Financial Stability Report 2004:2

SVERIGES RIKSBANK

Financial Stability Report 2004:2

Contents

FOREWORD 5

SUMMARY ASSESSMENT OF STABILITY 7

The Riksbank's role in work on financial stability 11

FINANCIAL MARKETS AND ASSET PRICES 15

Real economic developments and financial markets 16

Potential risks for Swedish banks and their borrowers 17

Real-estate prices 19

Financial markets and terrorist attacks 21

THE SWEDISH BANKS' BORROWERS 23

The corporate sector in Sweden 23

Corporate sectors in Germany, the other Nordic countries and the Baltic states 25

Altered conditions for credit against business mortgages 27

The household sector in Sweden 29

Household sectors in Germany, the other Nordic countries and the Baltic states 31

Summary 32

Swedish households' debt-servicing ability 2000–02 33

DEVELOPMENTS IN THE BANKS 37

Profitability – strategic risk 37

Assets – credit risk 40

Funding – liquidity risk and capital 44

Summary assessment 46

THE FINANCIAL INFRASTRUCTURE 47

CLS 47

The settlement process at CLS 50

Assessments of Swedish payment and settlement systems 59

PRICES AND COSTS IN THE SWEDISH PAYMENT SYSTEM 65

The payment process 67

Cost structure and pricing 68

Conclusions 71

Data collection and processing 73

■ THE MARKET FOR LONG-TERM SAVING 75

The personal savings market 76

Changed saving behaviour 78

The savings market in the future –
opportunities and threats for the major banks 80

Conclusions 82

■ FUNDING IN THE MAJOR SWEDISH BANKS 83

The banking system's deposit deficit 83

The major banks' assets and liabilities 84

Organisation and control 88

Strategic considerations 89

The significance of deposits for interest rate and liquidity risk 92

Conclusions 95

Foreword

An analysis of the stability of the financial system is presented by the Riksbank twice a year. The purpose of the Financial Stability Report is to identify conceivable risks in the financial system and assess the ability to withstand shocks. Publishing the Report makes its analysis available to players in the financial markets as well as to others who are interested, so that it can contribute to a well-informed debate concerning Sweden's financial system. The Report is also an instrument for demonstrating how the Riksbank works on the objective, assigned to it by the Riksdag, of promoting a safe and efficient payment system.

The analysis of financial stability concerns the ability to withstand unforeseen shocks to financial companies as well as to the financial infrastructure, that is, the systems that are required for making payments and for trading and delivering financial products. The analysis of financial companies concentrates on the four major Swedish banking groups because it is these that are of crucial importance for the payment system's stability.

The assessment starts from the external factors that can affect the agents in Sweden's payment system. The first chapter of this report accordingly discusses how the environment for bank operations has developed since the publication of the previous Financial Stability Report in June.

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

As payment system stability can also be affected by the banks' own actions, the third chapter analyses developments in the four banks more closely. Profitability trends can indicate the extent to which banks are exposed to strategic risks. The quality of bank assets is evaluated as an indicator of how credit risks might develop, while the banks' funding capacity provides a picture of potential liquidity risks.

The fourth chapter contains an analysis of the functions of the financial infrastructure. The infrastructure needs to function so well that problems which occur in one financial institution or market do not spread to other institutions or markets. It is also necessary to prevent problems from arising in the infrastructure as a result of the system as such being exposed to shocks. Oversight of the infrastructure involves identifying structural weaknesses that may lead to risks of contagion via payments. Chapter 4 therefore differs from the first three chapters in that, instead of following a number of indicators, the Riksbank comments on events and tendencies that are currently of central importance for the infrastructure.

Three articles conclude the report. The first analyses the extent to which prices for various payment services in Sweden mirror the costs the banks incur for these services. The second analyses the market for long-term saving and the effects it can have on bank earnings. The third article, finally, maps how the major banks fund the deposit shortfall, that is, the deficit that is due to deposits being exceeded by lending.

The Executive Board of the Riksbank discussed this report at its meetings on 10 and 23 November, 2004.

Stockholm, December 2004

Lars Heikensten
GOVERNOR OF SVERIGES RIKSBANK

Summary assessment of stability

In the light of the Riksbank's growth forecast in the latest Inflation Report, there are no signs at present of risks in economic developments or in financial markets that might cause serious problems for the banks. Firms and households are in a good position to service debt; neither are they expected to occasion any sizeable loan losses for Swedish banks. The continuation of household borrowing at a high rate cannot be seen as a threat to financial stability because most of the indebted households have fairly satisfactory financial margins for servicing debt. Moreover, the major Swedish banks have improved their potential for coping with unexpected shocks.

Global economic activity has strengthened in recent years and this left its mark on financial markets last spring, with smaller price movements and decreased risk premiums. By degrees, however, there was growing concern that the financial markets would become turbulent when central banks began to tighten monetary policy as economic activity strengthened. In practice, however, that has not happened; the higher instrumental rates in certain countries have led so far to adjustments in an orderly manner. In the summer, however, the financial markets became more hesitant. A conceivable interpretation is that the real economic assessments of market players became more cautious than those of economic forecasters. But during the autumn, equity prices have risen once more. Since the last stability report, spreads for corporate and emerging-economy securities have narrowed.

In recent years, commercial property prices have fallen markedly, whereas house prices have risen steeply. Prices for office premises now seem to have stabilised and vacancy rates have decreased. But prices are still well below the levels in 2000 and the future trend will depend to a large extent on economic developments. Increased demand for office premises, which – given the Riksbank's economic assessment in the latest Inflation Report – should materialise next year, can lead to higher prices.

House prices have been rising rapidly since the mid 1990s. Low interest rates and rising incomes, coupled with more and more migrants to the metropolitan regions, have led to increased demand from households. Meanwhile, fewer new houses have been built, so the supply has been virtually unchanged. In time, however, a growing supply together with higher interest rates as economic activity strengthens are arguments for a slower price trend.

Corporate borrowing in Sweden, after falling for two years, was broadly unchanged in 2004. Borrowing in securities markets has recently tended to rise but borrowing from the banks as a whole has fallen. There are also indications that instead of obtaining conventional bank loans, firms are mortgaging or selling invoices or leasing machinery and equipment from finance companies to a greater extent.

The tendency not to borrow more has been accompanied by larger cash flows and increased corporate saving. The financial statements for 2003 show that earnings as well as financial positions improved in all industries. The ratio of debt to equity capital fell and interest expenditure amounted to a smaller share of financial costs than before. Interim reports for 2004 Q2 confirm these tendencies.

High utilisation of industrial capital and business optimism about the future have meant that investment has begun to pick up and this should lead to a renewed increase in borrowing. In a survey of banks, branch managers judge that corporate borrowing will rise from Q3 onwards in connection with increased investment or expansion.[1] As it is small and medium-sized firms that are most dependent on banks for funds, it is mainly in this group that bank borrowing will probably rise.

The number of bankruptcies is falling in virtually every industry. A majority of defaults are now occurring in firms with less than 20 employees. The probability of default in the coming year has also decreased. The expected default frequency among property companies is lower than in other industries and also considerably below the average for this industry over the past five years.

The banks have extensive operations in Germany, the Baltic states and the other Nordic countries. Corporate developments in Germany and the other Nordic countries largely resemble the picture in Sweden. Relatively cautious corporate borrowing is accompanied by a reinforcement of financial positions and fewer bankruptcies. In the Baltic states the situation is different, with considerably higher growth than in the rest of Europe and a strong expansion of credit. Under such circumstances there are always risks of overheating. However, Baltic companies do not seem to have any problems in managing the increased debt. Their profits are sizeable. One of the industries with the highest profits in these countries is the construction and real estate sector; it is dependent on persistently high activity in the markets for mortgage loans and real estate.

All in all, the Riksbank considers that the risks in corporate loans are lower than last spring. None of the industries in the corporate sector seems likely to cause sizeable loan losses by the banks in the near future. Neither are there any signs at present that imbalances have been built up that might cause problems in the next economic downturn.

Households in Sweden have continued to borrow at a high rate. They are still borrowing mainly from house mortgage institutions but borrowing from banks is also rising. The ratio of household debt to disposable income has moved up and is now over 120 per cent.[2] Debt is foreseen to grow more rapidly than household income as a result of comparatively low interest rates and persistently high activity

1 Almi's lending indicator is a quarterly survey in which 150 branch managers are interviewed about lending to firms.

2 The household debt and interest ratios have been revised since the Report in June and are therefore not fully comparable with earlier figures. A new accounting method has entailed an upward revision of disposable income, which results in lower ratios.

in the housing market. So the debt ratio is expected to go on rising.

In relation to household wealth, however, debt is virtually unchanged. In the years when stock markets rose, the debt to asset ratio fell sharply. Since then the ratio has tended to move up again but since 2003 the rising house prices and thus the value of households' real assets have led to parallel increases in debt and wealth.

Interest expenditure continues to make up a comparatively small share of disposable income (less than 4 per cent), notwithstanding the rapid growth of debt. An increase in this share is foreseen in the years ahead but in relation to disposable income it will continue to be comparatively small. The Riksbank considers that there is little danger of households having such large payment difficulties that the banks incur sizeable loan losses.

However, the fact that assets and debts are both growing in relation to income does make households more sensitive to changes in interest rates and asset prices. A higher interest rate affects household purchasing power directly, particularly as a growing proportion of household borrowing is at variable interest rates. Falling house prices reduce wealth. So if interest rates were to rise while house prices fall, the effect on household purchasing power would be greater than before and thereby probably on consumption and saving as well.

An updating of the study of debt and the debt-servicing ability in individual indebted households, using data on income and wealth in 2002, shows that the debts continue to be located mainly in the households that also own the real and financial assets. These households' financial margins for servicing their loans would be fairly good even in the event of a loss of income or increased expenditure. Thus, the study of the debt and debt-servicing ability of individual households supports the impression from all borrowers as a group, namely that households are not a threat to the stability of the banking system.

At the same time, the high level of debt can be a problem for some of the indebted households. Stronger economic activity and thereby higher interest rates will mean that interest expenditure takes a growing share of household income. But stronger economic activity also means that the debt-servicing ability is strengthened.

Bank profitability has been satisfactory in the past two years. Total income has risen and commission income from securities trading and payment services has made up a gradually growing share. Net interest income, the primary source of bank income, has become less important as a result of falling interest rates and depressed margins. In the latest reporting period, net income from commissions and financial transactions accounted for the major part of the increased income. A reduction of costs since 2000 has also contributed to the improved profitability. However, the largest economies have already been made and in the latest reporting period the level of costs hardly changed.

The Tier 1 capital of the banks has grown by degrees in recent years and the level at the end of the latest reporting period was 7.7 per cent. In relation to general economic activity and the development of bank earnings and loan losses, this can be said to be satisfactory.

At present there do not appear to be any distinct threats to the stability of the financial system. Given the Riksbank's scenario with a continued increase in global economic activity and the comparatively stable picture in financial markets, the external conditions seem to be favourable. Neither are the banks' borrowers expected to occasion any extensive loan losses.

There are always grounds for discussing various risk scenarios. The Riksbank highlights three conceivable risks. One lies in a rapid weakening of the US dollar. Another is that of a renewed global economic downturn. A third conceivable risk is that, in a search for higher yields, market players are excessively prone to take increased risks. Given the current strategies of the Swedish banks, none of these scenarios would affect them directly. But altered expectations could lead to decreased liquidity and turbulence, so that financial market prices are affected. An economic slowdown would affect bank profitability and lending risks. However, it would take a substantial deterioration of banking conditions to lead to overall losses for the banks. Their resilience to unexpected shocks is strong.

The Riksbank's role in work on financial stability

The financial system has three main functions: providing payment services, converting savings into investment and managing financial risks. The system consists of the banks and other agents, market places where they can meet and the financial infrastructure for registering and settling transactions. The stability of the financial system is a major socioeconomic concern. If the system were to stop functioning, the economic and social consequences could be very great. The government therefore has a particular interest in overseeing its functioning.

Considering the huge volume of payments that flows through the system, the greatest economic damage would probably arise from disruptions to the payment function. All economic transactions involve some form of payment. The central agents in the payment system are the Riksbank and the commercial banks. The banks distribute notes and coins, keep transaction accounts connected to the giro system and manage card systems. The Riksbank in turn issues notes and coins and provides accounts in the RIX payment system that the banks can use to execute large mutual payments.

In the light of its role in the payment system, the Riksbank has the Riksdag's mandate to promote safe and efficient payments. Here there is also a clear link to the Riksbank's other primary objective of maintaining the value of money. A stable financial system is a basic premise for a functional policy of targeting inflation.

The major role of the banks in the payment system puts the spotlight on them with respect to the public interest in *overseeing financial stability*.[3] A crisis in the banking system would have serious consequences for payments. Overseeing banks is particularly complicated in that banking as such involves a larger element of risk than most other enterprises. Bank liabilities (deposits, loans from other banks) are mostly short-term, whereas assets tend to be long-term.

Moreover, a problem in one bank is liable to spread to other banks and thereby develop into a risk for the system as a whole. One reason for this is that banks have mutual liabilities in connection with lending or securities trading, or simply because they participate in the payment system. Another reason is that the similarity of their operations means that problems elsewhere can hit them all in the same way. Contagious effects can also arise simply because other agents suspect that the institutions are interrelated even if that is not the case. Under certain circumstances, such suspicions are liable to be self-fulfilling.

The fact that suspicions alone may suffice to generate contagious effects is characteristic of the financial system. It illustrates the high degree to which systemic stability is dependent on the participants and users being confident that all the system's functions are in working order. A loss of this confidence can make it difficult for the banks to conduct their operations, thereby generating instability. An example of this is to be found in the bank crisis in Sweden, when the international credit market had little confidence in Swedish banks in general, regardless of the extent of the problems in each particular case. This resulted in funding problems for all the banks and almost led to a systemic crisis. In that situation the State was obliged to guarantee all of the banks' liabilities.

However, it is not just confidence in the individual banks that is essential for the proper functioning of the financial system. Participants must have confidence in all the system's components. In practice, oversight must therefore go beyond the self-evident task of overseeing the banks in the payment system. The Riksbank also needs to analyse developments in financial markets and the tendencies there that could generate threats to stability. To a growing extent this is also an international issue.

3 Finansinspektionen (the Swedish Financial Supervisory Authority) and the Riksbank both have major roles in this oversight and their tasks inevitably have a good deal in common. The division of work on stability and the collaboration in this respect have been clarified in a joint agreement; an English translation of the agreement is available at www.riksbank.se/upload/Dokument_riksbank/Kat_AFS/overenskommelse.eng.pdf.

The oversight of systemic stability also includes the stability of the financial infrastructure, that is, the systems that are necessary for executing payments and for handling and delivering financial products. The proper functioning of these systems lessens the risk that problems which arise somewhere in the financial markets or in some institution are spread to other participants or markets. It also reduces the risk of disruptions occurring in some part of the infrastructure and spreading from there. By continuously evaluating – on the basis of international norms and standards – the components of the system, the Riksbank is in a position to act so that the infrastructure is able to withstand shocks of various kinds.

The preventive work on stability also includes the construction of the regulatory framework. Laws and regulations establish the bounds within which financial companies must operate. The Riksbank contributes to this by responding to matters submitted to it for comment and by participating in the international work on the ongoing development of regulations, which is largely undertaken within the Basel Committee and the EU.

The Riksbank's assessment of the risks in the financial system and of the banks' ability to withstand any shocks is published twice a year in this Financial Stability Report. As the four major bank groups constitute around 80 per cent of the Swedish bank market, the analysis of this ability concentrates on them.

Besides the preventive aspects, the work on stability includes crisis management, that is, a readiness to act if a crisis were actually to occur. Crisis management presupposes that the government is in a position to gauge the consequences of the default of an institution with problems. If the consequences would be serious, the government must be able to take measures to mitigate them. This may involve contributing to an orderly closure of the institution in some cases or to providing financial support in others.

In certain cases it may be up to the Riksbank to provide emergency liquidity assistance. This possibility arises, however, only if a particular institution has such grave problems that the stability of the entire system is threatened. If the enterprise is insolvent, any financial support has to be granted by the Riksdag because there is then a risk of costs arising for taxpayers.

The preventive oversight and crisis management are closely connected. Oversight is a prerequisite for the ability of the Riksbank to assess whether a crisis threatens stability and whether the problem concerns solvency or liquidity. In a critical situation, the cooperation with Finansinspektionen and the Finance Ministry is even more important.

PART I. STABILITY ASSESSMENT

Financial markets and real-estate prices

During the summer and autumn, the picture of a stable global increase in economic activity has become increasingly clear, though there are still a number of uncertainties. However, the picture is not entirely confirmed by price developments in international financial markets. The real economic assessments of market players seem to be more cautious. In Sweden, house prices are continuing to rise; this is largely attributable to low nominal interest rates, rising disposable incomes and high construction costs. Prices and vacancy rates have both stabilised in the market for commercial property.

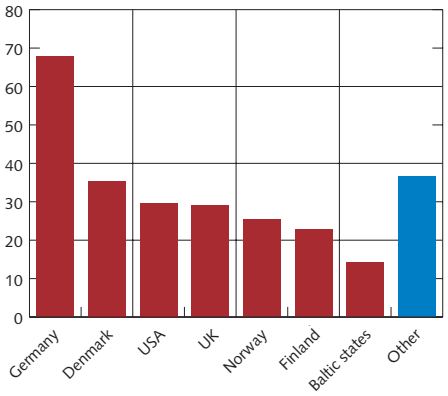
One purpose of the macroeconomic analysis amounts is to identify driving forces behind financial market developments, assess the extent to which they are in line with real economic developments and identify conceivable risks.

Approximately half of the lending by the four major Swedish banks is arranged with borrowers outside Sweden. The foreign claims of the Swedish banking system total about USD 260 billion. The countries where the claims are largest are Germany and Denmark, followed by the United States and the United Kingdom. The borrowers in these countries, together with those in the other Nordic countries and the Baltic states, account for about 90 per cent of the Swedish banking system's total claims abroad (see Figure 1:1). Some of these countries are also important as sources of bank funds.[4] The analysis in this chapter is therefore focused in the first place on these countries.

The last section of this chapter is devoted to developments in the real estate market. Property prices – in the housing market as well as in the market for commercial real estate – are particularly relevant for the stability analysis. A large proportion of the banks' collateral consists of real estate and property management companies are major borrowers from the banks. Moreover, a sharp fall in property prices can also affect the confidence of households and firms in the economic future.

However, property prices need to be considered somewhat differently from the prices in financial markets. The primary concern is their development in Sweden because the contagious effects from developments abroad are smaller than in the case of financial markets. But as the factors behind property prices in other countries are the same as in Sweden, it can be of interest to make some international comparisons.

Figure 1:1. Consolidated foreign claims of Swedish banks, June 2004.
USD billion

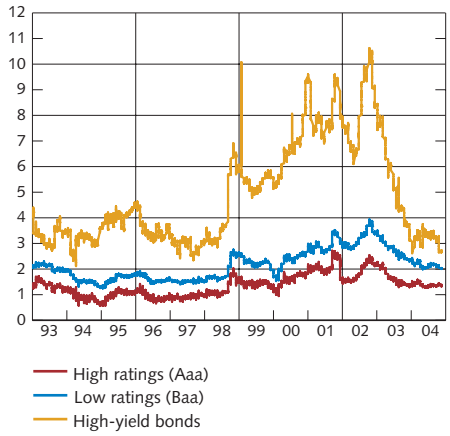


Note.The volumes to other Nordic countries could be underestimated since one of the banks does not report on a consolidated basis.

Source: BIS.

4 Bank funding in the international capital markets is discussed in the article on pages 83–95 in this Report.

Figure 1:2. Credit spreads for companies with high and low ratings and for high-yield bonds.
Percentage points



Sources: Ecowin and Datastream.

Real economic developments and financial markets

Global economic activity has gradually strengthened and most forecasters foresee a continued recovery. The high price of oil may admittedly subdue growth in certain regions or countries but that is offset by the prospect of stronger growth elsewhere. Some slackening of growth is assumed for the United States, partly as a consequence of higher interest rates, a less expansionary fiscal policy and higher oil prices. In spite of this, the economic trend in the coming years is expected to remain strong. Moreover, improved conditions for growth are seen in the euro countries and in Sweden, though there are differences between countries.

Long-term interest rates rose in the spring throughout the world in connection with expectations of stronger growth and tighter monetary policies. The interest rate increases in the United States in June, August and September had been foreseen and their impact on long-term interest rates was marginal. During the summer, however, the upward interest trend was broken unexpectedly, perhaps to some extent because unexpectedly weak labour-market figures from the United States caused market players to lower their expectations of growth. Confidence in a continuation of globally low inflation may have contributed, too. Moreover, exchange rate policy considerations have prompted some central banks in Asia to go on buying US Treasury bonds and this has contributed to higher bond prices and lower interest rates than would otherwise have been the case.

Bond market price movements, measured as implied volatility, continues to be low in the United States as well as in Europe.

The Swedish banks have a sizeable presence in the Baltic markets. Estonia, Latvia and Lithuania have been among the fastest expanding economies in Europe in recent years, with annual growth rates between five and seven per cent. Growth in these countries is expected to remain high in 2005. There are some differences between them in that growth in Estonia is being driven primarily by exports, whereas domestic consumption is more important in Latvia and Lithuania.

CREDIT MARKETS

In the credit market the spreads on corporate bonds and on bonds issued by emerging-market countries have largely returned to the low levels from before the financial crisis in Asia.[5] During 2003 the spreads on high-yield corporate bonds (bonds with a relatively low credit rating) narrowed from over 10 to less than 3 percentage points (see Figure 1: 2). These spreads have tended to widen again in 2004 but are still comparatively low.

The assessments of credit rating companies also provide a picture of expectations and credit quality in the bond market.

5 All spreads are from the US treasury bond rate.

The increasingly strong financial statements in Europe and the United States have altered the relationship between the numbers of upgraded and downgraded companies (see Figure 1:3). For the first time since 2002, more companies were upgraded than were downgraded in the United States in the first half of 2004; in Western Europe, downgradings continue to outnumber upgradings but the ratio here has been improving steadily.

Spreads on bonds issued by emerging-market countries widened to some extent last spring but have narrowed again since the summer (see Figure 1:4). Prospects of higher economic growth and sounder finances have led to higher ratings for a larger proportion of bonds issued by emerging-market countries. Together with the low level of interest rates, this has resulted in a larger volume of issues.

STOCK MARKETS

The increasingly clear economic recovery has been accompanied by rising stock markets throughout the world. In the countries that are most relevant for the Swedish banks, stock markets rose by between 20 and over 100 per cent in 2003 (see Figure 1:5). The increases were most dramatic in the Baltic states. The upward trend continued in the early part of 2004; during the summer, however, it slackened in all the countries considered here. The oil price rise and expectations that the price will remain high contributed to a downward revision of listed companies that are dependent on oil or oil-based products. During the summer, a number of companies, above all in the American IT sector, issued warnings that profits would be lower than expected. Stock markets then tended to mark time. Equity prices have risen again in recent weeks but in the twelve months up to November 2004 the annual stock-market return fell markedly.

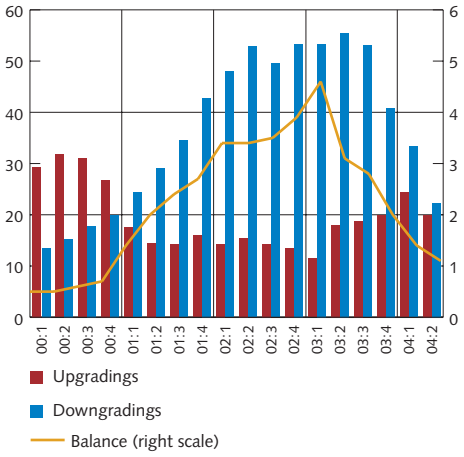
However, the weaker stock market trend has not resulted in abnormally large price movements. On the contrary, implied stock market volatilities have been falling since 2003 Q1 and are back at the levels in the mid 1990s (see Figure 1:6).

A conceivable interpretation of equity and bond prices since the summer is that in their assessments of real economic developments, market players are more cautious than economic forecasters. At the same time, price movements are small in all markets.

Potential risks for Swedish banks and their borrowers

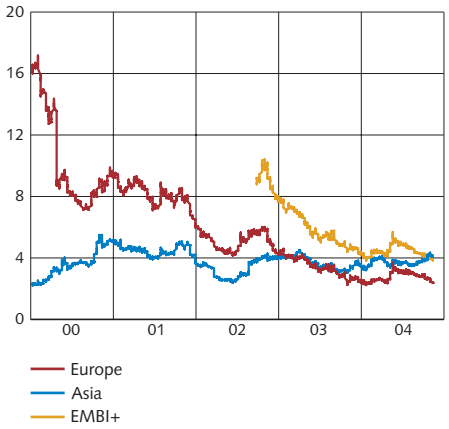
There are no signs at present of any risks in real economic developments or in the financial markets that might lead to serious problems for the Swedish banks. Still, there are always grounds for trying to identify risks that might affect Sweden's financial system, even if there is little probability of them materialising. A discussion of terrorist attacks in the context of stability is therefore presented in a box.

Figure 1:3. Up- and down-grading of companies in Western Europe. Four-quarter average



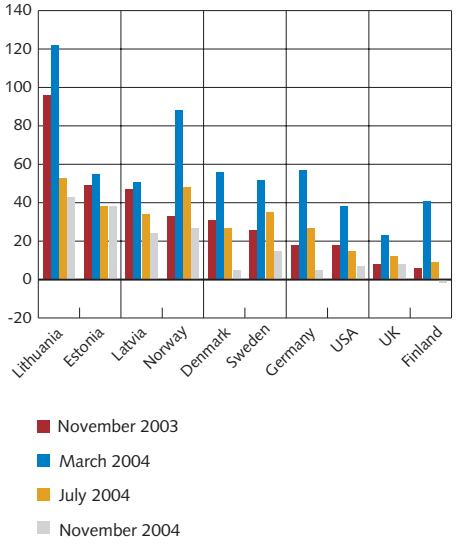
Source: Moody's.

Figure 1:4. Credit spreads for bonds issued by emerging market countries. Percentage points



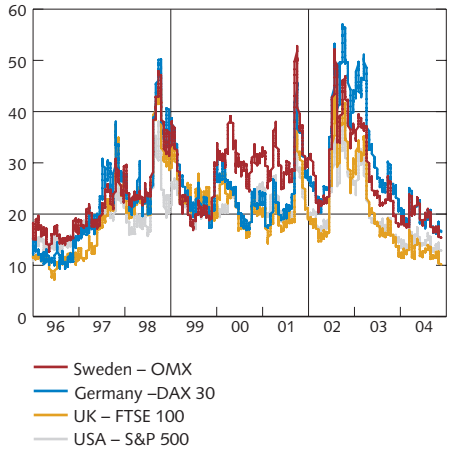
Source: Bloomberg.

Figure 1:5. Equity prices in selected countries. 12-month change, per cent



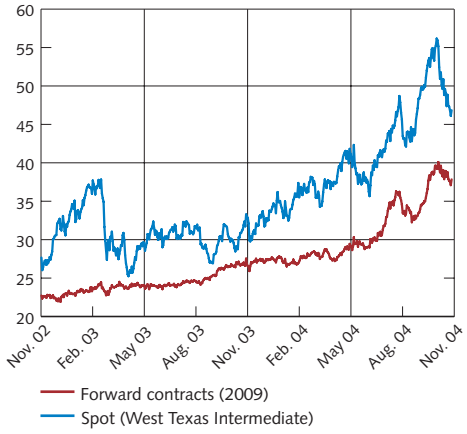
Sources: Ecowin and the Riksbank.

Figure 1:6. Implied stock-market volatility in selected countries.
Index



Source: Bloomberg.

Figure 1:7. Oil prices.
USD per barrel



Source: Bloomberg.

A RAPIDLY FALLING DOLLAR

A conceivable risk for the financial system lies in the possibility of a marked and rapid shift in the value of the US dollar. Many observers consider that in view of the sizeable accumulated current-account deficits, the dollar exchange rate is still unduly high. If the dollar were to undergo a rapid correction to a value that can be said to be more in line with fundamentals, it could result in turbulent financial markets and thus also affect the business cycle.

GLOBAL ECONOMIC SLOWDOWN

A further future risk is that global economic growth slackens or comes to a halt. Most financial market players and economic forecasters are generally agreed that global growth will continue. If the economic upswing were to end prematurely, there could be problems even in the financial markets, particularly as many countries have limited scope at present for stimulating economic activity with fiscal or monetary measures.

EXCESSIVE EXPOSURE TO RISK

The move back to narrower interest rate spreads could be due to investors searching for higher yields and therefore looking for investments with a higher risk. In that case, the spreads do not fully mirror the underlying credit risk.

Together with the narrow interest rate spreads, the low market volatilities for equity as well as bonds have meant that investor risk, measured as value-at-risk, has been low.[6] This has given investors scope for trying to obtain a higher yield by choosing alternative assets or markets. A case in point is the growth of investment in hedge funds by financial institutions. Another example is that, new players, including hedge funds and global pension funds, have begun investing in oil as a financial asset. The fact that new players are investing in oil futures has probably contributed to the price rise for forward contracts (see Figure 1:7).

Prices of other primary products have also risen during 2004 in response to increased demand. But it looks as though investments by a number of new players have also influenced prices in these markets. The correlation between the commodity markets and the more traditional financial markets has been weak to date, which is also one of the attractions for investors as it means they can accept larger exposures without increasing the total risk in their asset portfolios to the same extent. But if the inter-market correlation were to depart from the historical pattern, the risk could increase rapidly. Prices in a number of markets might then all move in the same direction, as was the case in the LTCM crisis in 1998.

None of these risk scenarios would have any sizeable direct effects for the major Swedish banks. The banks could be affected

6 Value-at-risk is a method for measuring risk by means of statistical analyses of historical market trends and volatilities; the result indicates the probability of a given portfolio generating losses above a specified level.

indirectly by increased uncertainty in financial markets as well as by the consequences of a different cyclical development.

Real-estate prices

HOUSING

House prices in Sweden have risen rapidly in recent years, in real as well as nominal terms. This has also been the case in other countries and the issue has been a major topic internationally. The price increases have accompanied low and falling interest rates, increased incomes and rising household debt.

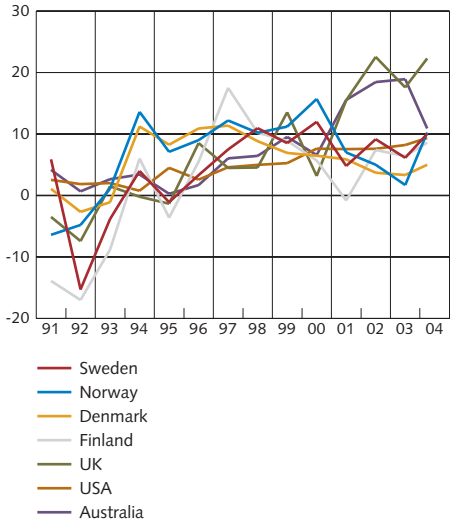
During the period August until October 2004 house prices in Sweden were 9 per cent higher than the corresponding period 2003, according to the house price index from Statistics Sweden. The price increases in Malmö and Göteborg (15 and 14 per cent, respectively) were higher than in Stockholm (8 per cent).

In Finland and Norway, in 2004 Q2 house prices had risen on a twelve-month basis by around 9 and 10 per cent, respectively, while the corresponding figure in Denmark was 5 per cent. Outside the Nordic area, house prices have risen rapidly in Spain, Portugal, Ireland, the United Kingdom and Australia, for example. The differences are partly attributable to structural differences between the housing markets in these countries.[7] In the latter two countries the latest statistics indicate that the price rise is slackening.

The house market is naturally attracting a lot of attention on account of the strong correlation between the price increases and the growth of household debt. This means that a rapid price fall might affect household purchasing power and thereby economic development in general. There are countries where price formation appears to be driven in part by expectations of continued price increases and thus includes a speculative component. In Sweden, however, it seems that house prices can be largely explained in terms of such fundamental factors as rising incomes, low interest rates and migration to cities. It is also conceivable that the greater stability of interest rates, as a consequence of lower inflation, has made households more inclined to carry increased debt.[8]

In time, however, higher interest rates and a growing supply should cause the price trend to slacken. A price fall would not be unreasonable in certain local markets. But sizeable or more abrupt price adjustments are unlikely to occur if economic development is as predicted. Amendments to regulations or tax laws could, of course, have substantial effects on prices but no such changes have been announced.

Figure 1:8. House prices.
Percentage annual change

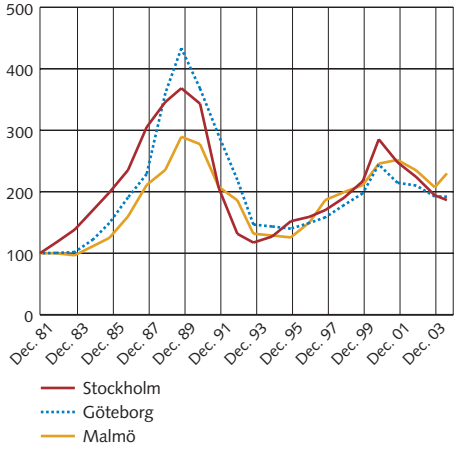


Sources: Ecowin, national central banks and the Riksbank.

7 For a fuller discussion of this aspect, see the box on pages 15–17 in Financial Stability Report 2004:1.

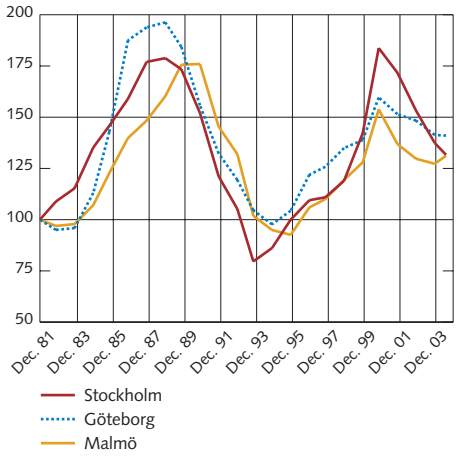
8 The Riksbank has commented – in speeches as well as in more in-depth analyses – on property market developments on a number of occasions since the late 1990s; see, for example, Inflation Report 2002:3, pages 41–44.

Figure 1:9. Real prices of office premises in central locations.
Index 1981=100



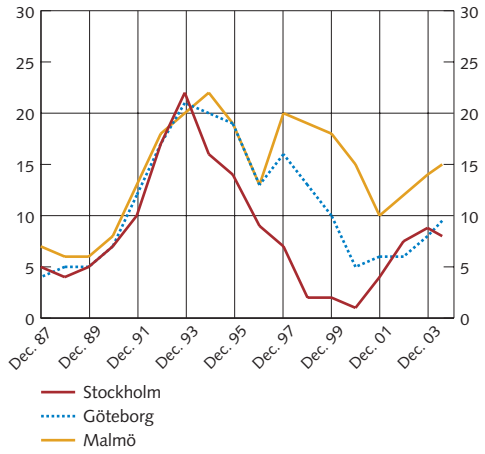
Sources: NewSec AB and the Riksbank.

Figure 1:10. Real rents for office premises in central locations.
Index 1981=100



Sources: NewSec AB and the Riksbank.

Figure 1:11. Vacancy rates for office premises in central locations.
Per cent



Source: NewSec AB.

THE COMMERCIAL PROPERTY MARKET[9]

The market for office premises has been weak since 2000 and rents have fallen in real terms. During 2004, however, there has been some stabilisation. Prices for office premises have been comparatively stable in Stockholm and Göteborg, while the level in Malmö has tended to rise (see Figure 1:9).

Commercial property prices are essentially geared to rents and vacancy rates, which in turn reflect the demand for and supply of office premises. After a period of low demand and falling rents, there has been some stabilisation this year. Rents have risen in Malmö and the fall in Stockholm and Göteborg has slowed (see Figure 1:10). Vacancy rates have declined to some extent in Stockholm, whereas they have gone on rising in Malmö and Göteborg (see Figure 1:11). The supply of new office space has been very low for some time and its effect has therefore been marginal.

The Swedish property market has been dominated for some years by foreign investors. In the first half of 2004, however domestic buyers accounted for 80 per cent of the transactions on the Stockholm market, which can be compared with 35 per cent in 2003. Market activity remains high.[10]

The Riksbank's main scenario for the assessment of inflation envisages a gradual improvement in the labour market towards the end of 2004, which should lead to increased demand for office premises and a continued stabilisation of prices and rents.

In the other Nordic countries the market for commercial property has also tended to stabilise, though vacancy rates are still comparatively high. In the Baltic states, the economic growth has led to a considerable increase in the production of both office and commercial premises in recent years. Given that new construction remains high, the main risk in these markets lies perhaps in an economic slowdown and thereby also a weakening of demand.

9 This section deals with the market for office premises as this is the major item in the holdings of the listed property companies.
10 See Nordic City Report Autumn 2004, from real-estate consultants Jones Lang Lasalle.

Financial markets and terrorist attacks

Terrorist attacks often have devastating consequences for people and their property. In the context of stability, it is of interest to consider the effects attacks could have on the financial system. Besides having a tangible impact on the financial infrastructure, terrorist attacks are liable to have various effects on the global financial markets. The confidence of consumers and firms in the future may be influenced indirectly and direct effects can occur from increased uncertainty and abrupt changes in prices of financial assets.[11]

In that financial market prices reflect the economic expectations of investors, an unforeseen shock – such as a terrorist attack – may elicit sharp price movements. Decisions to buy or sell an asset may be suddenly reconsidered. As information about such a shock spreads throughout the world – increasingly quickly nowadays with new information technology – investors tend to move to markets and assets that involve less risk. Panic selling and self-generated price spirals can lead to large price movements and increased financial market uncertainty.

There are signs, however, that financial markets have become more resilient to exogenous shocks. The effects of such shocks – directly on prices and indirectly on the expectations of households and firms – now also appear to be more limited. The terrorist attacks on 11 September 2001 in the United States and on 11 March 2004 in Spain led to a marked global stock-market fall and increased uncertainty (see Figure B:1).

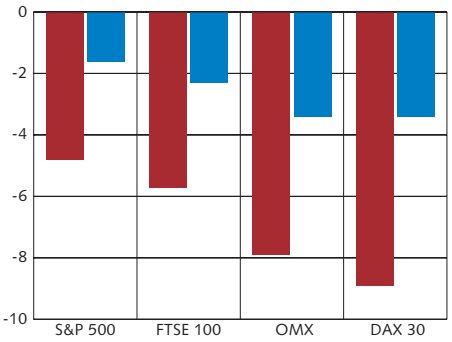
After both these attacks, it took between 14 and 27 days for the stock markets in the United States, the United Kingdom, Sweden and Germany to return to more normal levels (see Figure B:2). It is interesting to compare this with the US stock market's reaction to Iraq's invasion of Kuwait in August 1990: on that occasion the return to the pre-invasion level took 134 days.

The implied volatilities in these stock markets also took approximately two to three weeks to return to the level from before the terrorist attacks (see Figure B:3).

The number of days it takes for markets to return to more normal levels does not necessarily represent the duration of a terrorist attack's impact on the financial markets. Equity prices are also influenced by the continuous flow of information to market players. But it can serve as an approximate indication of how the financial markets handle shocks.

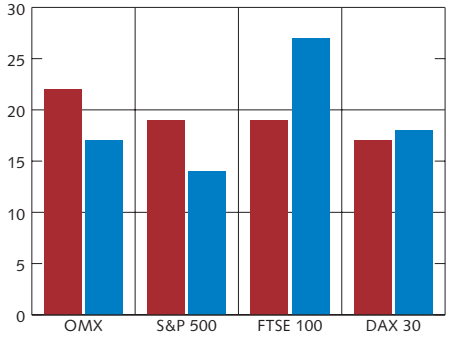
A historical picture of US capital market

Figure B1. Equity price reactions[12] on the first trading day after the attacks.
Per cent



Source: Ecowin.

Figure B2. Number of trading days before equity prices recovered.

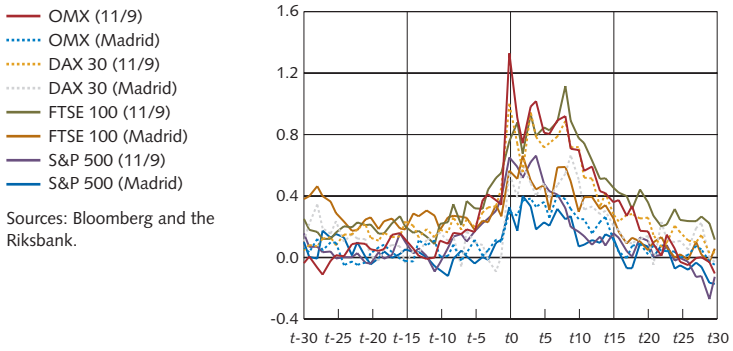


Sources: Ecowin and the Riksbank.

11 For a discussion of conceivable macroeconomic consequences, see the box on pages 34–37 in the Riksbank's Inflation Report 2001:3.

12 The equity price shift is calculated as an adjusted average yield. The figure for the day in question is compared with the average value over a period of 20 trading days up to the 11th day before the attack.

Figure B3. Effects on implied volatility.
Per cent



Sources: Bloomberg and the Riksbank.

effects of terrorist attacks and military invasions in the period from 1915 to 2001 has been presented in a study by Chen & Siems (2004).[13] They find that these capital markets appear to be more resilient today and absorb information about terrorist attacks and military conflicts more quickly. The global effects of the terrorist attacks on 11 September 2001 are also considered in their study; one of the conclusions is that the financial markets' reactions were so limited because banks and other players in the financial sector around the world were financially stable. This conclusion is supported by a study by Eldor & Melnick (2004) concerning the effects of terrorist attacks on financial markets in Israel between 1990 and 2003.[14] They present evidence that market development and liberalisation have helped to make the Israeli financial markets better at handling terrorist attacks.

Although the initial reactions have been small, it seems that terrorist attacks and other types of shock can lead to a stronger covariation between financial markets. This is something that banks and other financial institutions need to incorporate in risk management. The stronger correlations, between countries as well as asset categories, also suggest that a second shock in quick succession would have a greater impact on the global financial markets.

To sum up, there are many indications that financial markets have become more robust.

- The increased integration of financial markets may be one explanation. This admittedly implies a risk of larger contagious effects from a terrorist attack but it also improves the financial markets' possibilities of managing risks.

- Another probable explanation lies in the continuous development of financial markets' instruments and techniques for risk management, which improves the potential for spreading risks more effectively.

- The state of the global banking sector is no doubt important, too. A banking system that is stable and efficient is in a better position to absorb and manage large shifts in financial market prices.

13 See Chen, A.H. & Siems, T.F., 2004, "The effects of terrorism on global capital markets", European Journal of Political Economy, 20:349–366
14 See Eldor, R. & Melnick, R., 2004, "Financial markets and terrorism", European Journal of Political Economy, 20:367–386.

The Swedish banks' borrowers

Total corporate borrowing has hardly changed since December 2003 but an increase is foreseen as investment picks up. Improved profits and stronger solvency indicate a better ability to service debt in the corporate sector as of 2003. Both the development of actual bankruptcies and the probabilities of future defaults point to a decreased credit risk on loans to all industries. The ability to service debt has also improved for property companies and the credit risk on loans to this sector remains low. Households are still borrowing at a high rate and this is expected to continue. But their ability to service debt is persistently good and here, too, the credit risk is low.

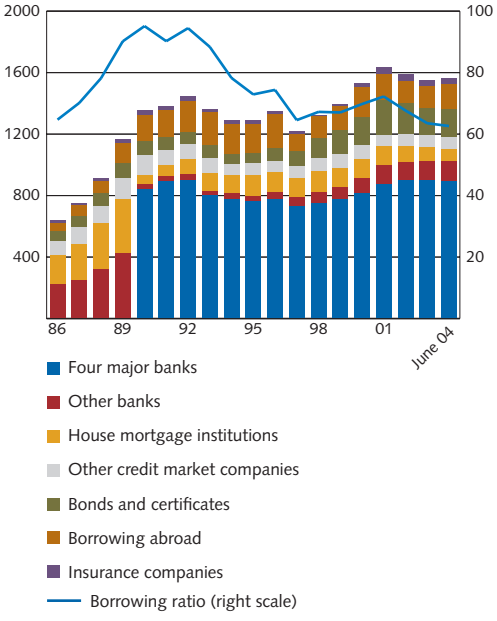
The corporate sector in Sweden

The Riksbank's financial market statistics up to end August this year show that total corporate borrowing has hardly changed since December 2003. Relative to GDP, however, the fall in corporate borrowing has continued. Companies are returning to the securities markets but borrowing here still makes up a relatively moderate share of the total.

Another persistent trend is the fall in corporate borrowing from mortgage institutions. Corporate borrowing from the banking system as a whole is also declining but the level of borrowing from the four major bank groups is being maintained (see Figure 2:1). Borrowing from the four largest banks includes borrowing from their finance companies and this shows that, to a growing extent, firms are replacing bank credit with factoring and leasing via bank-owned finance companies.[15] This shift may partly have to do with the altered order of priority for creditors in bankruptcy law; the new rules are expected to apply in full as of 2005.[16] However, the main driving force behind the increased borrowing via finance companies is probably a need for alternative forms of funding.

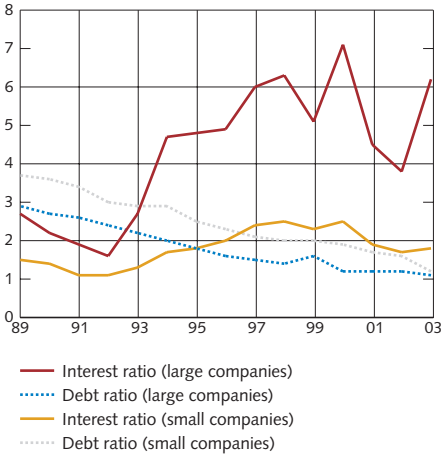
In the Report last June the Riksbank judged that corporate borrowing would pick up during 2004. This assessment still holds and is motivated above all by the prospect of increased corporate investment in this and the coming years.[17] Indicators of increased investment are the high utilisation of industrial capital and optimism in the corporate sector. Increased borrowing from 2004 onwards is also supported by data from a bank survey.[18] Of 150 bank managers throughout Sweden, 56 per cent reported increased lending to companies in Q3 from Q2. Looking ahead, 71 per cent considered that corporate borrowing would rise in Q4 and an even larger proportion, 88 per cent, foresaw an increase during 2005. Half of the bank managers cited increased investment or expansion as factors

Figure 2:1. Corporate borrowing and borrowing ratio.
SEK billion and per cent



Source: The Riksbank.

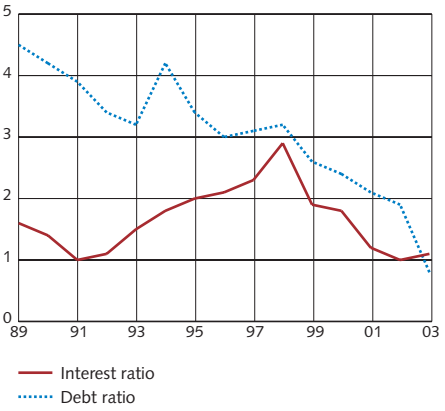
Figure 2:2. Interest and debt ratios for small and large companies.



Sources: UC AB and the Riksbank.

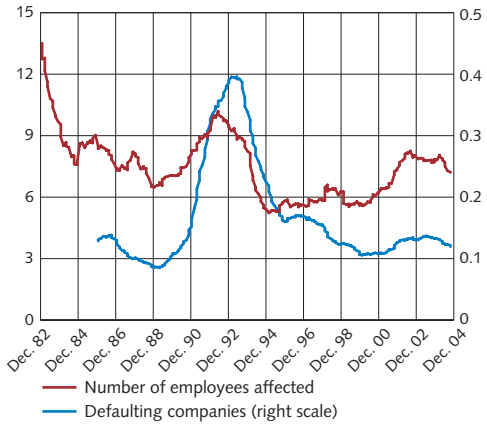
15 Factoring is a procedure whereby a company mortgages or sells its invoices to a finance company; leasing is an arrangement whereby equipment or real capital that a company needs for its operations is rented by it from a finance/leasing company.
16 See the box on page 27 in this Report.
17 See the Riksbank's Inflation Report 2004:3.
18 As of Q3 this year, Almi is conducting a quarterly survey in which 150 managers of bank branches throughout Sweden are interviewed about lending to companies; for Almi's indicators, see www.almi.se.

Figure 2:3. Interest and debt ratios for new companies.



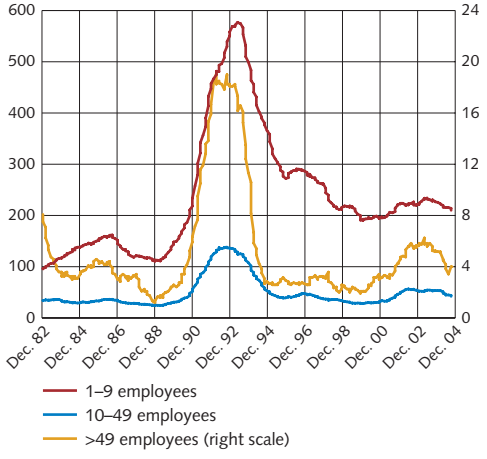
Sources: UC AB and the Riksbank.

Figure 2.4. Corporate sector bankruptcy rate and number of employees affected. Number and per cent, 12-month moving average



Source: Statistics Sweden.

Figure 2:5. Number of defaulting companies broken down by size.



Source: Statistics Sweden.

behind the higher borrowing requirement. The recipients of increased loans were judged to be mainly small and medium-sized companies, the categories that are most dependent on banks for funds.[19]

Companies are increasing their bank deposits, which indicates that they are generating income to a greater extent than before. The annual reports for 2003 from all Swedish non-financial limited companies show that all categories improved their earnings as well as their financial position (see Figures 2:2 and 2:3). A look at annual reports for the decade up to 2003, broken down into small, large and new companies, reveals a successive fall in debt ratios.[20] The interest ratio (profit in relation to interest expenditure) has improved during the last two years, above all among the large companies. This suggests that firms have strengthened their ability to service and repay debt.[21]

Confirmation that these developments are continuing in 2004 is to be found in the interim reports of listed Swedish companies for Q2 this year. Of the 317 listed companies, around 66 per cent report an improved profit and 46 per cent report better earnings as well as higher profits. This strengthens the impression that the stronger profits come not only from cost-cutting but also from increased earnings. Improved corporate sector profitability and solvency are indications that firms have a larger capacity to invest and thereby also to borrow.

Some recovery of equity prices since March 2003, coupled with historically low overall stock-market volatility, suggests that the market is more positive and less uncertain about future corporate profits.

The impression of a reduced credit risk on corporate loans is strengthened by the development of corporate defaults. The proportion of corporate defaults in the first nine months of this year was around 9 per cent lower than a year earlier (see Figure 2:4). A majority of defaults occur among small companies – over 90 per cent among those with less than 20 employees (see Figure 2:5). An industry breakdown shows that the number of defaults has fallen in all sectors except wholesale and retail trade (see Figure2:6).

A leading indicator of the probability of corporate sector bankruptcies is the expected default frequency (EDF) for listed non-financial companies, calculated on the basis of stock-market information and data from financial statements.[22] Less uncertainty

19 Small companies are those with 1–20 employees, medium-sized those with 21–250.

20 Small/large companies are those with an annual turnover of less/more than SEK 5 million; new companies are those with a history of less than two years.

21 The interest ratio is calculated as operating profit plus financial income divided by financial costs; the debt ratio is defined as liabilities divided by equity capital

22 Moody's KMV calculates the probability of bankruptcies in limited companies – the expected default frequency (EDF) – within a given time horizon on the basis of share prices and financial statements. By calculating the probability of the market value of a company's assets falling below the size of its debts at the time when the debts mature, the EDF shows the estimated risk of a listed company being unable to meet its commitments. The market value of the company's assets and the volatility of the assets are derived in turn from the company's stock-market value, using option pricing methods. Higher indebtedness, a lower market value and higher asset volatility all lead to a higher EDF, implying a greater probability of default within the given time horizon.

about the value of corporate assets and increased corporate solvency contribute to a decreased expected frequency of defaults in the coming twelve months for all industries (see Figure 2:7). Thus, forward indicators of credit risk point to this risk remaining low for loans to the corporate sector. In the present situation there does not seem to be any industry or trend in the corporate sector that might lead to substantial loan losses for the banks.

PROPERTY COMPANIES

Companies that manage real estate are particularly relevant for bank stability in that they have as much as around 18 per cent of bank loans to the corporate sector.

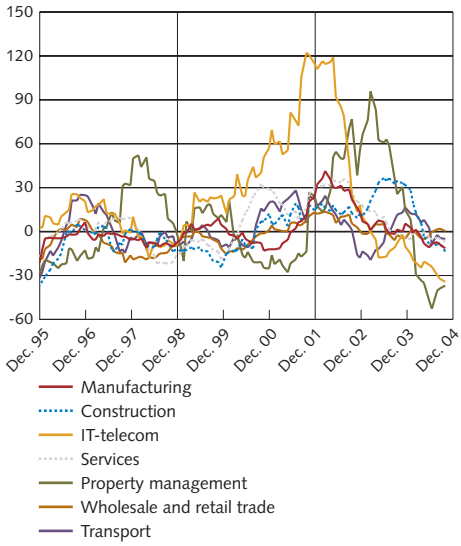
Financial statements from all property companies show that the financial position of these companies strengthened during 2003. An upward tendency in the interest cover ratio and a further fall in the debt ratio imply an improvement in the ability of property companies to service debt, despite the past three years' weak trend in the commercial property market in Sweden (see Figure 2:8). The development of defaults, with a smaller number to date this year, likewise points to a decreased credit risk on loans to property companies. Looking ahead, the expected default frequency (EDF) for property companies indicates that the credit risk here will also be low in the coming twelve months (see Figure 2:10). The EDF for property companies is now considerably below the average for this industry over the past five years and also lower than for any other industry (see Figure 2:7).

The earnings of property companies with a large proportion of their holdings in retail and other commercial premises may be affected by the increased frequency of defaults in wholesale and retail trade. A compilation of the holdings of the thirteen listed property companies shows that for four of them, retail premises account for between 12 and 25 per cent of their property holdings. In these cases, the weakening of wholesale and retail trade can lead to increased vacancies and decreased earnings.[23]

Corporate sectors in the other Nordic countries, Germany and the Baltic states

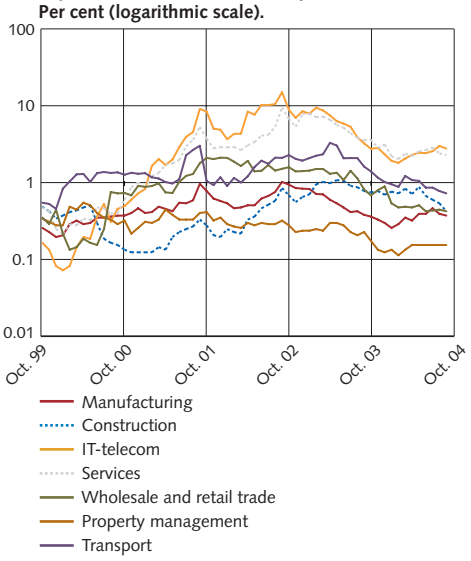
Corporate activity elsewhere in Europe appears to have strengthened and to some extent this has been reflected in stock markets and a better credit quality (see Chapter 1). The EU Commission's confidence indicators, based on survey data up to the end of July, suggest that growth is continuing both in manufacturing and in service industries in the European Union.[24] In Germany, slackening demand for credit has been accompanied by fewer defaults. Small companies have

Figure 2:6. Bankruptcies broken down by industry. Per cent, 12-month moving average



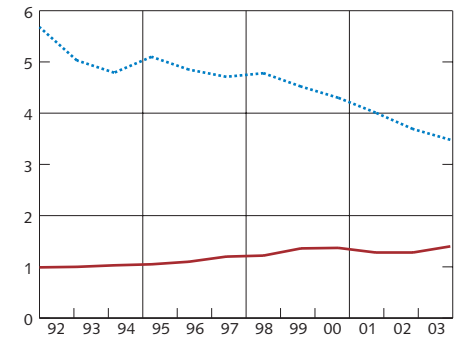
Source: Statistics Sweden.

Figure 2:7. Expected default frequency (EDF) by industry for listed non-financial companies. Per cent (logarithmic scale).



Source: Moody´s KMV.

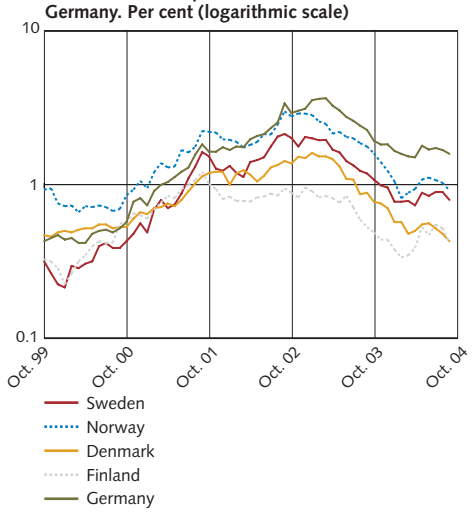
Figure 2:8. Interest and debt ratios for property companies



Sources: UC AB and the Riksbank.

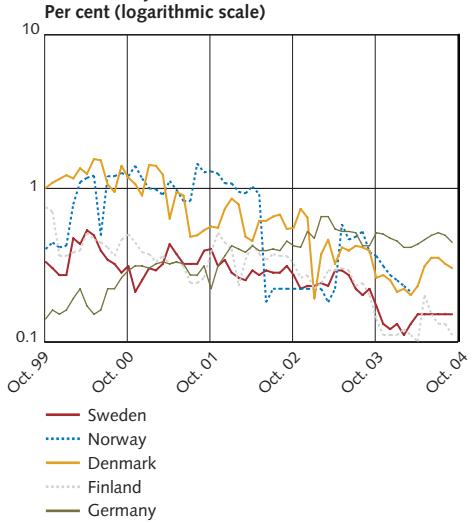
23 See the presentation on the website of real-estate consultants Leimdorfer: www.leimdorfer.se.
24 ECB Monthly Bulletin, September 2004.

Figure 2:9. Expected default frequency (EDF) for listed non-financial companies in Nordic countries and Germany. Per cent (logarithmic scale)



Source: Moody´s KMV.

Figure 2:10. Expected default frequency (EDF) for listed property companies in Nordic countries and Germany. Per cent (logarithmic scale)



Source: Moody´s KMV.

been hit by bankruptcy to a greater extent; firms with less than five employees accounted for 70 per cent of all defaults in 2003. The prospect of a continued fall in bankruptcies is indicated by a declining frequency of expected defaults one year ahead (see Figures 2:9 and 2:10).

In the Nordic area, developments in the corporate sector broadly resemble the picture in Sweden. Corporate borrowing has hardly changed in Norway since mid 2003 but there have been some increases in Finland and Denmark. Rising economic activity and falling interest rates have strengthened the financial position of companies in the Nordic area by leading to lower debt ratios and improved interest ratios. The higher level of bankruptcies in Norway compared with the other Nordic countries has begun to subside; from the high in mid 2003, the bankruptcy rate has now fallen more than 20 per cent. Bankruptcies in Denmark have tended to rise. The expected frequency of default one year ahead has decreased since the spring in all the Nordic countries, which confirms the impression of greater confidence in the economic future (see Figure 2:9).

For property companies, expected default frequencies indicate the same risk of defaults as last spring in Denmark and a somewhat decreased risk in Finland (see Figure 2:10). In Norway, the lower interest rates have benefited the profit trend for property companies and this, together with a falling vacancy rate, has strengthened their financial position.

In the Baltic states, the strong economic trend has led to increased corporate borrowing at the same time as more and more companies are replacing loans from abroad with bank loans. Corporate earnings have risen and so have profits. The financial position in the corporate sector is therefore judged to be stable. High profits are being generated above all in the construction and property industries, which are dependent on a continuation of high activity in the house mortgage and real-estate markets. The development of bankruptcies differs somewhat between the Baltic states. A falling bankruptcy rate in Latvia has been accompanied by recent increases in Estonia and Lithuania, primarily as a consequence of stronger competition from relatively large corporate chains. The primary potential risk for the Baltic economies in general and thereby for their corporate sectors lies perhaps in the effects of diminishing demand if the comparatively high economic growth were to slacken.

Altered conditions for credit against business mortgages

New rules for preferential rights under bankruptcy law are expected to apply in full as of 2005. The aim of the new rules is to provide creditors with incentives, where applicable, to undertake reconstructions instead of initiating bankruptcy proceedings. In the provision of credit, moreover, greater consideration is to be paid to the profitability of borrowers and their ability to service and repay debt rather than to the value of pledges. The changes are being implemented in two stages. The preferential rights for new credit against business mortgages were altered as of 2004.[25] In the second stage, which is expected to apply in full as of 2005, the new preferential rights apply to all outstanding credits against business mortgages. The Riksdag has decreed that the effects of the new rules for small and medium-sized companies are to be evaluated promptly, which means in practice that this work is to be initiated already this year.

The changes to the rules for preferential rights mean that:

- A business mortgage that in the earlier law constituted a full-value claim with special preferential rights is transformed into a new business mortgage of which one-half constitutes a claim with general priority and the remaining half constitutes a claim that has no priority over the claims of other creditors in the event of bankruptcy.

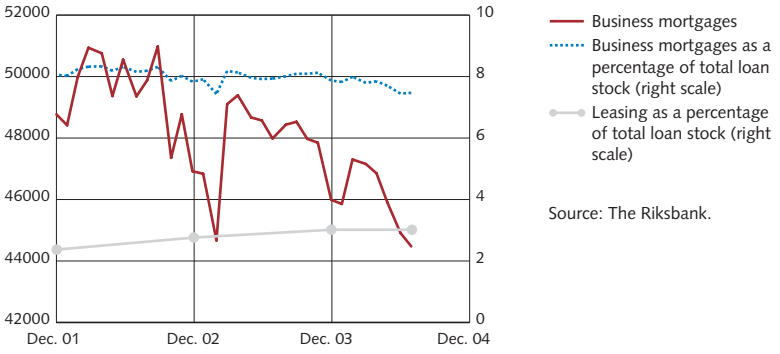
- Preferential rights for taxes and public charges are abolished

- Preferential rights for rent and tenancy are abolished

- Protection for employees' wages is improved by raising the wage guarantee ceiling and prolonging the guarantee's maximum duration

As these changes impair the position of banks in the recovery of claims from estates in bankruptcy, they may have consequences for the provision of bank credit against business mortgages. The banks may tighten their standards for collateral or offer alternative forms of credit. For example, a bank can lease the real capital a firm requires or provide credit against invoices (factoring) and thereby become the sole owner of assets that otherwise would have to be shared with other creditors in the event of bankruptcy. Since 2001, lending against business mortgages to non-financial companies has been declining steadily, both in absolute terms and as a share of total bank lending against certificates,

Figure B4. Business-mortgage and leasing operations of the major banks.
SEK million and per cent



Source: The Riksbank.

25 An entrepreneur can obtain a business mortgage via an entry in the relevant register; proof of the registration is provided in the form of a business mortgage certificate. The entrepreneur can then hand the certificate over to a creditor as collateral for the latter's claim on the entrepreneur or other person. In this way, the creditor holds collateral in the form of a business mortgage in the entrepreneur's property and has a preferential right to payment from the property on which the business mortgage is based. The preferential right extends to the full amount of the business mortgage. A business mortgage entitles the entrepreneur to dispose of property that forms the basis for the mortgage, whereas a lien transfers the property to the holder of the lien (see the comments from the Council on Legislation, Nya förmånsrättsregler (New rules for preferential rights) and Government Bill 2002/03:49). Business mortgages are common among comparatively small and medium-sized companies but uncommon among the smallest and the largest companies as well as among new companies and services companies. Business mortgages have the potential to be more important in sparsely-populated areas than in metropolitan regions because real-estate liens are worth relatively less in the former; however, studies by Statistics Sweden show that their procurement does not differ with the size of the municipalities in which the firms are located, see SOU 1999:1.

while leasing arranged by banks via finance companies has been rising (see Figure B1).[26]

The impaired preferential right may not be the only reason why lending against business mortgages has declined. Business mortgages may have been overrated as a source of funding because valuation difficulties pushed up the price. The banks had already discounted 50 per cent of the basis for business mortgages before the preferential rights were changed. Increased corporate funding via factoring and leasing focuses more attention on the profitability of the operations that are being funded. Compared with conventional bank credit, leasing and factoring are more costly forms of funding and also entail more meticulous administration of receivables, for example. However, they do mean that less capital is tied up in that real capital is leased or invoices are sold.

26 Factoring is just a small item in the operations of the bank groups. In July 2004 the bank groups provided factoring credits for a total of SEK 901 million, which can be compared with a figure of over SEK 18 billion for leasing credits.

The household sector in Sweden

Since the Report in June, household borrowing has continued to grow and the rate has accelerated (see Figure 2:11). The twelve-month increase in total borrowing in October was over 11 per cent. The most rapid increase is still coming from borrowing from mortgage institutions, for which the twelve-month change in October was almost 16 per cent. Borrowing from banks has been accelerating since the end of last year and reached a twelve-month rate in October of just over 5 per cent. The increase in household borrowing from other credit market companies seems to have stabilised at a rate around 10 per cent.

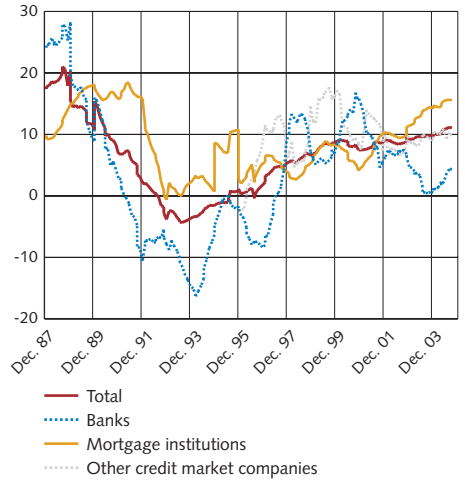
The continued growth of household borrowing has been stronger than the Riksbank assumed in the June Report. This is partly due to the comparatively rapid growth of income but also to a further fall in lending rates. Persistently high activity in the housing market, strong economic prospects and rising disposable income should help to maintain the borrowing rate even though rising interest rates are foreseen. In the rest of 2004 the growth of household borrowing is accordingly expected to continue at a relatively rapid rate. After that, borrowing is expected to slacken by degrees and then keep pace with the economy in general. This is consistent with the picture of the housing market in Chapter 1, with a subdued house price trend in the future; as mentioned earlier, household borrowing is closely related to developments in the housing market (see Figure 2:12).

Household debt is rising but so is household wealth. In the longer run, households' total assets (real and financial) have changed in line with indebtedness (see Figure 2:13). It is the house price trend that has led to increased household wealth despite the major stock-market fall from 2000 to 2003. Moreover, the level of household wealth is appreciably higher if the definition of assets is extended to include more illiquid items such as private and group insurance saving.[27]

Revisions to household disposable income have been made since the June Report on account of a new accounting method as of 2004.[28] This gives a somewhat lower debt ratio for earlier quarters. For 2004 Q2, the revised ratio of household debt to disposable income is just over 120. As before, debt is judged to grow more rapidly than disposable income, so the debt ratio moves up in the coming two years (see Figure 2:14).

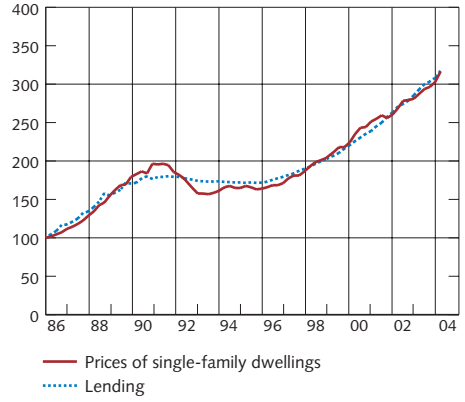
The ability of households to service debt, measured as the interest ratio (interest expenditure after tax relief as a percentage of disposable income), has likewise undergone some downward revision. Notwithstanding the recent rapid growth of debt, falling interest

Figure 2:11. Household borrowing by type of credit institution.
Percentage 12-month change



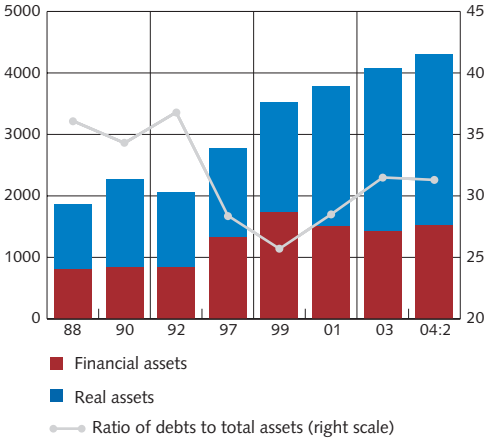
Source: The Riksbank.

Figure 2:12. Lending to households by credit institutions and prices of single-family dwellings.
Index: 1986 Q1=100



Sources: Statistics Sweden and the Riksbank.

Figure 2:13. Households' real and financial assets and ratio of debts to total assets.
SEK billion and per cent

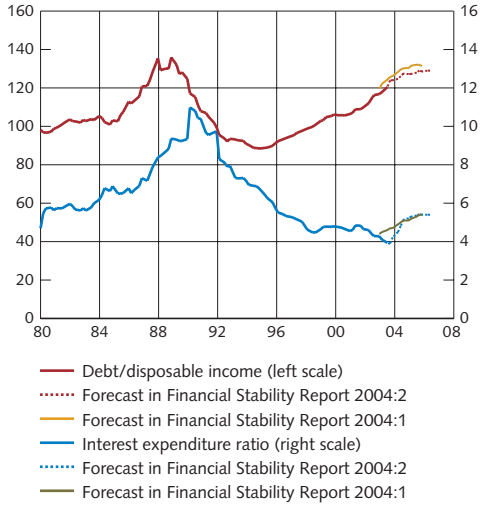


Note. The time scale is not uniform. Financial assets do not include either insurance saving (individual and group) or holdings in tenant-owned housing. Real assets consist of real estate excluding imputed business facilities. The data on debt and financial assets come from Statistics Sweden's Sparbarometer.
Sources: Statistics Sweden and the Riksbank.

27 For a more detailed account of the development of wealth over a longer period, see for example Baksmällan – De svenska hushållen förmögenhetsfördelning (Hangover – The development of household wealth in Sweden), Nordea Markets, October 2004.

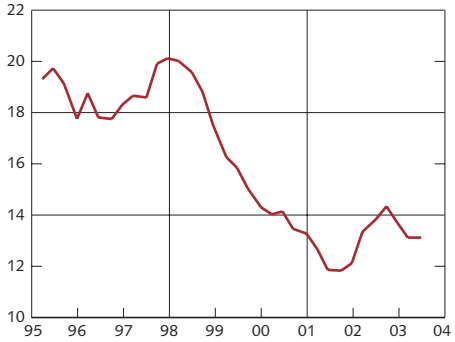
28 The revisions are occasioned by changes in the principles behind the national accounts for the periodisation of household tax; the differences between preliminary and final tax are now booked under the year when the income was obtained instead of the following year.

Figure 2:14. Ratios of household debt and post-tax interest expenditure to disposable income. Per cent



Sources: Statistics Sweden and the Riksbank.

Figure 2:15. Duration of interest terms for total household borrowing. Number of months



Source: The Riksbank.

rates have resulted in a further drop in the interest ratio, which is now historically low at just under 4 per cent. In the forecast period, the combination of increased borrowing and gradually rising interest rates implies an upward movement in the interest ratio (see Figure 2:14). From an expected average level of 4 per cent for 2004, the interest ratio after tax relief rises to around 5.5 per cent in 2006.

The proportion of loans arranged at variable interest rates has increased to some extent since spring, making households more sensitive to interest rate movements. Variable rates are being chosen for almost 60 per cent of all new borrowing from mortgage institutions. Although loans at variable rates still make up no more than 35 per cent of the mortgage loan stock, such rates are also used for other loans to the household sector and this item comprises more than a third of total household borrowing.[29] Of the 65 per cent of the stock of house mortgage loans that have fixed rates, a duration of interest terms up to 5 years is still the largest category; however, for a majority of these loans the actual duration is around 1 year. So the exposure of Swedish households to interest rate movements can be said to be comparatively marked. From just over 20 months in 1999, the average duration of interest terms in the stock of loans to households has followed a falling trend and is currently just over 13 months; there was an increase during 2003 but the average duration has shortened again in 2004 (see Figure 2:15)[30]

In an article in the June Report the Riksbank noted that the indebted households have financial margins for coping with higher interest expenditure or lower income.[31] The data for 2000 and 2001 showed that indebted households tend to be financially strong, with high incomes and assets; this is now confirmed by the wealth and income data for 2002.[32] Assuming, as seems likely, that these conclusions also apply to more recent years, the ability of these households to service debt will have gone on improving with the continued increase in their wealth.

At the same time, the growth of household debts as well as assets has presumably increased households' exposure to macroeconomic shocks. A shock that causes a fall in asset prices means that asset values fall while levels of debt are unchanged. Moreover, the shortening duration of interest terms in the stock of loans exposes households to interest rate movements more immediately than was the case some years ago. And although increased unemployment is judged to have only marginal effects on the household sector, it should be noted that a sudden loss of income

29 Bank groups in Sweden usually comprise a house mortgage institution and a finance company, for example, in addition to the parent bank; loans from the parent bank are mostly arranged at variable interest rates.

30 The average duration is a weighted mean for house mortgage loans with different interest rate terms; in the calculation, alla loans from banks and other credit market companies, including housing loans at variable rates, are assigned a duration of 3 months.

31 For a more detailed account, see the article on the Riksbank's study, based on income data for individual households, on pages 61–69 of Financial Stability Report 2004:1.

32 Data at household level show that the ability of Swedish households to service debt developed satisfactorily from 2000 to 2002; see the box on pages 33–35 of this Report.

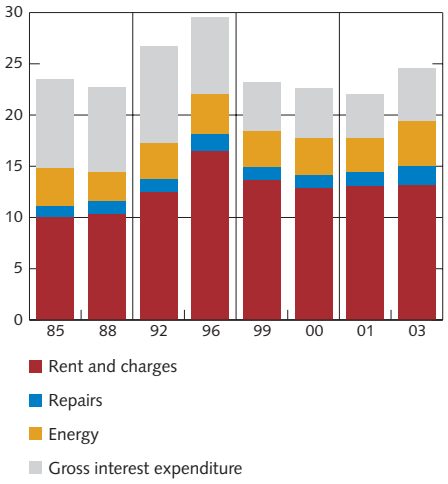
can probably have a considerable impact on certain households. Notwithstanding the indications of a further improvement in economic activity, there are no clear signs of a fall in unemployment. A persistently weak labour market trend is therefore a risk factor for individual households.

From 2001 to 2003 the ratio of housing expenditure to total household expenditure became somewhat higher – on account of rising energy costs and increased expenditure on repairs – but does not seem to be particularly high in a longer perspective.[33] Low interest rates have eased the burden of interest expenditure for households. All else equal, the combination of increased energy costs and higher interest expenditure (due to rising interest rates and increased debt) should mean that housing expenditure takes a growing share of total household expenditure.[34]

The balanced development of housing expenditure supports the conclusion that the current level of indebtedness can be motivated. At the same time, the recent upward tendency in housing expenditure could indicate that the growth of debt needs to slacken by degrees from the present high rate before the burden of household debt crowds out other consumption expenditures.

The overall assessment is that household debt does not constitute a threat to financial stability. The additional costs entailed by rising interest rates, for instance, are unlikely to lead to payment difficulties for households in general and thereby to increased loan losses for the banks. But there does seem to be some risk of consumption – and thereby overall economic development – being affected when interest rates move up. Household debt is therefore more of a question concerning future effects on private consumption than an immediate risk factor for financial stability.

Figure 2:16. Breakdown of households' housing expenditure.
Per cent



Sources: Statistics Sweden and the Riksbank.

Household sectors in the other Nordic countries, Germany and the Baltic states

In the other Nordic countries and the Baltic states, household borrowing is continuing to rise but at different rates: growth in the Baltic states is very strong, while in the Nordic countries it is much the same as in Sweden. Household sector debt in the Baltic states is rising at annual rates of between 40 and 80 per cent; but as the initial levels were comparatively low, the debt to GDP ratios are still only between 10 and 20 per cent. The ratios of interest expenditure to disposable income are also comparatively low in these countries. The higher growth of borrowing has led to some impairment of the Baltic household sectors' ability to service debt. Notwithstanding the comparatively low level of household debt in the Baltic states, there are grounds for keeping a watchful eye on future developments.

33 Note that the time scale is not uniform: Statistics Sweden's household surveys have been made at irregular intervals. Note also that as the 1996 survey differed somewhat from those in other years, the results for that year should be regarded as indicative.

34 The energy item has grown and is expected to go on rising on account of the high price of oil.

In Germany, the household sector is developing differently from the Nordic and Baltic picture. Growth in household consumption has been relatively weak, though the situation has improved to some extent in 2004. In contrast to the other regions, German house prices show a downward tendency. Household sector borrowing has also been comparatively low in Germany and this has been reflected in an unchanged debt ratio in recent years.

Summary

- Total corporate borrowing in Sweden has been virtually unchanged since December 2003 but an increase is foreseen when corporate investment picks up.

- Corporate profits and the ability to service debt have both improved in Sweden since the beginning of 2003. This applies to virtually all industries, including property companies.

- The development of actual bankruptcies as well as forward indicators of the risk of default point to an unchanged low credit risk in lending to all parts of the corporate sector.

- In the rest of the Nordic area, companies have strengthened their financial position and the risk of default one year ahead has decreased. Companies in the Baltic states have continued to borrow more, accompanied by increased bankruptcies in certain industries.

- Household borrowing in Sweden is expected to go on rising relatively rapidly in the coming year and then be broadly in line with general economic development. Notwithstanding the prospect of rising interest rates, it is foreseen that a continuation of comparatively strong activity in the housing market, an improved economic outlook and rising disposable income will help to maintain the growth of borrowing.

- The ability of Swedish households to service debt is judged to be good and in line with the picture in the June Report. A weakening of this ability is foreseen in the coming two years in connection with a growing burden of debt and higher interest rates. But the overriding assessment is that the development of household borrowing does not constitute a threat to financial stability.

Swedish households' debt-servicing ability 2000–02

In the June Report the Riksbank presented a study of the indebtedness and ability to service debt of individual indebted households to determine whether this modifies the picture of households as an aggregated group of borrowers.[35] The impression that households are not in a position that could generate bank losses to an extent that threatens stability still held. The major part of household sector debt is located in households that have:

- high disposable incomes
- real and financial assets
- good financial margins

Households that were financially weak tended not to have any loans. Wealth and income data for 2000 and 2001 showed that households had sufficiently large financial margins to cope with appreciably higher interest expenditure as well as with a sudden loss of income on account of increased unemployment. Now that data for 2002 are available, there are grounds for updating the study.

Once again, households have been divided into five equally large disposable income categories.[36] Their financial margin is calculated in order to assess the extent to which households are vulnerable to changes in income and expenditure. The margin indicates how much income after tax is available after a deduction for interest expenditure and other living costs. Household living costs are based on calculations by the Swedish Consumer Agency.[37] The Riksbank's study concentrates on how the proportion of vulnerable households (those without a financial margin) changes over time in income categories 2 to 5.[38]

The distribution of debts and wealth among Swedish households changed only marginally from 2001 to 2002. The distributions of these two items over income categories also tend to be rather similar (see Table B1).

The value of households' financial assets fell appreciably in all income categories from 2001 to 2002 on account of the declining stock market but this was accompanied by a strong increase in the value of real assets in connection with developments in the real estate market. The ratio of debt to total assets remained relatively stable at around 35 to 40 per cent in each income category. The decomposed data

Table B1. Distribution of debt and wealth among indebted households. Per cent

Income category		2000	2001	2002
2	Per cent of total wealth	4.6	4.0	4.3
	Per cent of total debt	4.8	4.4	4.7
3	Per cent of total wealth	11.6	10.1	10.4
	Per cent of total debt	10.7	11.0	10.9
4	Per cent of total wealth	24.3	20.7	21.9
	Per cent of total debt	27.5	27.1	24.5
5	Per cent of total wealth	57.0	63.5	60.1
	Per cent of total debt	55.1	55.8	56.1

Sources: Statistics Sweden and the Riksbank.

35 See the article on pages 61–69 in Financial Stability Report 2004:1.
36 Income category 1 comprises the 20 per cent of households with the lowest disposable incomes; category 5 similarly comprises the 20 per cent with the highest disposable incomes.
37 Household budgets have been estimated by matching the composition of families with the Swedish Consumer Agency's calculations of living costs as presented in its publication *Koll på pengarna* 2004.
38 According to the statistics, virtually all the individuals in category 1, whether or not they have debts, have an annual disposable income that is exceeded by their estimated expenditures, so that the latter encroach on their margins. We have not made any further assumptions and chose instead, in keeping with the earlier study, to define all debts in income category 1 as credits with an above-average level of risk.

for the period 2000–02 essentially match the picture that emerged at the aggregated level. So the additional information does not alter the presentation in the June Report.

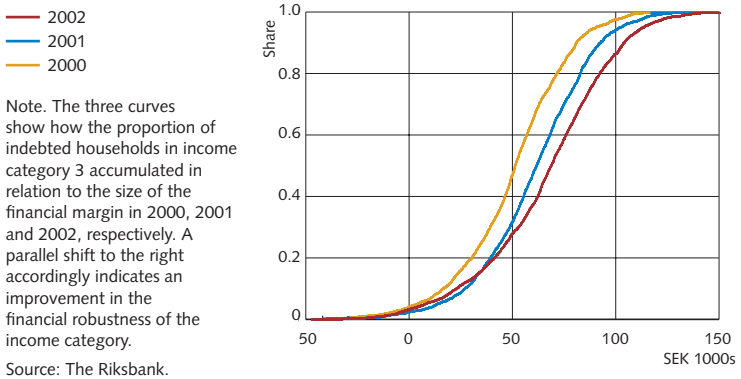
The ability of households to service debt, measured as the post-tax interest ratio, was virtually unchanged from 2001 to 2002 for borrowers as a single group. That leaves the question of how this ability developed among indebted households in the income categories considered here. Table B2 shows how the proportion of households with no financial margin developed in this period in income categories 2 to 5. It will be seen that in categories 4 and 5, the financial situation was solid, with a negligible proportion of households in the vicinity of the margins defined here. In categories 2 and 3, the proportions of financially weak households decreased appreciably from 2000 to 2002. These figures suggest that the financial situation was much the same for indebted and unindebted households. From 2001 to 2002, however, the proportion of households with no financial margin rose in both these income categories.

Table B2. Households with no financial margin. Per cent of all households

Income category		2000	2001	2002
2	Indebted households, no margin	20.5	11.8	11.9
	All households with no margin	7.9	4.6	5.0
3	Indebted households, no margin	3.1	1.7	2.4
	All households with no margin	1.8	1.0	1.5
4	Indebted households, no margin	0.0	0.0	0.0
	All households with no margin	0.0	0.0	0.0
5	Indebted households, no margin	0.0	0.0	0.0
	All households with no margin	0.0	0.0	0.0

Source: The Riksbank.

Figure B5. Tolerance of rising expenditure or loss of income in income category 3.



Note. The three curves show how the proportion of indebted households in income category 3 accumulated in relation to the size of the financial margin in 2000, 2001 and 2002, respectively. A parallel shift to the right accordingly indicates an improvement in the financial robustness of the income category.

Source: The Riksbank.

Figure B5 shows how households in income category 3 are affected when their budget shrinks in steps of one thousand kronor. Zero on the horizontal scale represents the position where the incomes and expenditures of the indebted households balance exactly in accordance with our definitions. From 2001 to 2002 the group in this position grew from just over 1.7 per cent to about 2.4 per cent.

The figure also shows, however, that this deterioration applied, not to all indebted households but mainly to those that already lacked financial margins initially. The financial situation improved, for example, for households with an annual margin of at least 40,000 kronor, as indicated by the rightward shift in the curve. The main message is still that the ability of Swedish households to service debt is satisfactory, although this more detailed analysis of borrowers does indicate, as found earlier, that the ability differs between income categories.

The size of interest expenditures in the different categories was affected, moreover, by the rapid expansion of borrowing from 2000 to 2002. Table B3 shows how the proportion of indebted households with large interest expenditures changed in these three years in the different income categories. In categories 3 to 5 there has been some increase in the proportions of households whose interest expenditure exceeds 10 and 20 per cent, respectively, of their disposable income. By itself, this is probably not a problem, particularly as just these households improved their financial margins in this period. But it does provide a clearer picture of how sensitivity to interest rates may develop in the household sector. On the whole, the changes in these years in households' ability to service debt are generally relatively small and the financial situation in the different income categories is in line with the overall development in the household sector.

Thus, the assessment that households' margins for coping with interest payments are fairly good, even if their budgets weaken relatively markedly, continues to hold even when data for 2002 are included. The high indebtedness in the Swedish household sector does not appear to constitute a threat to the stability of the banking system but can entail problems for individual households. The current annual growth of debt by over 10 per cent, coupled with a future increase in interest rates, will probably lead to an increase in the overall interest ratio for all households. The effects of rising interest rates could, of course, be tangible for individual high-indebted households.

Table B3. Share of the total stock of debt for households with high interest expenditure. Per cent.

Income category		2000	2001	2002
2	Households with interest ratio > 10%	2.1	2.1	2.0
	Households with interest ratio > 20%	1.0	0.5	0.9
3	Households with interest ratio > 10%	4.3	4.0	4.7
	Households with interest ratio > 20%	1.1	1.2	1.3
4	Households with interest ratio > 10%	10.4	9.2	9.4
	Households with interest ratio > 20%	1.6	1.8	2.0
5	Households with interest ratio > 10%	20.0	21.1	23.4
	Households with interest ratio > 20%	2.1	2.6	5.9

Source: The Riksbank.

Developments in the banks

The earnings of the four major banks rose in the latest reporting period. The improvement came mainly from increased income as rising equity prices helped to strengthen the net result of commissions. The net result of financial transactions and lower loan losses also contributed. Thus, the banks continue to have a good capacity to cope with unexpected losses.

The Riksbank's analysis of developments in the banking system concentrates on the four major Swedish banks – Föreningssparbanken, Handelsbanken, Nordea and SEB – because it is primarily these banks that are of crucial importance for the stability of the financial system.[39] The analysis focuses on four aspects: the strategic risk in profitability, asset quality, the structure of financing and capital.

Stock-market uncertainty about future corporate earnings has decreased since 2002. This is reflected in the implied volatility of bank equity options, which are now just below the average levels since 1998 (see Figure 3:1). The development resembles the general trend in the financial markets, with a falling implied volatility of the OMX index, though the fall in the volatility of bank equity has been somewhat more marked.

Profitability – strategic risk

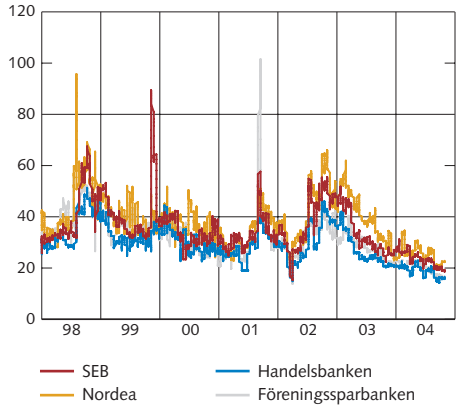
After falling for a couple of years, earnings have been rising steadily since mid 2003. Earnings are now just above the high levels that were achieved towards the end of 2000 but the upward tendency has become somewhat more moderate. In the latest reporting period, the growth of underlying earnings, measured as profit before loan losses in constant prices, amounted to almost 7 per cent (see Figure 3:2).[40]

The decreased earnings during 2001 and 2002 were accompanied by increased loan losses. During 2003 loan losses went on rising and at the year-end their level had more than doubled from 2000. Since then, however, loan losses have fallen and are again very low. The present difference between earnings and loan losses is the largest ever.

The increased earnings and decreased loan losses are reflected in improved profitability; measured as the return on equity after tax, profitability in the latest reporting period was 14.5 per cent. This can be compared with the annual figure for 2003 of just over 12 per cent (see Figure 3:3).

Almost two-thirds of the improvement in profitability comes from core operations (see Figure 3:4).[41] The outcome for core operations was mainly due to increased net income from commissions and

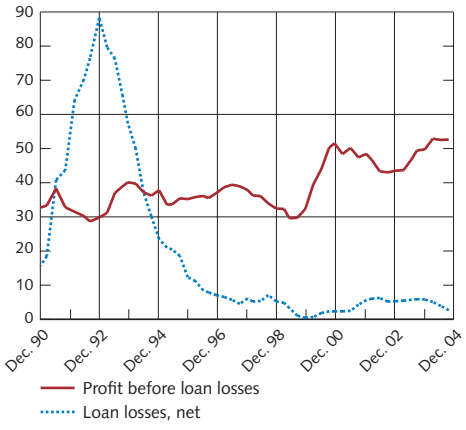
Figure 3:1. Implied volatility of bank equity. 10-day moving average, per cent



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

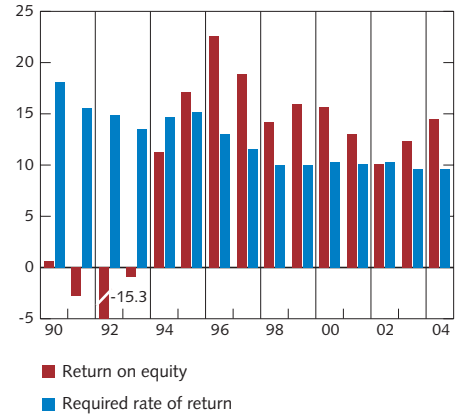
Sources: Bloomberg and the Riksbank.

Figure 3:2. Profit before loan losses and net loan losses in the major banks. Accumulated over four quarters, SEK billion, 2004 prices



Sources: Bank reports and the Riksbank.

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



Note. The market's required rate of return is defined as the sum of the risk-free interest rate and a risk premium; risk-free interest is represented by the ten-year government bond rate and the risk premium is assumed to be 5 per cent over the entire period. The data for 2004 refer to the latest reporting period.

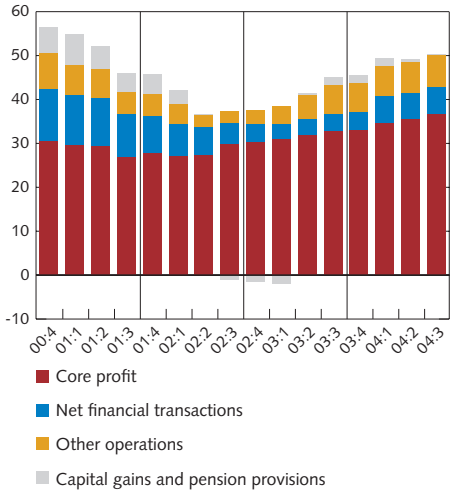
Sources: Bank reports and the Riksbank.

39 Unless stated otherwise, the term Swedish major bank denotes the bank group as a whole, that is, including both Swedish and foreign subsidiaries. The reason for this perspective is that risks can be taken in various legal entities and it is the consolidated risk exposure that is most relevant for financial stability.

40 The most recent reporting period is the four quarters through 2004 Q3. All results have been adjusted for sizeable one-off effects and unless stated otherwise, all comparisons are with the preceding four-quarter period.

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

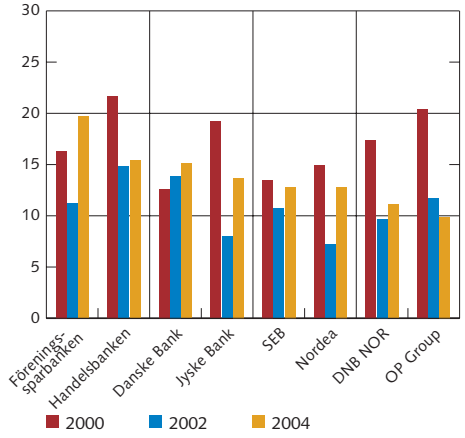
Figure 3:4. Results in the major banks. Accumulated over four quarters. SEK billion



Note. Pro forma adjusted for acquisitions. Core profit consists of net interest and commission income less expenditures and loan losses. Other operations comprise other income as well as profits from affiliated companies and insurance operations.

Sources: Bank reports and the Riksbank.

Figure 3:5. Post-tax return on equity. Per cent



Note. DNB NOR is pro forma. The data for 2004 refer to the latest reporting period.

Sources: Bank reports and the Riksbank.

lower loan losses. Increased net income from financial transactions also contributed with a large part of the overall improvement in profitability.

Most of the major Nordic banks have had broadly the same development of profitability in recent years: a lower level during 2002 followed by an improvement (see Figure 3:5). Compared with a majority of the other Nordic banks, the fall in profitability from 2000 to 2002 was greater for the Swedish banks and the subsequent increase was also more marked; this is partly because the income of Swedish banks is more dependent on stock markets and thereby more sensitive to the development of equity prices and turnover.

INCOME

Since mid 2003 the income of the major Swedish banks has risen comparatively smoothly. The increase in the latest reporting period amounted to almost 3 per cent.

The largest flow, net interest income, has gradually slackened since 2002 and in the latest reporting period it decreased around 4 per cent. However, there are differences between the banks. Net interest income clearly fell for Nordea and Handelsbanken but was virtually unchanged for SEB and rose slightly for Föreningssparbanken. These differences are partly explained by matters to do with accounting. Operational net interest income, which does not include trading factors, rose slightly for Nordea and fell only marginally for Handelsbanken.

The fact that a growing volume has not generated an increase in net interest income is explained by a successive narrowing of the net interest margin (net interest income relative to interest-bearing assets). This is mainly because falling short-term interest rates in Sweden and the other Nordic countries are depressing the banks' deposit margins (see Figure 3:6). The pressure on deposit margins has been offset to some extent by increased lending and rising lending margins but since mid 2004 the latter has developed less favourably.

The pressure on the banks' deposit margins should ease as stronger economic activity leads to higher interest rates. On the other hand, factors such as the growing competition suggest that margins will not improve at all markedly. Increased net interest income therefore calls for continued volume growth.

The net commission income of the major banks rose more than 10 per cent in the latest reporting period. The increase came mainly from securities-related commissions in connection with rising stock market turnovers and equity prices (see Figure 3:7). Income from payment commissions also grew; the steady increase in this item in recent years is mainly due to the rising frequency of card transactions by bank customers (see Figure 3:8). At the end of the reporting period, transactions of this type were generating almost a third of

total net income from commissions. Compared with securities-related commissions, which tend to vary with the securities markets, payment commissions are a more stable source of income.

The net result of the major banks' financial transactions, which represents the change in the market value of bank assets, rose more than 55 per cent in the latest reporting period. The main reason for the increase is that as the Swedish krona's appreciation against the US dollar slowed, earlier exchange rate losses were turned into gains. These gains arise to a large extent when the banks cover their funding in foreign currency, which means that the positive result is offset by decreased net interest income; the combined effect on bank earnings is therefore limited.[42]

Income from equity trading, on the other hand, weakened to some extent, partly due to lower stock-market volatility, whereas interest income continued to be positive in connection with the falling long-term interest rate.

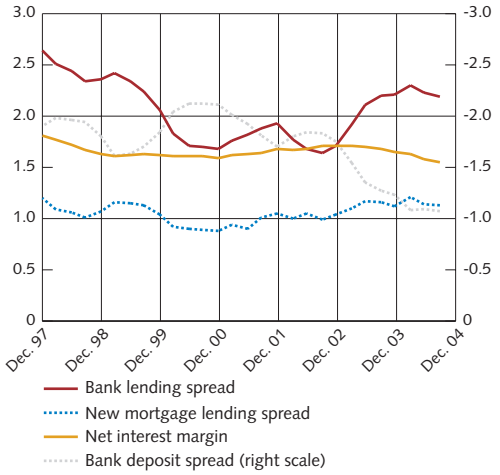
Income from the major banks' other operations also increased in the latest reporting period, partly in the form of improved results from their limited liability insurance operations. The tendency is mainly a consequence of rising equity prices, as that affects the value of the base for income from asset management in the insurance operations.

The income of the major banks is fundamental for their profitability and thereby for their ability to manage negative shocks. Given the close link between bank income and developments in the interest-rate and equity markets, it is relevant to test the sensitivity of current levels of income to a major price change in those markets. Interest rate movements mainly affect the banks via net interest income and the interest item in the net result of financial transactions, while stock market movements have their main impact on net commission income.

In a scenario where interest rates right across the yield curve rise 100 basis points from one day to the next and this is accompanied by a stock-market fall of 30 per cent, with all else equal, the consequences for the banks in the following reporting period are comparatively small.[43] For the four major banks the change in net interest income would lie in the interval from –3 to +4 per cent, while net income from commissions would fall by between 8 and 15 per cent.

The immediate effect of the interest rate hike on the net result of financial transactions would be markedly negative but this item is of minor importance for the total income of the major banks (less than 5 per cent). All in all, in the next reporting period the total income of the four major banks would fall by between 2 and 11 per cent.

Figure 3:6. Net interest margin for the major banks and spreads for deposits and lending in Sweden. Four-quarter moving average, per cent



Note. The spread = average bank rate – six-month treasury bill rate, resp. average mortgage rate – three-month treasury bill rate.

Source: The Riksbank.

Figure 3:7. Net securities-related commission income in the major banks and stock-market turnover and prices. Index: March 1997=100

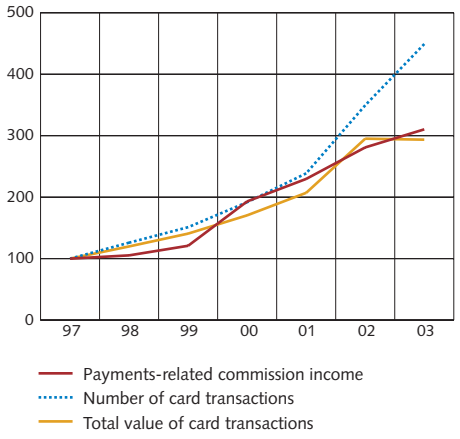
Note. Adjusted pro forma for acquisitions. Turnover for the Stockholm exchange. Price index for Nordic stock markets (Financial Times index).

Sources: Bank reports, Stockholmsbörsen, Ecowin and the Riksbank.

42 For further details, see Chapter 3 in Financial Stability Report 2003:2.

43 In this scenario, effects of the market movements are assumed to be confined to the profit items for which there is a clear connection; other items are unchanged. Moreover, the volumes of deposits and loans are assumed to be the same as in 2004 Q3.

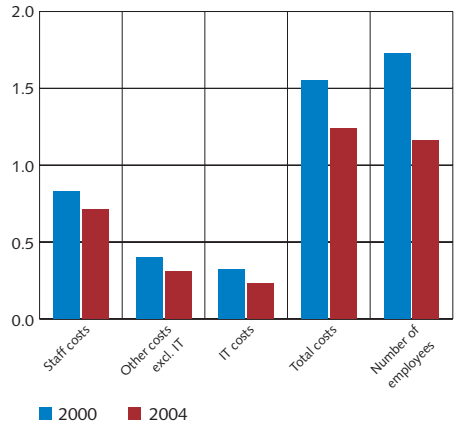
Figure 3:8. Payments-related commission income in the major banks and card transactions in Sweden. Index: 1997=100



Note. Adjusted pro forma for acquisitions. Card transactions refer to debit, charge and credit cards.

Sources: Bank reports and the Riksbank.

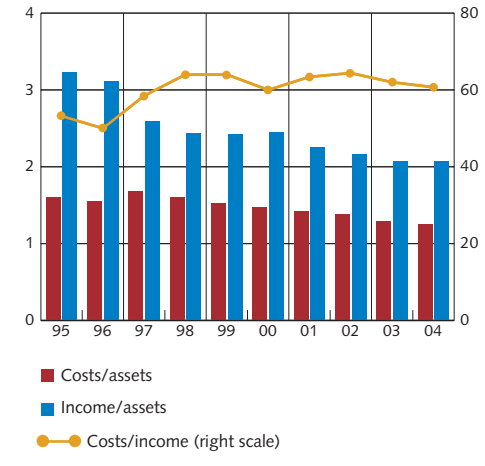
Figure 3:9. Ratio of the major banks' operating costs to total assets. Per cent



Note. The data for 2004 refer to the latest reporting period.

Sources: Bank reports and the Riksbank.

Figure 3:10. Ratios of costs and income to assets and of costs to income. Per cent



Note. The data for 2004 refer to the latest reporting period.

Sources: Bank reports and the Riksbank.

COSTS

The banks have cut costs in recent years. The largest economies have been achieved by reducing the number of employees and thereby staff costs in relation to assets (see Figure 3:9).[44] IT costs have also been reduced and so have such items as administration and marketing costs and write-offs. Since 2000 these costs have been lowered by about a quarter.

Major reductions in costs have been achieved by a number of the banks in capital management and investment banking. During the stock-market boom of 1999–2000 these operations were seen as sources of future income and were therefore expanded by a number of the banks. The stock-market fall was then followed in a number of cases by the opposite, with substantial staff cuts and other economies.

In the latest reporting period the costs of the four major banks fell only marginally. The number of employees, adjusted for outsourcing and altered operations, was unchanged. This meant that unchanged staff costs were accompanied by some reduction of other costs. Cost efficiency has gradually improved in recent years (see Figure 3:10). The cost/efficiency (C/I) ratio is now almost as low as in 2000.

C/I ratios improved earlier either because income rose more than costs or because costs were cut by more than the fall in income. In the latest reporting period, however, the improvement in efficiency came from a combination of increased income and some reduction of costs. Still, a return to the level of cost efficiency that the major banks achieved in the mid 1990s would call for a further increase in income of about 20 per cent while costs remain unchanged.

The development of cost efficiency has followed a similar pattern for virtually all the major Nordic banks. The C/I ratios have improved since 2002 but for half of these banks they are not yet as low as they were in 2000 (see Figure 3:11).

Assets – credit risk

The assets of the major banks rose 3 per cent in the latest reporting period which is somewhat more slowly than before. Insurance assets increased most, followed by interest-bearing securities and interbank claims.

LENDING

In the latest reporting period, lending by the major banks grew by about 3 per cent, which is somewhat less than in the preceding period. Growth differed between the banks in that it was higher for lending abroad for Handelsbanken and Nordea, while for Föreningssparbanken and SEB it was higher for lending in Sweden (see Figure 3:12). Lending growth to the household sector was high

44 An expansion of the banks' operations meant that costs were not reduced in absolute terms.

in all these banks' main markets.[45] At end June the twelve-month increase in lending was between 5 and 8 per cent in the Nordic countries; lending in the Baltic states rose at high rates of between 30 and 60 per cent, whereas lending in Germany was more or less unchanged.

In the Swedish market, household borrowing continued to expand rapidly. Nordea and SEB stand out with rates around 10 and 15 per cent, respectively (see Figure 3:13); however, these two major banks' shares of the household market are rather small compared with those of the other two. Mortgage lending predominates. Lending to households via the major banks' finance companies also rose strongly but it represents just a small share of total bank lending.

Corporate lending by the four major banks went on falling as a result of low corporate demand for bank loans. This was partly offset by increased lending by mortgage companies and to some extent by finance companies.[46] However, there are differences between the banks: corporate lending rose by around 5 per cent for Föreningssparbanken and SEB, while it fell for Handelsbanken and Nordea (see Figure 3:14).[47]

CREDIT QUALITY

The quality of a bank's credits is indicated by the ratios of impaired loans and loan losses to total lending.[48] Both of these ratios concern events that have already occurred and do not say anything about the probability of future losses.

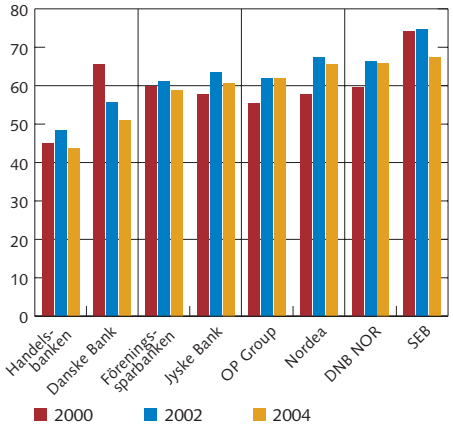
The proportion of impaired loans in lending by the four major banks to the general public has fallen continuously in recent years. In the latest reporting period the ratio fell by about another 20 per cent to a level of 1 per cent of the loan stock (see Figure 3:15).

The proportion of loan losses more than halved in the latest reporting period. The banks admittedly reported decreased recoveries and reversals of earlier loan losses, which adds to loan losses, but this was more than balanced by decreased provisions for new loan losses. Provisions by the four major banks are now clearly below the average level for the period after 1999 (see Figure 3:16).

During the past decade the share of total bank lending that goes to households has grown. Today, loans to households make up over 40 per cent of the total supply of credits in Sweden. That is a considerable figure with a potentially large impact on the financial system. It should be noted, however, that the credit risk in lending to households is substantially smaller than in corporate lending, mainly because so much household borrowing is collateralised with real estate and that households are not declared bankrupt to the same extent as firms.

45 Except Germany.
46 For finance companies, see also the section on the corporate sector in Sweden in Chapter 2 and the box on pages 27–28 of this Report.
47 For Nordea, the decreased lending is partly explained by the sale of a property company for which this bank undertook the lending; the sale resulted in the transfer of the lending to the purchaser.
48 Impaired loans are gross before accumulated reserves; loan losses are calculated as the net of provisions for actual and expected loan losses after recoveries and reversals.

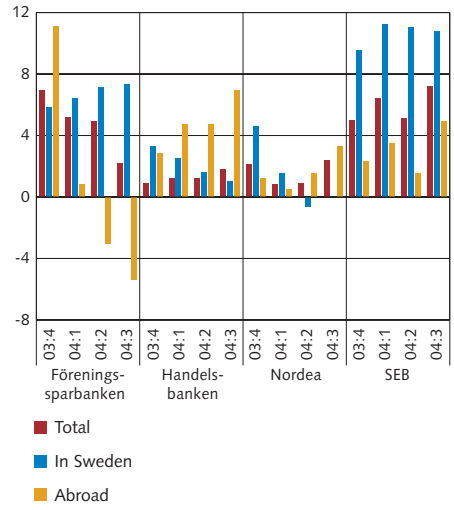
Figure 3:11. Ratio of costs to income. Per cent



Note. DNB NOR is pro forma. The data for 2004 refer to the latest reporting period.

Sources: Bank reports and the Riksbank.

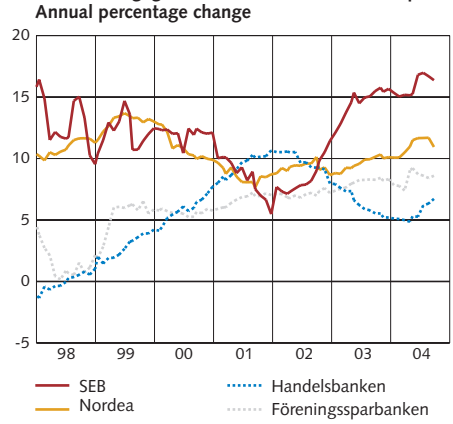
Figure 3:12. Lending by the four major banks to the general public in Sweden and abroad. Accumulated over four quarters, annual percentage change



Note. Adjusted for one-off effects.

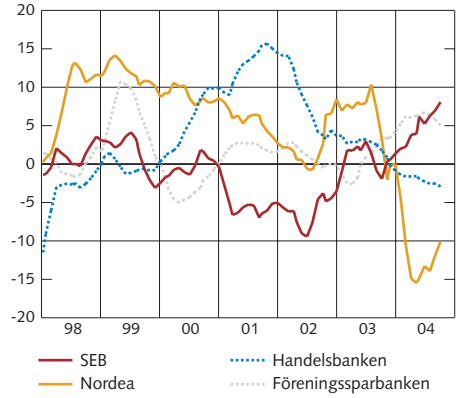
Sources: Bank reports and the Riksbank.

Figure 3:13. Lending to households in Sweden by banks, mortgage institutions and finance companies. Annual percentage change



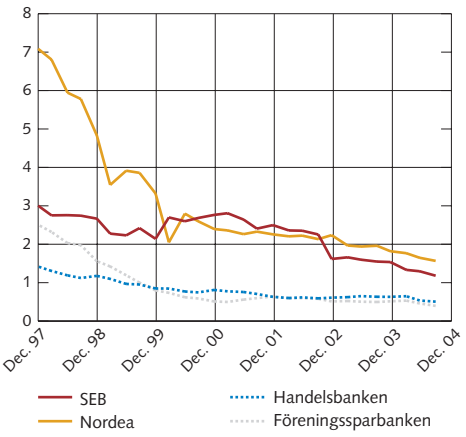
Source: The Riksbank.

Figure 3:14. Lending to companies in Sweden by banks, mortgage institutions and finance companies. Moving three-month average, annual percentage change



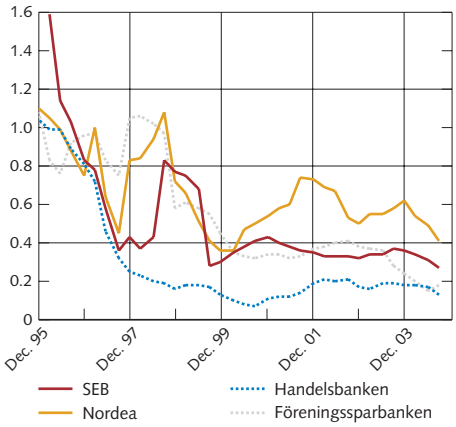
Source: The Riksbank.

Figure 3:15. Impaired loans (gross). Per cent of total lending



Sources: Bank reports and the Riksbank.

Figure 3:16. Provisions for incurred and probable loan losses. Accumulated over four quarters, per cent of total lending



Sources: Bank reports and the Riksbank.

The real-estate crisis in Sweden in the early 1990s exemplifies this. There were massive loan losses but just a limited share occurred in the household sector. In 1992, when the banks' loan losses totalled about SEK 70 billion, the figure for the household sector is estimated to have been SEK 4.6 billion or less than 7 per cent.[49]

Of the reservations by Swedish credit institutions for probable losses on loans to the resident general public, the share for loans to households is just over 10 per cent, which in relation to households' share of total lending is a relatively low figure. Since the beginning of 2002, the provisions ratio has decreased in general but mainly for lending to households. The provisions ratio for loans to households is currently about 0.15 per cent, which can be compared with 0.8 per cent for loans to companies.

In the other major Nordic banks, loan losses deceased in the latest reporting period, with the exception of the Danish Jyske Bank (see Figure 3:17). The levels of loan losses in the latest reporting period were spread over a fairly wide interval with the Swedish banks in the middle. The problems in the Norwegian fishing industry, which occasioned a large part of both Nordea's and DNB NOR's earlier loan losses, seem to have subsided.

Given the slightly positive growth in the Riksbank's main scenario, it is hard to find grounds for a cyclical increase in loan losses.

However, even with a development in line with the main scenario, there are some minor uncertainties. One uncertain factor is the development of retail trade, where the probability of default has tended to rise (see Chapter 2). Borrowers in retail trade are liable to affect the banks' credit portfolios both directly as borrowers and indirectly in that real-estate companies are exposed to them. There is also some uncertainty about the ability to service debt in parts of the Norwegian corporate sector; an example is the fishing industry, though recently there has been some stabilisation there. Moreover, the rapid growth of lending in the Baltic states can entail risks if the currently strong economic growth there were to turn into a pronounced slowdown. However, the activities of the major Swedish banks in the Baltic states represent a relatively small part of their total operations.

The major banks can currently manage loan losses of between 1.3 and 1.6 per cent of their loan stock without showing an overall loss that has to be covered with equity capital. Even with the scenario that served as an example earlier – with an interest rate hike of 100 basis points and a stock market fall of 30 per cent – the banks could cope with loan losses up to between 0.8 and 1.4 per cent of the loan stock without showing an overall loss.

49 These amounts are expressed in 1992 prices.

COUNTERPARTY EXPOSURES

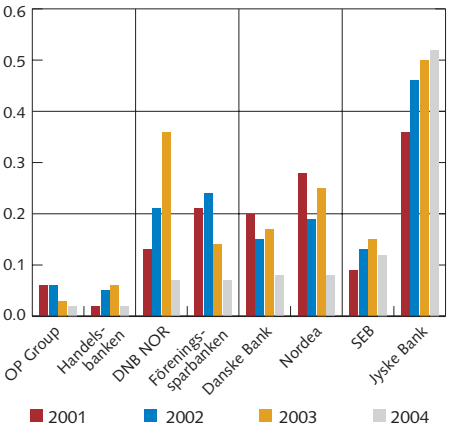
The central role of the major banks in the Swedish markets for currency, deposits, securities and derivatives results in considerable exposures to counterparties and settlements. As these exposures are primarily to other financial institutions and large non-financial companies, the risk of default is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

The aggregate counterparty and currency exposures[50] of the four major banks in the first half of 2004 were about 11 per cent smaller than the level in 2003. In relation to the second half of 2003, however, exposures grew, mainly in the form of increased exposures to securities. The establishment of CLS Bank[51] has led to a further reduction of exposures via foreign exchange settlements. The Riksbank's data suggest that the credit ratings of the counterparties remain satisfactory.

If one of the major banks were to lose the whole of its exposure to its largest counterparty, it could have problems with solvency. The magnitude of the solvency problem from a counterparty failure would depend in practice not just on the size of the exposure but also on how much of the original claim the bank ultimately manages to recover. Assuming that the bank recovers 25 per cent of the exposure, in 2 cases out of 8 a counterparty failure in the first half of 2004 would have led to the Tier 1 capital ratio falling below the statutory requirement of 4 per cent; this is an improvement from the situation in the preceding half-year (see Figure 3:18).

The risk of contagion between the major banks must also be said to be moderate. Of the reported exposures between these banks for the first half of 2004, about 8 per cent were such that a suspension of payments would have brought solvency down below the statutory requirement (see Figure 3:19). This implies a somewhat higher risk of contagion compared with the preceding half-year, due to the combination of decreased capital and increased exposures to securities.[52]

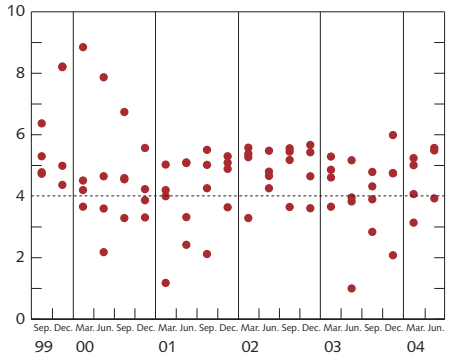
Figure 3:17. Loan losses, net.
Per cent of total lending



Note. DNB NOR is pro forma. The data for 2004 refer to the latest reporting period.

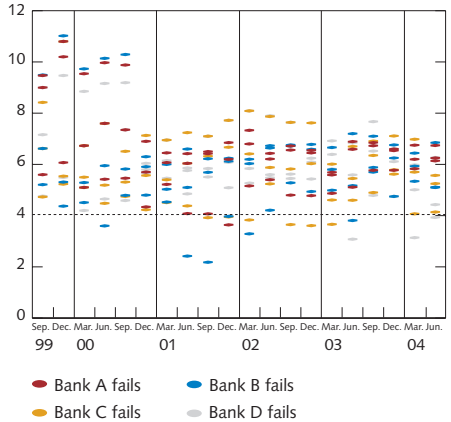
Sources: Bank reports and the Riksbank.

Figure 3:18. Tier 1 capital ratio in the four major Swedish banks after a default of their largest counterparty. Recovery 25 per cent.
Per cent



Source: The Riksbank.

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



Note. Given the failure of Bank A, the tier 1 capital ratio is calculated for banks B, C and D at quarter ends. In this way, tier 1 capital ratios can be observed for the three surviving banks in each period after a particular bank has defaulted.

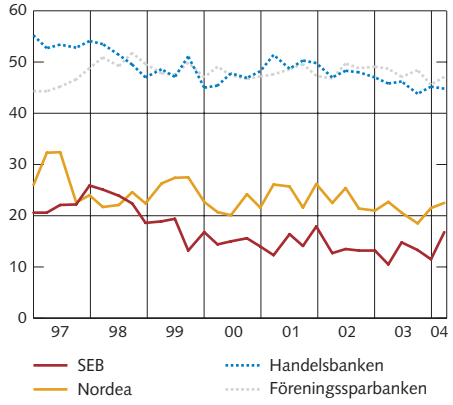
Source: The Riksbank.

50 Due to changes in the reporting routines, data on foreign exchange settlement risks for 2004 Q2 were not available for one of the banks; an approximation has therefore been made on the basis of last year's foreign exchange settlements.

51 The CLS Bank is described in more detail in Chapter 4.

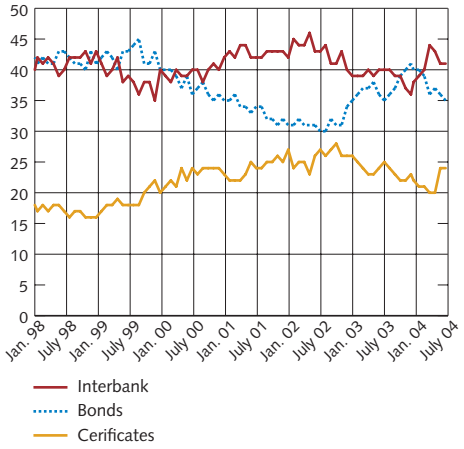
52 The decreased capital is a consequence of equity buy-backs; see the section on capital.

Figure 3:20. Market funding by the four major banks.
Per cent of total funding



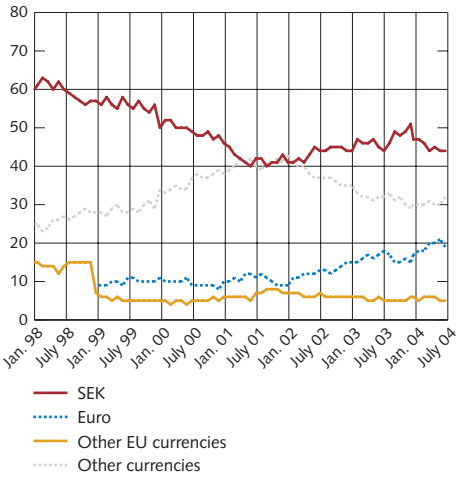
Source: The Riksbank.

Figure 3:21. Market funding by the major banks' Swedish credit institutions, maturity breakdown. Per cent



Source: The Riksbank.

Figure 3:22. Market funding by the major banks' Swedish credit institutions, currency breakdown. Per cent



Source: The Riksbank.

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

Funding – liquidity risk and capital

The structure of bank funding is a central issue for stability.[53] This is because the particular nature of banking – with predominantly illiquid assets in the form of loan stocks and short-term liabilities in the form of deposits and borrowed funds – makes banks vulnerable to problems with funding.

Of the major banks' funds, 80 per cent are interest-bearing liabilities. Deposits from the general public make up 40 per cent of this component, while market funding accounts for 60 per cent. Deposits from the general public can be assumed to be a stable source of funds. With the deposit guarantee, there is only a limited incentive to withdraw money from a bank that has serious problems with solvency.

In the interbank and securities markets, on the other hand, players are sensitive to interest rates and confidence, which makes it reasonable to assume that if a bank's ability to meet its commitments were to be questioned, it is market funding that would dry up first.

The extent to which a bank is dependent on market funding is indicated by the level of market funds less liquid assets in relation to illiquid assets (see Figure 3:20). All four major Swedish banks are highly dependent on the interbank, certificate and bond markets. The differences between them in this respect are largely explained by differences in the nature of their operations. The higher degree of market funding by Föreningssparbanken and Handelsbanken is due above all to their large house mortgage institutions, which are funded by borrowing against securities.

The market funds of the four major banks currently total over SEK 2000 billion, of which interbank loans make up 40 per cent, bond borrowing 40 per cent and borrowing against certificates 20 per cent (see Figure 3:21).[54] The major banks undertake between 75 and 80 per cent of total market borrowing by Swedish credit institutions. Bond borrowing fell from 2000 to 2002, while interbank and certificate borrowing both rose. Since 2002 the reverse has applied; interbank and certificate borrowing have decreased in favour of bond borrowing.

53 The structure of the banks' funding is described more fully in the article on pages 85–96 in this Report.
54 The maturities in the Riksbank's data are defined as: bonds more than 1 year, exceptionally 1 year; certificates up to 1 year, exceptionally up to 2 years.

Around half of the funds of the major banks are currently denominated in Swedish kronor, the currency that is used for almost all bond issues. The group of other currencies[55] is the second most common for all market funding and the largest for both interbank and certificate funding. The Swedish krona's share of total market borrowing decreased from 1998 to 2002 in favour of the group of other currencies. To begin with, the introduction of the euro in 1999 did not lead to an increased share for market funding in European currencies. Since 2002 it is mainly the share for market funding in euro that has grown but funding in Swedish kronor has also risen, while the group of other currencies has fallen. The general pattern in market funding – a decreased share for other currencies in favour of borrowing in euro – also applies to each of the four major banks. For two of them there has also be an increase in the share of market borrowing in Swedish kronor (see Figure 3:22).

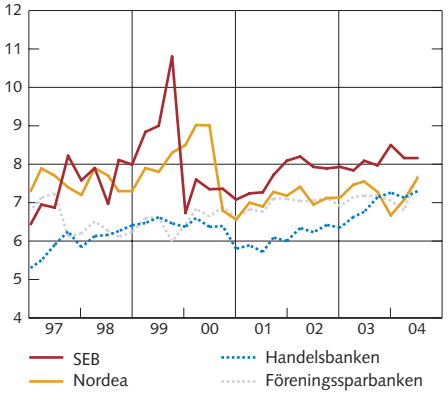
To sum up, since 2002 the proportion of borrowing by the major Swedish banks has decreased in the interbank and certificate markets in favour of an increase in the bond markets. These banks have also reduced their funding in money and bond markets in the United States and increased it instead in these markets in Europe in general but also in Sweden. The increased diversification over markets, with a less one-sided dependence on funding in US dollars, could be considered positive for stability.

CAPITAL

At the end of the latest reporting period the capital adequacy and Tier 1 capital ratios of the four major banks averaged 10.3 and 7.7 per cent, respectively. In recent years the tier 1 capital ratios of these banks have risen because equity capital has increased more than risk-weighted assets. Given the banks' objectives, this has resulted in a capital surplus. In order to reduce their capital, all four banks have adopted programmes for buying back equity. The buy-backs have left their mark on the Tier 1 capital ratios, which fell for three of the four major banks in the first half of 2004 (see Figure 3:23).[56] Since then, however, this ratio has clearly risen again for Nordea and Föreningssparbanken, in the former case because the bank has issued securities, which are classified as Tier 1 capital, and in the latter due to the sale of the Danish operations which has increased the bank's capital and reduced its risk-weighted assets.

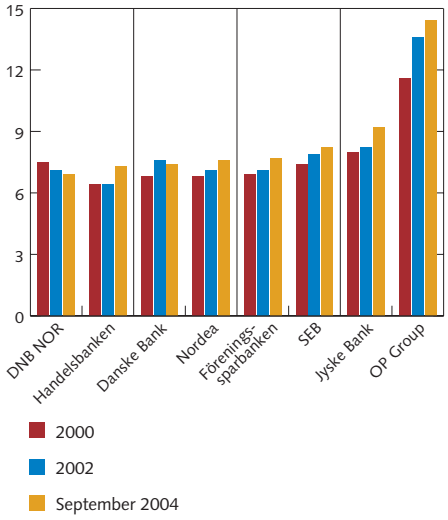
In a Nordic comparison, the Tier 1 capital ratios of major banks are, with the exception of OP Group, inside an interval between 6.9 and 9.2 per cent (see Figure 3:24).

Figure 3:23. Tier 1 capital ratios.
Per cent



Sources: Bank reports and the Riksbank.

Figure 3:24. Tier 1 capital ratios for the major Nordic banks.
Per cent



Note. DNB NOR is pro forma.
Sources: Bank reports and the Riksbank.

55 The US dollar makes up 90 per cent of the group of other currencies.
56 Nordea's buy-back (the latest was on 22 March 2004) came before those of the other three major banks.

Summary assessment

The profitability of the major banks has continued to improve since the June Report. This is mainly a consequence of the rising stock market, which contributed to increased net income from commissions. Other factors behind the improvements were the net result of financial transactions and lower loan losses. Given the slightly positive growth in the Riksbank's main scenario, it is hard to find grounds for a sharp cyclical increase in loan losses in the coming years.

With an upward interest rate trend, deposit margins would be likely to grow. But at the same time this would compress lending margins. Moreover, pressure on lending margins seems to have grown recently on account of increased price competition. In the somewhat longer run, higher interest rates also imply lower credit growth. So the overall effect of rising interest rates on net interest income is likely to be limited.

With the recent improvement in profitability, the buffer with which the major banks can cope with unexpected losses has been further reinforced.

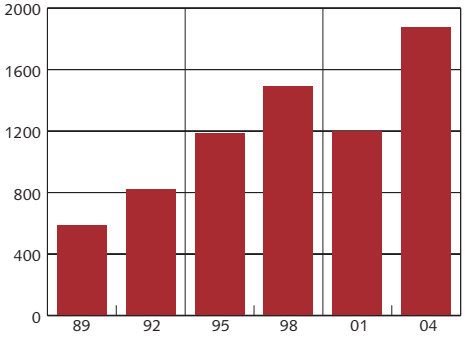
The financial infrastructure

One element in the Riksbank's oversight of the financial infrastructure is to make regular assessments of the payment and settlement systems. Given the substantial changes in the infrastructure for the settlement of foreign exchange transactions in recent years and the introduction of the new real-time CLS system, the greater part of this section is devoted to an assessment of the krona's first year of participation in CLS. The Riksbank also presents a following up of the earlier assessments made of three of the payment and settlement systems in Sweden, RIX, BGC and VPC.

The Riksbank's responsibility for a stable and safe payment system includes regular assessments of the systems that make up the financial infrastructure. One major change made in recent years concerns the settlement of foreign exchange transactions. In 2002 a real-time system for clearing and settling foreign exchange transactions, CLS – Continuous Linked Settlement – started up. This system reduces the risks that are normally connected with foreign exchange trading in that payments of two currencies are linked together, despite the existence of different time zones. The Swedish krona has participated in this system since 8 September 2003, which gives us reason to assess the system in greater depth with regard to risks and use of liquidity for Swedish participants and the Swedish currency.

The chapter also contains an update of the assessments the Riksbank made earlier of the Swedish payment and settlement systems RIX, BGC and VPC, on the basis of international principles for safety and efficiency.[57] All of these systems maintain a good international standard and no major deficiencies have been detected. However, some small comments are made by the Riksbank at the end of the chapter.

Figure 4:1. Turnover global foreign exchange trade
USD billion



Source: BIS.

CLS

Settlement risks in traditional foreign exchange trading have long been regarded as a major problem. The lack of connection between payment and delivery means that settlement risks arise and last throughout the entire transaction process. In addition, enormous amounts change hands daily in the foreign exchange market. Global foreign exchange trading has increased in recent years and is estimated at a turnover of around USD 1,900 billion a day.[58]

In the foreign exchange market, one currency is bought and paid for with another currency. It is usually said that there are two legs in a foreign exchange transaction – one leg is the currency bought and the

57 RIX and BGC were assessed in Financial Stability Report 2003:1. VPC was assessed in Financial Stability Report 2003:2. The assessment of Stockholmsbörsen's derivatives clearing was made in spring 2004 and will be updated in spring 2005. The assessment was made in relation to CPSS/IOSCO Recommendations for Central Counterparties Consultative Report, March 2004. The complete assessments can be found on the Riksbank's website, www.riksbank.se.

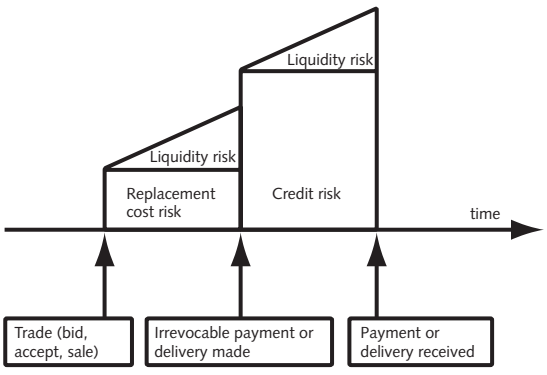
58 "Triennial Central Bank Survey of Foreign Exchange and Derivatives Market Activity in April 2004", BIS, Preliminary global results, September 2004.

other leg is the currency sold. As the payments for the two legs have not traditionally been linked to one another, a risk arises that a bank will pay the currency sold but not receive the currency bought.[59] This is because the two legs of a foreign exchange transaction are settled in two different countries' payment systems, for instance Swedish kronor are settled in Sweden and US dollars in the United States. The lack of a connection between payment and delivery can arise when the payment systems are not open at the same time or when settlement of each leg of the transaction is governed by different laws, market practice and financial infrastructure.

CLS REDUCES SETTLEMENT RISKS

Settlement risks can be divided into three different risks – replacement cost risk, liquidity risk and credit risk. When a business deal is made, a risk arises that the bank's counterparty will not carry out the transaction and that it will then be necessary to make a replacement transaction, which may be less profitable. This risk is called replacement cost risk. The second type of risk, liquidity risk, arises when delivery of a currency occurs later than expected. Obtaining liquidity later constitutes a cost as this liquidity has an alternative use. The third risk, credit risk, is the most serious risk for the parties in a foreign exchange transaction and arises when one party pays in the sold currency but does not receive the bought currency. The full value of the foreign exchange deal is then at stake.

Chart 4:1. Settlement risks in the transaction chain



Over the past two decades, central banks and international banks have striven to reduce settlement risks in foreign exchange trading.[60] CLS Bank, which was established at the initiative of several large international banks, can be said to be the result of this endeavour.[61]

---

59 A well-known example of this is Herstatt Bank in Germany, which went bankrupt in 1974. On that same day, Herstatt had received its foreign exchange payments, but the outgoing payments from Herstatt to US banks were stopped when the United States opened for business. Herstatt's counterparty banks never received their payments in US dollars and therefore suffered major losses.

60 "Settlement risk in foreign exchange transactions", BIS, March 1996 and "Reducing foreign exchange settlement risk: a progress report", BIS, July 1998.

61 The organisation that supplies the settlement services is called CLS Group Holdings and consists of CLS Bank International and CLS Services. CLS Bank is located in New York and is an Edge corporation regulated by the Federal Reserve Bank. CLS Services is located in London and supplies CLS Bank with operational and back-office support.

CLS started up in autumn 2002 and is a system for clearing and settling foreign exchange transactions. The major change with the introduction of CLS is that payments of two currencies in a foreign exchange transaction are now linked together. This simultaneous interconnection is called payment versus payment (PvP) and it eliminates credit risk in a foreign exchange transaction. To enable PvP to function in CLS it is necessary:

- that CLS and the national payment systems are open at the same time. The local times are thus: In Europe CLS is open in the morning, in Asia it is open in the afternoon and in the United States it is open in the very early morning.

- that each member has a main account with CLS that is divided up into sub-accounts in each CLS currency. [62]

- that CLS has an account in each participating currency's central bank and thereby access to the payment systems for each CLS currency. These are the accounts through which members' ingoing and outgoing payments are made.

62 The 11 currencies participating in CLS are: the US dollar, the British pound, the euro, the yen, the Canadian dollar, the Australian dollar, the Swiss franc, the Singapore dollar, the Swedish krona, the Danish krona and the Norwegian krona.

The settlement process at CLS

Compilation and distribution of the Pay-in Schedule: The settlement process at CLS begins with the banks sending their payment instructions to CLS before midnight of the day before settlement. At midnight CET (2300 hours in London, 0700 hours in Tokyo, 0800 hours in Sydney and 1800 hours in New York) CLS sends out a Pay-in Schedule to each member, showing the member's net position in each currency, the amounts to be paid and the time they are to be paid.[63] The members then have the opportunity to make deals that will be settled the same day with another member in order to trade down their positions.[64] At 0630 hours CET a revised Pay-in schedule is sent out.

Payment: When the members begin to pay in currency to the CLS accounts with their central banks, starting from 0700 hours CET, CLS credits the respective members' accounts in CLS Bank for the stated currency. If, for instance, a member pays in Swedish kronor to the CLS account in the Riksbank, their sub-account at CLS will be credited with kronor. This means that liquidity is released to execute the settlement process. When CLS Bank pays out currency to its members, each member's sub-account at CLS is correspondingly debited by the currency which the member sold. One condition for CLS Bank to pay out is that the currency to be paid out must be in a CLS account. This requires in turn that the members have made their payments in accordance with the Pay-in Schedule.

Settlement: Each transaction to be settled is placed in a settlement queue. Both legs of the foreign exchange deal are matched with regard to currency, amount and date. This is followed by a check that certain conditions are met. If these conditions are not met, the transaction will remain in the settlement queue until they are met.[65] When the terms are met, settlement is carried out through simultaneous transfer of both currencies between the members' currency sub-accounts in CLS. The transaction is thereby removed from the settlement queue. When CLS closes at 1200 hours CET (1100 hours in London, 1900 hours in Tokyo, 2000 hours in Sydney and 0600 hours in New York), the balances on all settlement members' accounts with CLS and all CLS' accounts with central banks are zero.

63 CET, Central European Time.
64 You can read more about this in the section on Inside/outside swaps, page 53.
65 These criteria are discussed under the section Payment and settlement are separated on page 51.

PAYMENT AND SETTLEMENT ARE SEPARATED

Settlement of a foreign exchange transaction occurs when an obligation ceases in connection with currencies being transferred from one party to another. Pure PvP involves settlement beginning once all payments have been made. No participant has an exposure to another during any phase of the settlement process, which means no credit risks are run. Both payment and settlement are on a gross basis, which requires considerable liquidity and is costly to the participants – particularly given the high turnover on the global foreign exchange market.

While CLS was established to reduce credit risks in the foreign exchange market, it has chosen to make some departures from the pure PvP principle. One is that members' inward and outward payments to and from CLS are separated from settlement, in order to reduce liquidity use and the costs this entails. This means that settlement can begin, and even be completed, before all members' payments have been made. Payment and settlement start at 0700 hours CET. Settlement is normally complete 0900 hours, while payments continue until 1200 hours CET. The following criteria must be met for settlement to take place:

- Short position limit, SPL. This is a limit for how much a currency sub-account may be in the red during the day. The limit is set per currency and is the same for all members. The SPL can be set at zero, which means that currency is not allowed to have a short position.

- Aggregated short position limit, ASPL. This is a limit that is specific to each member and applies to the total negative balances on a member's currency sub-accounts. The ASPL is set through a balance of capital base, short term rating and long term rating and can in principle be set at zero for a member considered unreliable.

- Net position. The net total of all of a member's currency sub-accounts converted into dollars must always be zero or positive. This is the most important criterion, as it means that CLS never takes on any credit exposure.

A necessary condition for separating payment from settlement is that CLS allows overdrafts, short positions, on individual currency sub-accounts during the day. This means that during the settlement process the members will have short positions in certain currencies and long positions in other currencies. Inward and outward payments continue after settlement is complete until short and long positions

have been evened out.[66] By separating payments and settlement, it is also possible to allow payments to be made in net amounts, although settlement is still in gross amounts. This reduces the liquidity requirement. Similarly, the liquidity requirement in CLS is reduced by the fact that inward payments are spread across the five hours of the settlement cycle.

Despite the fact that payment and settlement are separated, CLS meets the most important requirement for PvP – namely that settlement takes place through simultaneous exchange of two currencies between two members' currency sub-accounts. This eliminates the credit risk. However, as settlement is completed before all payments have been made, the risk arises that a payment of an already settled foreign exchange transaction will be delayed or fail to materialise. This could give rise to liquidity risks and exchange risks. However, CLS has several methods of reducing the risks and possible effects of delayed payments or non-payments.

RISK MANAGEMENT

One way of reducing the risks of non-payment is that membership of CLS is limited to institutions with financial and operational capacity to manage their payment commitments.[67] Moreover, there are criteria that must be met for a currency to be accepted into CLS.[68] For instance, the national payment systems must be compatible and the limited opening hours at CLS must be respected. CLS also makes requirements, as mentioned earlier, that certain criteria must be met for each individual transaction to be settled.

The short positions that members are allowed during the settlement process result in a potential market risk as a result of exchange rate fluctuations. If exchange rates change, the limit for the negative net position on an individual member's currency sub-account may be exceeded. Haircuts are used to reduce potential losses resulting from exchange rate fluctuations. These are calculated according to historical volatility for the respective currency pair.[69] The use of haircuts provides margins that give CLS Bank sufficient liquidity in the central bank's account to carry out payments in all currencies.

If an inward payment were not made for some reason, for instance, if a bank failed, the other banks would act as liquidity providers. They have signed agreements that they will provide CLS

66 An in-depth explanation of how currency transfers are made in practice between different members' accounts can be found in Financial Stability Report 2001:2. The article "CLS Bank- improved risk management in the foreign exchange market" contains two examples; one with full payment prior to settlement and the other with part payment prior to settlement.

67 The members must be regulated financial institutions under the supervision of an authority. There is no minimum size, but the member must be a shareholder in CLS. There is a particular short-term credit rating requirement (A3). CLS also has certain operational requirements to reduce the risk of non-payments resulting from operational problems.

68 The CLS criteria for participating currencies include: The payment system must be RTGS (Real Time Gross Settlement). The central bank must allow CLS Bank to have an account in the system with remote access options. The opening hours for the RTGS system must overlap the opening hours for CLS Bank by at least five hours, starting from 0700 hours CET. The central bank and the RTGS system must provide a suitable form of secured intra-day credit. Legal basis, volatility and devaluation risk are also assessed, as are the independence of the central bank and political risks.

69 Haircuts are in this case an extra margin paid with the aim of covering any exchange rate fluctuations with a negative effect.

with an amount in their own currency corresponding to the non-payment.[70] Liquidity providers also have a responsibility to exchange domestic currency for another CLS currency. There must be at least two liquidity providers for each currency. There has been no need for liquidity providers for the Swedish krona to step in during the time it has participated in CLS. This means that all participants in kronor have met their commitments regarding payments to CLS. Nor has there been any need for liquidity providers of other CLS currencies to step in since CLS started. However, there have been delayed payments.

If a member has failed and is unable to pay in the currency for a transaction which has been settled, this member's other currency holdings will be used to cover the deficit. This means that CLS Bank does not take on any credit exposure in its capacity as intermediary. In theory, a loss could arise if one member did not pay in a currency and if the exchange rate fluctuated more than the set security margins (haircuts). If a loss arises the other members share the burden.

The limited membership of CLS, the criteria for settlement and the system of liquidity providers mean that the system is designed to manage the effects arising from delayed payments and non-payments. The existence of liquidity providers means that the other banks receive the currency they expected at the time they expected, even in the case of non-payments. This reduces liquidity risks with regard to expected payments in CLS, compared with traditional settlement.

INSIDE/OUTSIDE SWAPS

The narrow opening hours at CLS require liquidity planning by the members, particularly when large payments are to be made outside of the national payment systems' normal opening hours. Inside/outside swaps, in addition to the netting in the payment channel, have proved to be an efficient tool for reducing CLS members' liquidity requirement.[71]

An inside/outside swap can be implemented if a settlement member has a large pay-in to CLS Bank in one currency (short position) and a large pay-out in another currency (long position), while another member has the reverse positions. As the name implies, the two legs of one transaction are settled inside CLS and the two legs of the other transaction outside CLS. Both transactions are settled on the same day and at the same settlement rate. CLS has a system that identifies members' long and short positions in different currencies and matches two members that can enter into inside/outside swaps. The swaps are traded between 0100 hours and 0300 hours CET and mean that the Pay-in Schedule has to be revised.

70 The liquidity providers are always settlement members.

71 There are also swaps in CLS where two members exchange currencies with one another and then swap back again the following day. Both transactions are then settled through CLS and currency positions occur overnight.

An example of inside/outside swaps

Positions in CLS according to the first Pay-in Schedule:

Member A:	*Member B:*
Short position of USD 750 million	*Long position of USD 550 million*
Long position of EUR 500 million	*Short position of EUR 430 million*

Members A and B have the possibility to carry out a swap of USD 500 million against EUR 400 million (USD 1 = EUR 0.80). After the inside/outside swap, members A and B have the following positions in CLS:

Member A:	*Member B:*
Short position of USD 250 million	*Long position of USD 50 million*
Long position of EUR 100 million	*Short position of EUR 30 million*

Inside/outside swaps reduce the members' liquidity requirement and thereby provide efficiency gains. However, they bring back traditional settlement risks as the outside swap is settled in the traditional manner outside CLS via correspondent banks.[72]

LIQUIDITY LOCK-IN

There is another factor – in addition to the netting in the payment channel and the use of inside/outside swaps – that affects the liquidity requirement in CLS; namely the size of the liquidity lock-in on CLS accounts in the respective central banks. As some of the pay-ins from members must come to the CLS account before pay-outs can begin, liquidity is locked into the CLS account. The size of this liquidity lock-in is measured as the balance on the CLS account in the central bank in relation to the total payments made into this account during the day. From an efficiency point of view, it is good for the liquidity lock-in to be as low and short-lived as possible. The shorter the time between the pay-ins and pay-outs from CLS accounts, the lower the liquidity lock-in.

OPERATIONAL RISKS

One necessary condition for a safe and efficient payment flow through CLS is operational reliability in the settlement process, that is to say, that the operational risks are low. Operational risks are risks of disruptions in the financial infrastructure that could lead to stoppages or delays in the payment flow. These risks can trigger liquidity risks in CLS.

The settlement process at CLS requires a communications system and software that link together a large number of participants and payment systems in several countries, in different time zones and with different technology. This interlinking involves a transition from decentralised foreign exchange settlement to a centralised

72 A correspondent bank carries out payments on behalf of a foreign bank, which does not itself have access to the national payment system. If a Swedish bank wants to make payments in USD, an account in USD is opened with an American bank. The American bank is called a correspondent bank and participates in the American payment system through which payments are forwarded to the final recipient of the payment. In a corresponding manner, Swedish banks manage accounts in SEK for foreign banks and carry out payments through the Swedish payment system to the foreign banks' Swedish counterparties.

environment with clear links between the participants, the national central banks and CLS Bank.

On the one hand, a more centralised environment could lead to safer and more rapid deliveries. The risk of misunderstandings and errors in the clearing and settlement process would decline as a result of established routines for checking and following up. On the other hand, operational disruptions in a centralised system could have major contagion effects, which could trigger systemic risks. This, combined with a time critical Pay-in Schedule, means that there is very limited scope for system errors and administration errors.

CLS Bank, its members and central banks that are involved are all aware of the possible consequences of operational disruptions and have worked together to reduce these risks. This has resulted in CLS Bank having a clear plan of action to deal with any operational disruptions that arise and in all main components of the CLS system having emergency routines that can be implemented within the course of one hour. Moreover, CLS members ought to have increased incentive to manage their operational risks, as it is in their interests that the settlement process should function.

Disruptions in the CLS system could be due, for instance, to disruptions in the central banks' operational systems, disruptions at one or more of its members, disruptions in SWIFT message processing[73] or disruptions at CLS Bank. Since CLS started up in 2002, there have been two occasions involving disruptions of such a scope that it was impossible to settle all instructions during the day. Other, more minor disruptions have caused delays to differing extents, but all instructions have been settled.

Disruptions at CLS could affect the payment flow in the Swedish RIX payment system, but the reverse could also occur – that disruptions in RIX could affect settlement in CLS. In the event of communications problems between CLS and the Riksbank, an emergency routine is activated, which ensures that transfers can nevertheless be implemented.

HOW MUCH IS SETTLED THROUGH CLS?

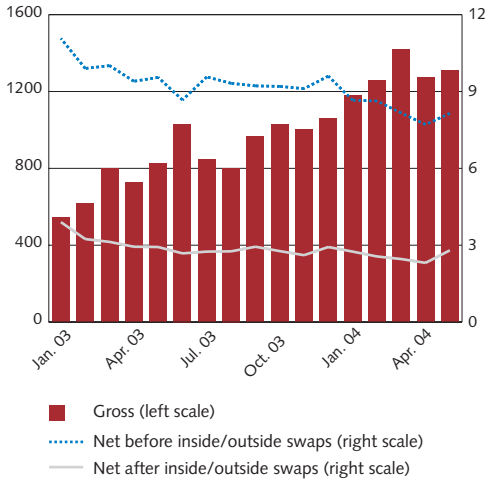
The value of the foreign exchange deals settled in CLS has increased substantially since it started up in 2002. This is because new members and third parties have joined, because global trade has increased and new currencies have been accepted into CLS. The Swedish, Norwegian and Danish krona, together with the Singapore dollar, were included in CLS in autumn 2003. The New Zealand dollar, South African rand, Hong Kong dollar and South Korean won have applied to join, but must first prove that they meet all requirements.

In spring 2004, the total value settled through CLS averaged

73 Society for Worldwide Interbank Financial Telecommunications.

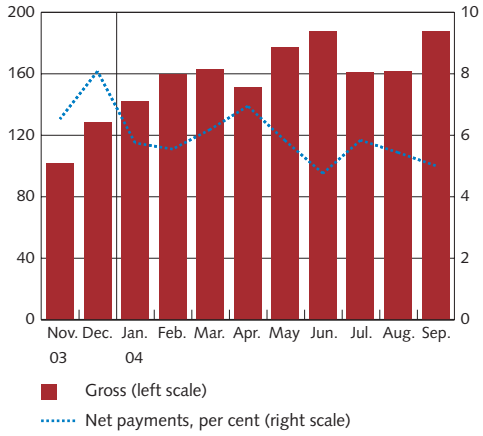
74 Some days much larger amounts are settled than the average. On 12 November 2004, a total value of almost USD 2,900 billion was settled in CLS, which is a new daily record. See www.cls-group.com.

Figure 4:2. Total settlement through CLS, daily average per month
USD billion and per cent



Sources: CLS and the Riksbank.

Figure 4:3. SEK settled in CLS, daily average per month
SEK billion and per cent



Sources: CLS and the Riksbank.

USD 1,300 billion.[74] According to the Riksbank's calculations, around 22 per cent of the global foreign exchange trade is settled through CLS.[75] The average daily total value for Swedish krona settled through CLS is SEK 160 billion. According to the Riksbank's calculations, this puts CLS' market share for settlement of Swedish krona at 27 per cent. A common pattern is that CLS' market share is larger for small currencies than for large currencies. In addition, it can be observed that a majority of foreign exchange trades are settled in the traditional manner outside of CLS. One explanation for this is that there are banks and other financial operators that remain outside of CLS. There is thus scope for lowering the risks in the financial system by increasing settlement through CLS.

HOW LARGE ARE THE NETTING EFFECT AND THE LIQUIDITY LOCK-IN?

A total of three per cent of the total net settled value for all currencies settled in CLS in spring 2004 was paid in to CLS; without inside/outside swaps this figure would have been eight per cent. Netting and swaps thus contribute to reducing the liquidity requirement by 97 per cent, compared with payments made on a gross basis. Prior to CLS, foreign exchange settlement was often based on bilateral netting. The liquidity requirement was lower than if the payments had only been made only on a gross basis, but by no means as low as in CLS.

The size of the percentage settled gross value paid in net to CLS Bank depends on the size of the currency and the use of inside/outside swaps. Comparisons of the netting effect in different currencies show that a large currency traded often, such as the US dollar, is the object of a higher netting effect, while smaller currencies, such as the Scandinavian ones, are connected with a slightly lower netting effect. This is mainly because more foreign exchange trades are made in a large currency than a small currency, which in turn means that pay-ins and pay-outs in a large currency can to a greater extent be offset against one another. Between 2 and 10 per cent of the gross amounts settled are paid in net after inside/outside swaps – 2 per cent of the largest currency and 10 per cent of the smallest. If there had been no swaps, between 6 and 20 per cent of the gross amounts would have been paid in. Netting thus considerably reduces the liquidity requirement in CLS. The swaps also contribute to reducing the liquidity requirement, although to a lesser extent.

Settlement of Swedish krona through CLS amounted to an average of SEK 160 billion a day during the first half of 2004. An average of around 6 per cent of this was paid in net to CLS Bank. Without inside/outside swaps the figure would have been 16 per cent. Figure 4:3 shows that the higher the amount in Swedish krona

75 It is not possible to show exactly how large a percentage of the global foreign exchange trade is settled through CLS. Settlement in CLS is the total of both legs of each foreign exchange transaction, while the BIS survey of the total turnover in the global foreign exchange market only includes one leg of each trade. In addition, the value of the swaps in the global foreign exchange market are based on one leg in each swap, while settlement in CLS is based on four legs. The Riksbank has therefore recalculated the figure for global turnover to make it comparable with CLS' calculations.

settled through CLS, the larger the netting effect. The same pattern applies to other currencies. Swedish krona to a value of over SEK 180 billion a day was settled in June and September 2004, which is the highest noted daily average per month since the krona joined CLS. The largest netting effect was also noted during these months, with almost 5 per cent paid in net. Another conclusion of the diagram is that settlement in Swedish krona through CLS has shown an increasing trend, from SEK 100 billion in November 2003 to around SEK 180 billion in September 2004. Moreover, the percentage paid in net has shown a declining trend, from 8 per cent to 5 per cent.

The average daily pay-ins in Swedish krona to the CLS account at the Riksbank are, as mentioned earlier, 6 per cent of the settled gross value. This corresponds to around SEK 10 billion. As pay-ins to the CLS account are spread across the five hours of the settlement cycle, according to the Pay-in Schedule around one fifth, SEK 2 billion, are paid in each hour, starting from 0700 hours and up to 1200 hours CET. This means that the net pay-ins, both per hour and total, are relatively small in relation to the four major Swedish banks' total pledges at the Riksbank, at around SEK 90 billion If the payments were instead based on the gross amounts settled, CLS would have required considerable liquidity. The pay-ins would have then exceeded the value of the four major Swedish banks' pledges in RIX.

An interesting question to illustrate in this context would be whether the pay-ins to CLS coincide with other pay-ins in RIX and if so, whether this could have a negative effect on the flow in CLS. As the size of the payments to CLS is relatively small and spread across the cycle, the risk of queue problems in RIX resulting from CLS is limited. More and larger payments in RIX are made in connection with other types of transactions, which culminate between 0930 hours and 1000 hours CET. As the pay-ins to CLS are prioritised above other payments in RIX, there is only a small risk of a break in the flow to CLS at this point.

As pay-ins and pay-outs are divided into different payment rounds, CLS' account balance varies during the day. The amount not paid out will remain in CLS' account until everything has been paid out. Pay-ins to CLS' account at the Riksbank received early in the morning and not paid out until later result in liquidity being locked in. The Riksbank's studies show that the liquidity lock-in for Swedish krona in CLS' account at the Riksbank varies from day to day. Some days a balance is built up in the account, other days pay-outs are at a faster rate so that the balance often approaches zero. It is important to emphasise that the size of the liquidity lock-in is limited to the net amounts in Swedish krona paid into CLS. Efficient netting thus lays a foundation for limiting liquidity lock-in.

The size of the liquidity lock-in, like the netting, is dependent on the size of the currency. The lock-in effect for a large currency is less than for a small currency. The more pay-ins and pay-outs to and from CLS' account, the shorter the interval between their pay-ins and pay-

outs and the lower the balance built up during the day. This means that the liquidity lock-in on CLS' account in the American central bank is relatively less than that on the CLS' account in the Riksbank.

The Riksbank's analysis shows that the highest level of the lock-in of Swedish krona in CLS' account on a normal day corresponds to between 2 and 5 per cent of the four major Swedish banks' total pledges in RIX. The largest part of the lock-in usually occurs during the first daily pay-in, between 0700 hours and 0800 hours CET. The fact that a balance is built up in CLS' account during the first hour of the payment process is due, as mentioned earlier, to the pay-ins having to be made before settlement can begin.

CREDIT RISKS IN THE SWEDISH BANKS' FOREIGN EXCHANGE SETTLEMENT

The Riksbank has carried out a survey to find out to what extent the Swedish banks use CLS. The result of the survey shows that in total between 35 per cent and 65 per cent of the Swedish banks' foreign exchange trading is settled through CLS.[76] This is a high usage compared with the global usage of CLS of 22 per cent. The Riksbank considers that there is still scope for increased settlement through CLS, both within Sweden and globally.

By studying the Swedish banks' use of CLS, it is possible to obtain an impression of how credit risks have changed with the advent of CLS. Prior to CLS there were credit risks in all foreign exchange transactions. After CLS, there are credit risks in all foreign exchange transactions settled outside of CLS. Credit risk is eliminated in the foreign exchange trades settled through CLS in that PvP is applied. This means that settlement through CLS has reduced credit risk in the settlement of foreign exchange transactions in Swedish banks by between 35 per cent and 65 per cent.

CONCLUSIONS

CLS has led to major changes in the infrastructure for the settlement of foreign exchange transactions, both globally and within Sweden. The aim of CLS was to reduce settlement risks and thereby increase security in foreign exchange settlement. It is mainly credit risk that has declined, as a result of the settlement of a foreign exchange trade taking place through simultaneous transfer of the currencies between the members (PvP). As more participants and currencies are accepted into CLS, the risks will decline as intended. Another major change resulting from CLS is increased efficiency in the payment process, as pay-ins and pay-outs to and from CLS Bank are based on netting between the participants. Only 6 per cent of the settled value in Swedish krona is paid in net to CLS Bank after inside/outside swaps.

At the same time, CLS has led to other risks and demands. For instance, the tight Pay-in Schedule requires liquidity planning by

76 These percentages refer to the Swedish banks' foreign exchange trading in all currencies, not merely Swedish krona.

participants. There are particularly high demands on the liquidity providers, who have agreed to rapidly supply CLS with liquidity in the case of non-payment of a transaction that has already been settled. In addition, the management of operational risks at CLS makes considerable demands of both participants and CLS Bank, as the system's centralised construction is based on the interlinking of several national payment systems in different time zones around the world. Both CLS Bank and the national central banks have emergency routines to deal with these operational risks. All in all, however, the reduction of settlement risk is much greater than the size of the new risks that have arisen with CLS, which was its aim.

The Riksbank's studies show that liquidity use in CLS is higher for a small currency than for a large currency. This is due partly to different netting effects and partly to differences in the liquidity lock-in. The netting effect leads to a lower liquidity requirement for all participating currencies, but it is greater for a large currency than for a small currency. The fact that there are differences between large and small currencies is clear even in the analysis of the liquidity lock-in, which shows that the lock-in effect is greater for a smaller currency than for a larger one. However, the liquidity lock-in is limited and relatively small for both large and small currencies.

The liquidity requirement is also positively affected by the use of inside/outside swaps, but at the same time these bring back some of the traditional settlement risks for participants, as one of the swap's two legs is settled in the traditional manner outside of CLS. However, these settlement risks are considered an acceptable price for reducing the liquidity requirement, as long as only a limited part of the settled amounts is involved.

Assessments of Swedish payment and settlement systems

The Riksbank has given an account in previous reports of its assessments of the four payment and settlement systems in Sweden; RIX, BGC, VPC and Stockholmsbörsen's derivative clearing.[77] The assessments showed that all of the systems maintain a good international level. However, the Riksbank put forward some recommendations for improvements to some flaws in the systems. Below follow brief descriptions of these flaws and what has happened since the assessments of three of these systems were made; RIX, BGC and VPC.

77 RIX and BGC were assessed in Financial Stability Report 2003:1, while VPC was assessed in Financial Stability 2003:2. The assessment of Stockholmsbörsen's derivatives clearing was made in spring 2004 and will be updated in spring 2005. The assessments were made in accordance with international principles for safety and efficiency (CPSS/IOSCO Recommendations for Central Counterparties Consultative Report, March 2004). The complete assessments can be found on the Riksbank's website, www.riksbank.se.

RIX

RIX, the central system for settling payments, was assessed in 2003 and the Riksbank's opinion was that the system largely fulfilled both the Riksbank's requirements and the Core Principles. Those principles that were not met in full or where the Riksbank had comments, concerned financial risks (CP III), operational risks (CP VII) and efficiency and usability (CPVIII).

The comment regarding financial risks was linked to the fact that there was no fixed routine for ensuring that the participants in RIX regularly met the participation requirements applying for the system. The recommendation to introduce such a routine still stands. From a financial risk perspective, there is no major problem, as the stability of the financial system is constantly monitored by the Riksbank and Finansinspektionen.

The system should have a high level of security and reliability as well as emergency routines for safeguarding daily settlement, in order to reduce operational risks. Although RIX fulfils the Core Principles, comments were made in the assessment with regard to emergency routines and routines for making technical changes in the RIX-system itself. Considerable resources have been invested in analysing the operational risks and improving change management and business continuity planning. This has resulted in no disruptions occurring in the RIX system in connection with changes to the actual RIX system. However, the availability of the RIX system has not improved. The disruptions that have occurred in 2004 are largely due to a change in the communications system. There was also a comment in the assessment on the need to use the reserve site on a normal production day. This need remains unchanged.

With regard to efficiency and usability, it was noted in the most recent assessment that the system did not meet the criterion of full cost coverage. A new charge structure has been introduced with effect from 2003, and this involves higher charges. The settlement system for krona (K-RIX) thus covers its costs. However, it has not been possible to achieve full cost coverage for the settlement system in euro (E-RIX) because of the design of the pricing.

It was also pointed out in the assessment that a large percentage of the payments were made during a limited part of the day, which could cause queues to arise as a result of technical problems. The system has therefore been dimensioned to cover a large capacity. Although payment settlement has to some extent been better distributed throughout the day since autumn 2004 and greater computer capacity has been acquired, the problem of a high concentration of payments during a short period still remains in part.

BANKGIROCENTRALEN BGC AB

The Riksbank's assessment of BGC showed that this system also met both the Riksbank's requirement and international standards. The Riksbank recommended making changes on two points. The

first recommendation was that BGC should regularly follow up that the banks included in the system actually meet the criteria set as a condition for participation. The second recommendation was that all participants in the system should clarify what would happen if a bank were unable to meet its payment obligations at a particular settlement time. There are different measures that can be chosen here and the choice of measure is regulated in agreements between the individual banks and BGC. The fact that other participants are not aware of their counterparties' choice of measure makes their risk assessment more difficult. The Riksbank considers that this information should be provided to all participants. However, the simplest solution would be to offer the banks only one choice, which would mean that they received equal treatment.

These recommendations have not yet been fulfilled, but a group of representatives from BGC and the banks have discussed these issues in connection with a review of the agreement structure between BGC and the banks. The discussions have in practice meant that the banks are aware of each other's choice of measure if they cannot carry out a particular settlement. It can be added that all of the banks have made the same choice. However, this informal solution is not sufficient. The Riksbank considers it important to introduce routines that safeguard the distribution of information if settlement does not occur. The recommendation to introduce routines for regular following up of participation criteria also remains.

VÄRDEPAPPERSCENTRALEN VPC

The assessment of the Swedish system for the settlement of securities transactions showed that VPC largely fulfilled the requirements made by the Riksbank and CPSS/IOSCO for securities settlement. At the time the assessment was made, however, VPC was using its own communications system that required knowledge of Swedish. This could comprise an obstacle to institutions wishing to participate in the system but having no knowledge of the Swedish language. International principles therefore require that systems for securities settlement allow their participants to use internationally-practicable communication systems. As of April 2004, VPC's participants can use international systems for communication via SWIFT to communicate with the VPC system. This means that VPC now meets the requirements set by the Riksbank and international principles for systems for securities settlements. In its assessment, the Riksbank also commented that settlement was completed on only four occasions during the day and it therefore considered that VPC and its participants should continue the dialogue regarding opportunities

to introduce continuous settlement. After one year's experience of the new system for settling securities transactions, it would be an appropriate time for closer analysis of this issue.

International recommendations also entail each market assessing the advantages and disadvantages of the introduction of central counterparty clearing (CCP) for securities transactions. In Sweden there is a central counterparty for clearing derivative transactions. At the time the assessment was made, two projects were being conducted to develop a central counterparty in the spot market. Restructuring in the market, primarily through OMX and now more recently the merger of VPC and APK, changes the conditions for having a central counterparty.

PART 2. ARTICLES

Prices and costs in the Swedish payment system

A business efficiency analysis of the major Swedish banks' costs in connection with the production of payment services shows that they only in exceptional cases provide users with information on the cost of these services through the prices they set. This undermines one of the tasks of the price mechanism, that is to say, to give users of payment services the information they need to make rational choices. At present, different types of payment service subsidise one another. Pricing that better reflected costs should help to reduce the banks' total costs. This also creates the conditions for lower total charges to bank customers. However, other welfare aspects have not been considered in this analysis.

The Riksbank has the statutory task of promoting a safe and efficient payment system. This means that in addition to stability, achieving efficiency in the payment system is an important goal. Part of the Riksbank's oversight responsibility entails studying the payment system from the perspective of efficiency and identifying possible problems. Here, attention is paid to the market for payment services, with the main focus on the relationship between transaction fees and the banks' variable costs.

Most payments made within the economy involve relatively small amounts and are between households, firms and the public sector. These payments are called retail payments. This category includes payments in cash, credit transfers, card payments, cheque payments and so on. Common to the payments not made directly in cash is that they are account-based; that is to say, involve payment from one bank account to another.

The banks play an important role as mediators of payments and distributors of cash. These operations lead to costs for the banks. The size of these costs depends on which payment services are most in demand. Payment services are cheaper to produce the higher the degree of automation. The demand for the services depends in turn on their design and the prices charged. Different payment services can be more or less close substitutes to one another, often depending on the context in which they are used. For instance, consumers often find it more practical to pay small amounts in cash, while debit cards are easier to use for larger purchases. Somewhere in between, the alternatives are perceived to be equal.

Apart from the inherent properties of the different payment services, the customers' choice also depends on the charges made for the services. Developments in Norway are a good example of this. There, the use of card payments and other electronic payment instruments increased rapidly when the banks altered their pricing and began to charge fees that better reflected their actual costs.[78, 79]

78 See Humphrey, D., M. Kim and B. Vale (1998), "Realizing the Gains from Electronic Payments: Costs, Pricing and Payment Choice", Arbeidsnotat 1998/1, Norges Bank.

79 Previously the banks primarily financed their payment services through floats and net interest income. To simplify, a float is the interest the bank can assimilate during the period the payment is in transit, i.e. between debiting the payer's account and crediting the payee's account. Net interest income on a deposited amount is the difference between the interest the bank has to pay the account-holder and the earnings the bank itself receives on this amount. Both floats and net interest income are methods of financing that are not transparent to the users.

In Sweden the increase in transaction fees for cheques contributed to bank customers beginning to use debit cards and credit transfers instead of cheques. Similar examples of how changes in the pricing of cheques directly affected their use can be found in other Nordic countries.

What significance does this have for the use of the payment system? Table 1 provides a survey of how the payment systems are used in Sweden, Denmark, Finland and Norway. The figures are from 2001, as this was the last year with reliable data on M0 in Finland, which introduced the euro in 2002. However, the data from 2002 shows the same qualitative pattern. The use of cash in a country is usually measured as the relationship between the value of banknotes and coins in circulation and the value of the goods and services produced, that is to say, M0/GDP. The use of cards is measured as the number of card payments per person per year.

The table shows that Swedes use cash to a greater extent and cards to a lesser extent than citizens of other Nordic countries.[80] The number of cards per person is low, as is the number of payment terminals where cards can be used. This difference is somewhat surprising considering that payments systems and payment patterns are otherwise quite similar in the Nordic countries. The difference in the way different services are priced may partly explain this. In 2002 Norwegian bank customers paid an average withdrawal charge of NOK 3.76 if the withdrawal was from their own bank's ATMs outside of office hours. For withdrawals from other banks' ATMs, they paid NOK 3.89 during office hours and NOK 4.79 outside of office hours. The same charge patterns can be found in Denmark. In Finland, customers only pay a withdrawal charge outside of office hours. It is rare that charges are made for ATM withdrawals in Sweden. This difference in charging still applies and could be part of the explanation for the differences in the use of cards and cash in the Nordic countries.

Table 1. Cash and card use in the Nordic countries 2001.

	M0/GDP	Electronic payments	Number of card payments per capita	Number of cards per capita	Number of terminals per 1,000 inhabitants
Denmark	2.90%	n.a.	87	0.69	n.a.
Finland	1.84%	88%	76	1.31	12.9
Norway	2.75%	87%	99	1.43	15.9
Sweden	4.48%	89%	45	0.85	9.9

Sources: Blue Book 2003 and Norges Bank.

There is thus a direct link between the fees the banks charge for their services and how the customers use different instruments of payment. Prices shall provide information on what the payment alternatives cost. It is only when prices reflect the costs behind them that users can consistently choose to use the payment services that cost the least

80 Nyberg, L., and G. Guibourg (2003), "Card payments in Sweden", Economic Review 2003:2, Sveriges Riksbank.

to produce in relation to the other properties of the payment services. Given this, the Riksbank has examined the four major banks' pricing of payment services in Sweden. Together these banks account for just over 90 per cent of the retail payments market. Our aim is to study whether the bank's private and corporate customers are faced with prices that reflect the banks' costs for producing the various payment services. A business approach was used, as only the banks' costs are taken into account. [81]

The payment process

Each payment is essentially a transfer of an amount of money between two parties. The way in which this transfer is made is determined by which instrument of payment is used and which channel the parties choose to make the payment through. A cash payment means that the payment is completed at the actual time of payment with the exchange of banknotes and coins. No intermediaries are required here. Account-based instruments of payment, such as credit transfers, cards, cheques and direct debits entail money being moved between two accounts held at one or more banks, which then act as payment intermediaries. Customers can utilise different channels to access account-based instruments. For instance, a credit transfer can be made by visiting a bank, posting an envelope or using the Internet. Corporate customers can also make electronic file transfers. A payment service here refers to a combination of payment instrument and payment channel. The existence of intermediaries makes it possible to implement a payment without the sender and recipient of the payment meeting in person. At the same time, it also entails a risk that the payment will not reach the payee, despite being sent by the payer.

Account-based payments require one or more intermediaries, including the banks or other financial institutions where the payer and the payee have their accounts. This requires a number of checking and information processing stages. At the actual point of payment, a check is made on the validity of the payment instrument and the holder's right to use this instrument. The account-holding bank checks that there are sufficient funds in the payer's account and then allows the transaction. If the payee has an account with the same bank, the amount can be transferred immediately. However, if the payee and the payer have accounts in different banks, the transaction must be cleared and settled. During clearing the banks' liabilities and claims on one another are compiled. This information is then used as a basis for settlement, that is to say, the final payment transfer between the

81 An economic approach would also take into account the costs arising for other participants in the economy. These are not included in the Riksbank's study as the banks' costs do not cover, for instance, private customers' costs in the form of time and telephone charges for payment via Internet banks. The retail trade's costs for administering cash or card payments are also excluded. The same applies to any deficiencies in market efficiency. This could be caused by what are known as network effects, which occur with certain instruments of payment. These occur when the benefits of participating in a network increase with the number of participants. For instance, the usability of a debit card, and thus its usefulness to the holder, depends on how many retail outlets will accept the card.

banks when they settle their debts and claims. Settlement almost always takes place between the institutions' accounts in the central RIX system that is owned and operated by the Riksbank.[82] When all this has been done, the recipient's account is credited.

Cost structure and pricing

Clearing and settlement requires that there is an infrastructure. This infrastructure consists of computers, systems, lines of communication, terminals and so on that produces the services required in the different stages of the payment process. The infrastructure is generally characterised by large fixed costs and low variable costs, with each further transaction made leading to relatively small additional costs. It is this characteristic that leads to economies of scale.

How can prices reflect costs when fixed costs are high and variable costs are low? One simple method is to use a combination of fixed fees and variable fees. The variable fee is a transaction fee that is paid for each transaction and the fixed fee is usually made in the form of an annual fee that the bank customer pays to obtain access to the service in question. Prices reflect the bank's actual costs if the variable fee is equal to the variable cost that arises through a further payment and the fixed fee covers the other operating costs.

The banks often use this form of two-part pricing system, with their customers paying a fixed fee, a form of admission into an entire package of payment services. A paid-up annual fee for a debit card, charge card or credit card allows the holder to make payments with the card and to withdraw cash from ATMs. In the same way, a bank customer can make different kinds of credit transfers over the Internet once the annual fee has been paid.[83] Once the admission fee has been paid, it is mainly the transaction fee that influences the bank customers' choice of instrument and channel and the Riksbank has therefore chosen to focus on these fees and corresponding variable costs. The question that the Riksbank tries to answer is to what extent transaction fees for each instrument and channel reflect variable costs. Although the focus is on variable costs and transaction fees, the Riksbank has also gathered data on fixed costs and fees. However, it is in the nature of fixed costs that they often are difficult to distribute between the different payment services.

Table 2 describes the cost and fee structure for an average major bank in Sweden in 2002. The table shows fixed and variable fees, and also fixed and variable costs per transaction for each of the most common payment services. The cost of sending a payment and receiving a payment are reported separately as the sending bank is often different from the receiving bank. In addition, receiving and

82 For a detailed description, see the section on the financial infrastructure in The Swedish Financial Market 2004.

83 In 2002 every adult Swede had on average at least one card. Similarly, the number of Internet bank customers in relation to the number of adults was 0.7. The annual charge for these instruments and channels is thus largely already paid in Sweden.

sending payments involve different services, often directed at different customers. The variable, fixed or total cost of producing a particular payment service from account to account is obtained by totalling the corresponding costs for sending and receiving payments. For example, the variable cost of a paper-based credit transfer is calculated in Table 2 by totalling "paper-based" under "Credit transfers (send)" with "other" under "Credit transfers (receive)". The variable cost will then be 1.76 + 0.74 = SEK 2.50. The fixed costs will be 0.25 + 0.16 = SEK 0.41 and the total cost will be 2.50 + 0.41 = SEK 2.91. Both of these cost examples are underlined in Table 2.

In some types of payments, the banks pay fees to one another, known as interchange fees. This applies to card payments, where the recipient bank on average pays the sending bank SEK 0.70 in interchange, and for direct debits, where the recipient bank on average pays the sending bank SEK 1 in interchange fees. The sending bank therefore receives a net income of 2 öre for sending a direct debit. Interchange also occurs in the case of cash withdrawals from ATMs, when one bank's customers take out cash from another bank's ATMs. The sending bank then pays on average SEK 5.14 to the bank owning the ATM, which is the explanation for the high variable costs of SEK 5.61 under "ATM-OC/FT" (own card/foreign terminal) and variable net income of SEK 3.18 under "ATM-FC/OT" (foreign card/ own terminal). The banks have to maintain a reserve of banknotes in order to meet the general public's demand for cash withdrawals, both through ATMs and over the counter at bank offices. This cash reserve entails a cost in terms of lost interest.[84] The cost is calculated at 12 öre per average ATM withdrawal and 6 öre per average withdrawal over the counter.

As an instrument of payment, debit cards have similar properties to charge cards and credit cards. However, the variable cost for the sending bank is much lower for debit cards than for charge cards and credit cards. The difference is that charge cards and credit cards also grant the cardholder a payment respite period. This form of credit provision causes a loss of interest income and some loan losses for the sending bank.

With regard to the different types of credit transfer, we see that the variable costs are lowest for electronic transfers, then come paper-based transfers and transfers over the counter have the highest costs, that is to say, the variable costs appear to decline as the degree of payment automation increases. In Sweden, there are two different kinds of clearing systems for credit transfers. One based on bank account numbers and the other, that allows for a larger variety of services based on a giro system. The variable costs for credit transfers routed through bank account numbers are lower than for credit transfers based on a giro number system, partly because the former do not allow the same amount of information to accompany the

84 The Riksbank has used the average repo rate for 2002 to calculate the fictitious interest income the bank loses. Data on the total number of cash withdrawals – over the counter and through ATMs – and the average size of the withdrawals is used to calculate the cost per withdrawal.

payment. The variable cost for cash withdrawals through ATMs varies according to interchange. If one disregards interchange, the average variable cost is SEK 1.30 per withdrawal. Withdrawals over the counter lead to almost no variable costs, but on the other hand are connected with high fixed costs. However, payments and withdrawals over the counter currently account for a very small part of the total number of payments and withdrawals.

Fixed fees are usually paid per customer and year and have here been converted into fee per payment for the sake of comparability. Transaction fees are a weighted average of the transaction charges paid by private and corporate clients. In general, it can be said that private customers only face transaction fees when making transfers over the counter and that corporate customers also face transaction fees for acquiring services related to card payments, outgoing paper-based and electronic credit transfers and receiving direct debits.

Table 2. Fees, costs and volumes for the most common payment services in an average major Swedish bank, 2002.

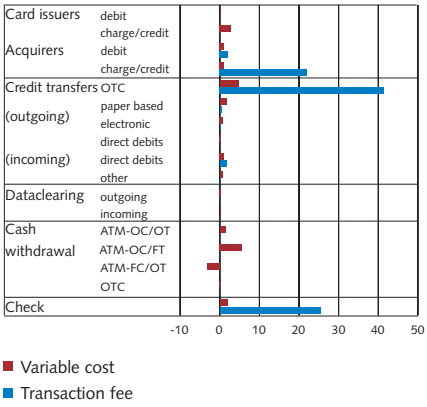
		The average major bank's charges and costs per payment (SEK)				
		Fees		Costs		Number*
Payment service		fixed	transaction	transaction	fixed	of payments
Cards	debit cards	1.76	0.00	0.23	0.43	98834
(send)	charge & credit cards	2.54	0.00	2.85	0.62	13419
Cards	debit cards	0.00	2.04	1.09	0.09	98834
(receive)	charge & credit cards	0.00	22.01	1.09	0.09	13419
	over the counter	0.00	41.93	4.72	1.90	644
Credit transfers	paper-based	2.86	0.44	1.76	0.25	51228
(send)	electronic	4.02	0.17	0.80	0.41	66353
	direct debit	0.00	0.00	-0.02	0.25	27405
Credit transfers	direct debit	0.00	1.50	1.01	0.16	27405
(receive)	other	0.00	0.00	0.74	0.16	118225
Electronic	send	0.00	0.00	0.30	0.28	31473
transfers	receive	0.00	0.00	0.18	0.05	17123
	ATM–OC/OT**	1.65	0.00	1.37	4.50	38301
Withdrawal	ATM-OC/FT**	1.65	0.00	5.61	0.08	30841
of cash	ATM-FC/OT**	0.00	0.00	-3.18	5.15	30841
	ATM, total	1.14	0.00	1.27	3.34	99983
	over the counter	0.00	0.00	0.06	10.98	11170
cheques	send/receive	0.00	24.82	1.97	18.05	932

* Number of payments expressed in thousands.
** ATM is an abbreviation of Automated Teller Machine. OC/OT stands for Own card/own terminal, OC/FT for Own card/foreign terminal and FC/OT for Foreign card/own terminal.

The marked columns in Table 2 show clearly that the variable costs and fees differ significantly, with the exception of debit card transactions and direct debits. There are high transaction fees for acquiring of charge card and credit card transactions, sending credit transfers over the counter and cheques. Otherwise, there are seldom any transaction fees. When the average major bank does take transaction fees, they are almost exclusively taken from corporate customers, particularly merchants. Moreover, prices for corporate customers were not sufficiently transparent to the extent that price information was sometimes difficult to obtain. However, this situation has improved since 2002; for instance, most major banks publish

corporate price lists on the Internet. Pricing with regard to private customers reflects the underlying costs to a much lesser extent than pricing with regard to corporate customers. However, there are major differences in the costs arising from different payment instruments. In general, payments over the counter, cheques, cash withdrawals and paper-based credit transfers are expensive to produce. Electronic payments, such as direct debits, credit transfers via Internet banks and debit card transactions are relatively cheap to produce. Figure 1 summarises the above discussion by illustrating the agreement between variable costs and transaction charges.

Diagram 1. Transaction fees and variable costs for the most common payment services in an average major Swedish bank, 2002.



Source: The Riksbank.

Conclusions

Our study shows that the major Swedish banks only in exceptional cases provide their users with information on the business costs of various types of payment service through the prices they set. Private customers receive practically no price signals at all through transaction fees; they pay almost exclusively fixed charges. Corporate customers receive slightly more information. Calculations show that total fees for most services cover total costs and that mediation of payments as a whole provides an average major bank with net income of SEK 155 million per annum. The largest surplus is generated by card operations and in particular through the acquiring services for charge card and credit card transactions.

A deficit of a corresponding size arises in cash distribution, where large costs but no transaction fees arise, but instead a fixed charge is normally made for debit cards or ATM cards.[85] There is thus extensive cross-subsidising between these payment services and this ought also to give rise to a financial redistribution between different customer groups. The fees paid by merchants for card purchases contribute to covering the banks' distribution of cash to the general public through ATMs, a service that is probably mostly utilised by private individuals, although it may be in the merchants' interest that cash be readily available. It was pointed out in the introduction that withdrawal charges are more common among our Nordic neighbours. These countries also have more ATMs; an average of 14.4 per 1,000 inhabitants, compared with 9.9 in Sweden. One possible explanation is that, as Swedish major banks do not price withdrawal services per transaction, they instead ration access to ATMs to keep costs down.

In light of the experiences from Norway's transition to a more cost-based pricing system and pricing of cheques in Sweden and other countries at the beginning of the 1990s, there is reason to believe that the demand for payment services is price-sensitive; that is to say, that changes in prices will affect how bank customers use the payment system. A plausible conclusion is thus that the banks could reduce their costs through more transparent pricing that is more

85 This refers to withdrawals in SEK and from ATMs owned by one of the four major banks. However, some withdrawal charges do exist among smaller banks.

firmly based on their actual costs. Such a price structure would lead to use of charge cards and credit cards as well as cash declining in favour of increased use of debit cards. Similarly, the number of paper-based credit transfers would decline in favour of electronic transfers. This change in payment behaviour would reduce the banks' cost and create scope for lower charges to bank customers. Determining the extent to which these changes would also benefit the economy requires further analysis, as a welfare analysis would cover the costs incurred by all participants in connection with payments, not merely the banks' costs. In addition, there may be market imperfections that affect the conclusions.

One interesting aspect to discuss, and which may also require further analysis, is the reason the banks apply this pricing strategy. The banks are probably aware that they could reduce their costs for payment intermediation if they applied a more transparent and cost-based price structure. One possible explanation as to why they have not yet taken this step could be that although the banks understand that all banks can gain from changing to a price structure where charges better reflect the underlying costs, the bank that takes the first step will lose customers to the other banks. No bank dares to be the first to take this step. Experiences from the Nordic countries, with pricing of cheques, support this theory.

One closely related explanation is that the banks do not see the mediation of payments as an isolated business area, but as part of a larger business area. There may thus be commercial reasons for under-pricing certain services, partly for publicity reasons and partly to establish a customer relationship and then charge more for other services, such as savings. This type of pricing can be found in other operations, such as mobile phones, where the actual telephone is often sold cheaply. The operator's profits then come from the telephony services generated. These two explanations are not mutually exclusive, and it is quite possible that both play a role in the banks' pricing.

Data collection and processing

Data collection includes costs and charges connected to the production and sale of payment services during 2002 for the four major banks in Sweden. Together they cover just over 90 per cent of the retail payment market in Sweden.

Data on variable costs were gathered separately for different payment services. For instance, data were gathered separately regarding the costs of credit transfers over the counter, paper-based credit transfers and electronic or Internet-based credit transfers respectively. Data on the number of transactions for each payment instrument and channel were used to calculate the variable unit cost per instrument, channel and participating bank. After this, a weighted average of the four banks' variable unit costs per instrument and channel was calculated. The banks' internal market shares in the relevant market segment were used as weights in the estimate. A simplified example with only two banks is the following: bank A had 30 per cent transaction volumes with debit cards and a variable unit cost of SEK 0.20, while bank B had 70 per cent of its transactions with debit cards and a variable unit cost of SEK 0.40. The weighted average variable unit cost is then SEK 0.34 (=0.30 x 0.20+0.70x0.40). Fixed costs were broken down by the various payment instruments and channels with the aid of data on transaction volumes for the various instruments as the key to distribution. In the same way as for variable costs, a weighted average of the fixed costs was calculated per instrument and channel. Together these weighted averages constitute a cost structure within an average major Swedish bank.

The representative bank's transaction charges were calculated in the same way as the variable costs. One complication is that banks apply different charges for private customers and corporate clients. The charges for these categories were calculated separately with the aid of data on the number of payments initiated by the different customer categories in the different banks. Table 2 shows a weighted average of both customer categories' fees. The average reflects the average fee for the service in question in the market as a whole. Another complication of the price structure was that the fixed fees were made per customer, while all other data was expressed in terms of "per transaction". By calculating each bank's income from fixed fees per customer category and then dividing this by the number of payments, it was possible to calculate an average fixed fee per payment. The calculated fees are based on officially-stated prices. However, it is probably possible for corporate clients to negotiate the size of the fees in some cases. The Riksbank's calculations do not take this into account and may therefore to some extent overestimate the fees to corporate clients. The calculations are based on stated fees per payment service and therefore do not take into account the fact that the banks in some cases offer packages of payment services, which also means that the calculated fees may be slightly too high.

For a more detailed description of the methods and results, please see WORKING PAPER 172 in Sveriges Riksbank's Working Paper Series.

The market for long-term saving

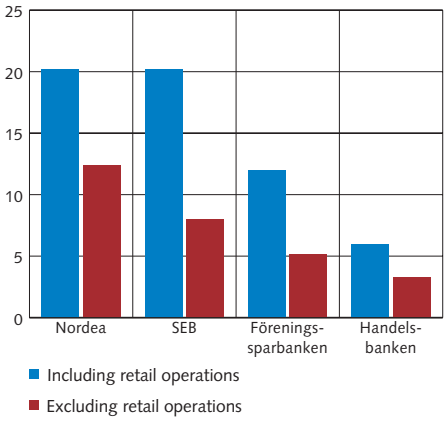
The savings market is changing. Against the background of a rising equity market the Swedish savings market was long characterised by substantial saving in mutual funds and life insurance, with stable inflows of new savings. The major banks were quick to secure a dominant position in the savings market through their fund management and life insurance companies. However, increased competition from both small domestic participants and bigger foreign players, coupled with more demanding savers, may lead to a change in these conditions. This entails a strategic challenge for the major banks' activities in the savings market.

A precondition for an efficient and stable banking system in the long run is that the banks are able to cope with structural change and adapt to new market conditions. When the external conditions for their business models change, the banks face strategic choices. The decisions that the banks make in response to these changes can in the long term have great significance for the risk in the banking system.

At the end of the 1970s the conditions governing households' saving changed when a personal savings market for the general public began to take shape. The banks proved to be the big winners on that occasion by quickly providing the fund and insurance products demanded by this new market. It now seems that the savings market is in the process of changing again, albeit not as radically as the first time, and the question is who is going to gain from it this time. The high margins in the market are attracting a constant stream of new players, while the recent years' weakness in the equity market may have made savers more demanding. The role of savers is also strengthening through a number of regulatory changes. This article discusses the banks' future role in the savings market.

Since the 1990s, asset management[86] has been an important component of the major banks' earnings. However, it is not that easy to quantify its significance in terms of profit. In the banks' operational accounts, the proportion of profits generated in asset management, pensions and insurance stands somewhere between a few per cent and, at most, just over 10 per cent (see Figure 1). This underestimates the significance of asset management though since a large fraction of the asset management earnings goes to the banks' branch operations, which distribute and sell fund and insurance products. Excluding the group internal fees asset management pays to retail banking, the estimated profit share is markedly higher, somewhere between around 6 per cent and 20 per cent.

Figure 1. Asset management's significance for the major banks' profits, 2003. Percentage share



Sources: The banks' reports and the Riksbank.

86 Asset management here means the management of savings on behalf of customers, for example through funds, insurance and pension products, and discretionary wealth management.

The personal savings market

AN INCREASED NEED FOR PERSONAL SAVING...

The collective social insurance systems are currently developing in a way that increases the need for additional personal saving.[87] The centralisation of the responsibility for saving from the individual to various public systems, which was a common feature of the post-war period, has stopped. The past decades have instead seen a gradual return of the responsibility for economic security back to the individual, which has boosted the incentives for personal saving.

This trend can be said to have begun in 1978 with the introduction of a savings scheme that offered tax incentives to individuals who saved in mutual funds or a special bank account (skattesparkonton). The saving in these mutual funds was carried out via monthly deposits, which were invested in Swedish exchange-listed equities. This savings scheme was later replaced by a similar public savings programme known as *allemansfonder*. As a result of these initiatives, regular monthly saving in equities and mutual funds became a part of many Swedes' personal finances, and the schemes can be said to have had a lasting impact on saving behaviour in the country. Conditions had been created to generate stable streams of savings that were invested chiefly through the banks, at the same time as the proportion of saving in bank accounts declined.

This development has continued in recent years, notably in some parts of the pension system. For instance, individual choices have been introduced that make individuals responsible for choosing how their savings are to be invested. This applies to both occupational pensions and the state pension system. These changes stimulate the demand for savings and also channel some of the earlier collective savings into the personal savings market.

...HAS HAD AN IMPACT ON THE BANKS' BUSINESS...

The development of a personal savings market has expanded the banks' range of savings services, which today comprises a large number of products in addition to traditional deposits. In 1975 more than 70 per cent of the banks' balance sheet total was composed of traditional deposits. Today the proportion is slightly less than 40 per cent.

Households' needs for other forms of saving than deposits have changed the banks' role. Even though deposits have traditionally been the banks' most important source of funding, there are from a bank's perspective several advantages to be gained from savers choosing to invest in funds and life insurance schemes instead of in deposit accounts. Above all the bank gains, via the management fee, from the growth in stock market value, which was considerable throughout

87 The public sector is still the main provider of many services, but fees have now begun to be used and above all to be discussed to a greater extent.

the 1990s. Furthermore taxation rules make it costly for a saver to transfer fund and insurance savings from one bank to another, which provides a stronger lock-in effect compared with deposits.

…AND CHANGED HOUSEHOLDS' FINANCIAL PORTFOLIO

From the households' perspective, saving in bank accounts has decreased considerably in importance. From having accounted for almost 60 per cent of households' financial wealth in 1980, bank deposits' share of savings has fallen to just over 20 per cent today (see Figure 2). The lion's share of households' savings has been transferred to the equity market, notably to mutual funds and life insurance, but also somewhat through direct ownership of equities. The proportion of Swedish adults who directly or indirectly own equities has more than doubled in 30 years, to around 84 per cent in 2003.

The trend towards a smaller share of deposits in households' financial saving is in no way unique to Sweden. But compared with many other countries, Swedish households invest a very small fraction of their savings in the bank, and a correspondingly large proportion of their savings in equities (including funds) and life insurance schemes (see Figure 3).

CONTINUED HIGH GROWTH…

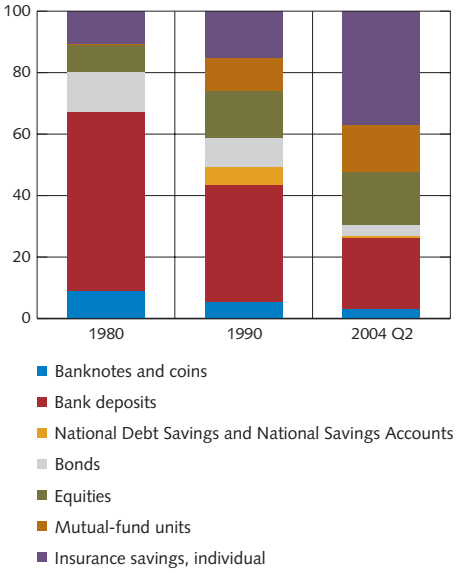
The personal savings market in Sweden comprises a host of different savings options (see Figure 4).[88] The single biggest one of these is traditional insurance, which accounts for around 30 per cent of the saving, followed by fund savings. The Premium Pension Authority's (PPM) pension scheme has so far only represented a small fraction, but this can be expected to grow as the contributions to the scheme increase. Following a temporary slowdown in connection with the equity market decline in 2001-2002 the savings market has begun to grow again in 2003-2004. The growth is not only attributable to the upturn in the stock market but also to a large inflow of new savings.

…BUT TOUGHER COMPETITION

The competition in the savings market has so far been fairly mixed, with many different kinds of institutions – for instance securities brokers, fund managers and insurance companies. These include both small domestic niche players and large global companies.

The four major banks were among the first to enter the savings market and therefore have a strong position. But as the competition in the savings market has gradually become tougher, the major banks' position has begun to weaken. Currently the four major banks have a share of just over half of the personal savings market, but the trend is in decline (see Figure 5). Between 1998 and 2004 the share decreased by more than four percentage points. In certain segments, such as

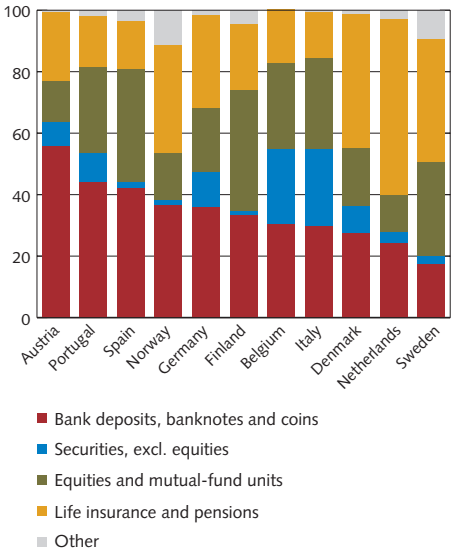
Figure 2. Households' financial saving. Percentage distribution



Note. The Figure does not include collective insurance schemes (via employers) or state insurance schemes (the National Pension Funds and premium pension fund).

Source: Statistics Sweden.

Figure 3. Households' financial saving in Europe in 2002. Percentage distribution

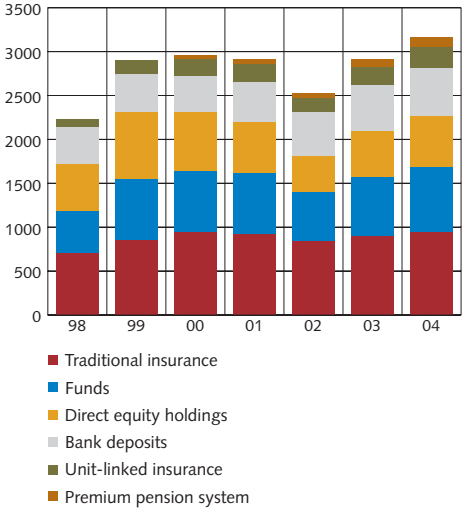


The Figure does not include collective insurance schemes (via employers) or state insurance schemes (the National Pension Funds and premium pension fund).

Source: Eurostat.

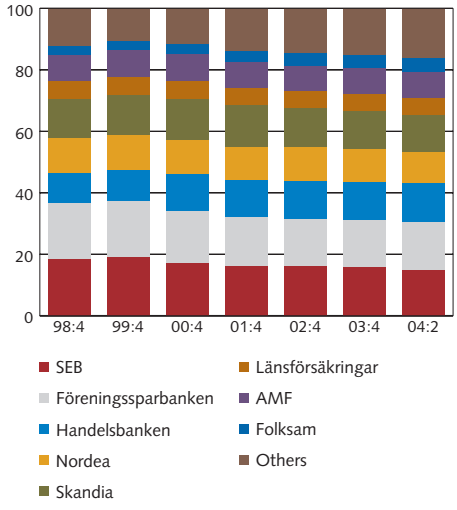
88 By far the largest share of households' total real and financial wealth is accounted for by housing, which comprises a little more than 40 per cent. Amortisation of home loans can indeed be seen as saving in non-financial assets and competes to some extent with the banks' range of savings products. But the focus in this article is on households' financial saving.

Figure 4. The personal savings market, broken down by type of saving. SEK billion



Sources: SEB's Saving Barometer and the Riksbank.

Figure 5. The savings market. Market shares in per cent



Source: SEB's Saving Barometer.

mutual funds, the development has been more pronounced. The major banks' market share of directly owned funds shrank between 1998 and 2004 by 16 percentage points, from 88 per cent to 72 per cent. Over the same period the major banks' share of new saving in funds dropped by 18 percentage points, from 77 to 59 per cent.

The total stock of savings includes different categories of products with different contractual terms and duration. A large portion of the stock is relatively stable, while other parts are more flexible. The rigidity of a large part of the stock means that there is a lag before changes in market shares of new saving have an impact on the savings stock. However, there is reason to expect increased flexibility in the future.

Changed saving behaviour

PREVIOUSLY LOYAL SAVERS…

The savings market is characterised by considerable rigidities and lock-ins, which are due to contractual and tax-related factors as well as behavioural reasons. Contractual lock-ins are most evident in life insurance, where the saver, due to the structure of insurance policy contracts, can only terminate the relationship at a high cost. Current tax legislation contributes further to the lock-in problem by providing incentives to savers to enter into long-term saving contracts with a regular transfer of new savings. As regards mutual funds the biggest rigidity stems from capital gains taxation, which makes it costly in tax terms to change from one fund to another. These lock-ins and rigidities make it difficult or costly for savers to terminate a contract or assignment with an underperforming provider. This is a favourable situation for the asset managers, of course, who can count on stable volumes and new inflows of savings even when their performance is relatively weak.

However, there are other factors that cause savings to be sluggish even in the absence of contractual and tax-related lock-ins. A typical saver often lacks both the time and knowledge to regularly assess and reconsider previous saving decisions to any great extent.[89] For individuals, saving is in practice often a 'durable good'. For instance, an individual might decide to save monthly in a fund or to have a standing transfer to an insurance scheme. This decision can easily be forgotten over time, with the saving continuing automatically. Furthermore, like all financial investments, saving involves a number of genuinely difficult considerations. Saving in funds and insurance schemes entails exposure to markets that the savers often have no in-depth knowledge about. It is far from easy for an individual saver

89 There are also psychological explanations for sluggish saving behaviour. A large number of studies have shown that financial decisions are often affected by emotions. For example, most people find it very hard to "accept" failure, which is manifested in an unwillingness to realise losses or a tendency to forget unsuccessful investments. Another common behavioural trait among savers is to take the blame for a failed strategy instead of questioning the asset manager or adviser. Consequently, many savers do not take action despite poor performance on the part of the provider.

to assess a previous saving decision and even more so to evaluate the provider's performance in relation to the general market performance, competitors and fees. For a saver that has evaluated an existing contract and wishes to reconsider it, the chief means available is to freeze the contract and instead enter into a new one with a different provider. The number of contracts that a saver enters into can therefore increase continuously, making the situation difficult to survey and reducing the incentives to try new forms of saving.

...MAY BECOME MORE DEMANDING

The robust performance of the securities markets during long periods of the 1980s and 1990s did not provide any great motivation for savers to evaluate and reconsider previous saving decisions. However, the more subdued and sometimes negative performance in the equity market in recent years has increased savers' awareness of the pros and cons of different savings options, and of different players' performance and fees.[90]

Furthermore, a number of regulatory changes have recently been implemented, and these are likely to lead to more assessments and reconsiderations on the part of savers as well as increase the opportunities to reallocate previously invested savings. Examples of such changes include the requirements for clear disclosure of fees and the new law to strengthen the protection of consumers receiving financial advice. Should the discussions regarding the right of consumers to move their life insurance and unit-linked insurance policies, and a scrapping of capital gains taxation when changing funds, lead to progress, the flexibility of savings may increase further.

Greater flexibility should mean that savers' regular assessments and reconsiderations will have a more direct impact on the stock of savings, which in all likelihood should lead to a tightening of demands on management performance. Managers that cannot justify their fees through sufficiently high performance will presumably see their margins shrink. The Swedish savings market has been characterised up to now by stable streams of savings that in large part have been channelled to the banks. The combination of a more demanding saver with greater power and tougher competition from new players may very well change the foundation of this system.

The savings market in the future – opportunities and threats for the major banks

The savings market will continue to grow. At the same time, higher demands and tougher competition may entail shrinking market shares and in the long run lower margins. This tougher future is by no means a foregone conclusion, however. The conditions for

90 The daily press, business press and other media as well as organisations such as Aktiefrämjandet and the Swedish Shareholders' Association have helped arouse many people's interest in finance and investments.

asset management involve factors that, depending on the choice of strategy, could just as well work in the banks' favour. Successful asset management is usually based on one or more of the following basic elements: (1) economies of scale (2) respected management expertise (3) efficient distribution (4) solid reputation thanks to a strong brand.

There are potentially large economies of scale to be realised in asset management. The earnings in asset management consist of the fees that the savers pay for the management services. These fees are mostly charged as a fixed fraction of the value of the savings. In exceptional cases, such as in the case of many hedge funds, the fee is performance-based and is charged, for example, as a fraction of any positive return. Also in dividend-paying life insurance companies the fee can be said to be partly performance-based since the manager can only charge a percentage of any excess return. The costs incurred in asset management comprise primarily the costs for staff, distribution and marketing, systems and broker commissions. A large part of these costs, such as those for staff and systems, are fairly fixed in relation to the size of the managed capital. This means that an asset manager's earnings can rise as a result of an increasing stock of managed capital but without necessarily incurring any equivalent rise in costs. The larger the managed capital, the lower the fees that can be charged to the savers. Compared with smaller domestic competitors the major banks have a distinct advantage owing to their appreciably larger volumes. However, in comparison with the big global asset managers that have started to enter the Swedish market the major banks' managed volumes are rather modest.

However, asset management has up to now not competed to any great extent on the basis of price, but rather on the basis of reputation, which in the long run is mainly determined by management performance. As mentioned previously, savers have no major incentive to assess a manager's performance as long as they receive a high return, as was the norm before the protracted equity market decline from 2000-2002. Since then, however, it has become more clear to savers that some managers are good and some less good, and that a manager that is good one year might be less successful the next. Managers that are considered capable of generating a higher, more stable return than their competitors will presumably be able to continue to charge high fees. On the other hand, managers that only outperform a market portfolio now and again are likely to find it increasingly difficult to justify current fee levels. The major Swedish banks' management performance in recent years leaves much to be desired, but it hasn't been any worse than that of their competitors.

The efficiency of distribution to customers is critical for profitability in asset management. The bank-owned asset managers have always enjoyed an advantage over their independent competitors in this regard thanks to the well-established distribution channels they have through their branch networks and internet banks.

The independent asset managers must instead reach their customers through their own distribution efforts – advertisements, campaigns and telesales – or in exchange for a fee via other players, such as banks and insurance companies, which have established customer relationships. An indication of the value of the bank branches' customer relationships is given by the intra-group payments that the major banks' asset managers make to the branches. The value of the branch network and customer relationships is also something that the major banks could take advantage of when foreign managers seek out channels to Swedish savers.

A solid reputation among the general public is crucial for being able to attract customers' capital. The public's confidence has been a contributory factor in the banks' success and is also an asset in their current competitive position. The major Swedish banks have a solid reputation, as different surveys have shown. However, some surveys indicate that this reputation has been tarnished in recent years.[91]

Conclusions

- As it becomes easier for savers to move their capital, management performance and fees will become an increasingly important means of competition.

- In the short run, strong brands may well delay this process, but in the longer term managers that cannot produce a higher-than-average return will face shrinking margins.

- With lower margins the significance of scale economies and access to efficient distribution channels will increase. An efficient distribution channel does not have to include a physical branch network, but can instead involve less tangible aspects such as strong customer relationships.

91 A report by Förtroendekommissionen (the Commission on Business Confidence) presents the results of different academic measurements of confidence in the business community, which also includes the banks. See SOU 2004:47. Näringslivet och förtroendet (The business community and its reputation), Appendix 4, Förtroendet för näringslivet (Confidence in the business community).

Funding in the major Swedish banks

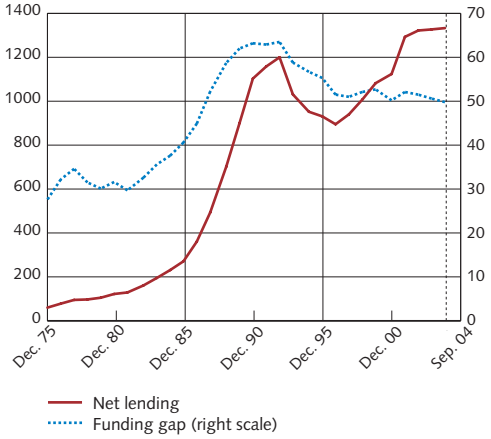
The Swedish banking system is running a structural deposit deficit – the banks' deposits are not large enough to fund their lending. The Swedish banks are financing this deficit both by borrowing from other banks and by issuing securities. Roughly half of this market funding is raised outside Sweden because the major Swedish banks have access to more liquid markets there and consequently to cheaper funding. However, the dependency on international funding involves a higher risk that problems in foreign financial markets will spread to the Swedish banking system.

In traditional banking, banks fund their lending with deposits. Converting liquid (short-term) deposits into illiquid (long-term) loans is one of the banking system's key functions in the economy. But in Sweden, as in many other countries, the public's savings are converted into loans not only via bank deposits but just as much through, for example, pension funds' and life insurance companies' purchases of the banks' issued securities.

It has long been a feature of the Swedish banking system[92] that the public's deposits do not suffice to fund the loans demanded by that same public. This has given rise to a deposit deficit that the banking system finances by borrowing in the interbank and securities markets. Normally these markets are efficient, stable sources of funding, but in some situations they can be volatile and selective. Consequently, a bank that for some reason is judged to be in difficulty could very quickly lose access to funding in these markets.

The Riksbank has a pivotal role in the Swedish liquidity supply – in normal circumstances by supplying the banking system with liquidity in Swedish kronor and in crises as a potential provider of emergency liquidity assistance to a bank with liquidity problems. As a result it is of great interest to the Riksbank to have a good knowledge of how liquidity is created in the Swedish banking system. The aim of this article, therefore, is to describe the major banks' market funding and the reasons for it.

Figure 1. Net lending to the public and funding gap in Swedish banks and mortgage institutions.
SEK billion and per cent



Note. Refers to Swedish and foreign currency. The data do not include other credit market companies.

Source: The Riksbank.

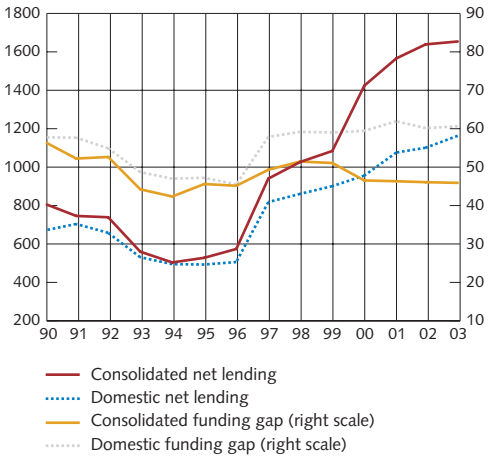
The banking system's deposit deficit

The funding gap – the proportion of lending that must be financed through market borrowing – stood during the 1970s at 30 per cent (see Figure 1). This changed at the beginning of the 1980s when the deregulation of the financial market resulted in much faster growth in lending, particularly to the household sector, than in deposits.[93] An additional explanation for the slower growth in deposits was that the competition for household savings from other forms of saving increased during this period, as saving in equities and mutual funds caught on among the general public. The funding gap grew rapidly

92 In the following discussion the banking system is taken to mean all credit institutions – banks, mortgage institutions and other credit market companies – unless specified otherwise.

93 The most important factor in this context was the abolition of the lending ceiling, with which the central government via the Riksbank previously used to control credit growth in the economy.

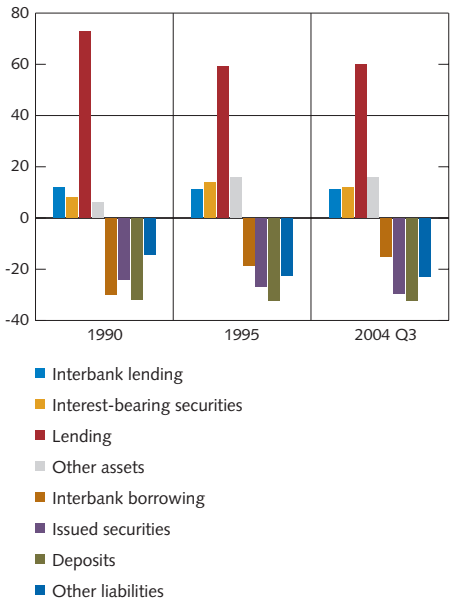
Figure 2. Net lending to the public and funding gap in the major banks. SEK billion and per cent



Note. The increases in net lending and the funding gap in 1997 are mostly attributable to Handelsbanken's acquisition of Stadshypotek at the time.

Source: The Riksbank.

Figure 3. Assets and liabilities in the major banks. Per cent of total assets



Sources: The banks' reports and the Riksbank.

throughout the 1980s and was at its highest in the early 1990s when more than 60 per cent of the Swedish banking system's lending was market financed. In connection with the banking crisis, however, the gap began to narrow and since the mid-1990s has stabilised around 50 per cent.

Consolidated lending and deposits[94] in the four major Swedish banks – Föreningssparbanken, Handelsbanken, Nordea and SEB – exhibit roughly the same development as the domestic banking system (see Figure 2). It can be noted, however, that the major banks' consolidated funding gap is somewhat lower than for the domestic system due to the fact that the major banks have consolidated foreign banks with relatively large deposits. As regards lending to the Swedish public, however, the major banks have a wider funding gap than that of the Swedish banking system as a whole. This is because in the Swedish market the major banks have larger shares of lending than of deposits.

The major banks' assets and liabilities

As mentioned above, the major banks' funding gap has been more or less unchanged over the past ten-year period. This is largely true also of the overall structure of the major banks' assets and liabilities (see Figure 3). Most striking is the fact that other (non-interest-bearing) assets and liabilities almost doubled in 1995, although this is entirely due to changed accounting rules.[95] From a funding perspective, it is mainly the structure of the interest-bearing assets and liabilities that are relevant. The interest-bearing assets are financed to a certain extent by equity capital and subordinated debt as well, but their part in the financing is determined more by the need to meet regulatory capital adequacy requirements and to achieve a desired credit rating in the market as opposed to being determined by funding needs.

The big changes in the composition of the banks' interest-bearing assets and liabilities took place during the first half of the 1990s. In connection with the economic slowdown and credit crunch that followed the banking crisis, the share accounted for by lending dropped from just over 70 to around 60 per cent between 1990 and 1995; meanwhile, the proportion attributable to securities holdings almost doubled and the share accounted for by interbank lending was constant. The same period saw a reduction in the shares attributable to interbank borrowing from 30 to almost 20 per cent, while the shares accounted for by deposits and issued securities were unchanged and increased, respectively.

94 Consolidated data refer to whole groups and therefore include the major banks' Swedish and foreign subsidiaries. As the Figure shows, the consolidated data begin to diverge from the Swedish data in 1997 when the major banks' cross-border expansion picked up.

95 This change is partly due to the fact that the major banks' balance sheets now include considerable insurance operations, but is mostly due to amended reporting rules that have led to a large part of derivatives positions, which were previously reported off the balance sheet, now being included at market value. The bulk of the non-interest-bearing assets and liabilities comprise derivatives contracts with positive or negative market values, followed by claims/liabilities on securities settlement proceeds as well as assets and liabilities in the insurance operations. Examples of smaller items are equity holdings and non-financial assets.

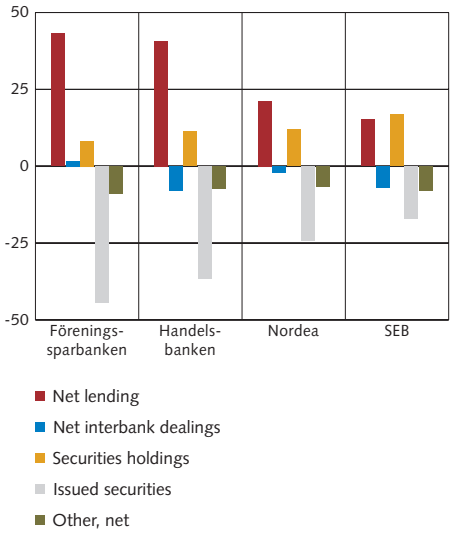
Since 1995, however, the composition has been practically unchanged. The major banks' balance sheet throughout the period has consisted of around 60 per cent lending and about 10-15 per cent each of interbank lending and securities holdings. On the liabilities side, however, the share accounted for by interbank borrowing has continued to decline and has been replaced by securities financing. The proportion attributable to deposits, almost one-third, is unchanged though.

In conclusion, the major banks have relatively less loans and instead more liquid securities, compared with the pre-crisis years. The major banks have also become somewhat less dependent on market funding as they have considerably scaled back their borrowing in the interbank market. Their interbank borrowing has to some extent been substituted by securities issuance, however.

Because the major banks specialise in different business areas there are some differences in the composition of their balance sheets. One way to compare the funding structure across the major banks is to break down their balance sheets' assets and liabilities into five different categories: net lending to the public (lending minus deposits), securities holdings, net interbank dealings (interbank lending minus interbank borrowing), issued securities, and other items (other assets minus other liabilities and equity capital). The rationale is that the major banks' core operations – credit granting, payment intermediation and financial trade – give rise to net lending and require some holdings of liquid securities.[96] Net lending to the public and the securities holdings can be financed by a negative net position to the rest of the banking sector, issued securities and equity capital.

As regards the overall structure, all the major banks, as expected, display a similar pattern – net lending and securities holdings are financed by securities and equity capital (see Figure 4). The only difference is the interbank net figure, where Föreningssparbanken has a positive position and the other major banks a negative position, albeit a very marginal one in Nordea's case. However, none of the major banks appear to be tapping the interbank market to any great extent to finance their deposit deficits. This reflects the interbank market's primary function as a market for short-term liquidity management. Unlike the securities market, the interbank market requires reciprocity: for a bank to be able to borrow it must also be willing to lend at regular intervals. The liabilities are therefore largely matched by the same kinds of assets, of which a large fraction comprises overnight loans, repos and deposits with maturities that seldom exceed two weeks. There are some exceptions, however. Handelsbanken and SEB use the international interbank market to some extent also to finance longer-term assets (see below for a more detailed description).

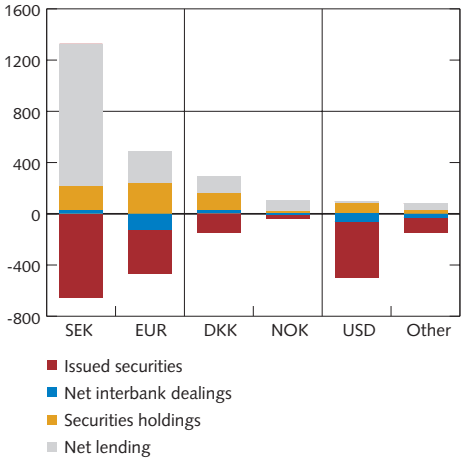
Figure 4. Assets and liabilities, 4-quarter average, September 2004.
Per cent of total assets



Sources: The banks' reports and the Riksbank.

96 As participants in the payment system and large players in the capital market the major banks must hold a liquidity portfolio. This serves as a buffer of liquid assets that can be used to offset temporary payment outflows that give rise to short-term liquidity requirements.

Figure 5. Interest-bearing assets and liabilities in the major banks, December 2003. SEK billion



Sources: The banks' reports and the Riksbank.

As regards relative levels, however, there are big differences between the banks. In Föreningssparbanken and Handelsbanken both net lending and securities issuance are, in relative terms, considerably larger than in Nordea and SEB.

This difference is explained by the fact that mortgage lending comprises a relatively bigger part of Föreningssparbanken's and Handelsbanken's operations than SEB's and Nordea's. Mortgage institutions contribute to a high share of lending among the assets, but they do not provide deposits to any such extent, being financed mainly by way of securities issuance. To sum up, all the major banks are dependent on market borrowing to finance their core assets, albeit to varying degrees.

CURRENCY STRUCTURE

Since 1995 the major banks' assets have more than tripled owing to a combination of mergers, acquisitions and organic growth. Most of this growth has been achieved through expansion outside Sweden.[97]

Since the mid-1970s the Swedish banking system has borrowed substantially in foreign currency in the market.[98] Previously, the purpose of international borrowing was almost exclusively to finance lending, in Swedish and foreign currency, to the Swedish public. This is still an important element of the banks' international borrowing, but recent years' cross-border expansion has made the picture somewhat more complex. From having previously only been borrowers in the foreign interbank and securities markets, the major Swedish banks now carry on full-scale banking activities in a number of other countries, notably in the Nordic region, the Baltic States and Germany. This means that they have gained access to deposits in foreign currency, but that they now must also finance deposit deficits with the public in more than one country.

At the end of 2003, nearly half of the major banks' interest-bearing assets were in kronor (see Figure 5). The foreign currency with the biggest share is the euro, in which almost a quarter of the interest-bearing assets are denominated, followed by Danish and Norwegian kroner and US dollars. The category "other" comprises mainly the Baltic currencies, sterling and the Japanese yen. The lion's share – 85 per cent – of the major banks' net lending and securities holdings is denominated in the "home market currencies" – the Nordic currencies and the euro. Of the issued securities, however, some 30 per cent are denominated in US dollars and other currencies (here mostly sterling and yen). The interbank positions differ between the different currencies. As regards the US dollar and the euro the major banks are net borrowers, while they are net lenders in Swedish kronor and Danish kroner. This is presumably because some of the

97 For a closer description of this development, see the article "Swedish banks' international expansion" in the Financial Stability Report 2002:2.

98 In the mid-1970s Sweden began to gradually liberalise its foreign exchange controls. The foreign exchange market was not fully deregulated until 1989, however.

major banks in Sweden and Denmark are among the biggest players in their national payment systems and serve as settlement banks.

To sum up, the major banks are running a deposit deficit in relation to the public in the home market. As regards the Nordic currencies the major banks also have a funding deficit overall, in other words including interbank and securities financing. This Nordic funding deficit is covered through securities issuance in US dollars and other currencies.

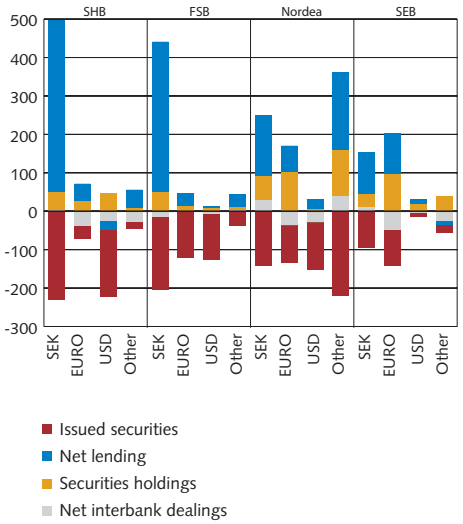
When a similar breakdown is done for each of the major banks there is again a dividing line between, on the one hand, Handelsbanken and Föreningssparbanken, which have by far the biggest deposit and funding deficits in Swedish kronor, and on the other hand SEB and Nordea, which have smaller funding deficits that also have a more even currency distribution (see Figure 6). The dividing line merely reflects the fact that Handelsbanken and Föreningssparbanken have a larger part of their operations in the Swedish market, where they also are the biggest banks. Nordea and SEB instead carry on a more substantial share of their activities in foreign subsidiaries - SEB in Germany and the Baltic States, and Nordea in Denmark, Finland and Norway.

The major banks choose to a certain extent different markets for their funding. Handelsbanken uses mainly the Swedish and US securities markets, while Föreningssparbanken and Nordea also tap the euro market to a sizable degree. Moreover, Nordea conducts a large measure of securities financing in other currencies, owing to the fact that the group's substantial mortgage lending in Denmark is funded by bond issues in Danish kroner. SEB has only a very small share of securities issues in the US market.

As regards the interbank market, Handelsbanken and SEB are net borrowers in euro, US dollars and other currencies. This is matched by only small net positions in the Swedish interbank market, indicating that Handelsbanken and SEB also use interbank borrowing to finance their core assets. In Nordea's case the interbank borrowing in euro and US dollars is counterbalanced by net interbank positions in Swedish kronor and other currencies. Föreningssparbanken has very limited net positions in the interbank market.

To sum up, all the major banks are running funding deficits in Swedish kronor and for the most part also in some other currency depending on the geographical distribution of their operations. These deficits are financed with market borrowing in US dollars and to a smaller extent in euro, except for SEB, which doesn't have a correspondingly large surplus in other currencies but instead finances these deficits with equity capital and non-interest-bearing liabilities, e.g. subordinated debt.[99]

Figure 6. Interest-bearing assets and liabilities, December 2003.
SEK billion



Sources: The banks' reports and the Riksbank.

99 While SEB does run a small financing surplus in other currencies, owing to interbank borrowing and securities issuance in sterling, this is far from enough to balance the deficits in the domestic market.

Organisation and control

All the major banks have central treasury departments that are responsible for the group's funding. The funding of a group's different entities - parent bank, mortgage institution, finance company and foreign subsidiaries and issuing company - is thus integrated in purely financial terms even though it is carried out in entities that are legally independent.

Typically, the treasury department occupies the role of the group's internal bank, channelling liquidity from the divisions with surpluses to those running deficits. Every day the internal bank sets an internal interest rate, which functions as all the divisions' opportunity cost of borrowing to cover deficits, or of lending surpluses, externally. The banks' Swedish branch networks often generate a deposit surplus that is used to fund mortgage lending and international expansion. Any deficit at group level is covered by the treasury department through external funding.

Usually the treasury department instructs the group's trading department to borrow the short-term funds – maturities up to one year – while the treasury department itself manages the longer-term borrowing. Correspondingly, foreign subsidiary banks obtain their short-term funds in the local market. The short-term borrowing comprises both interbank funds and short-term securities - certificates – while the longer-term borrowing is almost exclusively made up of long-term securities and only in exceptional cases of interbank funds.[100]

This division of responsibility is motivated by differences in how the fixed-income market functions at short and long maturities. The short-term borrowing may involve a large number of transactions every day, thus requiring continual presence in, and close contact with, the market, which the trading department often has. In the case of foreign subsidiary banks, the delegation is also warranted in that it is considered important for them to have their own established contacts in the local market so that they don't become entirely dependent on the parent. Longer-term borrowing entails considerably fewer, albeit regular, transactions and can therefore be managed to a higher extent without a permanent local presence.

Because the short-term funding activities are delegated to the trading department and local subsidiary banks, the major banks have local funding desks in a host of different markets. In some cases these local funding operations are carried on in a foreign branch, with the primary aim of borrowing funds to finance assets in the home market (e.g. the major banks' branches in London and New York). These branches often have the task of finding short-term funding in their particular currency for the entire banking group. In other cases the local funding function is located in a foreign subsidiary bank, only

100 The interbank borrowing is mostly composed of repos and deposits, and the certificates of Swedish bank certificates, certificates of deposit (CDs) and commercial paper (CP). The long-term securities come in many different forms, such as bonds, medium-term notes (MTN) and floating-rate notes (FRN).

serving a purpose in the local banking operations (e.g. the major banks' European subsidiaries).

The decision regarding what legal entity to use for a certain kind of funding is affected by price, regulatory and tax considerations. Interbank borrowing in the home market is justified mostly by short-term liquidity requirements to meet temporary payment outflows, and is thus managed cheapest by the local subsidiary bank or branch. Borrowing via bank certificates, too, is carried on in locally established subsidiary banks or branches since this is a regulatory requirement. However, as bonds and commercial paper can be issued without a local presence, this borrowing can essentially be carried on anywhere in the group. Often, the bulk of the securities issues are managed by the groups' mortgage institutions due to their good reputation and high name recognition among securities investors.[101] Sometimes, however, the parent banks also issue bonds and certificates due to the investors' limits in relation to legal counterparties. So, by issuing securities through two or more different legal entities the group gains access to additional liquidity. Another, closely related form of this is that the major banks to some extent use US-registered issuing companies to issue securities in the US market. This is because some US investors, owing to domestic regulations, are only allowed to buy foreign issuers' securities on a limited scale.

Strategic considerations

Given that a bank needs to obtain funding in the market, its aim is naturally to acquire this funding at the lowest possible cost. However, that is not to say that the bank always chooses the cheapest option. Rather, the bank adopts a long-term approach to its funding needs and strives to minimise its funding costs over time. The freedom in the bank's choice of funding is constrained by at least three factors - the bank's risk tolerance, the bank's credit rating and its fixed costs.

THE BANK'S RISK TOLERANCE

A bank's choice of funding strategy is influenced by the risk level it is prepared to have in its balance sheet. This risk is created by any imbalances, or mismatches, between the bank's assets and liabilities in terms of maturity, currency and liquidity. Interest rate risk stems from the fact that the bank's assets (e.g. lending) often have a longer fixed-interest period than its liabilities (e.g. deposits). Exchange rate risk arises if assets in one currency (e.g. Swedish mortgage lending) are funded by liabilities in another currency (e.g. US certificate issuance). Liquidity risk stems from the fact that the bank's liabilities (e.g. short-term deposits) often are more liquid than its assets (e.g. long-term lending).

101 Thus, in some cases the mortgage institution has lower borrowing costs in certain markets than the parent bank. However, it is only in the case of FöreningsSparbanken and Spintab that this is reflected in a higher rating for the mortgage institution.

Given that the bank wants to limit the interest rate risk, liquidity risk and exchange rate risk in its balance sheet, the bank's choice of funding will be based on the structure of its assets. The structure of the funding will be adapted to match that of the assets. This matching does not have to be achieved directly in the banks' borrowing but can essentially be attained just as well through the use of derivatives. For example, a mortgage institution that funds long-term fixed-rate lending through short-term securities issues can manage its interest rate risk by swapping interest payments with another player that has the opposite need. This can be done by entering into a long-term interest rate swap whereby the mortgage institution makes fixed-rate long-term interest payments in exchange for short-term variable interest payments. The same mortgage institution can manage the exchange rate risk that arises when it funds lending in kronor with borrowing in US dollars by entering into an FX swap, fixing the future krona price of the dollar-denominated debt. Liquidity risk, however, is more difficult to protect against using derivatives and is managed primarily by holding a buffer of liquid assets and by limiting the dependence on short-term borrowing and individual financiers and markets.

The ability to manage interest rate risk and exchange rate risk using derivatives makes the choice of duration and currency of the borrowing less dependent on asset composition. Whether the bank opts to match its borrowing directly or through derivatives is determined instead by what is cheapest at the time. If it is profitable on a certain date to borrow funds for a particular duration or in a particular currency, the bank can decide to do so and to manage the resultant risk using derivatives. At another point in time when there is no price difference, the bank can just as well decide to match the currency and duration of its borrowing against that of its assets. So, the choice of funding is nevertheless not entirely independent of the asset composition. This is also confirmed by the fact that changes in funding structure can often be traced to changes in asset composition. For instance, the major banks increased their short-term borrowing when higher household demand for variable-rate mortgages at the end of the 1990s resulted in the average duration of mortgage institutions' loans becoming increasingly shorter.

The major Swedish banks have relatively limited interest rate risk and exchange rate risk in their balance sheets. As the group's internal bank it is the treasury department that manages risk levels, which is done by setting limits for variables such as net exposures and Value-at-Risk.[102] Both interest rate and currency-related derivatives are used on a large scale – the market values of the major banks' derivative portfolios amount to between 5 and 15 per cent of their balance sheets, while in nominal terms they can often be several times larger than the balance sheets.

---

102 Value-at-Risk is a statistical measure that, with a given probability, most often 99 per cent, expresses the maximum loss in a financial position over a certain period.

The major banks limit their liquidity risk by holding a liquidity buffer, taking long-term funding positions and diversifying their funding sources. The size of the liquidity buffer depends on how long the bank wants to be able to survive in an extreme situation without access to market funding. As regards the diversification and duration of the market funding, all the major banks attach importance to not becoming too dependent on a particular market or investor category or on overly short-term funds, and all work with different kinds of strategic target values. Some of the banks control the funding mix more actively by setting explicit limits for currencies or individual investors, as well as objectives for the relation between core assets and stable financing. Other banks adopt the approach that, within reasonable boundaries, diversification is best controlled through price – the cheapest funding is often also the best diversified. According to this line of reasoning, it will quite simply be evident if a bank has become overly dependent on a certain market because its funding will be expensive.

The major Swedish banks are not substantially different in terms of the tolerance for interest rate risk, exchange rate risk and liquidity risk in their balance sheets. Their outlooks, methods and ways of working are different but they all share a conservative approach to risk-taking in their balance sheets. As a result, it is not possible to attribute differences in market funding to different degrees of risk-taking in the banks' balance sheets. The composition of assets and liabilities - particularly the size of a bank's deposit deficit - does go a long way towards explaining why FöreningsSparbanken and Handelsbanken have relatively more market funding than Nordea and SEB. But differences in duration and currency seem to be better explained by other factors.

The significance of deposits for interest rate and liquidity risk

An important underlying assumption that banks make when measuring their interest rate and liquidity risk is regarding the length of the and duration of their deposits. Generally, the major banks base this assumption on the contractual duration of the deposit accounts, which are usually payable on demand, thus assuming that the bulk of the deposits have a very short rate fixing period, usually one day. The behavioural duration of the deposits is much longer, however. Because of the government's deposit guarantee, deposits are a highly stable source of funds that, as experience has shown, rarely dries up even when a bank is in serious difficulty. To sum up, this means that, from the perspective of interest rate risk, deposits are viewed as very short, while in terms of liquidity risk they are considered to be stable or very long. In practice this implies that, in order to manage their interest rate risk, the major Swedish banks need to lengthen the duration of their liabilities either through longer-term market borrowing or through the use of derivatives. [103]

103 In some EU countries where deposit rates are much less variable than in Sweden the rate fixing period of deposits can instead be assumed to be very long, sometimes over 5 years. The banking systems in these countries have the opposite need to the Swedish one, and thus require short-term market borrowing.

THE BANK'S CREDIT RATING

A bank's creditworthiness as perceived by the market and its rating are of crucial importance for the bank's funding costs. An overly low rating may even mean that certain funding options will not be open to the bank at all. The significance of a rating differs across investors and markets, but serves as an "official" stamp of quality that essentially all investors use in their credit risk analyses. A closely related aspect that has considerable bearing on a bank's borrowing cost is the market's picture or categorisation of the bank. Being viewed as a boring, safe northern European retail bank is in this context very positive. In the long run a bank can of course influence its creditworthiness and rating by opting for a more or less risky business strategy. In the short term and from the perspective of a bank's treasury department, however, creditworthiness is given by external circumstances.

A bank's creditworthiness and rating have greater significance at longer borrowing horizons and outside Sweden. The shorter the duration of an investment, the less importance is placed by an investor on the credit risk – the probability of default during a short period is simply too low to warrant any in-depth analysis on the investor's part. In some markets, such as the Swedish one, this means that the pricing at short horizons is not greatly differentiated between various credit risks. In other markets, such as the US one, it simply entails that investors are even more inclined to leave it up to rating agencies to assess the credit risk. The less well known and large a bank is in a market, the more important its rating becomes. In the Swedish market, the major Swedish banks are highly established and well known. The investors themselves are part of the Swedish economy and the financial market, and they are thus well aware of the conditions under which the banks operate. In this case the rating agencies' opinions become somewhat less significant. However, in the US market, for instance, the major Swedish banks are initially relatively unknown to investors. A pension fund in California would require a great deal of resources to assess the credit risk in a small bank from a small country in northern Europe. Here the rating has a vital role by placing the borrower in a risk category that the investor can directly relate to.

All in all this means that, all other things being equal, there should be two differences in the funding of two banks with different ratings. The bank with the higher rating should both have somewhat longer-term borrowing and a bigger component of foreign debt.

Currently the four major banks have fairly similar ratings. During most of the 1990s, however, Föreningssparbanken (via Spintab) and Handelsbanken had a clearly higher rating than the other two. Moreover, through their large mortgage institutions (Handelsbanken acquired Stadshypotek in 1996), both had a distinct profile as stable retail banks. The difference in rating and perceived creditworthiness is probably the single most important reason for Föreningssparbanken's and Handelsbanken's much larger borrowing, relatively speaking,

in foreign currency. In the US market in particular, a high rating is quite simply more profitable to have than in the Swedish market, especially at shorter borrowing horizons.

FIXED COSTS

A high creditworthiness and rating is a necessary but not sufficient condition for being able to obtain funding in the market. Funding has fixed costs, in the shape of high initial costs and smaller maintenance costs. For a start, a bank has to acquire the technical means for borrowing in a certain market. This, for example, might involve establishing a borrowing programme with legal documentation for a particular type of security in one or more currencies, or setting up a branch organisation for being able to issue US bank certificates, for instance.

To be able to obtain funding, it is also necessary to have a name that is well recognised among investors. Investors in bank securities are conservative and risk-averse, and won't buy securities from an issuer with which they are neither familiar nor have established limits, regardless of the issuer's rating. Consequently, the prospective issuer must first build up a presence by establishing investor contacts and by carrying out regular issues that initially are small, but that gradually increase. According to some banks this is a process that can take many years but that in the longer run can entail substantial gains in the form of lower borrowing costs.

Maintenance costs stem from the bank's need to show a continual presence so as to have continued access to a certain market. This entails regular and frequent borrowing. Should a bank stop borrowing or issuing in a particular market for a long period, investors' recognition of the bank will diminish quickly and they will remove their limits. Then the issuer must begin to build up its presence all over again. The more funds a bank borrows, and the more frequently it borrows, the bigger the limits (access) and better the recognition (prices) the bank will obtain. Furthermore, several loan programmes contain clauses whereby the issuer has undertaken to meet a certain minimum level of outstanding volume. Finally, when a bank has invested in and built up a name and presence in a market, it creates an in-house tradition. This tradition consists of systems, competence, a sales organisation and personal contacts, and is vital to the bank's ability to obtain cost-efficient financing.

Given that a bank wants to minimise its long-term funding costs, the existence of fixed funding costs entail a certain amount of rigidity in the choice of financing. For instance, a bank cannot suddenly stop issuing commercial paper in US dollars because it's cheaper at the time to issue medium-term notes in euro. Temporary and cyclical price differences are therefore only partly visible in the banks' funding choices. Longer-term differences in price and access, however, have clear effects. As regards bond issuance, for instance, recent years have seen an increase in euro-denominated issues at the expense of US dollars. This is because the introduction of the euro has resulted in the evolution of a bond market that is beginning to compare with the US one in terms of liquidity and volumes.

Conclusions

All the major Swedish banks are dependent to a greater or lesser degree on market funding. Most of the differences in the banks' market funding can be explained by differences in creditworthiness and the presence of fixed funding costs. In some measure, however, the differences between the banks are due to the fact that they quite simply have different views about risk and liquidity in some markets.

About half of the banks' market funding is in foreign currency. The bulk of the foreign market borrowing is used to finance assets in the major banks' foreign subsidiary banks and branches. A substantial amount, SEK 400-500 billion, is used however to fund lending to Swedish households and firms. In many ways this is positive for the Swedish economy in that the banks' access to efficient funding means, in the long run, lower borrowing costs for households and firms as well.

From the perspective of financial stability there are several different aspects of the major banks' funding in foreign currency worth noting.

- The dependency on international funding entails a higher risk of problems in foreign financial markets spreading to the Swedish banking system.

- The major banks' use of several different markets does involve a diversification of funding sources, but it also means that the banks obtain funding in markets where they are relatively small, unknown borrowers. Under more turbulent and stressed market conditions, there may be a difference between being a big player in a small market, such as the Swedish one, and being a small player in a large market, such as the US one. It should be noted, however, that as long as an individual bank's reputation in the market is intact, it would take considerable financial turbulence before the availability of funding would dry up. For instance, the major Swedish banks had no great difficulty obtaining funding in US dollars during the tough market conditions that followed the terrorist attacks on 11 September 2001.

- Even though the bulk of the major banks' borrowing in foreign markets is now used to finance foreign assets, it means that the Swedish parent banks, given their treasury departments' role as the group's internal bank, de facto become the entire group's lender of last resort. A major Swedish bank that runs into liquidity problems and cannot obtain market funding will thus not only need liquidity to fund its Swedish banking activities but also any foreign subsidiaries.

- So the Riksbank, in its capacity as lender of last resort for the Swedish banking system, may need to provide emergency liquidity assistance in foreign currency.

Sveriges Riksbank
SE-103 37 Stockholm

Tel +46 8 787 00 00
Fax +46 8 21 05 31
registratorn@riksbank.se
www.riksbank.se

PRODUCTION: SVERIGES RIKSBANK, PRINTING: JERNSTRÖM OFFSET AB
ISSN 1403-0004