMIC RISK

The systemic risk consists of a threat that one of the financial system's functions will be seriously damaged. The Riksbank's point of departure is that it is primarily the *payment system* function that needs to be safeguarded. In Sweden this function is dependent to a large extent on the operations of the four largest banks and it is quite clear that if all of these four were to fail, the payment system would collapse. However, this does not mean that each of these banks is systemically important in itself.

An article in the previous Financial Stability Report analysed in greater detail the systemic importance of the major banks to the payment system.⁵⁶ The conclusion of this article is that no individual bank is at present indispensable to the functioning of the payment system. This is partly due to the fact that the lock-in effect on funds is relatively limited, due to the deposit guarantee and partly to the fact that it is relatively simple for another institution to take over the intermediation of payments function from a bank in liquidation. Another conclusion is that it is unlikely that a payment failure in any other institution than the four major banks could threaten the functioning of the payment system. On the other hand, the scope of the indirect contagion risks between the banks in particular is uncertain and there may be a possibility that a payment default by a *major bank* could in some cases lead to other banks failing and thereby threaten the functioning of the payment system. However, these risks are *not always* of such a scale that the functioning of the payment system would be threatened if a major bank were declared bankrupt.

Although the need of protection is greatest with regard to the payment system, it is not possible to draw any clear boundary lines between the different functions of the financial system: payment system, capital supply and risk management. For example, the fact that the banks supply liquid funds is a stage in the functions of both the payment system and capital supply and even to some extent risk management. As well as comprising the core of the payment system, the banks dominate the short-term loan market. Companies and households who lost their overdraft facilities might suffer payment problems if they could not obtain credit from another bank. As mentioned at the beginning, other banks may be unwilling to take over loans as they lack information on the borrower. One particular problem is that the capital adequacy rules may

⁵⁶ "Can a bank failure threaten the payment system?" Financial Stability Report 2003:1.

comprise a restriction to other banks' possibilities to take over a failing bank's loan stock, particularly if a large portfolio is involved or if they themselves are in a strained financial situation. The requirement that a bank should cover the risk in its loan loss provisions with adequate capital means that it may experience difficulty in rapidly expanding the loan portfolio, particularly as it may be difficult for banks to make new issues in a crisis situation. In this type of situation borrowers may experience difficulties in renewing their loans, which could give rise to bankruptcies resulting in costly consequences for the economy as a whole. The problems will of course be magnified if several banks suffer problems at the same time.

The conclusion is that there may be reason to include the bank's function of supplying credit when assessing systemic risk. As there is greater diversity in the credit supply system than in the payment system, the need for protection should usually be less. At the same time, it can be concluded that the probability of another credit-granting institution than one of the major banks being systemically important to credit supply is largely non-existent.

One important consequence of the conclusion that not even one of the major banks is always important in itself for the functioning of the financial system is that one of these banks can be declared bankrupt if the potential contagion risks can be managed. On condition that a bankruptcy would only give rise to contagion effects in the form of liquidity problems, the Riksbank can manage these by providing ELA to other banks affected by the failing bank's payment default. In this way the functioning of the financial system can be maintained.

Conditions for emergency liquidity assistance

The concrete conditions for ELA are important as they can affect the institution's incentives to take risk in general and the moral-hazard problem in particular. According to the Sveriges Riksbank Act, it is the Riksbank's task to establish the conditions for granting ELA. This section contains a discussion of some of the most important conditions.

COLLATERAL – PLEDGE AGREEMENTS

By and large, a need of liquidity assistance can arise only if an institution is not in a position to pledge collateral that is normally accepted in inter-bank trading and in the RIX system. In a crisis situation, the Riksbank can consider accepting other assets as collateral, for example equity or loan claims. By accepting collateral, the Riksbank can reduce the risk of ELA becoming something else. When an application for ELA is made, it is reasonable that the Riksbank therefore assesses the institution's solvency and systemic risk as well as the collateral it can offer. It is natural to make a haircut to take into account the fact that the value can vary over time and that the assessment is uncertain.

LENDING RATE

The academic literature provides arguments for charging a higher as well as a lower than normal interest rate for emergency liquidity assistance. One of the first to contribute to theories of the central bank's role as lender of last resort was Bagehot.⁵⁷ According to him, ELA should be supplied without restriction in a crisis situation to every institution that can supply good collateral (according to evaluations before the crisis) at an interest cost that is high in relation to the lending rate prevailing before the crisis. The purpose of the high interest rate is to counteract moral hazard. Banks lacking good collateral or unable to pay the high interest rate should be allowed to fail, according to Bagehot. In their model, on the other hand, Rochet and Vives find that a very low interest rate on emergency liquidity assistance is optimal.⁵⁸

The interest rate on ELA must be decided from case to case. There may be grounds for charging more than the normal lending rate in order to counter moral hazard. However, as the credits in this context have a short duration, the effect of charging more than the normal rate is limited. To act as a deterrent, the rate would no doubt need to be *considerably* higher than the normal lending rate. There would then be a risk of the purpose of the assistance being lost in that the high interest rate gives the bank problems with solvency.

ELA provided by the Riksbank would also be public information, even in the unlikely event that the markets had no knowledge of it. As the bank would probably be reluctant to advertise its liquidity problems, this should be sufficient incentive for a bank to request assistance only when it is really necessary.

FOREIGN CURRENCY

There could be a case where a bank applies for ELA for a liquidity shortage in a foreign currency, for instance if a bank has a loan in foreign currency that it is unable to renew for some reason. The Riksbank would then make an assessment, in the manner described above, of the institution's solvency and the potential systemic risk of a payment default. If ELA is granted, the Riksbank usually has no reason to provide loans in any other currency than Swedish kronor, as the bank should be able to exchange a loan on Swedish kronor to the desired currency on the swap market. If there is a lack of confidence in the bank's ability to pay, however, the bank may experience difficulty in finding a counterpart, as a swap agreement entails a credit risk. Nevertheless, the bank should be able to buy currency on the spot market, unless this has ceased to function. Buying currency would mean that the bank took on an undesired foreign exchange risk. To prevent the bank from carrying this risk, or if the spot market were not functioning at the present time, the Riksbank

⁵⁷ Bagehot (1873), *A description of the money market*, London, H.S. King.

⁵⁸ Rochet & Vives (2002), "Coordination failures and the Lender of Last Resort; was Bagehot right after all?", mimeo, INSEAD.

could provide loans in foreign currency to the bank or offer to make an outright swap, that is, to sign a forward contract with the bank. If an institution experiences an acute shortage of foreign currency, the Riksbank may choose to try to mediate between the lenders and the bank in question and if necessary to issue a guarantee to create confidence in the institution.

OTHER CONDITIONS

The Riksbank may also set other conditions in connection with ELA. For instance, the Riksbank could require that the bank take measures to increase its liquidity and thereby increase the likelihood that its liquidity problems are temporary. One means for a bank to increase liquidity could be to reduce the size of its loan portfolio, given that this occurs gradually. Another possible condition is a special requirement for access to information and reporting, which was applied during the bank crisis.

Conclusions

This article has taken up a number of issues concerning the Riksbank's role as *lender of last resort*. For instance, there has been discussion of the principles for which situations and which conditions should apply for emergency liquidity assistance (ELA). One conclusion is that the possibility to provide ELA gives the Riksbank an important tool to prevent purely expectations-driven payment failures and to safeguard system stability, although there is reason for the Riksbank to be cautious and counteract distortions in the institutions' behaviour, what is known as moral hazard.

To reduce the moral-hazard problem (and perhaps to avoid unnecessarily retaining inefficient banks in general), the liquidity support should only be given to *solvent* banks, that is to say, banks with a long-term survival capacity. Giving this type of system credibility requires a clear allocation of roles between the government and the Riksbank.

Unprofitable banks should be reconstructed or liquidated. This should primarily be done without any intervention from the central government and with the aid of private capital. If government capital infusions are nevertheless necessary to prevent a bank failure causing a systemic crisis, the responsibility lies with the government and parliament. Decisions on capital infusions should in principle be made by parliament. In acute liquidity crises, however, where there is no time to await a decision by parliament, the government must be able to make a decision on a government guarantee.

To avoid the government (or the Riksbank) facing a blackmail situation, where an institution suffering problems utilises its systemic importance to demand support, it is essential to have a well-developed and credible crisis management system similar to that proposed by the Banking Law Committee in its final report. This type of system could reduce the moral-hazard problem by making it clear that it is primarily the bank's shareholders and after them other creditors who would bear any losses.

The Riksbank works to reduce systemic risks from a payment default and the ensuing need for central government capital infusions to the banking sector. The contagion effects from a payment default can be reduced by the Riksbank providing liquidity support to the institutions suffering liquidity problems from the default. Thus, any insolvent institutions can be declared bankrupt without putting the functioning of the financial system at risk. The Riksbank (or Finansinspektionen) can also function as a mediator between institutions with problems and potential financiers to increase the likelihood of a private solution and the bank can be reconstructed without needing to use central government funds. Furthermore, the Riksbank can provide the market with information, for example about whether or not there is a systemic threat and its assessment of a crisis bank's financial situation. Such information can sometimes suffice to resolve the crisis.

One complication is that the decision on ELA cannot usually be made on the basis of complete information. Although the Riksbank regularly makes assessments of the major banks' portfolios and operations that may form the basis of an evaluation of a problem bank's survival capacity, updated information is needed in a crisis situation. As a decision on ELA usually has to be taken under considerable pressure to avoid the institution having to default on payments, there is not usually time to make a complete assessment of the institution's solvency. The immediate costs (in particular the political costs) of not intervening to assist a solvent bank can be perceived subjectively as higher than the costs of assisting a bank that is not solvent, which creates an almost unavoidable tendency to provide ELA when it is not necessary more often than to refuse it when it is warranted, particularly in cases where the systemic risk is potentially serious. As each case of ELA to insolvent institutions risks aggravating the moral-hazard problem, there is reason to be restrictive in granting this assistance and to carefully weigh the uncertainty of the solvency assessment when making its decision.

The Riksbank will also assess the systemic risks. If a payment default in an insolvent institution is assessed to threaten systemic stability, it is the government's responsibility to decide on financial support. The government shall weigh up the scope of the damage to the financial system caused by a failure against the risks of changing the incentives for market participants and preserving an unsuitable market structure. There is thus only reason to intervene when a non-solvent institution threatens to *seriously* damage the functioning of the financial system.

Explaining the allocation of roles between the authorities and clarifying the circumstances in which ELA might apply, should reduce the pressure on the Riksbank to grant assistance when it is unwarranted and create understanding for the policy pursued.

The Riksbank also intends to be as open as possible with regard to any lender of last resort measures taken. Transparency with regard to at least the fundamental features and the main motives behind a liquidity assistance operation could have great significance in building up the central bank's credibility towards both the general public and the financial institutions. The credibility of the central bank usually benefits if it

gives a reliable picture of how it has acted and how it interprets its role. This can also affect the moral-hazard problem. This could be reduced in particular if the public treatment proved to be stricter than expected both with regard to the decision to grant ELA and the terms connected with the loan. For the Riksbank, openness regarding its actions will not only affect its credibility and influence on the moral-hazard problem, but may also comprise an element of its reporting to the Swedish parliament.

Finally, the EC regulations on central government support naturally have to be taken into account when making a decision on ELA. Each individual case must entail a balance between the need for competition neutrality and the interest in maintaining financial stability.

■ Financial integration and responsibility for financial system stability in the EU

Work is under way in the EU to create a single market for financial services. An integrated financial market has significant positive economic effects but also entails challenges for the authorities responsible for financial system stability. This article discusses the problems that arise for oversight and crisis management when the risks to financial system stability are shifted from national to international level. The problems are complex and difficult to manage, and it is currently not possible to provide unambiguous answers about possible solutions. However, it is important that a discussion is begun within the EU before integration has progressed to the stage where the need for solutions becomes acute.

Introduction

The banks are the core of the financial system. Within a national banking system, there is a relatively high risk that financial problems in one bank coincide with or will lead to difficulties in other banks as well. This is usually referred to as systemic risk and is one of the main reasons for oversight and regulation of banks and the banking system.

The banking systems of different countries are becoming increasingly integrated, however. Consequently, the risk of problems in one bank or one national banking system spreading to banks in other countries has increased. Nevertheless, regulations, prudential supervision, system oversight and crisis management have been primarily designed to manage systemic risk at the national level and only partly take account of cross-border systemic risk.⁵⁹

As part of its work to create a single market, the EU is striving to introduce a regulatory framework that will be common to all financial companies in the Union. This also includes the EEA countries and thus not only countries of the EU. The reasoning here is that common regulations would enable financial companies to compete on equal terms, thus creating a single market in which only the most competitive companies survive.

However, these common regulations are not sufficient in themselves to allow systemic risks to be managed satisfactorily. One example is prudential supervision. Within the EU, prudential supervision is carried out according to the home country principle in cases where banks conduct their foreign operations through branches. In cases where activities are carried on in subsidiary form, the host country serves as home country for the subsidiary and thus has responsibility for prudential supervision. Responsibility for consolidated supervision, however, still rests on the country where the parent company is legally domiciled. The home country principle works well as long as a bank's operations outside its home country are comparatively small, which so far has been the case in the EU. However, increased integration raises the question of how much

⁵⁹ Furthermore, the organisation of the financial infrastructure has implications for the size and manifestation of cross-border systemic risk. This is outside the scope of the article, however.

responsibility home countries are willing to take for financial stability in other countries where a bank operates. For example, the Nordea Group is a Swedish bank that has its largest market share in Finland. Would the Swedish authorities be willing and able to judge Nordea's impact on stability in Finland? And would the Finnish authorities be prepared to transfer responsibility for a considerable part of its financial system to Sweden? Similar problems exist in other countries.

Adapting the home country principle to the new conditions, where bank branches can be systemically important, is just one of several challenges faced by the EU countries as a result of increased financial integration. The aim of this article is to illustrate these challenges and initiate a discussion of conceivable solutions.

At what level are systemic risks relevant – national, regional or EU?

The financial system is important for ensuring that the economy in general can function. The system's tasks are to convert savings to financing, to contribute services for risk management and to provide efficient instruments of payment. Given the considerable economic significance of the financial system, it is important that it functions both safely and efficiently. The government has therefore a particular interest in overseeing the functioning of the system. The objective of this oversight is to promote system stability, in other words to ensure that the financial system is not hit by such serious disturbances that it is unable to continue its functions, but at the same time to avoid the system becoming unnecessarily inefficient.

The need for oversight is made more urgent by the fact that both individual banks and the entire banking system have inherent characteristics that render them unstable. Put simply, banks have short-term financing that can quickly disappear, while their assets have long maturities and cannot be realised as quickly.

There are several causes of systemic risk. Banks have exposures to each other, for example credit exposures through the interbank market and through securities trading, as well as liquidity exposures due to their role in the payment system. Furthermore, banks have similar exposures and operations and thus risk encountering the same problems at the same time if these are brought about by macroeconomic events or other external factors. A further cause of systemic risk is that when problems arise in one institution, economic players tend to behave as though other institutions were also affected, whether or not this is the case. This behaviour reinforces systemic risk and can prove self-fulfilling.

SYSTEMIC RISK AT NATIONAL AND REGIONAL LEVEL

Systemic risk in the EU countries is so far most evident at national level since the banking systems are mainly national in nature. Few countries have a high proportion of either foreign banks or foreign-owned banks in their system. Consequently, few European banks have a large presence in

other EU countries besides their own. This will change somewhat, however, when the accession countries become EU members in May 2004, as several of them have a large share of foreign-owned banks.

A typical European bank has the principal share of its interbank exposures with banks in the same country, the majority of all payments are made between accounts in the same country and the bank's assets are located in its home country. Thus, all the important factors behind systemic risk are present in the national system. The bank's customers, including its depositors, are also mainly found in the bank's home country. Given that banks' borrowers are principally based in the home country, a national banking system has a relatively homogenous group of borrowers, at least in terms of legal domicile, but also to a certain extent in terms of sector in cases where certain sectors are dominant in a country. Consequently, credit loss patterns can be assumed to be more similar between banks in the same country than between banks in different countries. Cyclical fluctuations in the EU are relatively synchronised, however, even if there is less certainty over how these would behave under more extreme conditions when a bank crisis could conceivably occur. Also, the fact that bank customers do not use the financial services of banks in other countries to any great extent means that they are primarily dependent on the function of the domestic banking system for services such as credit and payments.

There are several reasons for why banks and their customers choose not to become more international. The infrastructure for financial transactions is mainly national, for example regarding depository and clearing organisations, and retail payment systems. Moreover, some structural factors such as mortgage legislation are different in various countries. In cases where countries have different currencies, integration of the financial infrastructure becomes somewhat more difficult.

Certain regions, however, are beginning to witness the emergence of clearly integrated banking systems. This has perhaps been most evident in the Nordic-Baltic area. Cross-border banks are also a reality for those countries that are due to join the EU in 2004. This trend is highly likely to continue in other parts of the EU as well.

The integration seen in the Nordic and Baltic region differs from the typical kind of foreign establishment whereby the foreign entity in the new country is small and often relatively small in comparison to the parent bank. The following kinds of integration give rise to particular problems for oversight:

■ *Banks with dominant positions in several countries.*

The Nordea Group, whose parent company is located in Sweden, has subsidiaries in all the Nordic countries following mergers with different Nordic banks. In terms of lending, Nordea is the largest bank in Finland, the second-largest in Denmark, the third-largest in Norway and the fourth-largest in Sweden. There are few examples of other banks that enjoy such a dominant position in several industrialised countries. One is Bank Austria Creditanstalt, which is the biggest bank in Austria in terms of assets and which is a part of the German HVB Group, the second-

biggest private bank in Germany. This banking group also has a considerable presence in several other central European countries.

■ *Countries whose financial system is composed of foreign subsidiaries.*

Estonia, which will join the EU in 2004, has a banking system that is 98 per cent owned by foreign-owned banks in terms of assets. Two subsidiaries of the Swedish banks, FöreningsSparbanken and SEB, account for 91 per cent of the system, while the Finnish bank Sampo comprises 7 per cent. Foreign ownership of Finland's banking system is also substantial in that Nordea is the largest bank there and the Swedish bank Handelsbanken is fourth-largest. In addition, several future EU members have banking systems that are dominated by foreign banks.

■ *Banks that are large in their home country and have considerable foreign representation, but that are small in the host country.*

SEB, which is Sweden's second-biggest bank, has 25 per cent of its lending through a subsidiary in Germany. However, this corresponds to only a marginal share of lending in the German banking system. So from a Swedish perspective, SEB has significant operations in Germany, but in German eyes it is a comparatively small business. The situation is the same for Iceland's largest bank, Kaupthing, which generates around half of its income from its Swedish business. The subsidiary is only a small player in the Swedish market, however.

The subsidiaries and branches of cross-border banks enable them to participate in the interbank markets of other countries and become active payment intermediaries and lenders there. Thus, the cross-border banks become part of the new country's systemic risk by creating and being exposed to systemic risk. They also become a channel for the systemic risk between the home country and host country, and vice versa. In the regional systems, however, it is still unusual for customers to use banks in other countries. Apart from the contagion risk, domestic companies and consumers in the bank's home country are therefore neither dependent on the functioning of the other country's financial system nor do they run the risk of losing their deposits due to foreign-bank failures. On the other hand, the country in which the branch or subsidiary bank is established, if this is large, is dependent on the cross-border bank.

SYSTEMIC RISK AT EU LEVEL

Although banks in the EU are not established in each other's markets to any great extent, many are active in the single interbank market in euro. The domestic interbank markets are still the most important for the vast majority of European banks. The interbank market for collateralised loans (mainly repos) is still mostly national, owing to the organisation of countries' depository and clearing institutions and the laws that govern collateral, although the proportion of cross-border loans in the deposit market (i.e. loans without collateral) has risen lately. There are indications that a group of large banks are gradually becoming liquidity redistributors by

borrowing in the integrated euro interbank market and then lending domestically, i.e. European equivalents to US money-centre banks. For the large euro area banks, the single interbank market is at least as important, if not more important, than the national one. Consequently, there are significant credit exposures between banks in different euro area countries, which points to possible systemic risk at euro area level.

Furthermore, in a not too distant future, the euro area may become an increasingly important financial system. The single currency in combination with the EU's Financial Services Action Plan (FSAP) has created conditions for more far-reaching, deeper integration of the financial system than seen so far. As discussed earlier, the financial infrastructure would probably have to become considerably more international than it is today for this to happen, especially regarding retail payment systems. The legal foundations for establishing a European retail payment system have been laid and initiatives taken in the market to this end, but there is none in operation as yet. A common financial infrastructure could bring about a more far-reaching internationalisation, with lower barriers to entry into new national markets for banks, and opportunities for customers to use foreign banks that do not have any form of legal presence in the customer's country. As regards stock exchanges and clearing institutions, a large number of cross-border consolidations have also taken place.⁶⁰ Besides the infrastructure, other changes are also likely to be required to produce such far-reaching integration, for example a harmonisation of civil legislation such as that for real-estate mortgages.

Developments in the euro interbank market and an integration of the financial infrastructure in the euro area could give rise to more palpable cross-border systemic risk. In turn, this would make national systemic risk less important. However, it is hard to say how quickly this could occur.

From certain aspects, the global perspective is significant when discussing the risks of cross-border contagion. There are a number of major international banks that are vital to the functioning of certain markets. The failure of one of these banks would affect a large number of countries whose banking systems are exposed to them directly or indirectly. Today the IMF and World Bank jointly evaluate the financial systems of different countries in the Financial Sector Assessment Program (FSAP). Countries that are also international financial centres are assessed in terms of their stability and functioning, with a particular focus on the risk of contagion to other countries. Even if some overall issues can be discussed and possibly managed at this level, the prospect of day-to-day prudential supervision and oversight that takes global stability issues into account appears very distant for the time being.

In all, international integration has had the following effects:

- Some banking groups comprise such a large share of other countries' banking systems that they could be systemically important there. This is likely to become more common.

⁶⁰ See Financial Stability 2003:1 for a detailed discussion of this consolidation trend and the forces driving it.

- An even larger number of banks have such extensive operations in other countries that developments there could cause a whole banking group to encounter difficulties, which then risk spreading to their home countries.
- A large number of banks risk encountering problems in other countries via the interbank market.

Thus, contagion channels exist between the different national systems, especially at regional level, and it is relevant to examine the systemic risks from this perspective as well.

How well prepared are authorities to manage systemic risk at EU level?

Authorities attempt to safeguard the functioning of the financial system in three main ways. The first is through a regulatory framework, consisting of laws and regulations, which establishes the bounds within which financial companies must operate. The second is through day-to-day prudential supervision and oversight of financial companies in the system. The third is crisis management, which concerns government measures designed to deal with crises in the financial system.

Given that the authorities' efforts in these areas aim to reduce the risk of uncontrolled bank failures that cause the functions of the banking system to collapse, the question is how well current legislation, oversight and crisis management are adapted to the increasing interdependence that exists between banks and banking systems in different countries.

DEVELOPMENT OF THE REGULATORY FRAMEWORK

The regulatory framework that forms the basis for the EU countries' national laws and regulations has largely been developed internationally for a number of years, both within the scope of the EU cooperation and in other international forums.⁶¹ The EU regulations are general in scope, however. There is still room for considerable national differences in the implementation and interpretation of the common rules. Furthermore, there are areas that are not yet covered by common legislation. Consequently, obstacles remain to both integration and efficiency.

Similar rules for all financial companies in Europe are a precondition for one of the EU's main objectives – the single market, in this case a single market for financial services. Given that the framework constitutes a restriction for companies, the existence of different rules could create

⁶¹ As regards banking regulations, the Basel Committee is a driving force. The Basel Committee consists of central banks and supervisory authorities from the world's leading industrial nations, principally the G10. Rules that are proposed by the Committee and adopted by the central bank governors of the participating countries are primarily intended to apply to international banks. As the Basel Committee cannot decide on matters of legislation, the proposals must proceed through national legislative processes. In EU countries, this is preceded by the adoption of EU Directives. The Basel Committee's rules have previously been more general in scope than EU Directives, however, although Basel II proposes more comprehensive, detailed regulations for banks, which the EU intends to implement, but which are fairly flexible on many points. For instance, the EU intends for the Basel II rules to apply to all banks and other credit institutions and not only those with international operations. This in turn increases the need for coordination and the sharing of information between supervisory authorities and central banks in the EU.

barriers to competition between companies from different countries. In other words, the common regulatory framework aims to increase financial integration by facilitating cross-border establishments and by creating competition neutrality for banks and other financial institutions in different countries. The fact that an increasing number of banks have expanded into foreign markets could be a part result of this.

In the development of the common regulatory framework and the integration of the banking systems, the work on cross-border systemic risk has not kept pace. The common rules have only to a small extent taken into consideration the changed conditions for stability efforts that have resulted from integration.

As EU-wide regulations are adopted through negotiation between all Member States, the process of producing new rules can sometimes be lengthy, not least given the relatively large number of rules that have required reform in the EU. With a view to accelerating the process, the EU drew up a plan in 1999 (Financial Services Action Plan) containing 42 points that will be implemented by 2005 so that the single market for financial services can then be considered a reality. Three-quarters of the points have already been put into effect. A large proportion of these relates to the securities markets. In order to enable all the measures to be implemented within the appointed time, it was also necessary to make the process for producing the new rules more efficient. This has been achieved with the introduction of the Lamfalussy process for securities markets, which now also applies to banking and insurance issues.

Briefly, the Lamfalussy process limits the work in the EU Council of Ministers to adopting framework legislation, while the work on technical implementation measures is delegated to particular committees for banking, insurance, securities and conglomerates. The Commission will continue to be responsible for producing proposals for such regulations. The application of framework legislation and regulations provides the scope for national practices in each country. The objective of the new structure is partly to enhance the ability to adapt the regulations to new conditions relatively quickly. The Council of Ministers has also established a special committee to monitor developments in the financial sector as a whole with a view to giving advice through the Economic and Financial Committee on additional measures.

As discussed above, a common regulatory framework is often a precondition for far-reaching integration of the financial sector, and in this sense the work in the EU is a positive step. At the same time, there is a risk that the framework itself may hamper the financial sector's development. There are tendencies that the Lamfalussy structure of framework legislation, rules and national implementation is not being put into effect as planned. The framework legislation is inclined to be overly detailed and the rules that are supposed to elaborate the framework legislation contribute further to this. Meanwhile, national regulations are not being tidied up as required, which is why there is relatively detailed regulation at three levels at the same time as national practices vary. This in turn will counteract the efficiency that the single market aims to achieve. In the Riksbank's opinion, the development of rules in the EU

should comply more closely with the intentions of the Lamfalussy structure and focus on the areas in which the rules can indeed be considered necessary for integration.

DAY-TO-DAY PRUDENTIAL SUPERVISION AND SYSTEM OVERSIGHT

System stability is overseen on a day-to-day basis at both institutional and system level.

Prudential supervision of individual banks is carried out in Sweden by the Swedish Financial Supervisory Authority (Finansinspektionen) and in many other countries by its equivalent. In some other countries, the central bank is responsible for this task. There is no international supervisory authority, for example, at EU level. For this reason, with a view to facilitating prudential supervision of international banks, the supervisory authorities of different countries have drawn up both bilateral and multi-lateral memoranda of understanding. Furthermore, the supervisory authorities in the EEA cooperate in *Groupe de Contact*, the aim of which includes coordinating and formulating principles for how prudential supervision is conducted. This is done by sharing information and experience, as well as by developing *best practice* solutions in the field of prudential supervision. The group will be given more official status in the future when it is made a working group in the above-mentioned committee structure for banking issues.

For supervisory authorities the principle of home country supervision applies, as described in the introduction. The idea of the home country principle is to facilitate bank expansion in other countries by making them subject to prudential supervision by one country's authorities only. The same principle applies to the deposit guarantee. According to EU regulations, all EU Member States must ensure a certain minimum amount for deposit protection that covers all customers in Member States where the bank has a licence.

Oversight of system stability at national level is carried out in most countries by both the central bank and the supervisory authority, but with a somewhat different focus. In order to manage the international dimension of system stability, the central banks and supervisory authorities of the ESCB cooperate in the Banking Supervision Committee (BSC). The Committee has two principal tasks, namely to monitor and analyse macroeconomic and structural developments from a financial stability perspective⁶², and to promote cooperation between supervisory authorities and central banks. This task may be adapted once the new Lamfalussy structure has been established fully.

The current structure for prudential supervision and system oversight is showing signs of certain weaknesses in terms of its ability to manage the integrated financial system that is presently evolving.

Since the responsible authorities are national and accountable to their respective parliaments and taxpayers, their work will primarily be

62 The work on these two tasks is carried out in two different working groups: the Working Group on Macro Prudential Supervision (WGMA) and the Working Group on Banking Development (WGBD).

focused on safeguarding the interests of their own economy. Thus, there is a risk that the home authority will allocate resources in proportion to the bank's significance for the national system and economy, regardless of its significance for the other countries where it operates. This could be a problem in several different situations, but especially in the case of a large branch in the host country. There are currently no clear examples of such a situation, although Nordea is planning to reorganise from a subsidiary to branch structure, after which Finland's biggest bank entity will be a branch of a Swedish bank. When the EU is enlarged with a number of new Member States, it is also conceivable that some of the foreign-owned banks that dominate these countries' banking systems will decide to go from subsidiary to branch structure. In these cases, the home authority may not take account of the host country's system stability in its oversight of the branches. This could prove particularly problematic if the branch is also small in relation to the parent bank or if the parent bank is small in the home country. In such situations, the bank may not even be supervised to the extent that would normally be warranted by its size in the host country. This is unlikely to be accepted by the host authorities, but it is also doubtful that current EU legislation provides grounds for carrying on prudential supervision in any other way.

These arguments also apply in principle to consolidated supervision where a banking group has a subsidiary structure. The host country is indeed capable of supervising the subsidiary, but as a rule a consolidated perspective is required to enable satisfactory prudential supervision. This perspective is important because there are often strong financial connections between different parts of a group and also because exposures and risks can often be redistributed quickly within the group. Estonia's banking system is essentially composed of three foreign banking groups. The failure, for instance, of one of the Swedish parent banks could very well result in the Estonian financial system being unable to fulfil its basic functions. So it would not be surprising if Estonia were not content with supervising the local subsidiaries, but also demanded to participate in the consolidated supervision of the Swedish and Finnish banking groups. Such demands are made today by a country whose system is less dependent on foreign groups than Estonia's.

Even in cases where the parent bank's country would be prepared to take account of other countries' systems when carrying out prudential supervision and oversight, the question is whether they would be able to do so in practice. Taking account of systemic importance in assessments is difficult, even in the home country. To judge the significance of an individual bank for the functioning of another country's financial system without also overseeing the other participants in the system would seem practically impossible. When it comes to prudential supervision, however, systemic importance should not be exaggerated. Effective supervision aims to reduce the probability of bank failure. If this is performed well by the home authority, it will also benefit the host country's authorities. The problem becomes more serious for crisis management, which is discussed in the next section.

Consolidated supervision of international groups entails coordination

problems and also risks leading to considerable duplication of effort, as the supervisory authorities in all countries where the group has a large presence will strive to attain a consolidated assessment of the bank's position. Moreover, the sharing of information between countries entails a risk that important information will never be conveyed, as reporting countries have difficulty determining what constitutes relevant information due to their lack of an overall view of the group. For the same reason, and because they do not have a detailed knowledge of the foreign markets in which the bank operates, the authorities in the receiving country find it difficult to specify what information they wish to receive.

In all, there does not appear to be any lack of incentives to carry out prudential supervision of cross-border banks. Rather, the problem is that regulations in some cases prevent the countries that are most eager to do so from carrying it out and that oversight of systemic risk is in danger of falling between two stools. If, on the other hand, all countries in which a bank has substantial operations were to carry out consolidated supervision, the bank would risk being over-supervised, which would obstruct integration of the financial markets and hamper efficiency. There is also a risk of lapses in communication when authorities attempt to coordinate prudential supervision by supervising their respective parts of a group, as no authority would have an overview of the group as a whole.

The finance ministers and central bank governors in the EU have on various occasions discussed whether the current structure for regulation and prudential supervision of financial activities is capable of ensuring financial stability in the Union. In the first Brouwer Report from April 2000, various proposals were put forward for how cooperation between banking supervisors could be made more efficient, particularly in terms of supervision of different areas of the financial system. This issue has been followed up at informal meetings of the ECOFIN Council, where discussions of financial stability in the Union are now a recurring item on the agenda.

CRISIS MANAGEMENT

The need for the third aspect of the authorities' efforts to safeguard the functions of the financial system – crisis management – arises because the government may need to act to prevent a crisis that threatens system stability. The main threat involves one or more banks that are central to the payment system encountering financial difficulties. Thus, crisis management includes assessing the implications of such a bank suspending payments and possibly failing, and even taking measures to mitigate these effects on the functioning of the financial system. Such measures could entail ensuring an orderly liquidation or reconstruction of the bank. In some cases the government may need to provide financial support so as to avoid a crisis in the whole system. One example of this was the general bank guarantee issued by the Swedish government during the banking crisis.

In order to prevent a bank from suspending payments due to a liquidity shortage and thereby stave off a potential systemic crisis, a

central bank can as a rule provide emergency liquidity assistance (ELA). However, such assistance should only be given to banks that are capable of surviving in the long run so as to avoid an unsuitable market structure and the problem of moral hazard. If financial support must be given to a bank that lacks long-term solvency, this should be financed through the central government budget and agreed upon through the normal channels, usually in parliament following a government proposal. In addition to providing ELA, the central bank generally also has the task of providing information in a crisis situation, which involves informing the markets of whether or not a particular disturbance constitutes a threat to the stability of the financial system.

Crisis management is closely connected to day-to-day prudential supervision and oversight. Oversight of system stability is a precondition for being able to ascertain whether a financial crisis in one or more banks threatens stability. A continuous analysis of the banks is also essential for being able to assess their financial position in a crisis situation.

The new arrangements that have been established to enhance cooperation between different supervisory authorities have therefore also improved the situation for crisis management, even if there remains a need to refine the European cooperation and the delineation of responsibilities. A first step towards greater cross-border cooperation for crisis management has been taken by the Banking Supervision Committee within the ESCB. This arose through the signing of an agreement regarding cooperation between different authorities in crisis situations. The agreement concerns practical arrangements such as the sharing of information. A working group, which the Riksbank currently chairs, has also been established under the Banking Supervision Committee to deal with crisis management issues. Moreover, the finance ministers and central bank governors in the EU have backed a number of measures recommended in the second Brouwer Report. For example, these call for greater international sharing of information regarding how crises may actually be dealt with by national authorities.

One problem here is that crisis management cannot be formalised in the same way as the regulatory framework or the day-to-day oversight. The need to manage crises seldom arises, which has resulted in a less distinct division of responsibilities and structure for how different public authorities should act and for what options are available.

In addition, crisis management is often perceived as sensitive and difficult to discuss in advance. This is particularly due to the fact that crisis management is partly a question of government willingness to provide financial assistance to the financial sector. Different countries have different experiences. Those that have encountered a crisis consider transparency and definite limits to be a way to lessen expectations of similar rescues being performed in all crisis situations (the problem of moral hazard). Other countries that have not encountered a crisis sometimes believe that the best way to counter moral hazard is to keep the financial sector in a state of uncertainty as to whether financial resources will be used. The government's possibilities for making use of the budget

and thereby the right to levy taxes are the ultimate guarantees for crisis management.

Still, given the large amounts of money involved, and the fact that decisions are often made quickly and under great uncertainty, it is important to create means for managing crises when they arise. All financial crisis are different, however, which makes it difficult to have formalised regulations for how authorities should act. Therefore, these means should be flexible enough to be used in different kinds of crisis. One such means could be the possibility for the government to take temporary control of banks in financial difficulty.

All of this makes responsibility for crisis management a difficult issue for banks with extensive operations in a number of countries. If the failure of one such bank risks threatening stability in the financial system of several countries, crisis management will also have to be carried out by several countries. This places great demands on the ability of authorities both within each country and between the countries involved in a crisis to cooperate with each other. For instance, a bank with operations in three countries would require cooperation between six to nine authorities – supervisory authorities, central banks and ministries of finance.

Thus, it is not unlikely that coordination problems would be encountered in crisis management, as would conflicts of interest when spreading the costs. In cases where a bank branch or subsidiary is large in the host country, but the parent bank is small in the home country, it is unlikely that the home country would be willing to bear any costs associated with a rescue. Instead, the host country may be forced to ensure in some way that the foreign group's operations will continue. The host country would have to do this without having been able to influence the situation until the problems materialised and without having satisfactory insight into the group's structure or financial position. One such example is Nordea, which is not in all circumstances systemically important in its home country Sweden⁶³, but which has a subsidiary bank in Finland that comprises some 40 per cent of the Finnish banking system. So the Finnish authorities would have much greater reason than their Swedish counterparts to act in a crisis situation. It is therefore very difficult to say in advance how a crisis in Nordea would be managed. However, there is no doubt that it would place considerable demands on the countries' authorities to cooperate with one another.

It should be underscored that there is a big difference between the ability of a host country authority to manage a crisis in a branch compared with a subsidiary. A subsidiary is a separate legal entity, which under certain circumstances could continue to exist even if the parent bank were to fail. The risk is great, however, that the problems would spread from the parent, for example in the event of large intra-group credit exposures. A branch, on the other hand, is the same legal entity as the home country bank, which means that it fails if the home bank fails. The only option open to the host authority is to attempt to safeguard the branch's assets and use them to settle claims on the branch held by

63 See Financial Stability 2003:1, "Can a bank failure threaten the payment system?"

creditors in the country. This was done successfully by US authorities when BCCI failed some ten years ago, although it is not likely to be feasible in all situations.

If a cross-border bank were to fail, it is improbable that either the politicians or the authorities in the respective countries would be willing to risk taxpayers' money to guarantee stability in countries other than their own. This could prompt the concerned countries to try to ring-fence the bank's assets in their own country with a view to minimising the costs to the domestic economy, or not to intervene at all in the hope that other countries in which the bank has a bigger presence feel forced to act. The result could be a suboptimal resolution of the crisis that proves costlier or that produces greater adverse effects for all the countries involved.

THE INTEGRATION OF BANKING SYSTEMS HAS IMPLICATIONS FOR PRUDENTIAL SUPERVISION AND CRISIS MANAGEMENT

As an increasing number of EU countries are going to have cross-border banks within their boundaries, either through the presence of a parent bank or foreign bank, the need to change the current system is growing. There are two main courses of action for dealing with cross-border banks and the implications they have for system stability, both of which entail advantages and disadvantages.

The first is the course of action mainly seen so far: cooperation within the scope of agreements, common principles and framework regulations. As discussed previously, there is a risk that this kind of solution may result in insufficient oversight of cross-border systemic risk and inefficient crisis management. Such shortcomings can be reduced through various kinds of bilateral agreements between the concerned countries and through ongoing discussion of the aspects of system stability related to cross-border banks. In spite of such efforts, there is a risk that problems will persist, especially with regard to crisis management since crises seldom occur and because it is difficult to make international agreements precise enough to ensure that all crises can be managed speedily enough or that the legislation of each country allows an optimal solution for the countries concerned.

The other course of action is a more supranational form of prudential supervision, system oversight and crisis management. In other words, the responsibility for these three tasks is borne by one or more international authorities. Given the current view that the central bank's role in crisis management is to provide ELA to solvent banks and the ministry of finance's role is to manage other matters when a bank failure could threaten the functioning of the financial system, it is possible to see the ECB as a supranational provider of ELA and the Council of Ministers or the EU Commission as responsible for other crisis management.

Empowering the ECB to provide ELA appears feasible as regards euro area countries. One problem, however, is that cross-border banks do not operate in the euro area only. Consequently, in order to act as lender of last resort for the EU, the ECB would have to be able to provide

ELA in currencies other than the euro. Also, it would be necessary to oversee the systems that this function intends to maintain, like the oversight carried out by national central banks. Thus, the ECB would have to regularly oversee both the different banking systems of the Eurosystem and also be capable of assessing whether the participants that are important in these systems had solvency or liquidity problems.

Neither is the current organisation of the Council of Ministers optimal for crisis management, since the Council's decision-making powers are influenced by national interests. Conflicts of interest regarding the spreading of the costs for a rescue, for example, would therefore remain. It is also difficult to see how the Council of Ministers or EU Commission could be ultimately responsible for system stability in the EU. Effective crisis management requires substantial financial guarantees or capital injections to create credibility for a rescue of an insolvent bank. As the EU does not have the power to levy taxes, the current regulatory framework would require the Council of Ministers or EU Commission to negotiate with individual countries over these capital injections, which would only recreate the current problems.

The supranational solutions also present new problems. Countries will want to continue to ensure the functioning of their national system as long as the principal systemic risks are not at EU level. Consequently, they will want to retain prudential supervision, national system oversight and the power to provide ELA so as to guarantee the functioning of their own system. A supranational supervisory authority therefore risks leading to duplication of effort, a heavier burden for the supervised banks, and new conflicts of interest and coordination requirements between the different countries and the EU and ECB.

At the same time, as pointed out above, it seems that international systemic risk tends to arise at regional rather than European level. Perhaps solutions could therefore be sought through agreements and cooperation on a regional instead of at an EU-wide level. It is likely that a combination of increased cooperation and greater supranationalism will be needed to achieve more effective prudential supervision, system oversight and the ability to carry out crisis management at international level.

One possibility that has been discussed is to create a supervisory coordination authority and make the national authorities accountable to it.⁶⁴ The authority would assess prudential supervision and crisis management at national level and intervene when national interests are given priority over international ones. It could also have the right to impose sanctions on the individual countries.

A first step towards such an authority could be a multilateral agreement that lays down principles for how prudential supervision, system oversight and crisis management should be carried out for cross-border banks. The agreement would then be given a more concrete form by the countries in which a specific bank operates, including a clear delineation

⁶⁴ See Stolz, Stéphanie. (2002), "Banking Supervision in Integrated Financial Markets: Implications for the EU", CESifo Working Paper No. 812.

of responsibilities and distinct routines for prudential supervision, system oversight and crisis management.

Another possibility would be to make a supranational supervisory authority responsible for cross-border banks of a certain size, as well as for oversight of cross-border systemic risk, while smaller banks would remain under national supervision. This is similar to the division that exists between federal and state level in the US regarding banking supervision. Still, this would not resolve the issue of crisis management and national interests.

Crisis management is more difficult to formalise than prudential supervision. Nevertheless, the legislation that governs insolvency and bank failure is the framework within which crisis management is carried out. Greater harmonisation of these rules within the EU would at least lay the foundations for better-coordinated crisis management between different countries. Elaborate rules for the management of bank crises are also largely non-existent at national level in the EU countries. This could perhaps advocate the introduction of a common regulatory framework by the EU. At the same time, such frameworks involve giving some discretionary powers to an authority, such as the power to take control of the operational management of a bank, which means that conflicts of interest between countries could nevertheless remain and prove difficult to manage. An EU body could also take on the role of honest broker between countries so as to enable greater overall benefits than if each country were to act solely in its own interests.

Summary

The financial integration that the harmonisation of the EU countries' financial regulations aims to achieve is beginning to become a reality in several areas of the Union. The integration has resulted in greater interdependence between the banking systems of different countries as well as in higher cross-border systemic risk. Problems in one country's banking system risk spreading to the banking systems of other countries through the cross-border banks. Thus, cross-border systemic risk is mainly found in countries where cross-border banks operate on a large scale. The risk will become even more pronounced in conjunction with the accession of a number of countries to the EU next year, as several of them have banking systems that largely comprise cross-border banks. At EU level, systemic risk is relatively limited and is primarily attributable to banks' activities in the interbank market.

The current approach to dealing with cross-border banks is mainly focused on supervising individual institutions. It is geared only to a small extent to overseeing cross-border systemic threats and to an even lesser extent to managing cross-border systemic crises. Thus, the prudential supervision and oversight of banking systems need to be developed, as does the organisation of crisis management. It is difficult, however, to specify in detail what form such a change should take; both the current approach involving bilateral and multilateral cooperation and a solution based on increased supranationalism entail problems.

Nevertheless, it is likely that a new regulatory framework will need to include elements from both of these approaches, in other words that current rules will have to be supplemented by a certain amount of supranationalism so as to get around the coordination difficulties and potential welfare losses that risk arising due to the retention of a national perspective. However, the main responsibility for prudential supervision, system oversight and crisis management should remain at the level where banks carry on the significant part of their operations and where systemic risk mainly exists.

A cross-border bank crisis that is managed unsatisfactorily or that could have been prevented through better cooperation between the authorities of different countries could jeopardise the incipient integration of the European financial markets. Thus, it is important to identify the problems that are caused by the current developments and to continue the discussion of how they can be resolved.

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