Sveriges Riksbank

# Financial Stability Report
# May 1999

# Contents

# Foreword

The promotion of a secure and efficient payment system is one of the Riksbank's primary functions. The purpose of the Financial Stability Report is to present the Riksbank's appraisal of tendencies in the financial system and their implications for stability. The Report is also intended to stimulate a discussion of matters that concern payment system stability.

The Riksbank has previously published three Financial Market Reports, in which various topics have been presented. These three topics make up the foundation of the Riksbank's analysis of payment system stability.

- The competitiveness and long-term profitability of the bank sector—the banks' strategic risk. A low level of profitability in the long term can undermine the banks' financial buffer and make them more vulnerable to shocks.

- The credit risk in the banks' lending to households and non-financial firms. It is the risks in the loan portfolio that have led to the largest losses for Swedish banks. The Riksbank monitors macro-economic developments and the risk that they will entail substantial loan losses for the banks.

- The counterparty and settlement risks that arise in the banks' trading with financial instruments. Financial problems at one bank can spread to other banks through the exposures that arise on the interbank markets, thus affecting the entire financial system.

This report is the first where we follow up the various topics previously presented. As of this report, we are also changing the name from Financial Market Report to Financial Stability, which better reflects the contents of the report.

Chapter 1 of the report contains a discussion of the bank sector's strategic risks. Chapter 2 analyses the credit risk of banks in the context of the macroeconomic situation. As before, it should be noted that the account is not to be interpreted as a vehicle for monetary policy signals. Chapter 3 provides a discussion of counterparty and settlement risks. Chapter 4 contains the Riksbank's overall assessment of the financial sector's preparations for the new millennium. Finally, Chapter 5 presents the Riksbank's overall assessment of payment system stability.

This work has been undertaken in the Payment System Department at the Riksbank under the direction of Kai Barvèll and Martin Andersson.

The report Financial Stability presents the essential subject matter of the reports and discussions on payment system stability that took place in the Executive Board on 8 and 22 April 1999.

*Stockholm, May 1999*

Urban Bäckström
Governor of the Riksbank

CHAPTER I

# Strategic risks in the bank sector

*The bank sector has experienced strong forces for change in recent years. The driving factors underlying this development include increased competition from both national and international players, the rapid development of new technology and households' changed saving behaviour. Increased efficiency due to competition and globalisation is positive. These developments can also lead to lower profitability that in turn can give banks an incentive to increase the riskiness of their business.*

The bank sector is experiencing strong pressure to change partly due to increased internationalisation and harder competition. This, combined with some slackening of economic activity, puts pressure on banks' profitability. Structural changes in a competitive environment are an important and a necessary part of the dynamic development of the financial sector. At the same time, structural changes in a competitive environment may have consequences for the stability of the financial system. It is therefore important to monitor changes and the strategies adopted by the banks to meet increasing external pressure.

Incorrect strategic decisions by the banks could lead to expensive problems for the national economy. An example of this is the kind of herding behaviour that took place during the deregulation of the Swedish credit market in the mid-1980s. This led the banks to compete extensively for market share in lending. Lending volume increased considerably, often at the cost of inadequate risk control. The result of this is well known. The risk for a similar chain of events seems to be small today. Nevertheless, it is important to analyse the factors that change the conditions for the players in the financial system and the risk that these changes entail.

A further reason why the Riksbank is interested in strategic risks in the bank sector is that pressure on profits can produce a motive for increased risk-taking. For instance, profit can be increased in the short-term by increased lending to less creditworthy borrowers or by taking more risk-filled positions in securities trading. Losses due to increased risk-taking are often not realised until macro-economic downturns occur. Strategic risks also affect the banks' long-term ability to maintain profitability and thereby their financial strength at a reasonable level. A low long-term level of profitability might erode the banks' financial resilience, leaving them vulnerable to shocks.

In this context, it is important to underline that the need for good profitability does not in any way mean that competition in the bank sector is not beneficial or that the banks' profitability should be protected by restricting competition. Sound competition in the bank market has considerable benefits for the national economy. Moreover, banks that are exposed to competition and used to dealing with it, are often better equipped to deal with risks in a changing environment.[1]

# The changing conditions for banks

The first issue of the Riksbank's Financial Market Report[2] contained a discussion on a number of factors that changed the operating conditions for banks within their traditional markets. This report follows up these trends and sheds light on them from different perspectives.

In recent years, a tendency to *disintermediation* in the financial sector has been observed in most industrial countries. Disintermediation means that a larger part of the financial flows associated with saving and the financing of investments are steered directly to the financial markets without the banks acting as an intermediary. Examples of this might be a reduction of bank deposits as savers choose other forms of saving or the securitisation of bank loans. The banks' role as an intermediary in the financial system is thus reduced. One effect of this is apparent in the banks' balance sheets because the asset and liability structure is changed. This in turn affects the banks' earnings and costs as well as the risks in the financial system.

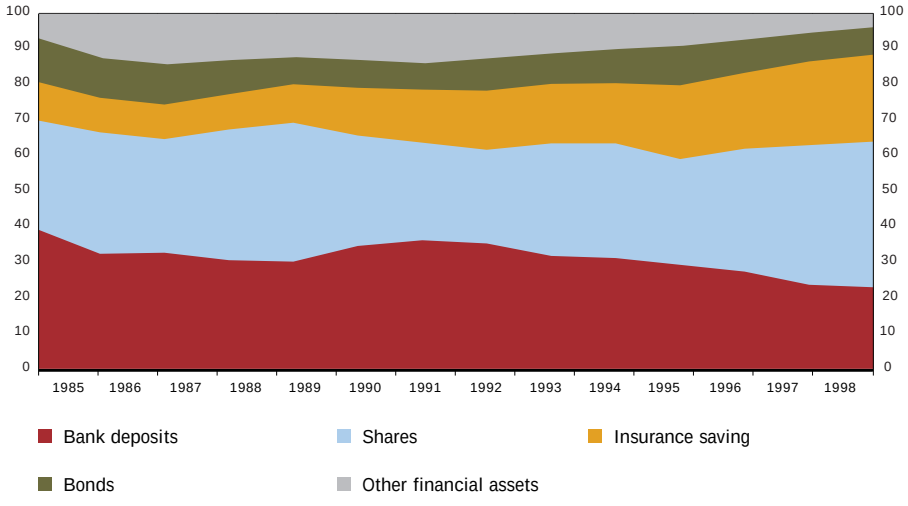
In Sweden, signs of disintermediation have to date appeared primarily in the banks' liabilities with deposits being replaced to some extent by other forms of savings that do not appear in banks' balance sheets. The share of deposits in total household financial assets declined from around 39 per cent in 1985 to around 23 per cent in 1998 (see Figure 1:1). In the corresponding period, the proportion of shares among household assets has increased by around 10 percentage points to 41 per cent while insurance saving's share of assets has increased by 14 percentage points to 24 per cent.

The changes in households' saving behaviour can be partly explained by the positive development of the stock market together with historically low deposit rates. At the same time as this development, demographic changes have taken place as well as changes in the public transfer and pension systems all of which have contributed to an increased demand for long-term saving.

However, the reduced share of traditional deposits in the major bank groups is not just a result of a switch to new forms of saving but is also due to increased competition for deposits. This trend cause the major banks to lose market shares to small and foreign banks. As a result, they have experienced increased financing costs and squeezed margins.

Although the share of deposits in the banks' liabilities has decreased during the past five years (see Figure 1:2), it has increased somewhat in absolute

**Figure 1:1.**
Households' financial assets.
Per cent




Source: Statistics Sweden.

figures. However, the decline of the relative importance of deposits as a source of financing is negative for the banks. Deposits are a cheap and stable source of financing. Unlike loans from international banks and financing by issues of securities, deposits are not affected to any greater extent by insecurity and volatility on the financial markets. Experience shows that the players on the financial markets, unlike depositors, focus more on creditworthiness and can reduce their financing to individual institutions in response to mere rumours that there are problems. The bank sector's increasing reliance on securities for financing can therefore contribute to the financial system becoming more sensitive to liquidity disturbances.

An example of this was when the Swedish bank crisis led to all banks having problems at times in obtaining refinancing on the international interbank market, while deposits were only affected to a minor extent. During the turbulence on the financial markets in the autumn, the Swedish banks, wise from experience, built up a stock of liquid assets to protect against any lack of liquidity on the international interbank market. At the same time, deposits increased from the general public, as savers preferred the more secure deposits to investments in securities, which are more risky. The role of the Riksbank as the provider of liquidity to the Swedish financial system makes it especially important to monitor conditions in the Swedish financial system that affect bank liquidity. The Riksbank did that during the autumn by keeping close contact with the banks and monitoring their liquidity position more closely.

**The bank sector's increasing reliance on securities for financing can therefore contribute to the financial system becoming more sensitive to liquidity disturbances.**

The primary changes in bank group assets during the 1990s are that lending to the general public[3] as a proportion of bank assets has declined, while lending to Swedish financial institutions and securities portfolios have increased[4] (see Figure 1:3). In 1998, lending to households and firms accounted for 38 per cent of the asset value in bank groups, compared with 57 per cent in 1990. However, this reduction is not a result of increased disintermediation in the form of credits to a greater extent being financed

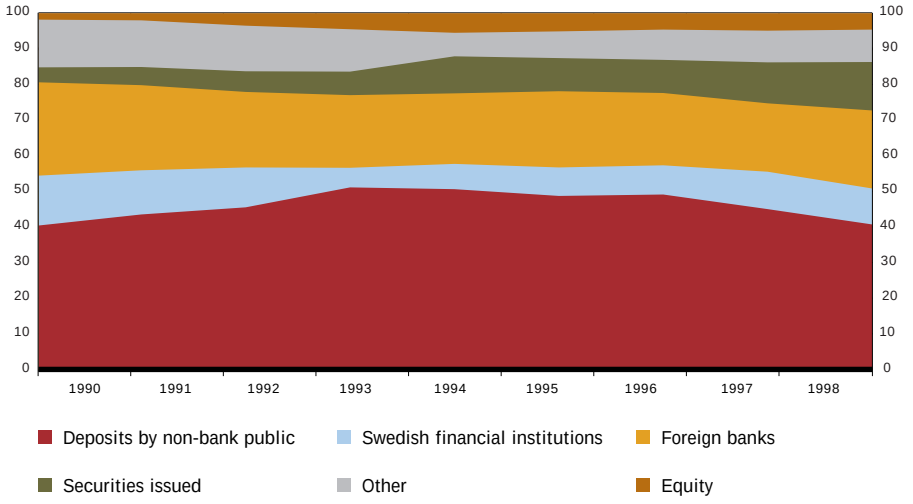
1 See Financial Market Report 1997:1 for a more detailed discussion of banks and competition.

2 Financial Market Report 1997:1.

3 The public is defined as households, firms, municipalities and county councils.

4 In order to obtain historical comparability derivatives have been excluded from 1995 and onwards.

**Figure 1:2.**
Liabilities of major banks.
Per cent




Source: The Riksbank.

outside the bank groups with securities. Swedish firms still obtain finance to a relative small extent by issuing their own securities and securitisation of loans has only taken place to a very small extent.

The explanation for the change in the banks' assets is instead that lending to financial institutions and the size of securities portfolios have increased. One development which has contributed to this is that the repo market has led to reduced costs for holding securities by lowering the cost of financing a securities portfolio. The repo market also entails that lending to financial institutions becomes less risky and the size of these positions has increased. The need to keep securities that can be used as collateral in other contexts has also increased. For instance, the Riksbank started to require collateral for all its lending in 1994.

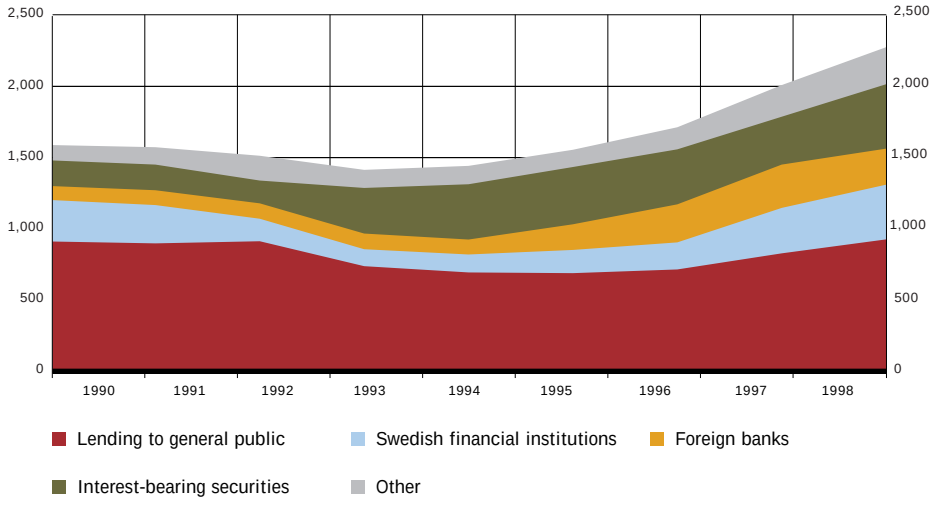
Although credit risk previously caused the greatest losses in the Swedish bank sector, the increased volume of other assets means that other risks may have increased in importance. This is discussed in more detail in Chapter 3 that takes up the banks' counterparty and settlement risks.

Changes in the banks' balance sheets have partially changed the income structures in the Swedish banks. The importance of net interest income as a source of income has declined since the beginning of the 1990s (see Figure 1:4). However, this figure exaggerates the trend to some extent. Since 1995 some items have been classified as net income from financial transactions instead of being classified as net interest income. The reduced importance of net interest income is a natural consequence of deposits from and loans to the general public decreasing as a share of the banks' liabilities and assets respectively. At the same time, commission income has increased in importance.

**The importance of net interest income as a source of income has declined since the beginning of the 1990s.**

The number of players, such as small banks and non-financial firms, that compete to some extent for the same customers as the large banks has increased. This has led to the banks being forced to introduce charges on services that were previously financed by high margins on loans and deposits. Even though bank customers have often reacted negatively to such charges, competition has led to a trend towards charging fees that reflect the actual costs of bank services. This has contributed to the reduction in the share of income from net interest income, at the same time as commissions have become more important.

**Figure 1:3.**
Assets of major banks.
SEK billion




Source: The Riksbank.

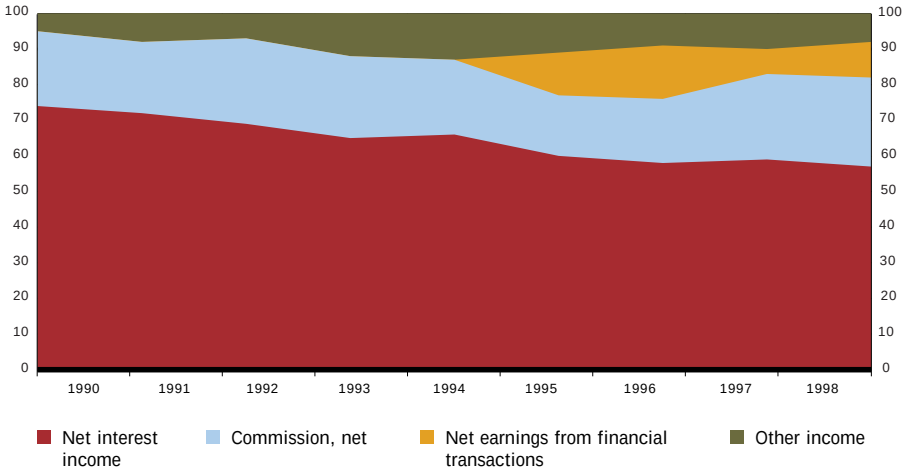
Another factor that has contributed to this development is falling inflation expectations. In recent years, these have contributed to reducing the difference between long and short interest rates. As the banks' activity largely consists of financing illiquid long-term assets (loans) by liquid short-term liabilities (deposits), this reduced gap between long and short term interest rates leads to lower interest margins (see Figure 10 in the Appendix).

In traditional markets such as deposits and lending, competition comes from small local institutions. In other markets, large international banks compete for business. There are considerable economies of scale particularly in business areas that require international distribution capacity and costly administrative systems. Typical examples of such business areas are asset management, trade in foreign exchange and interest-bearing securities, investment banking, and financial activity focused on major companies. These business areas have become increasingly more internationalised over a long period of time. It is highly probable that the establishment of a European monetary union will reinforce this trend and lead to fiercer competition in the financial sector.

Within the EMU area, the market for corporate securities especially the securities of major companies and municipalities will probably expand considerably. In 1998, the European market for corporate bonds doubled, albeit from a relatively modest level. In order to be able to compete for commission income on this market, very large volume activities are required. At present, Nordic banks are relatively small players in this context. The trend towards an increased dependence on securities markets among major companies and municipalities is also squeezing margins in the banks' traditional lending to businesses, since these customers can use the price levels on the financial markets as bench marks in price negotiations for loans. Although this has not been especially marked so far in the Swedish market, it will probably be more of a reality in the future.

At the same time, it is important for the banks that wish to retain a strong position in foreign exchange and fixed income trading to retain the major international companies as customers. Trading on behalf of customers is the basis for the banks' trading business. A strong customer base will become increasingly important in a possible future Swedish EMU membership, as the Swedish banks would then not derive any benefit from being large in their domestic currency. If the Swedish banks lose the major Swedish companies as customers, important negative effects on the banks' income from financial transactions could occur.

**Figure 1:4.**
Breakdown of the major banks' income by income category.
Per cent




Source: The Riksbank.

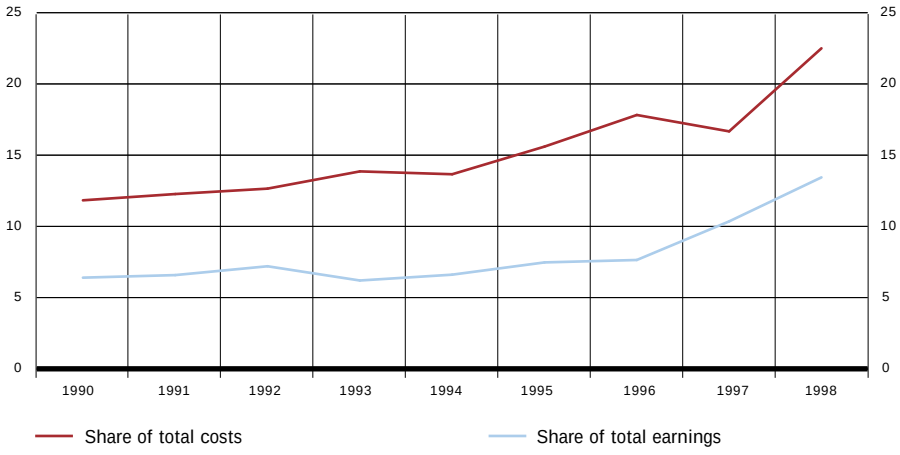
The banks' cost structure has also changed during recent years. IT costs have become one of the most important individual components (see Figure 1:5). For the last two decades, technological development has had important positive effects on the banks' productivity by reducing the costs of the production of financial services. Labour intensive, paper-based methods for handling different types of customer transactions have been replaced by new computer-based methods. These have contributed to increased cost effectiveness in administration and production. Technological development has also made it possible to create and manage new products in a way that was not previously possible. For instance, standardised derivative products such as swaps, forwards and options could not have been handled as mass products without advanced information and computer support. Technological development has also increased the opportunities for reaching customers through a number of new distribution channels. Examples of such distribution channels are telephone banks and internet banks. In Europe, the Nordic banks are well to the fore in this field.

The new channels of distribution have contributed to reducing costs for the banks' processing of various types of transactions. An investigation from Ernst & Young shows that the average cost for processing transactions initiated via internet is between 80 and 90 per cent lower than for manually initiated transactions via bank branches. For the major universal banks, this development poses a considerable challenge. The entry barriers for new players become lower, as it is easier to reach customers without investing in large branch networks. At the same time, IT costs can increase for the major, established banks in conjunction with the need to upgrade their existing computer systems.

**Today, Sweden is the country in Europe with the lowest number of bank branches per resident.**

Today, Sweden is the country in Europe with the lowest number of bank branches per resident (see Figure 6 in the Appendix). It is difficult to judge how much additional savings the Swedish banks can achieve in their branch networks.

**Figure 1:5.**
The bank groups'* IT costs as share of total costs and share of total earnings.
Per cent




*During the period 1990-1996 the measurement include three bank groups and during the period 1997-1998, four bank groups are included.
Source: The Riksbank.

There is a risk that competition will force the banks to offer several parallel distribution channels and this can increase their costs. The new channels of distribution may contribute to increased sales, which could compensate for higher costs. The increased element of high cost technology will probably encourage banks to try even harder to achieve economies of scale by having a broad customer base to spread the costs over.

**There is a risk that competition will force the banks to offer several parallel distribution channels and this can increase their costs.**

The increasingly sophisticated technology which banking activities demand increases the risk for incorrect investments with potentially important negative financial and operational consequences. The more extensive use of technology also requires the supervisory and regulatory authority to attain additional expertise in order to be able to monitor and understand the changed risks in the financial system.

The trends discussed above are important factors underlying the extensive restructuring and consolidation of the financial system that can be observed in the Nordic countries and the rest of the world. We have not yet seen the end of this process.

The following section takes up the effects of the trends described on the market positions and profitability of the Swedish banks.

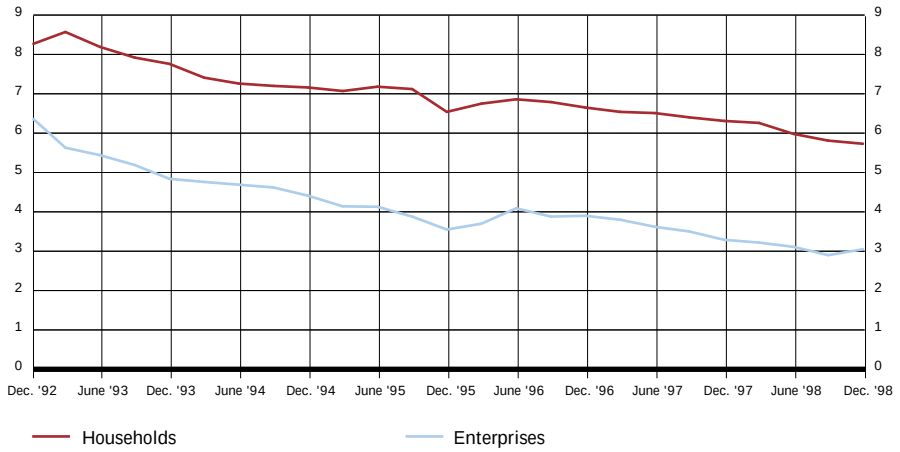
# Price and market development

The bank sector's core activities have traditionally been deposits and loans. Net interest income still accounts for over 50 per cent of the banks' income. The trends towards disintermediation, increased competition and technical development that have been discussed, will continue to have a significant effect on the development of the major banks' traditional activities. The prices which banks are able to charge for their services are a good indicator of the pressure to change.

The difference between the banks' deposit and lending rates shows the price development in deposit and lending activities.[5] It can be noted that the downward pressure on prices was strong during the period

5 The interest margin is the difference between the banks' deposit and lending rates to firms and households the final day of each quarter. The interest margin only shows the development at the banks and omits the price trend at the banks' housing institutions where the largest part of lending in the major bank groups takes place.

**Figure 1:6.**
Banks' margins between deposit and lending rates for households and enterprises. Percentage points




Source: The Riksbank.

The Riksbank's survey of deposit and lending rates. The survey covers interest rates on lending and deposits denominated in SEK with variable interest rates. Problem loans, repos, and lending with special terms, e.g. lending to companies in the same group are excluded. The deposit and lending rates are measured as a weighted average as of the last day in the quarter and the 3 month T-bill rate is the weekly average.

1992-1998 which is illustrated by the interest margin between deposits and loans to households falling by around 2.6 percentage points during this period (see Figure 1:6). This means that the margins in the household segment have fallen by approximately a third since 1992, which is part of the explanation underlying the trend towards the diminishing importance of interest income in the Swedish banks. It should be emphasised, however, that banks were able to earn very high margins during the bank crisis in 1992 and for this reason, the comparison starts at an abnormally high level.

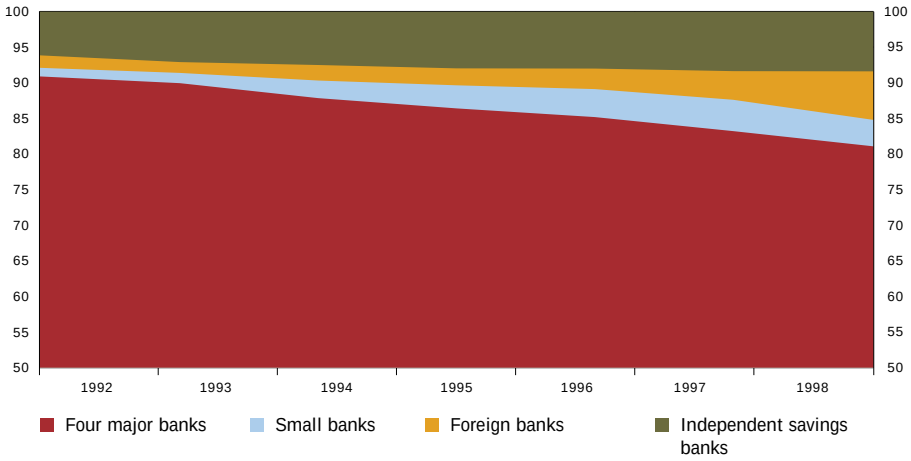
The margins between deposits and loans are generally lower for corporate customers than for households. The interest margin for the corporate market has been halved to around three per cent during the period 1992-1998 (see Figure 1:6). Corporate customers are getting lower interest rates because their size and knowledge of financial markets gives them a stronger negotiating position. At the same time, competition for the business of major companies is stronger and the Swedish banks must also compete with international banks, which because of their better rating, may have lower financing costs. Moreover, the volumes on the corporate market are greater, which means that only a small margin is required to cover the costs associated with the service. As of 1998, the banks report earnings and profitability per business area. This shows that margins in activities focused on households and small businesses are generally considerably higher.

The deposits and lending markets are characterised by high concentration with the four major bank groups being very dominant. Since 1992, however, the major banks have lost market shares, primarily to small and foreign banks. The loss of market shares in household lending has been especially noticeable. The major banks have lost about 14 per cent of this market during the period 1992-1998 at the same time as the small banks, international banks and independent savings banks have correspondingly increased their market shares (see Figure 1 in the Appendix). If housing institutions are also included in the lending to households, the loss of market shares by the major banks is not quite so dramatic but amounts to slightly over 3 per cent.

**Since 1992 the major banks have lost market shares, primarily to small and foreign banks.**

The market for corporate loans is more concentrated than the household credit market (see Figures 1 and 2 in the Appendix). Another difference is that the international competition is considerable on the corporate market, where foreign players have over 7 per

**Figure 1:7.**
Banks' market shares for household and corporate lending.
Per cent




Source: The Riksbank.

cent[6] of the market. Altogether, small banks, foreign banks and independent savings banks have increased their market share by over 8 percentage points between 1992 and 1998 (see Figure 1:7). Foreign banks account for the greatest increase with nearly 5 percentage points.

The deposit market is also characterised by increasingly strong competition. In the deposit market, the share of the major banks has decreased by 9 per cent while small banks and foreign banks have taken considerable shares (see Figure 1:8). The competition for household savings also comes from other investment products. Fund and insurance saving have shown especially significant gains during the past three years. The Swedish banks have been successful in fund management and have achieved a clearly dominant position. In 1998, their market share was around 85 per cent (see Figure 3 in the Appendix). They have also increased their market shares in insurance saving considerably, from over 30 per cent of new saving in 1993 to almost 60 per cent in 1997 (see Figure 4 in the Appendix). This is a contributory cause of the increase of commission income at the banks (see Figure 1:4). Consequently, the major banks have not been affected so greatly by the increased competition from alternative savings products.

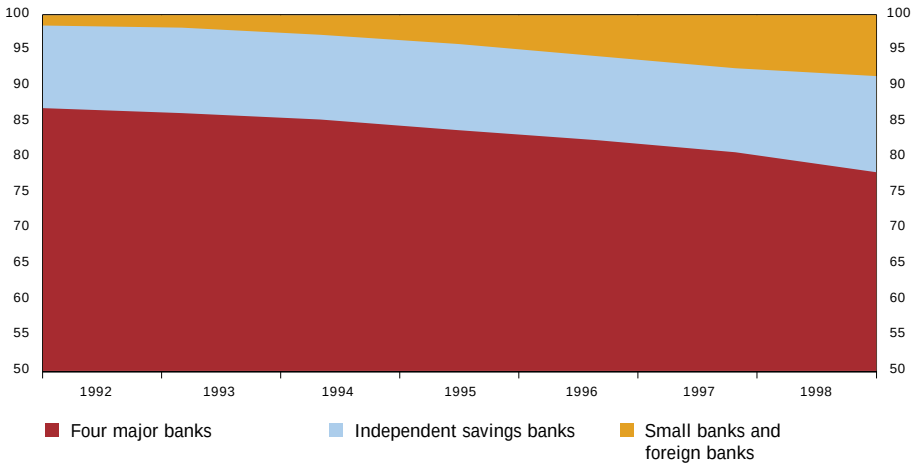
# Profitability and efficiency

In the Financial Market Report 1997:1, it was noted that the Swedish bank sector in an international comparison is relatively efficient. The key ratio, which is often used in comparisons of efficiency, is costs in relation to income, the so-called C/I ratio. However, during recent years a clear deterioration of the Swedish banks' C/I ratio has been noted (see Figure 5 in the Appendix). This can be partly explained by the increasing IT costs, and partly by stagnating income.

Disintermediation, increased competition and technical development have, as has been pointed out, contributed to an extensive structural transformation and increase in efficiency of the bank sector both in Sweden and abroad. The Swedish banking system has the lowest ratio of employees to total assets of any of the banking systems in a group of EU countries chosen for comparison (see Figure 7 in the Appendix). This development began in the mid-1980s but really accelerated when the banks

6 The figures reflect the take-over of the former Östgöta Enskilda Bank by Den Danske Bank, which has resulted in the category described here as small banks losing market shares during 1997 at the expense of foreign banks.

**Figure 1:8.**
Banks' market shares for household deposits.
Per cent




Source: The Riksbank.

were forced to cut their costs in connection with the bank crisis in the early 1990s.

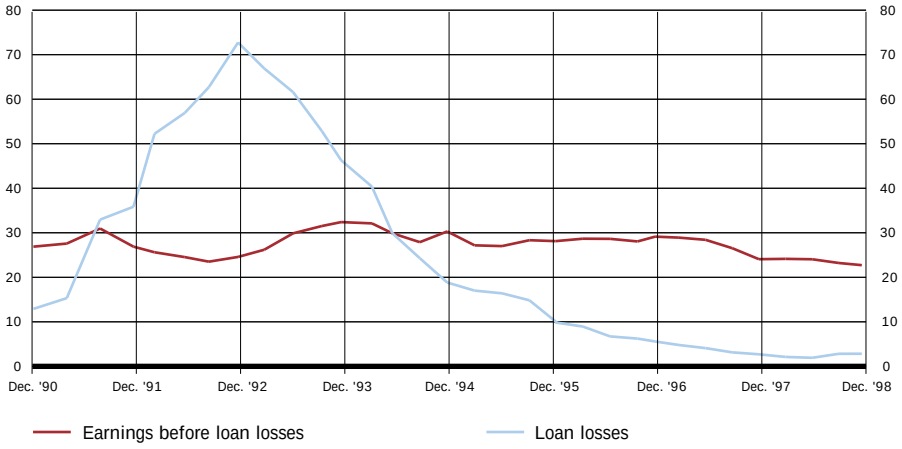
As the largest Swedish bank groups are listed on the stock exchange, their future earning capacity is continually assessed by the stock market agents. The price of banks' shares in relation to other share prices contains valuable information on the expected development of bank earnings. The price movements of bank shares indicate that the stock market agents have had relatively positive expectations for an increase in bank profits since the extensive consolidation in the industry started in 1996 (see figure 8 in the Appendix). The market assessment were changed, however, when the international financial uncertainty intensified during the third quarter of 1998, which affected bank shares harder than other shares. This was largely due to the markets' uncertainty regarding the size of the banks' exposures and loss provisions for emerging markets. Some stabilisation took place, however, when the banks in connection with the quarterly reports at the end of October 1998 reported relatively limited losses in these markets.

The earnings capacity of the major Swedish bank groups measured as profit before loan losses in fixed prices, has been stagnating or falling throughout practically all of the 1990s (see Figure 1:9). It is worth noting that the underlying earnings in kronor fell during recent years despite the consolidation of Stadshypotek and Trygg-Hansa into bank groups in 1997. This development indicates that the trend towards lower prices and increased competition in the banks' core activities which has been described has had an effect on bank profits. Falling earning capacity can therefore be part of the explanation for why bank share prices have developed less favourably than other sectors on the stock exchange even after the financial insecurity has subsided.

**The earnings capacity of the major Swedish bank groups has been stagnating or falling throughout practically all of the 1990s.**

The return on the banks' equity has improved considerably during the period 1992-1998. This is mainly due to falling loan losses that has been the single most important element in the banks' profitability during the period. The return on equity in the bank sector was around 16 per cent on average during 1998 (see Figure 1:10).

**Figure 1:9.**
The bank groups' earnings before loan losses* and loan losses, moving four quarter average.
SEK billion, 1991 prices




*The earnings for 1997 and 1998 have been corrected for restructuring and other extraordinary costs.
Source: The Riksbank.

# Consequences for stability

At present, profitability in the major Swedish banks is sound. The return on equity, amounted to almost 16 per cent in 1998. In the light of the low inflation and the current low nominal interest rates, this must be considered as being a good return on the owners' capital. However, the analysis has given a number of indicators that profitability in the bank sector could decrease in future.

A long-term low level of profitability can erode the banks' financial resilience, leaving them more vulnerable to various types of shocks. Experiences from the period that preceded the Swedish bank crisis, show that the banks in the greatly changed environment after deregulation, took a number of strategically incorrect decisions, which indicates the importance of monitoring the strategic risks.

The banks' profitability is squeezed by stiffer competition leading to lower margins and rising costs. They have reacted with an extensive restructuring in order to improve long-term profitability and efficiency. If the restructuring does not succeed in supplying the promised synergies there is a risk of a continued reduction of profitability. This could lead to an increased risk taking in an endeavour to achieve the profitability levels that the boards and owners consider reasonable. The increasing number of commitments, the Swedish banks are making in more risky countries such as Poland, Estonia, Latvia and Lithuania are examples that an increased risk-taking can be part of a strategy for increased long-term profitability.

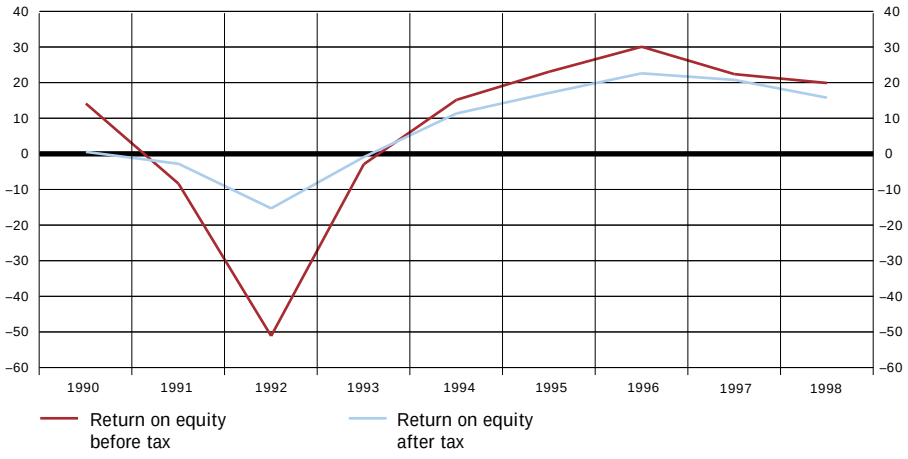
**The banks' profitability is squeezed by stiffer competition leading to lower margins and rising costs.**

It should therefore be noted that some banks have set up targets for return on equity after tax of 15 per cent on average over a business cycle, regardless of levels of interest and inflation. Other banks have set relative profitability targets, which mean that the return on equity shall exceed that obtained by their competitors.

Achieving a required rate of return of 15 per cent on average over a business cycle seems problematic, even taking into consideration that loan losses vary greatly over the business cycle. Today, the banks are operating under favourable conditions with historically low loan losses, but they still only exceed the target set by a small margin.

**Unrealistic targets for required rates of return in the bank sector can therefore contribute to increased risk-taking and the vulnerability of the financial system.**

**Figure 1:10.**
Average return on equity before and after tax.
Per cent




Source: The Riksbank.

Average return on equity capital before tax = operating net earnings as a percentage of the average of equity capital at the beginning and end of the year. Average return on equity capital after tax = net profit in per cent of the average of equity capital at the beginning and end of the year.

Bearing in mind today's low inflation expectations, it is justified to ask whether the banks have adjusted their required rate return to take this into consideration. The required rate of return of the Swedish banks appears relatively high compared with many of their Norwegian and Danish competitors, where the required return on equity lies between 10 and 11 per cent. Required rates of return that appear to be excessively high, can basically only be achieved by high prices, reduced costs or increased risk taking. With the structural pressure to change that affects profitability in the bank sector, it does not appear unproblematic to push through major changes in prices and costs. Unrealistic targets for required rates of return in the bank sector can therefore contribute to increased risk-taking and vulnerability of the financial system.

CHAPTER 2

# Macro-economic conditions and bank sector credit risks

*In the present phase of the business cycle, the risk that extensive loan losses will hit the banks is small. Substantial increases in lending are primarily confined to the household sector, but such loans have not caused any substantial loan losses for the banks in the past. The corporate sector appears to have a relatively balanced increase in lending, although lending increased sharply in the first months of 1999. The risks for insolvency in the corporate sector appear to be low, however. At present, what is most disturbing as regards the credit risk at the banks is real-estate companies' high level of indebtedness and the vulnerability to increasing interest rates that this entails.*

Bank problems that threaten the financial system have usually arisen when large loan losses have hit many banks in a country at the same time, due to sudden macro-economic changes. This was also a crucial element of the Swedish banking crisis. The Riksbank, therefore, monitors the development of risks associated with the banks' lending portfolios, viewed in the perspective of the macro-economic development.

The loan losses of the banks tend to covary with the business cycle.[7] The decline in economic activity in a cyclical downturn means that more companies will find it difficult to sell their products and services, with the result that profitability in firms falls and more firms go bankrupt. The result of this is greater loan losses. For the household sector, the cyclical downturn means higher unemployment and deteriorating income with repayment problems for some households.

The analysis of credit risks at the banks depends on the economy's current position in the cycle. During periods of stable economic growth, the immediate risks of loan losses are small. It is not until a downturn occurs that an increase in loan losses becomes probable. When an upswing in the economy is expected, as seems to be the case now, the primary goal of monitoring the bank sector is to look for signs of a build up of risks. If risk taking has increased considerably, loan losses might be exceptionally severe in a downturn.

**When an upswing in the economy is expected the primary goal of monitoring the bank sector is to look for signs of a build up of risks.**

7 See, for instance, the Bank of England Banking Act report for 1994/1995, where it is shown that loan losses vary more with the cycle than profits before loan losses.

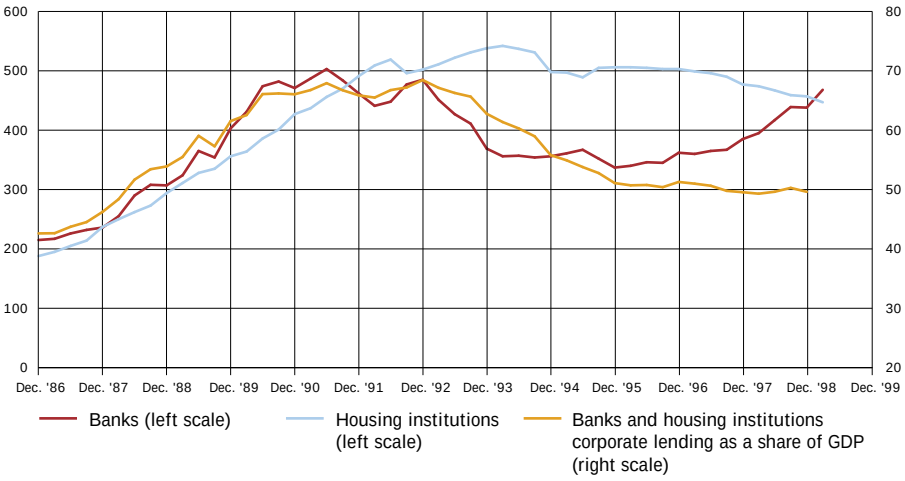
The chapter is introduced with a short section on the development of the economy and the present state of the business cycle. Then the risks of corporate lending are discussed, followed by a section on lending to households. The emphasis is placed on the corporate sector, however. The reason for this is that it is primarily corporate lending, both during and after the banking crisis, that has constituted the major part of loan losses at banks. For instance, the corporate sector accounted for almost 95 per cent of the banks' loan losses during the culmination of the bank crisis in 1992.[8] Cyclical downturns can also more quickly lead to payment problems in the corporate sector, as profitability often declines earlier in a cyclical downturn than, for instance, employment. Finally, a special review is made of the real-estate sector, as banks are especially exposed to this part of the corporate sector, and the real-estate market also affects the risk associated with the household sector.

## Economic developments

Economic activity in Sweden was on the whole favourable in 1998 with a GDP increase of 2.9 per cent. At the beginning of 1999, a number of indicators pointed towards a weakening of industrial activity, primarily due to reduced demand and falling world market prices. A number of facts illustrate the falling-off of the business cycle that could be discerned already at the end of 1998. These include, for instance, a decrease in the use of capacity and declining order inflows. The most recent reports on economic activity indicate that the falling-off may be rather less than expected at the beginning of the year. The real growth rate of GDP is expected to decrease slightly during 1999 compared with 1998 but will increase again in 2000. However, the cyclical forecasts include considerable uncertainty, mainly due to the difficulties in assessing current international economic developments.

Certain macro-economic conditions that are not clearly related to cyclical developments have often preceded bank crises. Among these are strong increase in lending, high real interest rates, deregulation, and rapid unexpected changes in the inflation rate. International factors have often set off financial crises. Market pressures on exchange rates and rapid outflows of capital have played an important role in the development in, for instance, Korea and Indonesia. No such important shifts in the macro-economic environment have taken place in Sweden during the recent period and at present none seem likely to take place in the near future.

**Figure 2:1.**
Corporate loan stocks of banks and housing institutions and their combined corporate loan stock as a share of GDP. SEK billion and per cent




Sources: Statistics Sweden and the Riksbank.

# The corporate sector

### INDICATORS OF RISK ACCUMULATION

When lending increases more rapidly than the rest of economic activity, the debt burden of lenders will generally increase, thus making the bank sector vulnerable. A development of this kind preceded the Swedish banking crisis. One way of obtaining indications as to whether economic imbalances are being created is to relate changes in lending to changes in some growth indicator, such as the GDP development.

Corporate lending by banks increased during 1998 by almost 11 per cent (see Figure 2:1). At the same time, the housing institutions' corporate lending decreased by around 4 per cent. The trend for corporate lending to decrease in housing institutions and increase in banks was partly due a shift to loans whose interest rates are fixed for a shorter period by companies that finance property holdings. This type of loan is often offered by banks rather than housing institutions. After having stagnated during the latter part of 1998, lending increased sharply during the first quarter of 1999.

**In the light of this, the increase in corporate lending seems to be balanced with the growth of the rest of the economy.**

Measured in relation to GDP, the banks and housing institutions' total loans to the corporate sector fell slightly (around 0.5 per cent) during 1998 (see Figure 2:1). In the light of this, the increase in corporate lending seems to be balanced with the growth of the rest of the economy. If the significant increase in lending that took place at the beginning of 1999 continues, the conclusion would change. However, it is still too early to say whether this is a temporary development or an indication of a more important trend reversal. The degree of risk accumulation is important if the cyclical situation for firms were to change and become considerably worse than the forecasts of economic development indicate. A combination of increased risk accumulation over a longer period and the concomitant deterioration of firms' payment capacity was the most important causal relationships underlying the Swedish bank problems at the beginning of the 1990s.

### RISKS FOR BANKRUPTCY IN THE CORPORATE SECTOR

As a natural consequence of the good economic situation, the number of bankruptcies is currently low. Overall, corporate bankruptcies fell by 17 per cent between 1997 and 1998[9]. The bankruptcy statistics thus show that payment capacity in the corporate sector is good at present. GDP growth is expected to recover during the second half of 1999, after a minor falling off during the second half of 1998 and beginnig of 1999. This means that it does not seem likely that there will be a substantial increase in bankruptcies in the next few years.

A supplementary picture of how economic development can affect companies in the future can be given by firms' own expectations. Indicators of firms' expectations have shown a high covariation with the number of corporate bankruptcies, which in turn covaries strongly with the banks' loan losses. The firms' expectations can therefore be used as early indicators of loan losses at the banks.

The two indicators of expectations that have displayed the highest correlation with bankruptcies are the *confidence indicators* of the National Institute of Economic Research (KI)[10] for manufacturing industry and the *purchasing managers' index* (ICI)[11] (see Figure

8 A more detailed discussion of this is presented in the Financial Market Report 1998:1.

9 Source: Business & Credit Information Agency (UC)

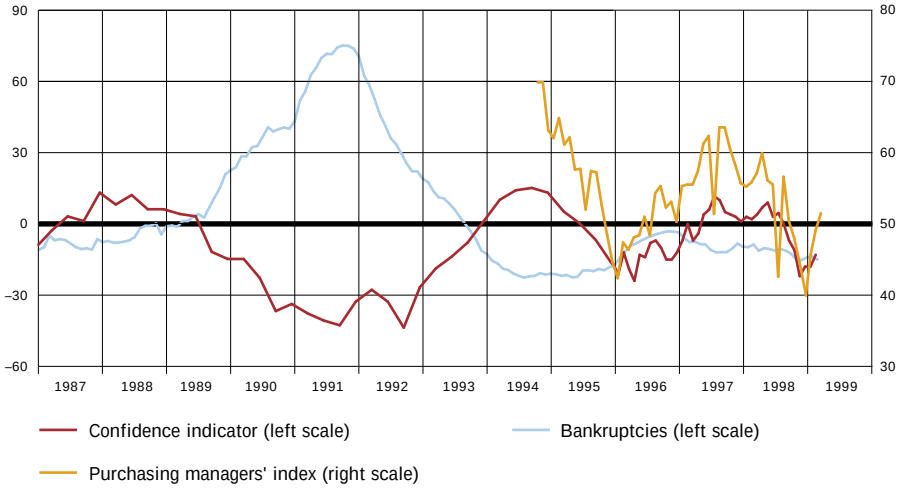
10 National Institute of Economic Research asks 2,250 companies about the present situation and changes in important economic variables. The confidence indicator for the manufacturing industry is compiled by order stock judgments with a deduction for an assessment of the stock of finished goods and expected production. The replies are reported as the net of the number of firms reporting a positive and negative assessment respectively.

11 The purchasing managers' index is produced by Organisationen för inköp och logistik (I&L) and Swedbank. When calculating the purchasing manager index, around 200 purchasing managers are questioned each month about their assessment of the firm's development with respect to order inflow, production, employment, suppliers' delivery times and purchasing stocks compared with the previous month.

2:2). A weak international development contributed during the autumn to a marked worsening of firms' expectations which resulted in a reduction in both indicators. The financial turbulence during the autumn may, however, have had an exagerated impact on firms' expectations. During the first months of the year, this negative trend of expectations seems to have abated and the purchasing managers' index exceeded 50 in March which indicates a turn to a predominantly optimistic view in the corporate sector. The movement of stock exchange prices, which to some extent reflects expectations about firms' future profit levels, has been subdued in early 1999. While the main assessment of economic developments indicates a satisfactory situation, there is always a risk that a worse scenario will occur, where the corporate sector develops more poorly than anticipated. A worse development can to some extent be concealed if the GDP is sustained by high domestic consumption.

Together with the Business & Credit Information Agency (UC), the Riksbank has developed material for this report that gives indications of the risks of bankruptcy in the corporate sector. UC divides firms into five different risk classes. By comparing changes in the relative proportions of firms in different risk categories, an indication can be obtained of changes in firms' creditworthiness.

**Figure 2:2.**
Business confidence indicators and the rate of change of bankruptcies per year.
Net value and 12-month moving average




Sources: I&L, National Institute of Economic Research, Statistics Sweden, Swedbank.

## UC'S RISK CLASSIFICATION AS AN INDICATOR OF FIRMS' PAYMENT CAPACITY

The risk classification is based on forecasts of the probability that a firm will be insolvent within two years. These forecasts are based on statistical correlations between the incidence of insolvency and a number of factors specific to firms such as previous records of delinquent payments, enquiries to UC, age and size of the firm etc. The model weighs together these factors which have proven to be good predictors of the risk for insolvency at the level of the individual firm. When interpreting the result, it must be borne in mind that the risk forecasts are based on only the previous two-years' historic data, which makes it difficult to assess the model's robustness with respect to changes in external factors such as macro-economic conditions, especially if these changes have the character of shocks.

The risk classification of the model is based on a random selection of limited companies in Sweden. In 1998, no new selection has been made, however, as the annual reports for 1998 were not available at the time of measuring. Risk classifications for 1997 and 1998 are thus based on the same selection of firms with the difference that the classification for 1998 is updated with new information that has been received during the year.

Of the five risk classes, *class 1* includes the most risky enterprises that according to UC's forecasts have more than a 25 per cent probability of becoming insolvent within a two-year period. The risk of insolvency in *class 2* is between 10 and 25 per cent, in *class 3* between 3 and 10 per cent, in *class 4* between 1 and 3 per cent, and in *class 5*, the least risky firms, there is at most a 1 per cent probability of becoming insolvent within two years.

A relatively small share of firms belong to the two high-risk categories, which together account for 6.7 per cent of firms (see Figure 2:3). The proportion of firms in the two highest-risk categories has fallen considerably between 1994 and 1998. The proportion of firms in class 1 and 2 in 1994 totalled 25 per cent, which means a decrease of around 18 percentage points up to December 1998. During the same period of time, the risk classes that can be associated with the lowest risk, that is, classes 4 and 5, increased by around 37 percentage points, to represent around 77 per cent of firms. The changes in 1998 compared with 1997 are small and have entailed a small shift from risk class 3 to classes 4 and 5. The positive tendency for risk development in the corporate sector is well in accord with the considerable fall in the actual number of corporate bankruptcies that has been noted since 1994. The risk level in the corporate sector seems at present to be low. In the light of this, the sector should be able to meet deterioration in the macro-economic development without this leading to extensive suspensions of payments.

The low level of risk in the corporate sector is also confirmed by the number of applications for injunctions to pay. Applications for injunctions to pay are normally the first step taken against a company with payment problems. These could therefore possibly serve as an early indicator of bankruptcies in the corporate sector. If bankruptcies increase greatly, this should be preceded by an increased number of injunctions to pay. Between 1994 and 1998, the number of applications per year decreased continually from 16,800 to 13,700. As several applications can be directed at the same enterprise, it is also relevant to look at *the number of* enterprises that have received at least one application during the past year. This proportion has also declined continually since 1994, from 6.8 to 5.5 per cent in 1998. To conclude, applications for injunctions to pay also indicated an improved payment capacity in the corporate sector.

**The risk level in the corporate sector seems at present to be low.**

The interest coverage ratio and the debt-equity ratio are used as indicators of firms' payment capacity

(see Figure 2:4)[12]. Accounting information for 1998 is not currently available for all large firms but a selection of listed companies has been used to forecast the development for 1998. The forecast shows that the debt-equity ratio continued to fall during 1998. However, the interest coverage ratio has declined slightly, but the change is altogether too small to be able to draw any conclusions from it. These indicators together do not give rise to any negative signals on firms' payment ability.

The tendencies described accord well with the development of the banks' credit losses. The expected and stated loan losses of the major bank groups fell 30 and 22 per cent respectively during 1998. The low level of loan losses is natural in the light of the favourable growth of earnings that the corporate sector has experienced in Sweden in recent years. It should be underlined that particular banks may be more or less exposed to the different risk classes, among other things depending on the type of credit policy applied or the appetite for risk that exists in the organisation.

To sum up, it can be said that the forecasts for the economy do not indicate any major cyclical downturn is to be expected and that firms' payment ability in the light of this should not drastically deteriorate in the immediate future. However, it should be pointed out that the uncertainty about economic development is rather high. Furthermore, there is at present nothing to indicate that any imbalances between the debt burden in the corporate sector and the economic development otherwise are accumulating. The Riksbank's indicators of payment capacity of firms also indicate that the risks for insolvency in the Swedish corporate sector are low at present.

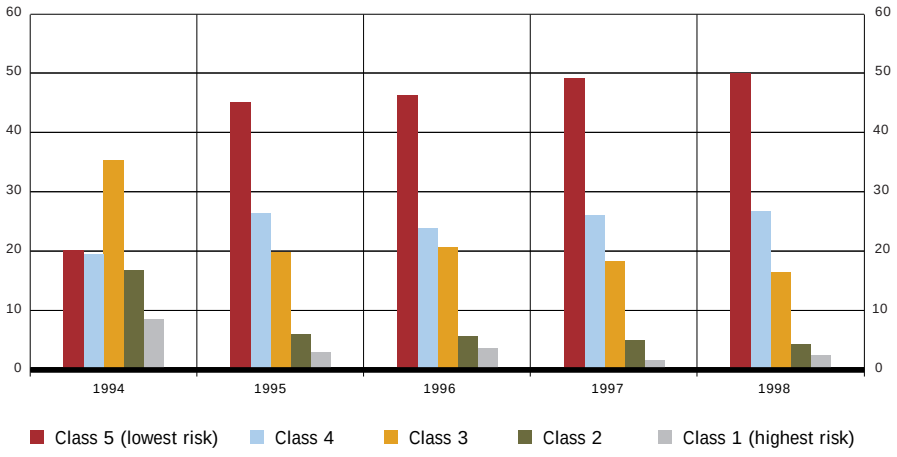
**The Riksbank's indicators of payment capacity of firms also indicate that the risks for insolvency in the Swedish corporate sector are low at present.**

## The household sector

In the same way as in the corporate sector, a high growth in lending to households can mean that an accumulation of risks is taking place in the banks. Lending by the banks and the housing institutions to the household sector increased during 1998 by 5.8 per cent, with an insignificantly larger share of the increase deriving from housing institutions rather than from banks. Compared with the previous quarter, the rate of increase has declined slightly. In relation to GDP, households' total burden of debt has increased insignificantly in 1998 (see Figure 11 in the Appendix).

The relation between household liabilities and income shows in a more direct way how indebted-

**Figure 2:3.**
Breakdown of enterprises in different risk classes.
Per cent




Source: Business & Credit Information Agency (UC).

ness increases for households in relation to the disposable income that is to suffice for payment of the debts. The ratio between the households' liabilities and disposable income in nominal terms is usually called the debt-to-income ratio. The debt-to-income ratio has increased in recent years (see Figure 2:5). In 1997 and earlier, this increase depended primarily on the weak development of income, substantially only increasing with inflation. In 1998, disposable income has increased in real terms by 3.5 per cent, while lending has increased even more, which explains the continued increase in the debt-to-income ratio.

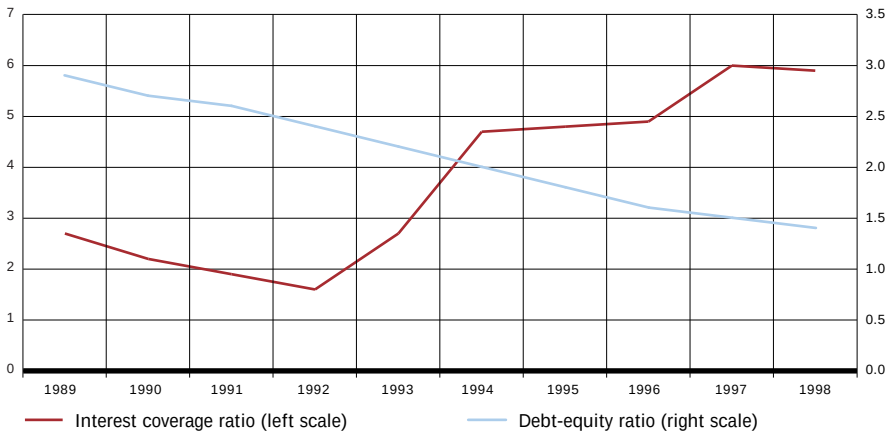
The higher indebtedness can be partly explained by lower interest rates, which mean that the cost of borrowing falls for households. Falling interest rates also push up prices for houses, which account for a large part of households' borrowing requirements (see further next section on the real estate sector). The low interest rates have meant that the household sector's cost of servicing debt has decreased despite increased indebtedness (see Figure 2:5). The increased lending is then less of a problem for households' ability to pay than is indicated by the increase in the indebtedness. The fact that interest expense in relation to income is low indicates that households' payment capacity is good, although it can rapidly deteriorate if the interest rate rises.

**The low interest rates have meant that the household sector's cost of servicing debt has decreased despite increased indebtedness.**

The household sector's high expectations about the development of their own economic situation is probably an important factor behind the increase in borrowing. These expectations have also brought about an increased consumption and a stronger tendency to borrow (see Figure 12 in the Appendix). Not only substantial increases in real incomes but also increases in the value of the household sector's assets, especially shares and homes, have presumably contributed to these positive expectations (see Figure 13 in the Appendix). The household sector's positive expectations have continued at a high level, which indicates that household indebtedness can increase in future. A fall in share prices would have the opposite effect, however, since this would entail a reduction of household wealth and thus a reduced willingness to incur debt. The good development of

12 The debt-equity ratio is firms liabilities divided by equity. The interest coverage ratio is firms' operating profit plus financial income divided by interest expense. A high value of the interest coverage ratio shows that firms' income covers financing costs, a value under 1 shows that income is not sufficient to cover interest expense. Only the development of large firms is discussed here, but this has been seen to covary with the equivalent indicators for small firms. See Financial Market Report 1998:1 for a detailed explanation of these indicators.

**Figure 2:4.**
Interest coverage ratio and debt-equity ratio, large companies*.
Ratios




*) A selection of listed companies has been used to forecast the trend as financial statements for 1998 were not available for all companies.
Sources: Annual reports.

wealth that households have experienced in recent years, primarily driven by share prices, has contributed to the level of saving being low today. In the somewhat longer term, a low level of saving can contribute to erode households' financial reserves, which could be used to pay interest and amortisation in a temporary economic deterioration.

If high expectations by households are not fulfilled, there is a greater risk for household-related loan losses in the bank sector. However, until now, household debt has increased relatively moderately although there are signs of some increase in risks taking place. Even though the debt-to-income ratio is increasing, it is still a long way from the levels from the beginning of the 1990s.

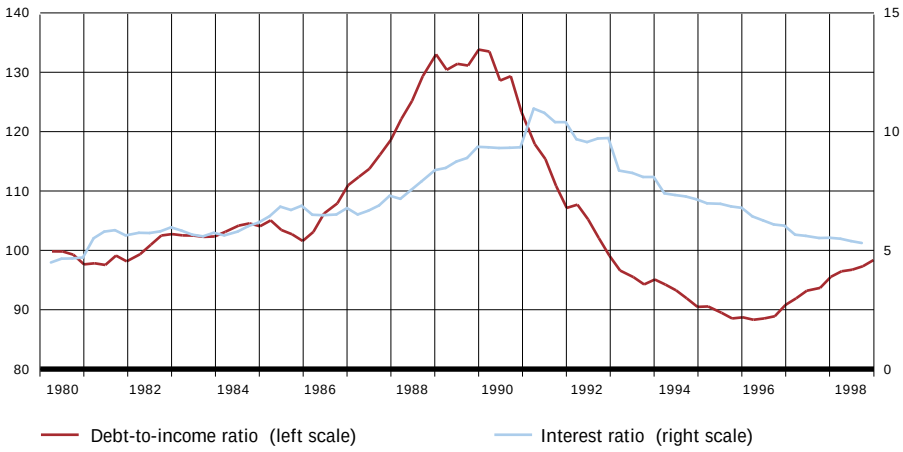
**The vulnerability of the household sector to unexpected increases in the interest rate and a downturn in the economy has grown.**

Altogether, there are signs of risk accumulation in the household sector brought about by a good development of income and positive view of the future. The Riksbank makes the assessment that the conditions for private consumption will remain good during the next few years. Rising real wages and employment and falling interest costs are expected to contribute to an increase in private consumption of around 3 per cent during 1999 and 2000. It seems therefore likely that the burden of debt in the household sector will increase for some time to come. The vulnerability of the household sector to unexpected increases in the interest rate and a downturn in the economy has grown as a result of this.

## The real-estate sector

Developments in the real-estate sector are important for the stability of the Swedish bank sector for several reasons. Lending by housing institutions takes place wholly against mortgages in properties. A considerable part of the lending by the parent banks, approximately a third of loans to households and firms is granted with property as collateral. Loans to the real-estate companies constitute the part of the corporate lending to which banks are most exposed. During the banking crisis, a considerable part of the loan losses related to the real-estate sector. This leads the Riksbank to regard developments in the real-estate sector as especially important for the analysis of the stability of the financial system. In this section, growth in the bank groups' property-related lending is discussed first, then development on the property market as a whole with regard to prices, direct return, etc. is presented. Finally, indicators of the payment capacity of real-estate companies are discussed.

**Figure 2:5.**
Household debt-to-disposable income ratio and the ratio of after-tax interest payments to disposable income.
Per cent




Sources: National Institute of Economic Research and Statistics Sweden.

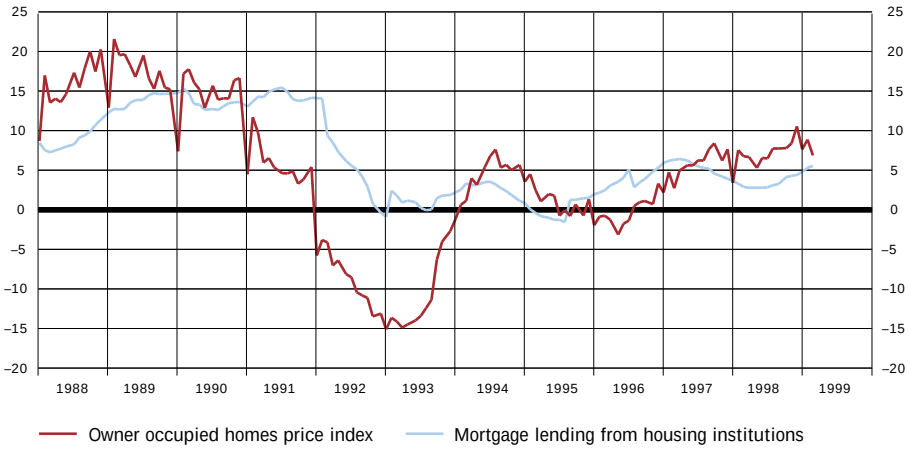
### THE BANK GROUPS PROPERTY-RELATED LENDING

The majority of property lending takes place in the housing institutions. During the past year, these have had a stagnating development, where the total volume of loans has been more or less unchanged. Changes have taken place, however, between the household and the corporate sector. Lending to households has increased by around 5 per cent per annum, while corporate loans have decreased by about the same amount (see Figure 2:1 above and Figure 11 in the Appendix). Lending for house purchases accounts for the predominant part of growth in the housing institutions. Lending to owner occupied dwellings has also increased by more than 10 per cent during the past year, but this lending only accounts for approximately 6 per cent of lending to households by the housing institutions and is therefore less important for the total growth of lending.

Lending to apartment buildings accounts for largely the entire reduction on the corporate side at the housing institutions. At the same time, lending against mortgages in residential property has increased in the banks during the past two years (see Figure 14 in the Appendix). Perhaps this increase to some extent consists of lending for apartment buildings. As discussed in the section on the corporate sector, real-estate companies have begun to borrow more from banks. This tendency probably reflects their preference for loans with a shorter fixed interest rate period and this type of loan is granted by banks. However, this does not explain the entire reduction in housing institutions lending to the corporate sector. Lower interest rates have probably led to an increase in the repayment of loans. During the last quarter of 1998, mortgage lending for both residential and commercial property decreased. This suggests that corporate lending will not push up real-estate prices the way it did in the late 1980s.

The increase in lending is at present only being driven to a limited extent by construction activities. House construction has been low for a number of years. New lending to new house-building schemes and rebuilding programmes by housing institutions only accounted for 1 per cent of their loan stock in 1998. The corresponding figure for 1991 was 8 per cent. The increase in lending is therefore presumably due to existing properties changing hands and/or mortgages granted against home equity to a greater extent than previously. This is a result of the increase in prices, among other things. The rate of increase of house lending coincides reasonably well with house price movements. This seems to indicate that property owners have to some extent cashed in on the increase in wealth resulting from the price increases. This means that the ability to withstand price drops

**Figure 2:6.**
Rate of change of prices of owner occupied homes and of mortgage lending from housing institutions.
Per cent




Sources: Statistics Sweden and the Riksbank.

has perhaps not increased as much as prices have (see Figure 2:6).

**Corporate lending will not push up real estate prices the way it did in the late 1980s.**

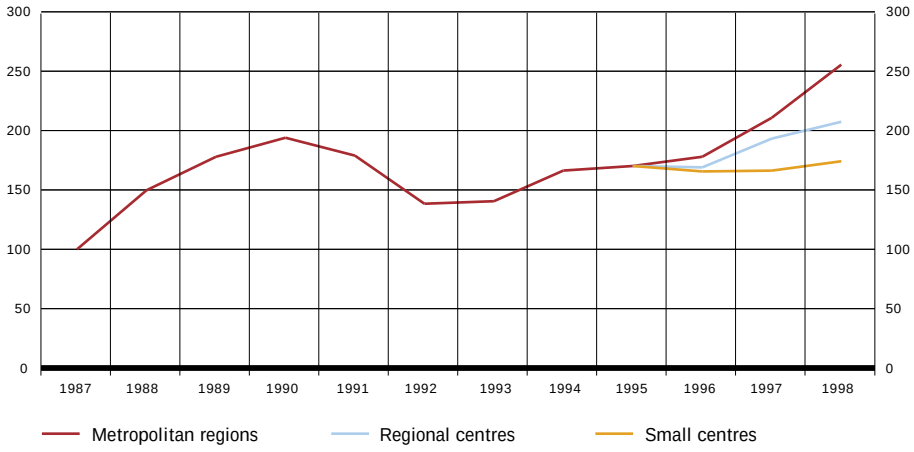
### PRICE MOVEMENTS

The prices of rented accommodation have increased continuously since 1993 and in metropolitan regions are now more than 25 per cent higher than the 1990 levels in nominal terms (see Figure 2:7). Since 1996, the price rise has accelerated, primarily in the metropolitan regions. The strong increase in price observed in mid-1998 has moderated slightly in the latter half of the year[13]. It can be assumed that the turbulence on the international financial markets has affected the real-estate market as well, despite this the annual rate of increase for 1998 is around 19 per cent in metropolitan regions. The continued fall in interest rates is probably the factor that has been most important for the price increase. Particularly in Stockholm, the transformation of rented property into tenant owned dwellings might also has had some effect on prices. A property in central Stockholm is of considerably more value to a tenant owner association than to an owner who lets apartments. A considerable part of the properties changing hands in Stockholm are conversions to tenant-owned apartments, which has led to an upward pressure on prices. Rental charges have increased by 2.5 per cent on average the past three years at the same time as inflation has been very low and this has also contributed to this trend.

The development in the regional centres[14] has been positive although not as strong as the metropolitan regions. The regional centres have also benefited from falling interest rates and increasing rents although vacancies have increased. The trend in small centres is noteworthy. Despite falling interest rates, prices have remained largely unchanged since 1995. At the same time, rents have increased more than in the other areas and vacancies have not developed as negatively as in regional centres. The explanation is probably related to some places having structural problems, with for instance large outward migration, at the same time as there are not especially many small centres with a more expansive development to pull up average price movements. The fact that prices are increasing more slowly in areas that can be worse affected in a cyclical downturn is positive from the Riksbank's stability perspective.

New construction of housing has remained at a constant low level since 1993, and has probably been a contributory cause of the price increase. However, forecasts indicate an increase in house construction

**Figure 2:7.**
Price trend (apartment buildings) in metropolitan regions, regional and small centres. Index: 1987=100 for metropolitan regions. For regional and small centres: Base year 1995= price level for metropolitan regions 1995




Source: Catella Fastighetsinformation.

in the next two years. This can lead to a continued price increase being restrained, or at least lower than it would otherwise have been.

Prices of commercial properties have risen greatly during recent years, as have residential properties (see Figure 2:8). The slackening-off during the latter half of the year was, however, greater for commercial properties. The price level for the full-year 1998 was lower than for the first half of 1998, which meant that prices in fact fell during the latter half of 1998. For 1998 as a whole, the increase was 12 per cent in metropolitan regions. Besides falling interest rates, both lower vacancies and higher rental levels have contributed to this development.

**Prices of commercial properties have risen greatly during recent years, as have residential properties.**

As the majority of indicators point towards a lower GDP growth in the next two years, there is a lot to indicate that the rise in prices will fall off. Unlike the case for dwellings, forecasts indicate that the construction of commercial properties will continue to be low in the next few years, although a minor upswing is probable during 1999. In this way, pressure will not be put on prices due to increasing supply. However, there is a risk that vacancies will increase if there is a cyclical deterioration during 1999, which can have a moderating effect on price increases.

Prices of commercial properties in regional and small centres lhave coincided more closely with the trend in metropolitan regions than housing properties have. Part of the background to this may be that the vacancy situation has not developed as negatively as for residential property, although a small increase in vacancies has also taken place here. In regional centres, the rental level has increased relatively much during 1998, which has not been the case in small centres, and this explains the difference in price movements during 1998.

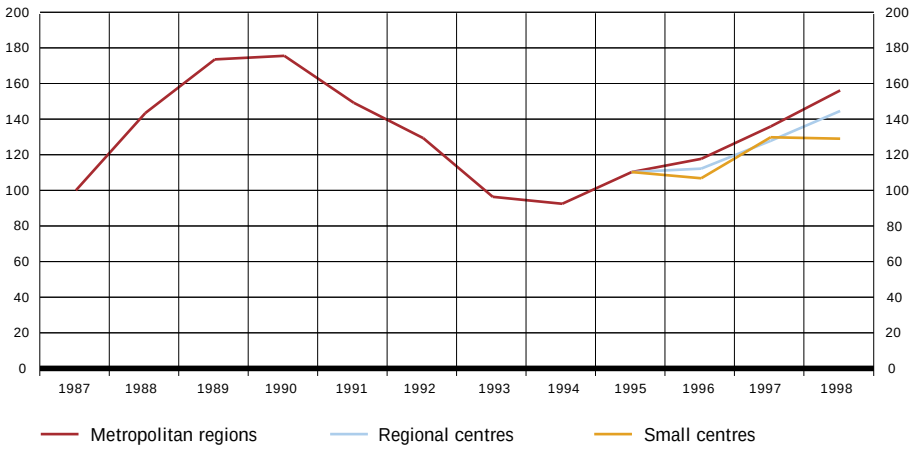
### DIRECT RETURN

The rapid increase in prices naturally raises the question whether the risk level has risen to the same extent. The direct yield on property investments is a good indicator of investors' expectations of the future development of the property market (see box on page 28 for explanation).

13 The price level consists of the price per square metre for all properties sold during the period. The transactions that formed the basis for the six-month figure in 1998 are therefore included in the full-year figure for 1998. The average square metre price for properties in five areas in the three metropolitan regions are indexed and weighted to an index. The various areas are weighted based on the total tax assessment value for properties in the area. For commercial properties, these metropolitan regions account for 40 per cent of Sweden's total property value, for residential properties 21 per cent.

14 Regional centres are larger towns in Sweden that serves as central locations in their respective region, with the exception of the three metropolitan regions.

**Figure 2:8.**
Commercial property price trend in metropolitan regions, regional and small centres. Index: 1987=100 for metropolitan regions. For regional and small centres: Base year 1995=price level for metropolitan areas 1995




Source: Catella Fastighetsinformation.

# DIRECT RETURN AS AN INDICATOR OF THE DEVELOPMENT OF THE REAL-ESTATE MARKET.

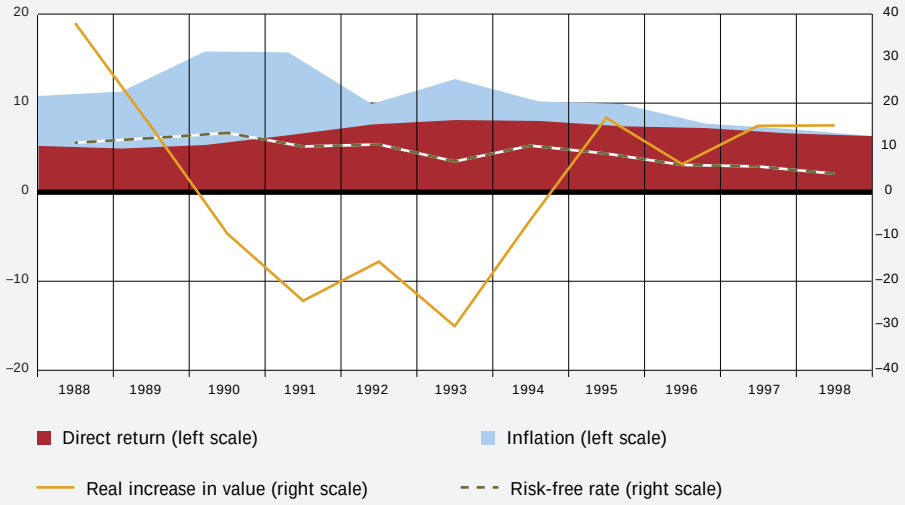
The return that an investor in securities receives consists of two parts, the direct return that the investor receives annually in the form of share dividend or coupon payments for bonds and the increase in value of the security. In the same way, the return on real-estate investments consists of an increase in value and a direct return. The direct return is then rent earnings with a deduction for direct costs as a proportion of the value of the property.

The rate of return that an investor requires on a risk-bearing asset can be divided up in another way. The required rate of return is due to the return on a risk-free investment, i.e., the interest on treasury bonds, and the amount of risk attached to the investment. The risk premium varies for different assets. On stock market investments the risk premium can be split into an expected return on the stock market as a whole, and a premium relating to how much a particular share can be expected to vary in relation to this, that is, a Beta coefficient. The risk premium for the market as a whole has been between 3.5 and 4 per cent for shares in recent years according to Price Waterhouse's investigations. There are no similar investigations for the real-estate market.

Inflation is an important factor in real-estate investments, as properties are usually regarded as real or inflation-protected assets. This is a consequence of the fact that there is a clearer relationship between property values and inflation than, for instance, share values. For assets such as shares, there is a broader spectrum of factors that affects the return. This means that the return varies with a smaller link to inflation. The different situation for properties is due to both rental income and operating expenses normally being expected to increase at the rate of inflation. If they do this, the net operating income for the property also increases and, if no other changes occur as regards expectations, this also entails that the value of the property increases with inflation. The fact that the difference between direct return and T-bond interest has fallen during the 1990s but has become positive (see Figure B1) again in recent years is partly related to the switch to a low-inflation environment.

By comparing the direct return on properties with the return on a risk-free investment, a treasury bond, expectations on increase in value in the market can be observed. A direct return close to the risk-free investment indicates that there are expectations of future

**Figure B1.**
The components of the return on property investments compared with the risk-free rate (5 year T-bond).
Per cent




Sources: Catella Fastighetsinformation, Statistics Sweden and the Riksbank.

increases in value. An investor would not accept a direct return close to the risk-free return unless there was a prospect of a higher return in future. As previously discussed, the property values in a normal case increase approximately with inflation, provided that rents and operating expenses also do so and that the real interest rate does not change. An increase in real value in properties assumes that net operating income increases in real terms sometime in the future, or that the real interest rate declines. On the stock market, the P/E ratio[15] is often used in a similar way. A high P/E ratio means that there is an expectation in the market that earnings will improve in future. As there is often a considerable element of uncertainty about increases in real value, it is a disturbing sign if direct return is low in relation to the risk-free return. At the end of the 1980s, many property deals were made on the expectation of a future increase in real value, which then did not materialise and created considerable problems for the bank sector.

A disadvantage of direct return as a measure is that an increase in the interest rate will immediately increase the direct return by the price of properties falling. The new price level will only apply to those who invest in properties after the interest rate increase. Those who purchased their properties at the present price level of direct return will risk having problems in bearing the higher financial cost that the increase in the interest rate entails, but this is not apparent in the direct return statistic. During the banking crisis, it was lending to real-estate investments prior to 1990 that was the problem for the banks, as many investors had purchased and raised loans on properties at a low direct return before prices fell.

A similar line of argument applies, of course, to all firms, but it entails greater risks in the real-estate sector, as the degree of debt financing is often higher than in other firms.

Real-estate companies can be compared with banks in that they normally generate their income from the balance sheet and often have a higher indebtedness in comparison with other firms. The difference, however, is that the real-estate company is generally more exposed to interest rate risks than the banks, which often have a good matching between assets and liabilities.

15 P/E ratio stands for Price-to-Earnings ratio.

The direct return has fallen continually since 1993 (see Figure 2:9). This downturn is due to prices increasing rapidly. Lower vacancies and higher rents should have led to an improvement in net operating income although this has not been sufficient to compensate for the increase in price. The risk-free interest rate has fallen more, however. In the light of this, the direct return does not seem unjustifiably low. In 1998, the direct return and inflation expectations[16] together were around 4 per cent higher than the risk-free interest rate. If it is assumed that the risk premium is at about the same level as for the stock market, this means that it is not possible at present to discern any expectations of a considerable real price increase in properties. The return that is now produced by the direct return and inflation together has never exceeded the risk-free interest rate by such a large margin as it does today, which is an indication that expectations of the real growth on the market are now lower than ever. The conclusion from the earlier Financial Market Reports that the upswing in property prices has been financially motivated and not driven by speculation can therefore be sustained. A rise in interest rates that coincides with deterioration in payment capacity of real-estate companies continues to be a threat, however. The risk that an increase in interest rates and a deterioration in payment capacity caused by a cyclical downturn coincides is not so great since monetary policy strives to maintain stable prices with an inflation target, lower interest rates can be expected to coincide with cyclical downturns, as cyclical slackening normally leads to lower inflationary pressure.

**A rise in interest rates that coincides with deterioration in payment capacity of real-estate companies continues to be a threat.**

16 The expectations for the inflation rate for the next three to five years were 2.1 per cent according to the Statistics Sweden investigation in March 1999.

## PAYMENT CAPACITY IN REAL-ESTATE COMPANIES

When the credit risk in the real-estate sector is studied, it is not only the value of properties that is of interest. The payment ability of the real-estate companies is crucial for a loan loss to occur. The Riksbank uses the debt-to-equity ratio and the interest coverage ratio as indicators of this.[17] The accounting information for 1998 is only available for listed real-estate companies. These are used as indicators of developments for the sector as a whole (see Figure 2:10). Listed companies and other real-estate companies differ relatively greatly as regards the level of debt to-equity, but they have changed in the same direction every year that data has been available. The same applies to the interest coverage ratio so that listed companies seem to function reasonably well as indicators for the others.

While the listed real-estate companies have decreased their indebtedness levels considerably since the crisis in the beginning of the 1990s, other real-estate companies as a rule are highly indebted. The fact that listed real-estate companies have a considerably lower level of indebtedness than the rest, a ratio of debt to equity which is less than 3 as opposed to a ratio of 6, can be an indication that the stock market does not accept a high indebtedness level. The higher level of indebtedness which real-estate companies typically exhibit means that their profits are liable to fall if, for example, their interest expenses increase as a result of a higher level of interest rates.

The interest coverage ratio of the real-estate companies, that is, the ability of firms' net operating income to cover interest expense, has shown a continual improvement in recent years. The considerable debt burden of real estate companies as a group means that their interest coverage ratio has not developed in the same way as the listed companies'. The explanation of the improved interest coverage ratio is above all the continual falls in interest rates in recent years, which has reduced the interest burden of the companies

The increase in the debt-to-equity ratio for listed companies in 1997 proved to be temporary. In 1998 it fell back to the same level as in 1996. This led to a reduction of interest rate sensitivity in listed companies. It is possible that real-estate companies also generally reduced their indebtedness in 1998. Although some reduction has taken place, the high level of debt means that real-estate companies would seem to be sensitive to changes in interest rates. This

**Figure 2:9.**
Direct return on commercial and residential properties in the metropolitan regions and the 5-year T-bond rate.
Per cent


Sources: Catella Fastighetsinformation and the Riksbank.

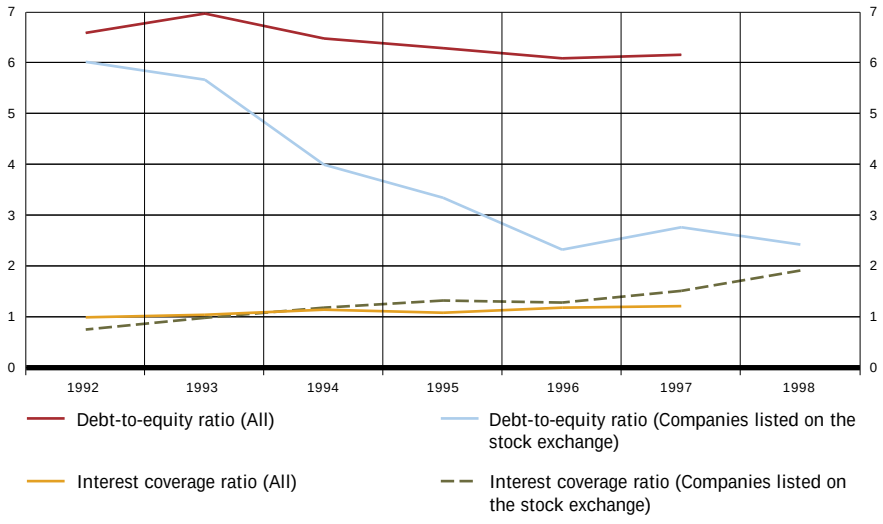
presumption is reinforced by the fact that the interest coverage ratio is close to 1, despite a strong decrease in interest expense. Even small increases in the cost of financing entail a risk that real-estate companies will report a loss.

**Even small increases in the cost of financing entail a risk that real-estate companies will report a loss.**

A simple calculation can illustrate the sensitivity to interest rates. The average interest coverage ratio in real-estate companies is 1.21. This means that an increase of the interest expense by 21 per cent would mean that net operating income just covers interest expenses and that the company would not produce any profit. If the interest cost is 5 per cent, it would suffice with an increase to just over 6 per cent for this to occur. However, it should be underlined that this example is simplified. There are probably a number of real-estate companies with fixed interest rates. The recent period's decline in interest rates therefore has not yet affect these companies' financing costs. Fixed interest rates also mean that these companies are not immediately affected by interest rate increases.

17 See Financial Market Report 1998:1 for a more detailed discussion about this. The interest coverage ratio is defined as the net operating interest in relation to interest expense. The debt ratio is defined as debt in relation to shareholders' equity.

**Figure 2:10.**
Interest coverage ratio and debt-to-equity ratio in real-estate companies.
Ratios




Sources: Annual reports and Business & Credit Information Agency (UC).

CHAPTER 3

# Swedish banks' counterparty and settlement risks

*The exposures of Swedish banks to one another are very important for financial stability. If the exposures are large, the failure of one single bank can rapidly lead to serious consequences for other banks. It is unfortunate that after ECHO was wound up in spring 1999; there is no agent on the market that can provide risk reduction for foreign exchange (FX) transactions by multilateral net settlement. The large increase in lending from banks to housing institutions in recent years is also noteworthy.*

Counterparty and settlement risks to banks were dealt with in detail in the most recent issue of the Financial Market Report. This analysis was based on a survey of the four major banks' exposures to one another within the spheres of financial trade where these risks arise. From the perspective of the Riksbank, the foremost problem is the extent of the exposures to individual counterparties. Individual failures can have major effects for a bank and lead to problems spreading from one institution to another. The perspective differs from other types of risks in bank operations such as credit risk in lending to firms and households. The loan portfolio is more diversified in those markets, which means that individual commitments are less important. The analysis must be based to a great extent on the nature of the asset stock as a whole and the risk of significant credit losses occurring at the same time for many loans in the portfolio.

In the light of the banks' extensive exposures to counterparty and settlement risks, it is very important that these are regularly monitored. For this reason, the Riksbank intends in the future to collect information on a regular basis in order to analyse counterparty and settlement risks. No such reporting has yet been developed, however. At the same time, it must be underlined that reporting of these risks does not by itself diminish them. These exposures derive from short positions, which mean that they can change quickly. Reports on exposures to counterparty and settlement risks more quickly become out-of-date than is the case for exposures in, for instance, the loan portfolio. The primary means of diminishing the immediate risks is the use of existing methods for risk reduction. Because of this these risks cannot be evaluated in the credit institutions without risk management also being discussed. This also applies to other risks that arise in financial trade, for instance market risks.[18]

18 Market risk is defined as the risk for loss associated with changes in interest rates, exchange rates, or share prices. See Financial Market Report 1998:1 for a more detailed description.

This report does not focus on the size of individual exposures in the banks' financial trade. Instead, the banks' activity on the market segments identified in the last report as having the highest risk will be discussed in more detail in each section. These activities are FX trade, derivatives trading, and bank's own securities portfolio. The chapter begins with an overall review of counterparty and settlement risks. Readers requiring a more detailed examination of this field are referred to Financial Market Report 1998:2.

Counterparty and settlement risks constitute a problem for the stability of the financial system in two main ways. Firstly, problems in foreign banks can spread to Swedish banks through exposures on the international wholesale markets even if the Swedish banking system itself is stable. This is because losses by failure of individual foreign counterparties can be so large that they per se threaten the solvency of an individual Swedish bank. The other is that interbank exposures can lead to problems in a Swedish bank spreading to other Swedish banks, with the result that the stability of the financial system can be threatened by individual bank failures. Developments relating to these two aspects are dealt with at the end of each section.

**Problems in foreign banks can spread to Swedish banks through exposures on the international wholesale markets even if the Swedish banking system itself is stable.**

## What is counterparty and settlement risk?

Counterparty and settlement risks arise in the banks' transactions with other banks and other financial enterprises. In the same way, counterparty and settlement risks arise in relation to non-financial enterprises when these take part in financial trade. However, counterparty and settlement risks become important primarily when trade volumes become large, and this applies primarily to interbank trade.

Both types of risk arise by because it is uncertain whether a party will perform in accordance with the agreed contract. Depending on the type of financial transaction involved, and the stage of the transaction at which problems arise, the counterparty's not honouring the terms of the contract can lead to different kinds of losses for the other party. *Settlement* risk is the risk that a counterparty has entered into an agreement, and that, before delivery and or payment has taken place, it becomes evident that the counterparty will not be able to fulfil the agreement. Typical for settlement risk is that it arises in a transaction that requires exchange of a financial asset and payment for it. The risk would not arise if settlement, delivery and payment took place at the same time. *Counterparty* risk arises in transactions where one party according to an agreement receives some form of claim on the other party. The most typical transaction is a loan, although the risk also arises in other transactions where some form of credit is part of the contract. Counterparty risk is accordingly something a bank deliberately assumes in connection with certain transactions, while settlement risk arises for purely technical reasons since it normally is not possible to agree, deliver and pay at one and the same time.

Counterparty and settlement risks are two major risk categories under which sub-categories can be identified: full principal risk, replacement cost risk and liquidity risk. *Full principal risk* refers to a situation where the bank risks losing the whole underlying value of a transaction if the counterparty cannot perform according to the contract. For instance, a loan bears full principal risk if there is no collateral for the loan. In connection with settlement risk, there is full principal risk when delivery of a security or an FX amount cannot take place at the same time as payment for the delivery[19]. If the delivery takes place but payment has not yet been received, one party risks losing the value of the whole security or FX amount if the counterparty fails (see Figure 3:1).[20] Given the extent of the exposure to these risks, it is very important that the banks use the different risk

management mechanisms that are available, in the form of internal risk management and by settlement through an intermediary, often in the form of a clearing organisation.[21]

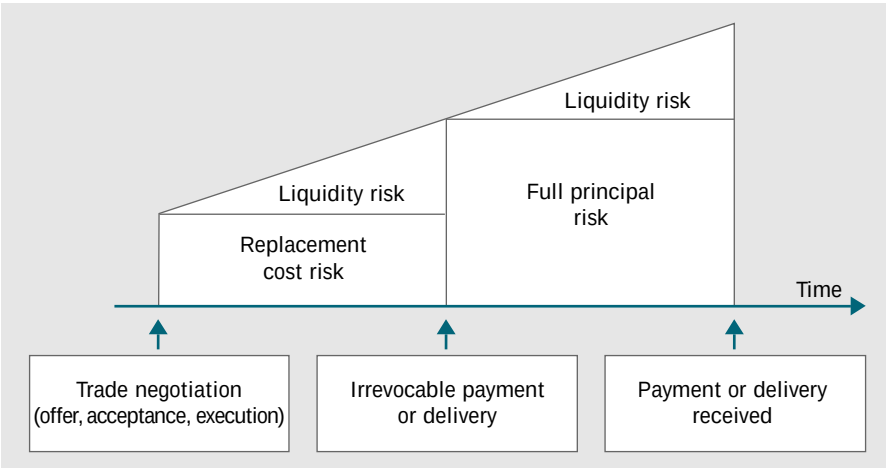
*Replacement cost* risk arises in the settlement process when a contract concerning a financial transaction is negotiated, for instance sale of a security, and one of the parties fails, before payment or delivery has taken place. Neither of the parties then risks losing the whole value of the asset. The loss will be definite when the other party needs to enter into a new transaction (in this case sell securities) and when market movements have led to the security falling in value. The parties' loss risk is thus limited to the change in the asset's value that has arisen. As regards counterparty risks, there is a replacement cost risk for instance connected with collateralised loans. If the counterparty fails and the value of the collateral has fallen, this entails a loss. For a loss to occur it is necessary that both the counterparty fail and market movements move in a negative direction. *Liquidity risk* is related to a bank not having access to the liquid funds that they have expected. To what extent the situation is serious or not for a bank depends on the bank's liquidity and overall financing situation.

19 The concept "delivery versus payment" DVP is usually used to denote that delivery of and payment for securities take place at the same time. This is usually called payment versus payment, PVP, on the FX market.

20 The various risks can be illustrated in a corresponding diagram for counterparty risks.

21 See Financial Market Report 1998:2 for a more detailed review of these mechanisms.

**Figure 3:1.**
Settlement risks in the stages of a transaction.



## LTCM—AN EXAMPLE OF PROBLEMS RELATING TO COUNTERPARTY RISKS[22]

In connection with turbulence on the financial markets in autumn 1998, attention focused on counterparty risks. This was certainly the case for the turbulence connected with the failure of the hedge fund, Long Term Capital Management.

The announcement in September that LTCM was threatened by bankruptcy caused investors to leave high-risk investments and move over to more secure and liquid securities, making an already turbulent market even more turbulent. This then led to a salvage action initiated by the Federal Reserve Bank in New York and a controlled winding-down of the fund's positions. LTCM was in many ways a typical case of how counterparty risks can lead to serious shocks throughout the entire financial system. All three types of counterparty risk—full principal risk, replacement cost risk and liquidity risk—were represented and became realities for the majority of LTCM's counterparts, which primarily consisted of internationally active investment banks. The banks' direct exposures to LTCM had their origin primarily in the repo and derivative market but also took the form of ordinary lending to and investments in the fund.

In the case of LTCM, many reports suggest that a substantial part of the lending to the fund took place without collateral, and thus involved full credit risk. The major part of lending was, however, collateralised, and was thereby only associated with replacement cost risk. It was probably this risk that gave rise to major losses for the banks because the value of collateral received decreased drastically when market turbulence increased. The glut of several instruments which occurred when many of LTCM's counterparties closed out their positions at the same time led to a price fall and increased the spreads between bid and offer prices. An effective way to reduce the replacement cost risk is to initially require excess collateral so that its value exceeds the value of the loan. Indications are that this was used only to a limited extent with regard to LTCM.

Liquidity risk is the kind of risk whose consequences are best illustrated by the LTCM problems. One way that liquidity problems can arise is if a security in the portfolio cannot be converted into liquid funds, that is to say it cannot be sold on the market. For LTCM and LTCM's counterparties, this became a reality when trading in the markets for several types of securities nearly ceased, or at least there was risk of it ceasing. The reason why liquidity problems were so serious in this case was that LTCM was active on markets characterised by low liquidity in the best of times—a liquidity that became even lower when the financial turbulence led to a general flight to quality and liquidity. Many of the hedge funds' counterparties thereby risked ending up in a liquidity crisis when the collateral for credits to LTCM could not be transformed into liquid assets.

The events in autumn 1998 were also a clear example of how systemic risks can become a reality. The turbulence around LTCM led to serious shocks throughout the entire financial system. It was thought that this could have serious negative consequences for the economy as a whole, which was the foremost reason for the U.S. central bank considering itself obliged to act. The alternative could have been an uncontrolled winding up of LTCM with significant shocks to the financial system as a result.

22 LTCM has been dealt with in more detail in an article by Pär Krause and Per Walter in the Riksbank's periodical Quarterly Review 1999:1.

# Foreign exchange market

In the most recent issue of the Financial Market Report, the FX market was pointed out as the banking activity that entailed the greatest exposure to counterparty and settlement risk. An important reason for this is quite simply the large volumes of FX trade. The FX market has expanded rapidly during the past ten years. The Bank for International Settlements (BIS) carries out a survey every third year on activity on the global FX and derivatives market. Between 1992 and 1995, the average daily turnover on the FX market increased by 45 per cent to almost USD 1,200 billion. The preliminary result of the

1998 survey shows that the rate of expansion has moderated although the rate of increase is still high, 26 per cent during the last three-year period.[23] [24]

Looking at the banks' exposure to counterparty and settlement risks on the FX market, it can be noted that banks are exposed to both these forms of risk. FX trading gives rise to *counterparty risk* as the banks' take positions in the form of deposits and loans in FX, and in trading with FX derivatives. However, the most important risk on this market is *settlement risk*. This arises as there is a time lag between agreement, delivery and payment for the FX trade. Banks face an uncertainty as to whether the counterparty will perform according to the contract (see Figure 3:1). An FX trade entails purchase of one currency and sale of another. It is accordingly natural that at least two countries' payment systems are involved at the settlement stage of an FX trade. For this reason, a time lag arises between payment and delivery of the two currencies since at present the payment systems in different currencies are not linked[25]. Consequently, the parties are exposed to full credit risk from the time when payment is irrevocable until the purchased currency has been delivered.

Within national markets, the settlement risk for other types of financial trade has been reduced, as systems have been introduced for payment on delivery, DVP, which means that a full principal risk does not occur. The FX market is the only market, on which the Swedish banks have a very high value turnover and where DVP is still not possible. The combination of the large turnover on the FX market and the fact that the banks are exposed to full principal risk in these transactions means that FX trade is the activity that gives rise to greatest exposure to counterparty and settlement risks for the banks. In the light of this, it is especially important to improve the management of FX settlement risks. The following section contains a discussion of recent developments to make risk management more efficient during settlement of FX trades.

**It is especially important to improve the management of FX settlement risks.**

### RISK MANAGEMENT THROUGH AN INTERMEDIARY

Since its establishment in 1995, ECHO[26] has acted as an intermediary, a clearing house, on the FX market by making available matching, clearing and settlement of FX transactions in the larger currencies. ECHO has offered systems for multilateral net settlement, which have led to a substantial reduction of the agents' exposure to settlement risks in FX trades. Simplified, multilateral net settlement means that the participating banks do not pay and deliver for each individual transaction. At the end of the day, a list of the net amounts are paid between the participants, which means that the number and size of payments is considerably reduced.

In March 1999, the owners of ECHO, CLS Services decided to wind up ECHO's operations during spring 1999. The direct effect of this decision on the total exposure of the agents will not be so great since ECHO, according to the most recent measurement, only accounted for 1.2 per cent of the total payment flows on the FX market.[27] For agents on the FX market, this decision means, however, that it is no longer possible to obtain this type of risk reduction services on the market. Bearing in mind the major exposures to settlement risk that exist in FX transactions, the Riksbank takes the view that this development is to be regretted.

At present, work is in process on developing the CLS Bank, "Continuous Linked Settlement Bank". CLS will be able to offer its participants settlement of FX transactions where full principal risk is eliminated by payment and delivery being linked together, i.e. transactions take place by means of Payment versus Payment, PVP. It is not yet clear when CLS will start

23 Press Release Central Bank / Survey of FX and Derivatives Market Activity in April 1998, Preliminary Global Data, BIS.

24 Taking into consideration the changed value of the dollar, the rate of increase was 45 per cent .

25 TARGET, the payment system based on the EU national central banks, only handles transfers in euro.

26 ECHO stands for Exchange Clearing House

27 See "Reducing Foreign Exchange Settlements Risk: A Progress Report", BIS, July 1998.

operating, but it will probably not be for another one or two years. To begin with, CLS will provide settlement in six currencies[28], although additional currencies, such as Swedish kronor, will eventually also be included. Until CLS starts operations, it is not possible for the agents to reduce their exposures to settlement risk in FX transactions by using clearing functions. It is therefore highly important that the banks improve their control of exposures to settlement risk in FX transactions by their internal risk management. In this connection, the banks should measure their exposures to settlement risk in FX transactions in such a way as not to underestimate them. A way of further improving control over these exposures is to introduce limits on the size of exposure in the form of settlement risk that the bank is prepared to accept for each respective counterparty. The banks' choice of counterparties is of vital importance. A reduction of exposures can be achieved, for instance, by bilateral netting agreements with counterparties.[29]

**Since the decision to wind down ECHO, it has become even more important that the banks improve the control of exposures to settlement risk in FX transactions by their internal risk control.**

### CASH SETTLED CONTRACTS

Risk reduction can be achieved without the use of any third party in the form of a clearing house if two parties try to reduce the volume of the payment flows that their trade together gives rise to. At present this takes place by the parties reaching agreement on bilateral netting of payment flows between them. The British Bankers' Association is leading the development of an alternative, cash-settled contracts for FX transactions, so-called "contracts for difference" (CFDs). It is up to the parties in an FX transaction to decide the maturity of a CFD. The point of these contracts is that no payment or delivery of the agreed amounts takes place. Instead the agent that has lost on the trade due to market movement pays the difference to the counterparty. This means that the bank is not exposed to the full principal risk of the entire underlying amount, but only in the form of a replacement cost risk where changes in the market value of the contract change from the contract date to settlement date[30]. In this way, the risk in FX transactions becomes more like the risk in derivative transactions by a reduction in the parties' full principal risk (see section on derivatives markets). CFDs can be used in cases where the parties do not require delivery of the purchased currency.

## Derivatives market

The biggest problem on the derivative market is counterparty risks, although there is also a settlement risk. Settlement risks in FX derivatives are an exception to this, although these are analysed together with other settlement risks in the FX market (see previous section). Counterparty risk arises when a derivative contract has a positive value for one of the parties at maturity. This positive value can be lost if the counterparty fails. For the agent with the positive value, the position is analogous to an agent having provided a loan to its counterparty for this amount and thereby being exposed to a counterparty risk. The size of the exposure depends accordingly on changes in the market value of the contracts. Market movements affect the exposure vis à vis the counterparty for the life of the contract. The party that has the positive value on the contract may vary and accordingly the party that has the exposure to the other.[31] The fact that the exposure varies with market movements means that it is most natural to regard this risk as a replacement cost risk. In the light of the fact that the value of the underlying contracts are very large, the exposure to replacement cost risk can be extensive even though it is not exposure in the form of full principal risk.

The banks' exposure to counterparty risk on the derivative market arises primarily on the non-cleared OTC market, i.e. the trade that does not take place via an established exchange and contracts which are not cleared by intermediaries. For derivatives traded on an exchange and cleared, banks are exposed to counterparty risk with the central counterparty, in

Sweden OM, and as different contracts are netted, the exposures will be small.

**The banks' exposure to counterparty risk on the derivative market arises primarily on the non-cleared OTC market.**

Although the exposures to counterparty risk are extensive on the derivative market, the survey in the last Financial Market Report showed that the exposures are less concentrated than on the other markets. The lion's share of exposures is to foreign counterparties (see Figure 3:2). This means that risks will be less concentrated to the Swedish financial system, which is positive with regard to the risk that problems in one Swedish bank will spread to another. The exposure between Swedish banks is, however, not negligible, almost SEK 30 billion and increasing. Together with the exposures on the other wholesale markets, this contributes to the total exposure between Swedish banks being large (see the section on concentration of counterparty risk in the Swedish financial system).

Since 1996, the total exposure on the derivatives market in the four banks has not changed in any clear direction, apart from a more marked increase during the first six months of 1997. In relation to the capital base, the exposure has varied between 91 and 146 per cent. As exposures vary both due to the bank's activity on the market and due to the size of market movements, it is difficult to assess the reason for the fluctuations that exist. The total derivative positions on the asset and liability side mirror one another very closely, which suggests that what is involved here is not to any significant extent speculative positions that could lead to losses as a result of adverse market movements alone. If a counterparty fails at the same time as negative market movements occur, losses can be large, however. It is not improbable that the failure of a counterparty will take place at a time of great volatility in the market.

**It is not improbable that the failure of a counterparty will take place at a time of great volatility in the market.**

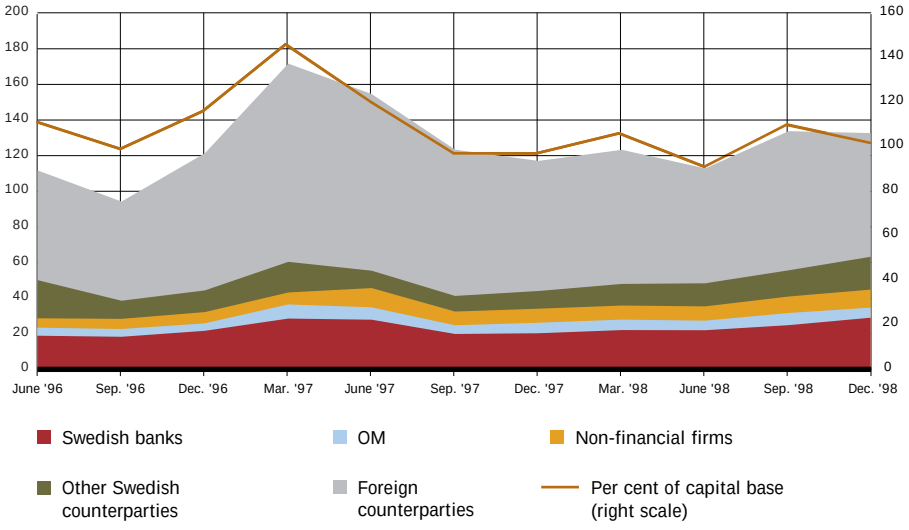
28 US dollar, yen, euro, British pounds, Swiss francs, and Canadian dollars.

29 See Financial Market Report 1998:2 for a more extensive description of the various methods for risk reduction of settlement risk.

30 In Sweden, there has been a tailor-made contract on OM for a couple of years, based on the same principles, but which covers futures positions. This is used to a very limited extent, however.

31 This applies to derivative contracts that are designed as futures. Options, on the other hand, always have a positive value for the same party. The proportion of derivatives of an option character of the total outstanding derivative positions in Swedish banks is very small, however.

**Figure 3:2.**
Breakdown of the four major banks' derivative positions with positive value by counterparties and the total exposure as a percentage of the capital base.
SEK billion and per cent




Source: The Riksbank.

Interest rate and FX derivatives each account for roughly half of the derivative positions in trade in the banks (see Figure 16 in the Appendix). Interest rate derivatives have grown in importance during the past year. The outstanding positions have increased in value without the underlying amounts increasing, which indicates that the increased values can be considered as being related to volatility on the fixed income market during the latter half of 1998.

## Issuer risk on the securities market

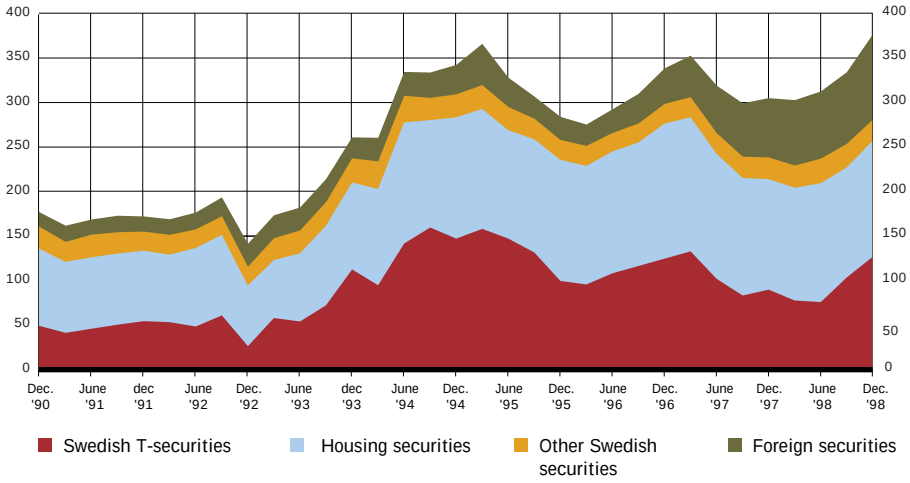
In the previous Financial Market Report, it was noted that the settlement risk in security transactions is relatively low. This is due to securities transactions in Sweden taking place according to the principle of DVP[32], which means that full principle risk does not exist. However, the banks have a counterparty risk on the issuer of the securities they hold. If the creditworthiness of the issuer deteriorates, the bank runs a risk that losses will arise due to this. This risk is called issuer risk.

The banks have relatively large counterparty risks toward issuers through their securities holdings. The total exposure to private issuers amounted in September 1998 to 160 per cent of the capital base.

The size of the banks' securities portfolios was substantially unchanged at the beginning of the 1990s, but fell quite dramatically during the second half of 1992, as a result of the liquidity problems associated with the bank crisis (see Figure 3:3). Since then, the banks have increased their portfolio considerably. As of 1994, it was primarily the holding of Swedish treasury paper that increased. Since then, the holdings of treasury paper fell, to rise considerably again during the latter half of 1998. This increase is probably a result of the turbulence on the international financial markets and a desire to shift over to safer investments. When the holding of Swedish treasury paper has been reduced, it is primarily the holding of foreign securities that have increased. From mid-1996, such holdings have almost quadrupled. Almost half of the foreign holdings is treasury paper. The banks account for over half of the holding of private foreign securities.

The dominant part of the exposure to private issuers is to housing institutions. Previously, the predominant part of this exposure consisted of holdings of the bank's own housing institution's securities, at the beginning of 1996 almost 60 per cent. This share has now fallen to 33 per cent, which is

**Figure 3:3.**
Aggregate securities portfolio: the four major banks.
SEK billion




Source: The Riksbank.

probably related to the Riksbank's decision not to accept securities issued by a bank's own housing institution as collateral for its loans at the Riksbank. Even if this means that exposures have decreased internally within the institutions, the large holding of housing paper means that the risk of contagion effects of financial problems from housing institutions to banks is relatively large. The lending of housing institutions should generally be less risk-filled than that of the banks, however.

**The large holding of housing paper means that the risk that effects of financial problems in housing institutions spread to banks is relatively large.**

To conclude, the exposure to issuer risk has increased relatively greatly during the 1990s at the banks primarily in the form of exposures to housing institutions and foreign issuers. The two following sections contain a discussion of how the banks' international counterparty risks have developed totally and what the large exposures to the housing institutions mean for the financial system.

32 DVP stands for delivery versus payment which means that the transfer of the security and payment take place at the same time. In Sweden, VPC takes care of clearing and settlement of security transactions.

## EXPOSURES TO THE STOCKMARKET

In the analysis of the securities holding, the banks' share portfolio is not discussed. The reason for this is that exposures to the stock market are small, which is discussed here.

The Swedish banks can be affected both directly and indirectly by a downturn in the stock market. During the past six months, the Swedish banks have on average held shares for around SEK 12 billion in their trading portfolio, which is equivalent to approximately half a per cent of their total balance sheet total. In addition, the banks receive shares as collateral for loans, although these make up only an extremely small part of the banks' total balance sheet total. In their own activities, the banks consequently have an extremely little direct exposure to the share price risks.

Indirectly, the banks are affected by customers' ability to repay loans being negatively affected in the event of a fall of stock values. A customer group whose payment capacity is especially affected by the stock exchange is other financial enterprises, particularly securities companies. Securities companies are the financial institutions that are most dependent on stock market trade. As the securities companies cannot take part directly in the RIX system, they need channel their payments via the banks. In these cases, the banks provide liquidity guarantees for the payments.

The banks also lend to securities firms. During the past two quarters, lending to securities companies accounted for SEK 6 billion on average. Even this is an extremely small share of the banks' total loans. Despite the securities companies being very active on the stock markets, they are still relatively protected against the effects of stock market movements as the major part of share trading takes place on behalf of customers.

During the past two quarters, the securities companies' share portfolios totalled around SEK 4 billion on average. In the event of stock market turbulence, it can be difficult to sell less liquid shares. This should not affect the securities companies, however, to any great extent since three-quarters of their shareholding portfolio has been in the most traded shares. A part of the securities companies customers with share custody accounts borrow money directly from securities companies with stock deposits as collateral. In order for securities companies not to be affected by the effect of a fall in share prices, it is important that the customers' positions can be realised if they cannot provide supplementary collateral. This was possible during the fall in share prices in the autumn.

It is obvious that a trading portfolio changes from

minute to minute and that monthly statistics cannot capture the risks that financial institutions assume during the day. Statistics together with the experiences of the market turbulence during late summer and autumn 1998 indicate, however, that the securities companies should be able to cope with a significant price change on the stock market without serious consequences for the banks and the payment system.

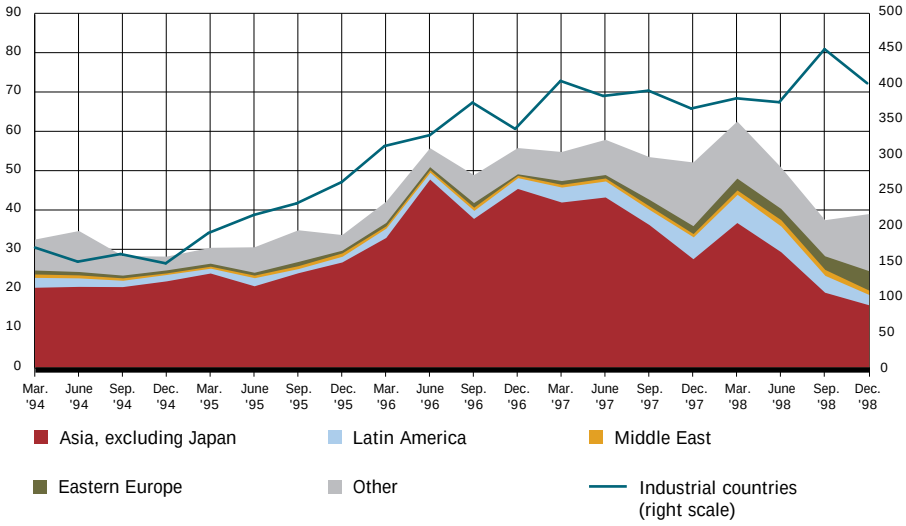
## Counterparty risks from foreign banks

The fact that the Swedish banks are exposed to foreign banks entails a risk that problems in foreign banks or bank systems will spread to the Swedish financial system. During the 1990s, the exposures to foreign banks have increased considerably (see Figure 3:4), and Sweden has thus become considerably more vulnerable to international financial instability.

Exposures have, however, been concentrated to countries where risks for serious financial problems are comparatively small. In December 1998, exposures to banks in industrial countries totalled approximately SEK 400 billion and only SEK 39 billion in other countries. The previous year's turbulence on the international financial markets and the reduced confidence in emerging markets led to exposures to other countries than industrial countries being reduced to almost half of their March 1998 levels. Exposures to Latin America in particular have fallen.

Exposures to industrial countries have continued to be large. The risk is that the entire bank system will fall is smaller in these countries. The size of exposure to individual banks will be relatively more important from a risk perspective. On the basis of the investigation of counterparty and settlement risks that the Riksbank presented in the Financial Market Report 1998:2, it could be noted that there were exposures to foreign banks that were of such a size that a Swedish bank could be threatened if such a counterparty failed. The Riksbank intends to return to this again when new statistics on the exposures have been collected from the banks.

**Figure 3:4.**
The banks' exposures to foreign banks by region. SEK billion




Source: The Riksbank.

# Concentration in the Swedish financial system

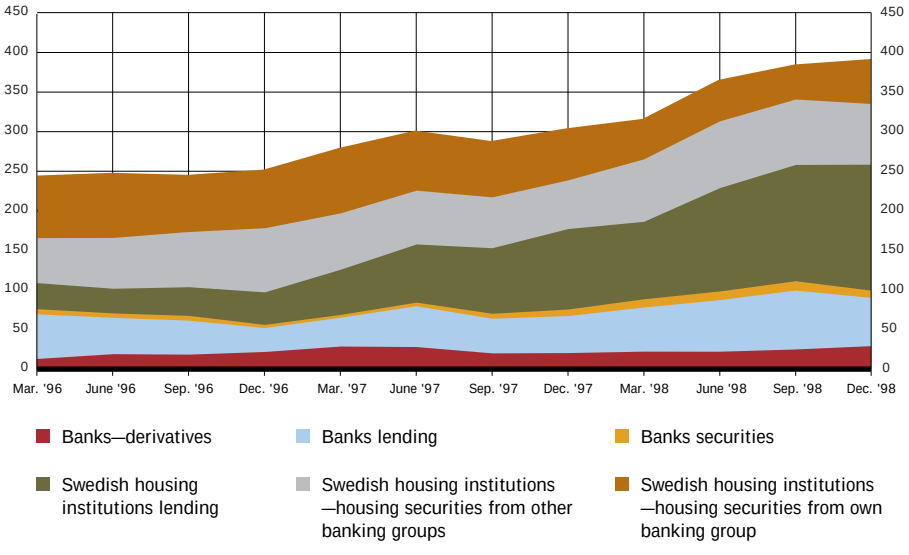
The Swedish banks have exposures to one another in all the financial markets. These exposures entail that the risk for contagion effects from one bank to other banks are large if one of the four major Swedish banks is affected by problems. Apace with the increase in the wholesale trade in various areas during the 1990s, exposures have also increased between the Swedish banks. The exposures between Swedish banks consist largely of lending in order to equalise differences in liquidity between banks. The Riksbank's survey of counterparty risks from August 1998 showed that the differences in the daily positions varied a lot day by day, so that exposures can from time to time be assumed to be considerably greater than shown by this balance-sheet item.

The increase in exposures to housing institutions is more remarkable. During the past three years, loans to housing institutions have almost quadrupled at the same time as the holding of housing institutions' securities has not fallen (see Figure 3:5). This can be explained by the housing institutions seeking the cheapest possible financing. It is at times cheaper to obtain finance via promissory notes instead of issuing bonds, particularly if the banks have a surplus of cheap financing in the form of deposits. Low nominal interest rates have also meant that the period in which interest rates on loans from housing institutions is fixed has decreased. This makes refinancing with bank loans possible. That the housing institutions go via the banks for their financing means that the connections between the banks and the housing institutions will be greater and that the banks will thereby be exposed to problems in housing institutions to a greater extent.

**In the past three years, loans to housing institutions have almost quadrupled, at the same time, as holding of housing paper has not decreased.**

This development can also entail problems if expectations of interest rate increases would arise. In such a situation, it can be expected that the general public will fix the interest rate on their loans to avoid excessively heavy interest rate expenditure. In such a situation, housing institution must find long-term refinancing which the banks cannot offer to any great extent. The housing institutions must therefore obtain funding directly from the market, which in some market situations can be difficult, particularly if the need of financing is extensive. The Riksbank intends to investigate what the effects of such a situation would be.

**Figure 3:5.**
The four major banks' exposures to Swedish banks and housing institutions.
SEK billion




Source: The Riksbank.

A simple calculation can illustrate the concentration in the Swedish bank system. The total exposure of the four banks to other banks totalled around SEK 80 billion in December 1998 and the exposure to housing institutions to around SEK 300 billion. An assumption that exposures are evenly distributed among the banks would mean that the position for each bank was SEK 20 and SEK 75 billion respectively. A further assumption that the exposures were evenly distributed to the other three banks gives a lowest exposure for one major bank to another of around SEK 7 billion.[33] For housing institutions, a distribution to the four major housing institutions entails an exposure for an individual bank to an individual housing institution of at least SEK 18 billion. By way of comparison, the annual results of banks are normally around SEK 4-7 billion, and the capital bases SEK 30-45 billion. The conclusion of this is that a single failure in any of the four major banks or their housing institutions would entail major direct consequences for the other institutions in the system. It does not seem as if the banks take account of this concentration risk to any great extent.

**It does not seem as if the banks take account of the risk associated with their large exposures to each other to any great extent.**

33 In the example, it is disregarded that the system comprises other banks than the four major banks, and that some of the wholesale trade takes place in the form of repos, which are loans for collateral. Taking into consideration that the example assumes an average distribution and therefore lower exposures than would appear if a more realistic, uneven distribution were to be used, these simplifications should nevertheless not mean that exposures were exaggerated in the example.

CHAPTER 4

# The year 2000 transition in the financial sector

*The millennium transition will place strain on the financial sector. For this reason, it will be important to discuss it from the perspective of stability. The Riksbank is working to ensure that confidence in the bank system will be maintained in the transition from 1999 to 2000. Uncertainty about the performance of the financial system can per se create major problems such as a deterioration in liquidity in the financial markets and a considerable demand for cash. Concretely, the Riksbank is working to safeguard the provision of cash, safeguard the financial infrastructure and create contingency plans and reserve procedures if problems should arise. The Riksbank makes the assessment that the most important agents in the payments system are well-prepared.*

The various risks that have been presented to date and which make up the foundation of the Riksbank's analysis of stability in the payments system are such risks that can affect several, or all, players at the same time, thereby creating problems in the financial sector as a whole. This is normally not the case for operational risks, which tend to be institution-specific and are therefore given less attention in the Riksbank's analysis of the stability of the payments system. However, the risks related to the transition from 1999 to 2000 are an exception. Although these risks can be classified as operational, they affect all players in the system on one and the same occasion. This means that it is important to take the Year 2000 transition into consideration in the analysis.

The complexity of the Year 2000 transition makes it difficult to know in advance which problems, if any, will arise. The risks of shocks to the financial system must be taken with the utmost seriousness. Both authorities and the financial sector agents have a great responsibility for dealing carefully with the issue and maintaining good preparedness. Deficient or misleading information can also contribute to making problems worse. Both politicians and authorities as well as businesses and the media therefore bear considerable responsibility for providing objective and accurate information about the issue.

The Financial Supervisory Authority is responsible for monitoring the preparations of the financial institutions (see box, page 46). Since 1997, the Riksbank has been working on securing its own systems. This work has been substantially completed. In addition, external activities have been initiated to ensure the functioning of the payments system and the Riksbank's ability to carry out monetary and exchange policy. The Riksbank's external Year 2000 work can be roughly divided into three component tasks:

- ensuring that the provision of cash to the general public functions and evaluating the ability of the bank system to handle cash withdrawals,
- ensuring that the financial system functions in a satisfactory way,
- ensuring that there are contingency plans and reserve procedures in the event of problems arising.

## THE ADAPTATION OF THE SWEDISH FINANCIAL SYSTEM TO YEAR 2000.

Since June 1998, the Financial Supervisory Authority has monitored the preparations made by the financial institutions for the transition from 1999 to 2000. Internationally, there is a committee, the Joint Year 2000 Council, which is working with information around the problems that may be expected to arise at the time of the transition to 2000. The Committee has published a report containing recommendations as to how supervisory authorities should assess individual institutions' preparations for the year 2000[34]. The Financial Supervisory Authority has requested reports from institutions on their work for the transition and has carried out surveys on site in accordance with these recommendations.

In its work of monitoring the preparations, the Financial Supervisory Authority has divided up the financial institutions into three groups. The first group consists of 16 prioritised institutions, of which 6 are insurance groups, 5 are bank groups and 5 are stock exchanges, clearing houses or payment processing institutions. The other group consists of the other 486 institutions that have been investigated and which, together with the 16 prioritised institutions, make up around 95 per cent of the market. The third group is very small and has not been investigated.

In order to ensure that the computer systems will perform on 1 January 2000, the financial institutions, like the Riksbank, have arranged special 2000-test environments. In these, the internal data systems are tested and the systems that link the institutions to the central clearing houses and stock exchanges. In the Financial Supervisory Authority's report to the Government from March 1999 it emerged that most institutions had carried out tests of the internal systems without any serious problems arising. The external tests will take place during the first half of 1999.

The Financial Supervisory Authority makes the assessment that the financial sector may experience a shock caused by the transition to the year 2000 have decreased. Moreover, the effects of a shock would be less than previously estimated, as the institutions have worked out contingency plans. A precondition for this is that the institutions continue making progress in establishing contingency plans guaging their financial risks and completing external tests.

This assessment is based on 90 on-site investigations which have been carried out since autumn 1998, a survey to institutions and the reports on the preparatory work that every board has been requested to submit to the Financial Supervisory Authority.

The Financial Supervisory Authority intends before the fourth quarter of 1999 to publish a list of the institutions that will not conclude their preparatory work in time. This means that the general public will not feel any uncertainty about the financial institutions that are well-prepared.

Besides external tests, work remains to be done on further development of contingency plans in the event of any shock arising. These are to include the routines for handling problems with IT systems and certain infrastructural issues such as electricity and transport. Moreover, institutions have to continue to analyse any financial risks related to year 2000 and prepare an information strategy.

34 Supervisory Guidance on the Independent Assessment of Financial Institution Year 2000 Preparations.

# The supply of cash

Extensive tests of the banks' systems show that the risks for shocks to the electronic payments systems are small, so that no major increase in the need of the general public for cash would seem to be motivated. However, it cannot be excluded that psychological factors may contribute to an increased demand for cash around the end of the year. An important part of the work of adjustment is therefore to ensure that any uncertainty about problems that may arise assumes reasonable proportions. For the Riksbank, it is very important that the general public can obtain information that is as substantive, objective and accurate as possible.

The Riksbank has ensured that any increased demand for cash will not lead to serious problems; there will be sufficient cash funds at the banks to deal with an increased cash withdrawal. Today, the Riksbank has large stocks of notes—around SEK 90 billion in addition to the SEK 80 billion that are at present in circulation.[35] Already today, it would thus

be possible to meet a quite strong increase in demand. In order to avoid concern about access to cash per se leading to hoarding, the Riksbank has decided to build up larger reserves by reducing the cancellation of worn-out bank notes. This measure will provide a surplus of about an additional SEK 20 billion. The proportions can be illustrated by a calculation example. Assume that every household takes out SEK 10,000 to cover its consumption needs in the event of disruptions in the payment system at the beginning of year 2000. This corresponds to an increased withdrawal totalling SEK 38 billion[36]. Even if such levels of withdrawal can be considered as being unrealistically high, it is only equivalent to a third of the available stock of notes.

**In order to avoid concern about access to cash per se leading to hoarding, the Riksbank has decided to build up larger reserves by reducing the cancellation of worn-out bank notes.**

An important issue is how much cash that can be withdrawn before the banks are emptied to such an extent that it seriously affects their balance sheets. The banks can compensate for increased withdrawals by realising their liquid assets, for instance securities. Securities can normally be converted into liquid funds by sale or by using them as collateral for loans from other agents than the Riksbank. The gross liquidity of the Swedish banks (defined as their cash balance plus holding of securities) totalled SEK 467 billion in February. Placed in relation to the available reserves of notes of SEK 110 billion, the liquidity therefore seems adequate. This view is also reinforced by the banks' report to the Financial Supervisory Authority of its liquidity preparation, where they state that the transition from 1999 to 2000 will not entail any effects except possibly marginal ones.

The Riksbank and other authorities have a very important task to contribute to spreading objective and accurate information to the general public with the intention of reducing the risk of turbulence due to the spreading of rumours and prophecies of doom. In the Riksbank's assessment, there is no risk that bank deposits will be wiped out. Banks can easily create back-up copies of the information which is stored in their computer systems, both in computer files and paper copies. However, concern for this would in a worst case scenario lead to households deciding to withdraw all their money. This scenario seems extremely unlikely. The deposit guarantee is also a stabilising factor which contributes to reducing the risk for such mass withdrawals. However, it may be of interest to see how such a situation could be coped with. Access to notes is one restriction, but withdrawals can take place in other forms than cash, for instance bank money orders, that remain in the balance sheet until they are cashed. The bank sector's total deposits from Swedish households amounted in February to SEK 434 billion. This is about as much as the banks have invested in securities. Even such an extreme mass withdrawal could thus be dealt with reasonably well. Nevertheless, it is important to avoid such a course of events, as it is associated with considerable costs for both households and banks.

**In the Riksbank's assessment, there is no risk that bank deposits will be wiped out.**

It is therefore important that the banks undertake such measures so that savers never need to feel concern that their savings will disappear from their accounts, even if technical problems should arise. In this context, it can be mentioned that both banks and other financial companies should have considerable commercial incentives to ensure that their systems perform and to communicate this to customers in a credible way.

# The stability of the infrastructure

### THE INFRASTRUCTURE FOR FINANCIAL TRADE

A potential threat to system stability is if trade with financial instruments, interbank payments or some

35 It is worth noting that not all of the outstanding stock of notes is in active circulation since parts of the supply of notes are held as an investment, instead of being invested in any interest-bearing saving form (i.e. "cash in mattresses"). The need for notes for a normal transaction turnover would be SEK 55-60 billion.

36 According to the most recent census from 1990, there were 3,830,037 households in Sweden.

other key function in the financial structure infrastructure were to stop at the transition from 1999 to 2000. The expectation of this alone could damage credibility in the ability of the financial system to cope with the transition from 1999 to 2000—something which per se could cause increased cash withdrawals on the part of the general public.

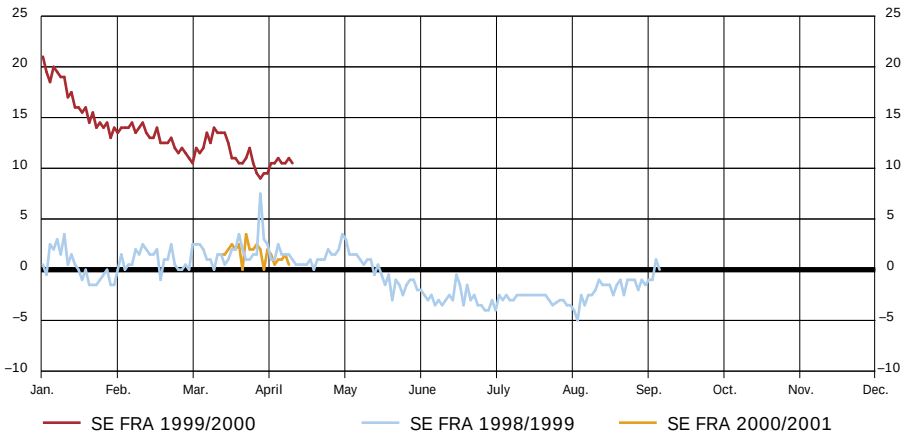
One way of obtaining a rough indication of the market's assessment of the risks for shocks in connection with the transition from 1999 to 2000, is to study the difference between the expected three-month interest rate at the year-end and the average of the equivalent interest rate for the third quarter of 1999 and the first quarter of 2000. This difference, sometimes called "butterfly spread", can be said to reflect the market's risk premium for the transition from 1999 to 2000. Exactly how large a part of the observed premium that can be related to risks specific to the transition is difficult to determine, so that the statistic should be interpreted cautiously. A part could, however, be explained by the risk that the markets will be affected by reduced liquidity around the transition from 1999 to 2000 because a number of players are expected to be disinclined to change their positions and there will be less lending than usual. In Figure 4:1, the corresponding spreads for 1999 and 2001 have been included. Even if the statistic is to be interpreted with care, it appears that the risk premium for the millennium transition is higher. This may indicate that traders expect less liquidity in the market in connection with the year 2000.

The financial institutions are responsible for maintaining the essential functions of the financial sector and their own business activities. For this reason, they are carrying out Year 2000 tests and adaptations to their computing systems. This work is carefully monitored by the Financial Supervisory Authority in accordance with the government commission they were given in June 1998. In its report to the Government in March 1999, the Financial Supervisory Authority stated that the institution's tests of the internal systems had been carried out without any serious problems arising. Tests of external connections are taking place in the first half of 1999. The Financial Supervisory Authority intends to publish the names of the institutions that do not complete their work of adaptation in good time before the final quarter of 1999.

**In its report to the Government in March 1999, the Financial Supervisory Authority reported that the institutions' tests of their internal systems had been carried out without any serious problems arising.**

At the initiative of the Riksbank, a number of major players on the market have reached agreement on investigating the need for additional tests. If it appears meaningful, certain tests of more important financial transactions will be carried out thereafter and the payments that follow on from these tests will be carried out. The purpose is to test that different systems can perform together in the whole transaction chain—from trade to settlement. Such tests

**Figure 4:1.**
Butterfly spread: the difference between the expected 3-month interest rate at the end of the year and the average of the corresponding interest rates for the third quarter and the first quarter for 1999, 2000 and 2001.




Source: The Riksbank.

contribute to strengthening the credibility of the Swedish financial sector if everything works as it should. If the tests instead indicate practical problems, work during the remainder of the year can be focused on solving these problems and setting up reserve procedures where such are considered necessary. These tests are important not least to ensure that the operations that are necessary for monetary policy can be carried out.

### THE RIX SYSTEM

The Riksbank operates the central payment system, the RIX system, and therefore has a responsibility as its owner with regard to safeguarding the system for the transition from 1999 to 2000. It is of central importance in this context that banks and others that are connected to RIX can use it as normal. For this reason, the Riksbank, together with the banks, has put forward a plan with bilateral tests in RIX. These tests will be completed during the second quarter of this year.

The tests that have been carried out to date have shown that the system should perform well. The Riksbank's own tests of RIX have been completed with good results. During April, co-ordinated tests have been carried out with all RIX participants. In May and June, Target tests[37] will be carried out and the last tests between RIX and SWIFT[38] can then be carried out.

### RETAIL PAYMENTS

The measures that aim at minimising the general publics' concern about the functioning of the various mass payment systems, for instance, the giro systems, card payments and cash dispenser payments, have been important.

By ensuring that the infrastructure for retail payments functions, consumers' need to withdraw large quantities of cash will be reduced. As discussed above, this will reduce the risks of shocks in the bank system and also has security aspects for the individual customer by the risk of robbery and other criminality being reduced. This is a very largely a matter of ensuring that the individual systems are tested, which the Financial Supervisory Authority supervises in accordance with its commission from the Government. The tests of the internal systems have, as mentioned above, been carried out with satisfactory results.

## Contingency planning and reserve routines

The Riksbank has an organisational plan for how crises in the financial system are to be dealt with. This forms a natural component of the Riksbank's responsibility to promote an effective and reliable payment system. Preparations for the transition from 1999 to 2000 are based on this plan.

During the spring, the Riksbank, together with the Financial Supervisory Authority, are planning to carry out a contingency exercise with respect to the changeover from 1999 to 2000. This work also includes working out concrete contingency plans in the event of problems in the financial sector in connection with the changeover. Examples of reserve routines might be working out manual settlement routines for the most important transactions in the event that all connections to RIX do not perform satisfactorily.

**Examples of reserve routines might be working out manual settlement routines for the most important transactions in the event that all connections to RIX do not perform satisfactorily.**

An idea which has been discussed internationally during the autumn is to introduce an extra holiday on 31 December 1999 and possibly also 3 January 2000. By doing this, more time would be available for dealing with any problems that might be created. In Sweden, New Year's Eve is already a holiday and the European Central Bank (ECB) decided at the end of March that Target will be closed that day. This decision was taken so that all routines which must be completed at the close of business and the end of the year could be accomplished long before

37 Target is the common payment system established by the EU national central banks to settle large payments in euro.

38 SWIFT provides the payment communications and the networks that RIX is based on.

midnight. Because Target is closed, all financial trading in the EU can be shut down on New Year's Eve.

The Riksbank has also initiated meetings with representatives of banks and other institutions to discuss their view on the risks in their balance sheets in connection with the year 2000. A measure that at first sight might seem available is to reduce the trading volumes on the various markets in connection with the year-end. The normal pattern is for securities trading during weekdays around the year-ends to fall slightly compared with the turnover weeks before and after the year-ends. The turnover on the FX market does not show the same clear pattern, but the question can be given consideration in this market as well. Payments between banks in the RIX system also do not have any clear upward trend around the year-ends. Nor do the net amounts paid via RIX in securities settlement indicate any special downturn (although gross settlement on the securities market, as mentioned above, falls slightly). However, the disadvantage is that such reductions would mean a deterioration in liquidity in the market.

An alternative to reducing activity on the financial markets is to temporarily change the settlement cycle for major transactions, i.e. the time period that normally elapses between a trade being initiated and its being settled, with a view to reducing the volume of trades that are not finally settled over the year-end. An increased use of real time settlement of trade just before New Year might, for instance, be one way, although it may require some resource-demanding initiatives on the part of the banks. Alternatively, the settlement cycles could be extended, so that the first settlements would take place at first a week or so into the New Year. This could be achieved by futures transactions, for instance.

Institutions have also developed internal contingency plans, which contribute to reducing the effects of any shock. The contingency plans, which contain routines for dealing with problems with IT systems and certain infrastructural issues such as electricity or transports, can, according to the report of the Financial Supervisory Authority, be further developed.

# Conclusion

The transition from 1999 to 2000 may entail risks for the financial system that cannot be ignored. Both authorities and financial sector agents bear a great responsibility for a conscientious treatment of the issue and the maintenance of a high level of preparedness. In addition, accurate and objective information to the general public is of great importance.

It is important that the most vital parts of the infrastructure are given priority in the work of adapting to the transition so that a normal function can be insured. The key functions of the financial system are one such component. The Riksbank considers it important to underline that it is the responsibility of the individual institutions to prepare for the transition from 1999 to 2000. The Riksbank is actively engaged by taking part in preparations, considering the need for further tests of vital parts of the infrastructure and preparing contingency plans if problems should arise.

**The work carried out by the Riksbank together with the banks reinforces the assessment that the most important agents in the payment system are well-prepared.**

The most important agents in the financial system have been working with these issues for a long time. In addition, the Financial Supervisory Authority has carried out extensive work to evaluate how far individual actors have progressed. The Financial Supervisory Authority draws the conclusion that the most important institutions are well-prepared. The work carried out by the Riksbank together with the banks reinforces the assessment that the most important agents in the payment system are well-prepared. Extensive systemic tests have been and will be carried out, which will reduce the risk of shocks. The contingency plans and reserve routines that are being worked out by both Riksbank and in the institutions themselves also contribute to reducing the effects of any shock. A precondition for this, however, is that the institutions continue their preparations in accordance with the plans presented.

CHAPTER 5

# Summary and conclusions

The Riksbank monitors the stability of the financial system by evaluating three main components of the risks in the bank system: strategic risks, credit risks and counterparty and settlement risks. In principle, the three components correspond to different time horizons in which risks arise in the bank sector. The strategic risks correspond to long-term risks and the banks' ability to create profitability for the foreseeable future is in focus. The analysis of credit risks has a medium-term perspective, where the risk for credit losses is primarily evaluated in a one or two-year perspective. Counterparty and settlement risks finally can entail very sudden losses and the analysis accordingly focuses on controls of and factors affecting rapidly changing exposures.

## Strategic risks

The Riksbank is interested in the strategic risks in the bank sector as these govern the conditions for carrying out banking operations. Strategic risks affect the banks' long-term ability to sustain a reasonable level of profits and thus sufficient financial strength. A low long-term level of profitability might erode the banks' financial resilience, leaving them vulnerable to various kinds of shocks. In the event of a great deterioration in profitability, there is also a risk that the banks will increase their risk-taking in order to improve short-term profitability.

**Profitability in the major Swedish banks is at present sound.**

Profitability in the major Swedish banks is at present sound. The average return on equity amounted to almost 16 per cent in 1998. At the same time, a number of factors can be identified that contribute to changing the banks' conditions. These are increased competition, disintermediation of savings, decreasing inflation expectations and the development of technology.

The analysis has provided a number of indicators that long-term profitability in the bank sector can decline in the future due to stronger competition, lower margins, and rising costs. The banks' response has been extensive restructuring in order to improve profitability and efficiency. If this restructuring does not produce the expected positive effects, there is a risk that pressure to maintain profitability will lead to increased risk-taking. An example of increased risk-taking as a strategic choice to increase long-term profitability is the Swedish banks' increased commitments to higher risk areas such as Poland and the Baltic Republics.

**The combination of structural adjustments that reduce the profitability of the financial sector and the bank sector's unrealistic target for its returns may lead to an increased appetite for risk. This makes the financial system more vulnerable.**

In this context, there is reason to draw attention to the fact that the banks have set a profitability target of a return on equity of around 15 per cent over the business cycle. Currently, banks are just reaching this target, despite historically low loan losses. The Swedish banks' required rate of return also appears high compared with the target required rates of return set by banks in other Nordic countries. It is therefore justified to ask whether the required return is

suitable in the present low inflation environment. The combination of structural adjustments that reduce the profitability of the financial sector and unrealistic targets for the bank sector's returns may lead to an increased appetite for risk. This makes the financial system more vulnerable.

## Macro-economic conditions and the banks' credit risks

Overall economic development in Sweden during 1998 was favourable with an increase in GDP of 2.9 per cent. After a minor slowdown during the second half of 1998 and the beginning of 1999, the GDP growth rate is expected to return to higher levels during the second half of 1999 and during 2000. However, the difficulties of assessing international economic developments entail that a relatively large degree of uncertainty is attached to forecasts.

Certain specific macroeconomic factors not obviously related to cyclical developments have often preceded bank crises. Among these are a strong increase in lending, high real interest rates, deregulation, and a major change in inflation rate. No such important shifts in the macroeconomic environment seem imminent.

The general state of the economy does not seem at present to give rise to any expectations that extensive loan losses will arise in the banks in the immediate future. However, there is reason to evaluate whether any important build-up of risk is taking place in the banks' loan portfolios, which could lead to loan losses if there is a downturn.

**The general state of the economy does not seem at present to give rise to any expectations that extensive loan losses will arise in the banks in the near future.**

*Corporate lending* in proportion to GDP fell during 1998, which indicates that it is not the case that any imbalances are being created between the burden of debt in the corporate sector and economic development in general. However, corporate borrowing from banks increased greatly during the first months of 1999, although it is too early to say whether this development is temporary or whether it is an indication that a more permanent increase in lending is to be expected.

The risks for insolvency in Swedish firms appear at present low. The Riksbank uses UC's risk classification for Swedish firms as an indicator of these risks. The proportion of companies in the highest risk classes has fallen continuously since 1994. The number of applications for injunctions to pay, which can be regarded as a good indicator of bankruptcies, has also decreased continuously in recent years. The payment ability of Swedish firms seems to be good at present.

**The risks for insolvency in Swedish firms appear at present low.**

There are signs of some increase of risk in the *household* sector in as much as the debt-to-income ratio is increasing. At the same time, interest expenses in relation to income is falling. This shows that increased debt does not entail any increased strain on household finances today. However, the increased debt means a reduced resilience to possible increases in the interest rate

The increased debt of households is probably related to households' very positive expectations of their own economy, which affects the willingness of households to borrow and consume. The Riksbank expects that the conditions for private consumption will remain good during the next few years. Most factors suggest that the household sector's debt burden will continue to increase for some time to come. This in turn increases the vulnerability of the household sector to unexpected increases in the interest rate and cyclical deterioration.

The bank groups' *real estate* lending is not growing in a disturbing way. The largest rates of increase are in loans to houses and condominiums, where the borrowers are households. Historically loans to the household sector have resulted in fewer losses than loans to firms. The loans of housing institutions to companies are falling. The increase in bank loans compensates for this somewhat, although the in-

crease is not so great that it wholly corresponds to the decrease in housing institutions.

Property prices have continued to rise in 1998. Since interest rates continued to fall during 1998, this development is not surprising, however. Rents have generally increased in real terms as well. The direct return on properties has fallen as a consequence of price increases. The risk free interest rate has fallen even more and this suggests that the risk premium on properties has increased. In the light of this, price increases seem to be motivated by fundamental factors, primarily lower interest costs and increased rental income, and not driven by speculative expectations of future increases in value.

**The property sector and the bank sector's loans to this sector are not developing in a disturbing way. However, the sector is very sensitive to changes in the level of interest rate.**

Real estate companies tend to have a high level of indebtedness, although it has fallen slightly in recent years. As a consequence above all of lower interest rates, the interest coverage ratio has improved. However, it is primarily the property companies listed on the stock exchange that have improved their situation since the beginning of the 1990s. This suggests that the stock market is less willing to accept a high level of indebtedness than owners and lenders are. The sector as a whole has a high debt-to-equity ratio and therefore a high interest rate sensitivity. To sum up, it seems as if the property sector and the bank sector's loans to this sector are not developing in a disturbing way. However, the sector is very sensitive to changes in the level of interest rate.

## Counterparty and settlement risks

Last autumn, the Riksbank identified the areas in the banks' financial transactions that contained the most important exposure to counterparty and settlement risks. These areas were the foreign exchange market, derivatives market, and the holding of securities. The exposures are greatest in the *foreign exchange market*. The most important change since last autumn is that ECHO, which was a clearing house for FX transactions, has been closed. This means that the only way to handle settlement risks in FX trade via an intermediary is no longer available. The Riksbank views this as an unfortunate development and intends to work towards clearer international rules requiring better risk management for FX trade.

**The Riksbank intends to work towards clearer international rules requiring better risk management for FX trade.**

Counterparty risks in the *derivatives market* indicate that risk concentration is somewhat less than for other activities. The greatest exposures are to foreign counterparties. The exposure between the major Swedish banks amounts to around SEK 30 billion, however, and is growing. Exposure to *issuer risk* has increased by a relatively large amount during the 1990s. Above all, there has been an increase of exposures to housing institutions and foreign issuers.

Swedish banks have greatly increased their exposure to foreign banks during the 1990s. This means that the risk that financial problems abroad spread to the Swedish market has increased. However, their exposure is mainly concentrated on banks in the industrial countries. The risk that the whole banking system in these countries will fail is quite low at present. The Riksbank instead studies the repercussions on the Swedish banking sector, if one institution should experience difficulties. The survey from last autumn shows, however, that the Swedish banks have an exposure to individual foreign banks, which can mean that they would get into great difficulties if the counterparty failed. With respect to exposure to banks in growth economies, this has been reduced greatly since the turbulence last autumn.

**The total counterparty and settlement risks between the Swedish banks are considerable. The effects of the failure of one bank could spread extensively.**

The total counterparty and settlement risks between the Swedish banks are considerable. The effects of individual bank failure could spread extensively. The connection between housing institutions and banks

has also become greater as bank loans to housing institutions have quadrupled in the past three years, at the same time as their holding of housing bonds has not declined. The banks do not seem to take this concentration risk into account to any great extent. At present, counterparty and settlements risks are not covered in practice by the rules on large exposures. In order to reinforce the stability of the payment system consideration may be given to establish limits for banks' exposures in this area.

## The year 2000

The changeover to the year 2000 may bring different problems in society. It is difficult today to make any assessment with any greater reliability how different functions will be affected, thus it is important that the most vital ones are given priority in the work of adjustment. The financial system contains some such key functions. Although it is the responsibility of the individual institutions to prepare for the changeover from 1999 to 2000, the Riksbank deemed it important to become actively involved in the preparatory work. This takes place in among other ways by coordinating tests of the functioning of vital components of the infrastructure and preparing contingency plans to handle problems if they should arise.

The Riksbank makes the assessment that the Swedish banks are well prepared and that any problems that can arise can be handled satisfactorily. None the less, it is important that the Riksbank prepares contingency plans so that the most important parts of the financial infrastructure can function even if disturbances occur. It is also very important that the public get objective factual information on what the transition to the year 2000 entails.

**The Riksbank makes the assessment that the Swedish banks are well prepared and that any problems that can arise can be handled satisfactorily.**

To avoid concerns arising about the access to cash, the Riksbank has decided to build up the note reserve by reducing the cancellation of worn notes. In all, there will be approximately SEK 110 billion in the Riksbank's note store in readiness for the transition from 1999 to 2000. This is deemed to be far more than will be required to cover any additional withdrawals which household may make to have a cash buffer even if they fear that other means of payment will not work in full during the first days of the New Year. The banks also have a liquidity that makes such withdrawals possible without any problems arising for them. The Riksbank therefore makes the assessment that the payment system as a whole will cope with problems that may arise.

## Overall assessment

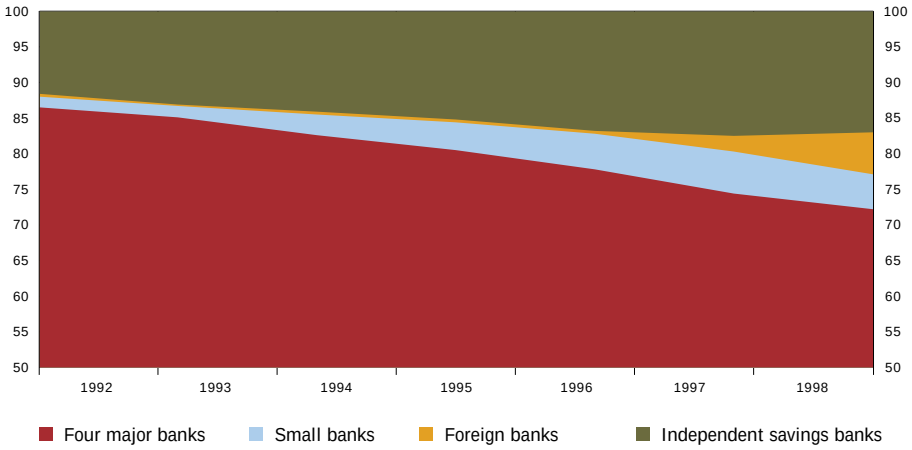
Altogether, there are no disturbing signals of increasing risks in the payment system. The situation seems to be stable. However, a number of factors have been highlighted that indicate that some vulnerability can be built into the system if this tendency continues. Therefore it should be monitored carefully. This concerns above all the property sector's increasing vulnerability to interest rate increases and tendencies which put pressure on profitability in the bank sector as a whole. The vulnerability of households to interest rate increases has grown, but historically households have not caused system-threatening credit losses for the banks. At present, these tendencies do not seem threatening but there is reason to follow their future development carefully. Special attention should be given to the large exposures that exist between the major Swedish bank groups and foreign banks. These exposures change quickly and are therefore difficult to monitor. Nonetheless, unforeseen shocks can be considerable.

**Altogether, there are no disturbing signals of increasing risks in the payment system. The situation seems stable.**

APPENDIX

# Indicators

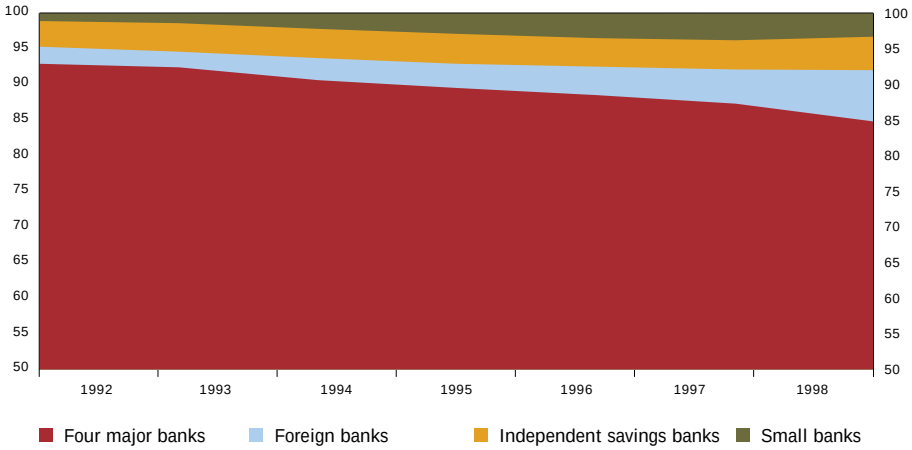
**Figure 1.**
Market shares for lending to households.
Per cent




Source: The Riksbank.

The stronger competition in the market for lending to households is illustrated by the fact that the market share of the four largest bank groups has declined steadily during recent years, and continued to do so during 1998. However, the upward trend in the market shares of independent savings banks and small banks reversed in 1998, while foreign banks were able to increase their market shares.

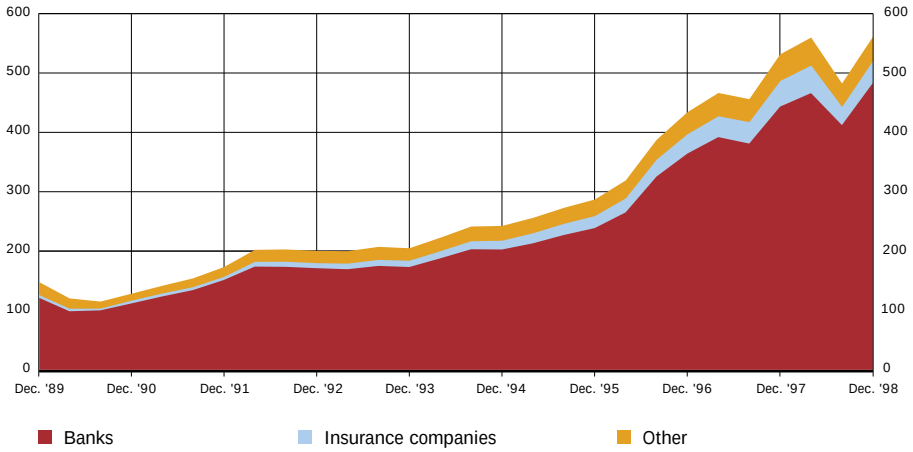
**Figure 2.**
Market shares for lending to enterprises.
Per cent




Source: The Riksbank.

Corporate lending has also been characterised by increased competition. It is primarily the foreign banks that have increased their market share.

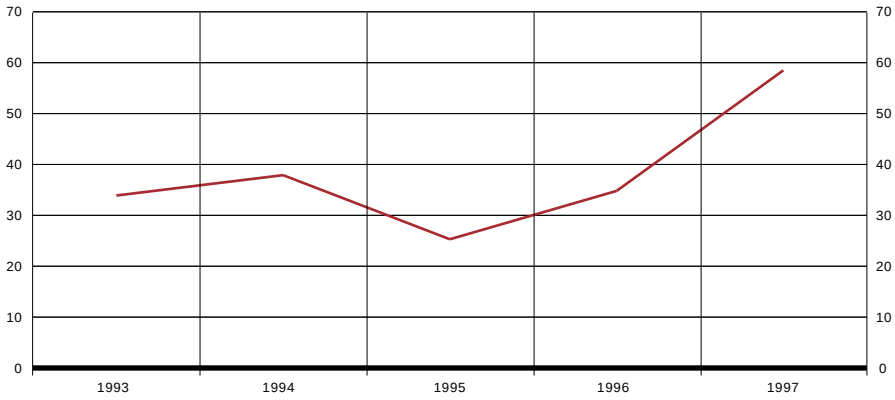
**Figure 3.**
Investment in securities funds.
SEK billion




Sources: Swedish fund statistics and the Riksbank.

Fund saving has increased greatly during the 1990s. Swedish banks have succeeded in retaining a large market share.

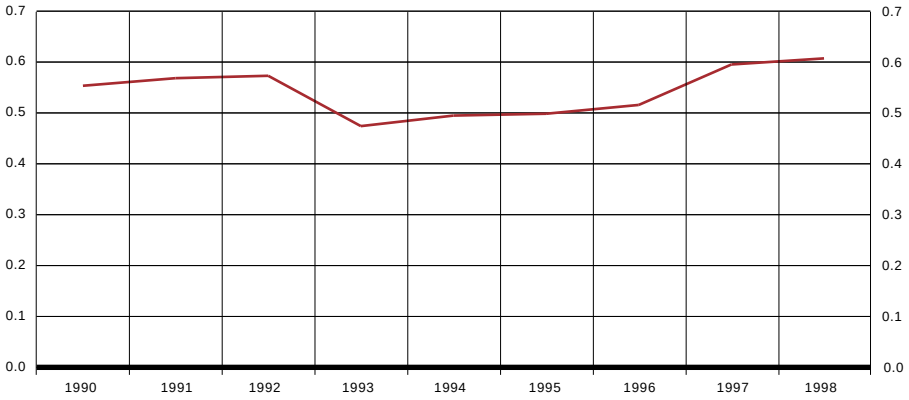
**Figure 4.**
The banks' share of new saving in pension insurance.
Per cent




Source: Finansinspektionen.

The banks' share of insurance saving has increased greatly in recent years. This has contributed to an increase in commission income.

**Figure 5.**
Operating costs to income, C/I ratio for the major bank groups, excluding loan losses, adjusted for items affecting comparability. Ratio

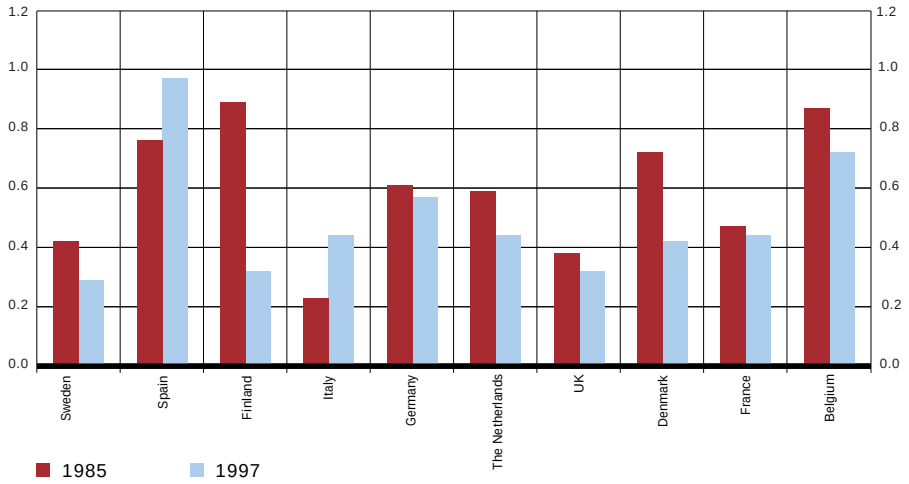



Source: The Riksbank.

C/I ratio = ratio of total operating costs, excluding taxes and loan losses to total income.

The cost-income ratio (C/I ratio) has increased for the bank groups in recent years, which may be an indication of lower efficiency. The explanation is both increasing costs, particularly IT costs, and stagnating income.

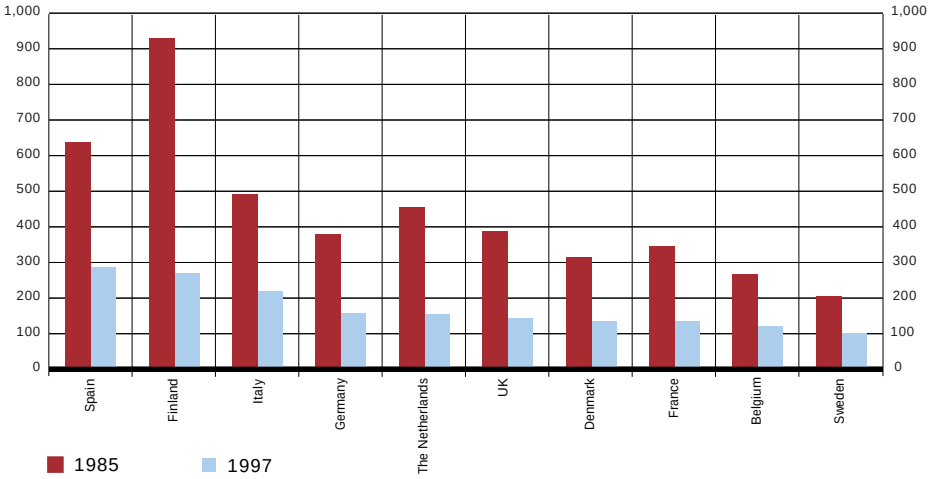
**Figure 6.**
Number of bank branches per 1,000 residents.




Source: ECB.

The fact that Swedish banks have fewer bank branches (per 1,000 residents) than banks have in most comparable countries is an indication that Swedish banks have made considerable progress as regards efficiency and restructuring in an international comparison.

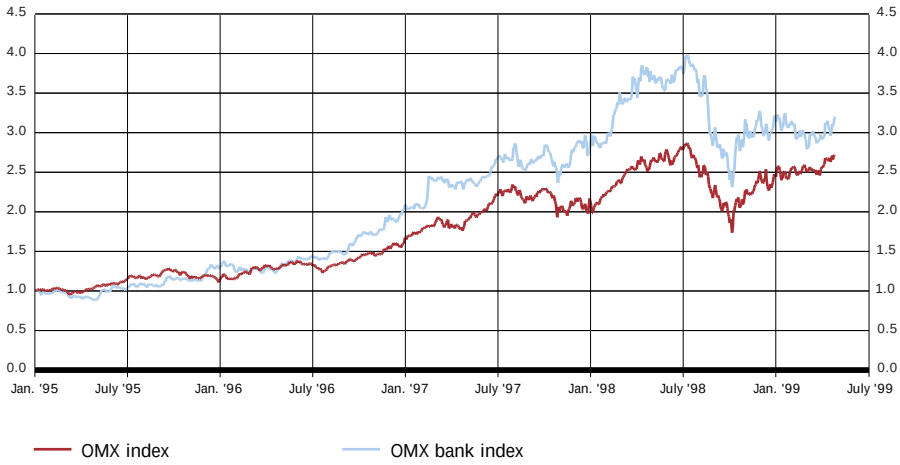
**Figure 7.**
Number of employees per billion ECU of banking assets




Source: ECB.

The number of employees in relation to banking sector assets is also lower in Sweden than in other countries.

**Figure 8.**
OMX index and OMX bank index (Index: 2 January 1995=1)

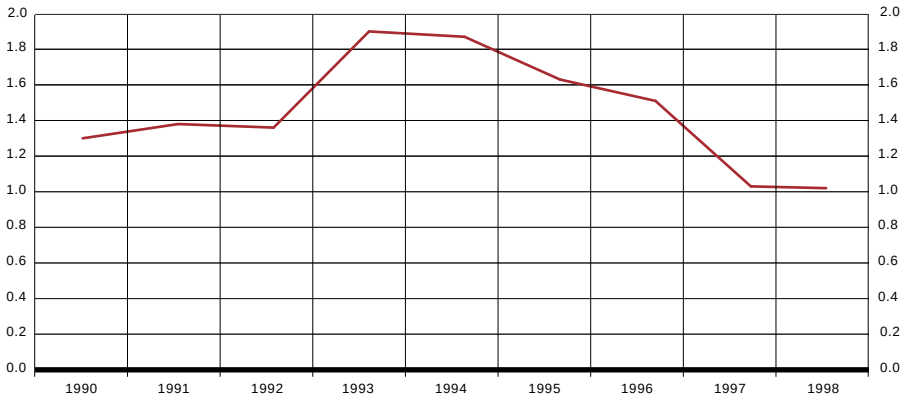



Source: Ecowin.

The OMX bank index comprises SEB A, FöreningsSparbanken (Swedbank) A, Nordbanken Holding and Svenska Handelsbanken A.

Movements of bank share prices indicate that the stock market has had high expectations of increasing bank profits. Since 1996, the bank index has experienced stronger growth than the stock market as a whole. The downturn during the financial turbulence in autumn 1998 was greater, however, for bank shares than for the stock market as a whole. This was mainly due to uncertainty about the banks' exposures to emerging markets.

**Figure 9.**
Return on total assets.
Per cent




Source: The Riksbank.

Return on total assets = earnings before tax and loan losses in relation to average assets.

The fact that the banks' return on total assets has declined since 1993 indicates that the improvement in return on equity since 1992 is primarily due to reduced loan losses. The steady increase in banking total assets has also contributed to the decline in return on assets.

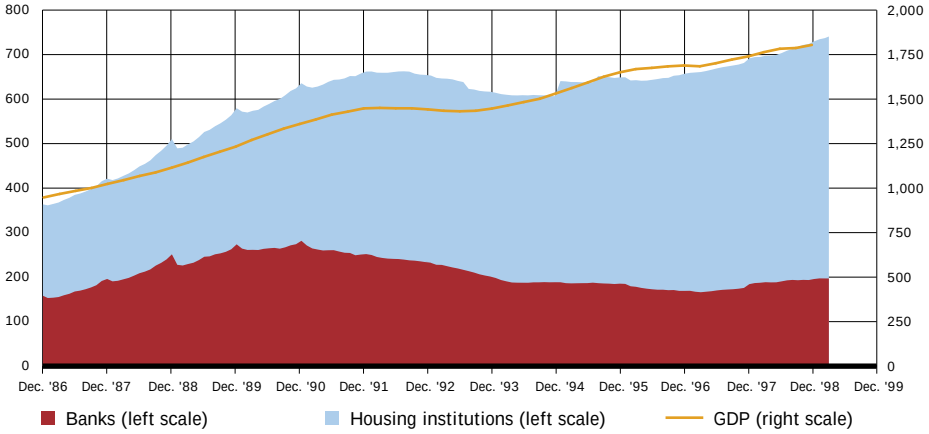
**Figure 10.**
The bank groups' interest margin and the difference between long and short interest rates.
Percentage points


Source: The Riksbank.

Interest margin = interest income in per cent of balance-sheet total less interest expenditure as a percentage of balance sheet totals excluding equity.

The banking groups' interest margin has decreased steadily since 1996. This is explained partly by the decrease in the spread between long and short interest rates during this period.

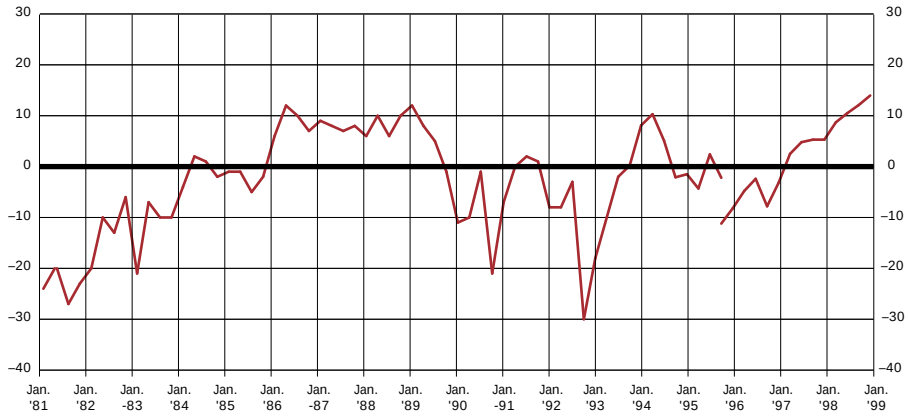
**Figure 11.**
Lending to households by banks and housing institutions and GDP, current prices.
SEK billion




Sources: Statistics Sweden and the Riksbank.

When lending grows more quickly than the rest of the economy, borrowers' debt burden will in general increase. As a result, the bank sector becomes more vulnerable. Lending by the banks and housing institutions to the household sector increased by 5.8 per cent during 1998. This means that in relation to GDP, a marginal increase in households' total debt.

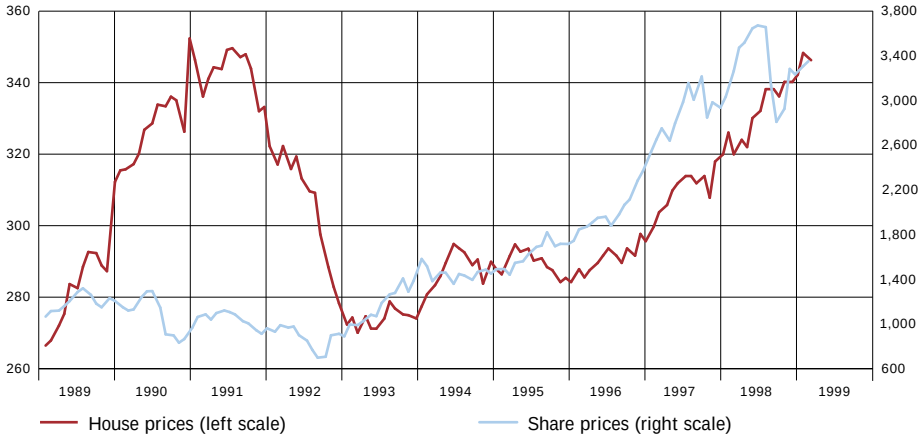
**Figure 12.**
Households' personal economic expectations. Net figure with positive expectations




Note. The HIP statistics were revised in October 1995.
Source: Statistics Sweden.

Households' personal income expectations continue to become more positive, which has led to increased consumption and borrowing. It is worthy of note that household expectations were also positive during the final months of 1998 unlike those of firms, which displayed considerable pessimism about future development.

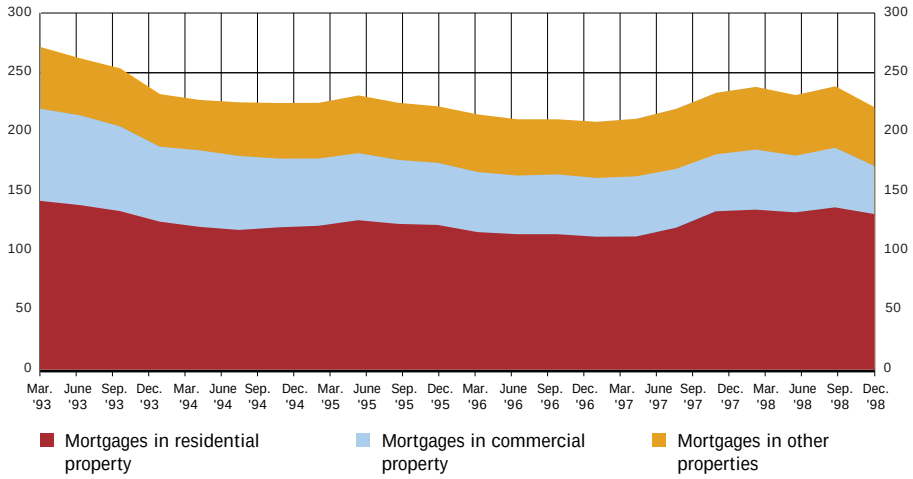
**Figure 13.**
Price index for owner occupied housing, current prices and index (1981=100) and Stockholm Stock Exchange share price index (Index: end 1979=100)




Note: Month-end share prices.
Sources: Statistics Sweden and Stockholm Stock Exchange.

Both house prices and the stock exchange index have continued to display a rising trend, which has meant that households' debt-to-asset ratio (total debts/total assets) has fallen.

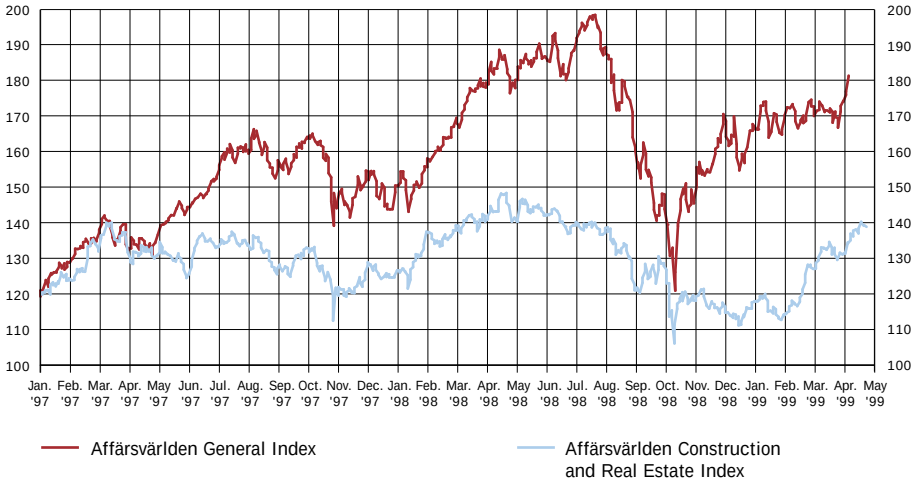
**Figure 14.**
Mortgage lending by banks. SEK billion




Source: Finansinspektionen.

Corporate lending by banks with residential properties as collateral has increased in recent years. This has largely compensated for lower levels of corporate lending by housing institutions. However, during the last quarter of 1998 lending with residential property as collateral and lending with commercial property as collateral both decreased.

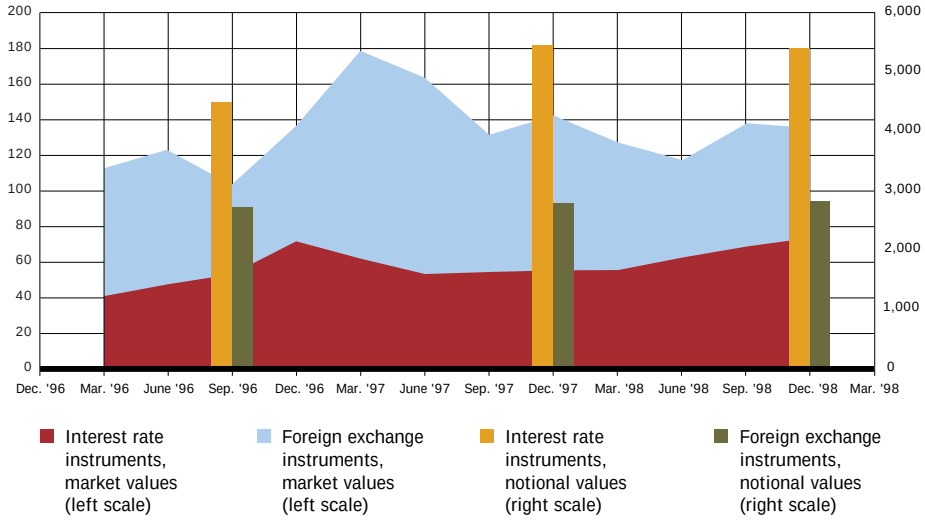
**Figure 15.**
Increase in real estate shares in relation to the general index.
Index: 1996=100




Source: Ecowin.

Real estate shares have had a considerably poorer development than the stock market as a whole in recent years, despite rising real estate prices and lower interest rates, which favour real-estate companies. One possible explanation is that the general index has increased as a result of significant stock price increases for companies in growth sectors such as the telecommunications sector.

**Figure 16.**
Positive derivative positions in three major bank groups broken down by underlying assets, market values and notional values.




Source: The Riksbank.

Interest rate derivatives and foreign exchange derivatives each account for roughly half of the derivative positions in the banks. Interest rate derivatives have increased in importance during the past year. The outstanding positions have increased in value without a corresponding increase in the notional values which may suggest that the increased values are related to the volatility on the interest market during the latter part of 1998.