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The use of market indicators in financial stability analysis

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In the financial stability analysis the Riksbank monitors the credit risk developments of the main borrowers in the Swedish banking system in order to asses the stability of the financial system. Indicators of credit risk and financial health are continuously evaluated and further developed within the Riksbank. In this paper we present some new indicators based on equity and bond markets that the Riksbank employ in its assessment. Furthermore, we also present some evidence of the usefulness of the indicators by looking at the Swedish banking crisis and analyse how the indicators reacted and behaved during the stressful period of time.

Introduction

Sveriges Riksbank is a non-supervisory central bank with an overall objective to promote a safe and efficient payment system. One of the major threats to payment system stability is bank failures. The Riksbank therefore monitors the stability of the banking system on an ongoing basis and presents its assessment of stability in the semi-annual Financial Stability Report which has two major parts.

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The first part of the Financial Stability Report covers macroeconomic developments, in particular how the soundness of the banks' major borrowers – the household and corporate sectors – is developing. The indicators have mainly been either of a macro- or microeconomic nature. Market indicators can be used to analyse the corporate sector, but also to some extent the real estate sector – a sub-sector on which the Riksbank focuses specifically, because of its importance for banking system soundness.

The first part covers macro-economic developments and in particular how the soundness of the banks' major borrowers is developing.

The second part concerns analysing the soundness of the banking sector, mainly from an analysis of balance sheets and income statements. More recently, the Riksbank has started to make use of information from market prices to complement its regular analysis. Market information from prices on securities issued by banks can provide direct information on how market participants assess the risk in the banks.

The second part concerns analysing the soundness of the banking sector, mainly from an analysis of balance sheets and income statements.

This paper discusses the general view that the Riksbank has taken on the use of market information and on the indicators the bank has chosen to develop and use in its stability analysis.

General features of market indicators

Market indicators have many attractive features, which distinguish them from other types of indicators, e.g. accounting-based indicators. Three such features are:

- Market indicators are forward-looking, while most other types of indicators, such as those based on national accounts or financial statements, are retrospective.
- They are frequently and immediately available; reliable prices can be updated daily and there is no time lag between the time they are generated and the time they are made public.
- Various methods exist for extracting information and calculating risk measures from market prices.

In the coming sections, we will present the methods and measures the Riksbank has chosen to use in its analysis and examine the reasons for doing so.

The usefulness of market indicators relates to markets' abilities to assess risk correctly and to whether this adds something to the regular analysis.

The main question concerning the usefulness of market indicators relates to markets' abilities to assess risk correctly and to whether this adds something to the regular analysis. Market prices incorporate the aggregate valuation of all publicly available information. This means that they provide a picture of the average view of a large number of market participants who invest a lot of effort in understanding what the accurate value of a particular security should be. It is not self-evident that central bankers or supervisors are better informed of the soundness of an institution than the investors' that invest in the institutions securities. Central bankers and supervisors need an information advantage to compensate for the collective knowledge of the well-informed traders of the securities markets.

Central bankers' and supervisors' information advantage comes from the fact that authorities are able to obtain proprietary information on any relevant institution through regulatory reporting or other supervisory measures. For the Riksbank, which mainly focuses on the four largest Swedish banks, this information advantage is not substantial. All four banks are traded on the stock exchange, where the requirements on financial statements are high, both in terms of frequency (quarterly) and

content. The information available from supervisory reporting or the monthly balance sheet statistics reported to the Riksbank does not add that much to the public reporting. Hence, the main advantage exists when there are events and possibilities to request special information from the institutions, for example when a particular industry experiences severe problems and information on exposures to that industry can be collected.

On the other hand, there are a number of reasons why markets may not always assess the available information correctly, at least with respect to the needs of the authorities, that is to obtain a picture of the risk in the relevant institutions.

Firstly, market prices may reflect other aspects than a valuation of an institution's ability to yield returns to investors. The most apparent aspect of this is liquidity. For many securities, variations in prices reflect variations in supply and demand factors, rather than changes in valuation of the prospects of future returns. Liquidity aspects may thus put a limit on which market indicators can be used for practical analytical purposes.

Liquidity aspects may thus put a limit on which market indicators can be used for practical analytical purposes.

Another reason why market information may become less useful is that the focus of investors may be different from that of the authorities, in particular when it comes to risk. The authorities are mainly interested in the risk of bank failures, which is normally a highly unlikely event. Investors may not have incentives to address this risk as strongly. There are arguments that this may be a problem both for debt instruments and equities, although for different reasons. For equities, limited liability for shareholders may lead to an upside focus by equity investors and little regard for potential losses. When it comes to debt instruments, particularly those issued by very large banks, there is always a likelihood of public support to debt holders should the bank run into problems. This holds true in particular for short-term debt, since investors think that they will receive support at least if a problem arises very suddenly. This is one of the main reasons why subordinated debt, which has low seniority in case of failure, has been discussed as the theoretically most attractive security to use for market indicators of bank risk. However, the problem with lack of risk focus should not be exaggerated. Even if investors may not have a reason to focus on extreme events such as sudden failures, they would be hurt by deterioration in earnings or substantial losses, and information of an increased likelihood of these events should prompt movements in market prices.

Market information may become less useful because the focus of investors may be different from that of the authorities, in particular when it comes to risk.

An additional, but related, reason why market information may have shortcomings in signalling risk is that banks are opaque. This opaqueness limits market participants' knowledge of a bank's risk profile. The Riksbank has frequent discussions in particular with analysts and end-investors in Swedish bank equity. These discussions show that investors have lit-

An additional reason why market information may have shortcomings in signalling risk is that banks are opaque.

tle more than aggregated measures of the credit portfolio, some retrospective measures of credit losses and some idea of the quality of credit management, as a means to assess the risk for credit losses in a particular bank. Thus, it is quite hard for market participants to successfully assess a bank's risks. On the other hand, investors tend to be quite quick at picking up even vague rumours of any deterioration in a bank's expected earnings. Fortunately, most of the recent academic research provides some reassurance concerning the reliability of bank equity market information. These findings suggest that banks are not harder for equity investors to value than non-financial firms (see for example Flannery et al. 2002).

A final reason why there may be problems with risk assessments from market information is the issue of market overreactions or herding.

A final, related reason why there may be problems with risk assessments from market information is the issue of market overreactions or herding. Markets are normally sensitive to bad news, and market prices tend to move strongly on these occasions.[1] When information that shows a large shift in risk for a bank reaches the market, it is questionable whether market prices really represent a fair valuation of the bank's risk. Moreover, the information often reaches the authorities at the same time, and they may be better situated to actually evaluate the importance of the particular information, by demanding qualifications from the bank itself.

To improve our understanding of the behaviour of market-based indicators it is of paramount importance that the indicators are studied during stressful periods of time.

In the empirical analysis concerning the use of market-based indicators, as with many early-warning models, we face an econometrical problem.[2] Market information seems to produce low type-I errors, that is, misclassifying problem banks as non-problem banks. However, the type-II error is probably larger, that is, they give warnings on occasions where there are no problems. To improve our understanding of the behaviour of market-based indicators it is thus of paramount importance that the indicators are studied during stressful periods of time and, if possible, also to use or analyse different market-based indicators.

Firstly, obtaining empirical results is key. Secondly, market indicators should be used as a complement to the regular analysis.

To sum up, for the Riksbank's purposes, market information has many attractive features as forward-looking, high-frequency, readily-available and information-intensive indicators. The caveats mean, however, that they need to be handled with caution. This leads to two important conclusions for the Riksbank. Firstly, obtaining empirical results is key. It is difficult to find out by any other means whether market information produces good indicators. As will be discussed in the following, empirical results seem to present quite strong evidence for some types of indicators,

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1 For a discussion on the mechanisms behind herd behaviour, see Sveriges Riksbank (2002).

2 Early-warning models combine a set of bank-level financial indicators (balance sheet, income statement and market indicators), as well as other variables, often on the macroeconomic conditions, to make a prediction about the state of a bank. See Gilbert et al. (1999).

and this has been very important for the Riksbank's decision to make use of market indicators. Secondly, market indicators should be used as a complement to the regular analysis. They provide a benchmark for the regular internal analysis and a good starting point for evaluating it.

The rest of this paper discusses which indicators the Riksbank has chosen to develop and use. Generally, the Riksbank has focused strongly on equity-based rather than debt-based indicators. We therefore discuss our stances on these two general types of indicators separately.

In general, we base our reasoning on what indicators to use by looking at previous research and then focussing particularly on the Swedish circumstances that are relevant for evaluating whether or not a particular indicator would be useful for us. In particular, we evaluate the significance of any indicator on data from the Swedish banking crisis in the early 1990s. This is informative, since it is a real test of the markets' abilities to signal risk in a case where several banks actually became insolvent and also of the markets' abilities to distinguish the ones that actually failed from those who managed to survive. Since the Swedish banking crisis, debt and equity markets have undergone significant development, that is, new instruments and actors, higher trading volumes and a higher degree of internationalisation. If data from the Swedish banking crisis supports the use of market-based indicators for signalling bank fragility then, due to the developments of the Swedish and international financial markets, more recent data should be even more useful for signalling bank distress. In order to give the reader a reference to the timing of market reactions, the timeline of the crisis is described in the box below.[3]

We present indicators for the six banks that lived through the entire period of the crisis, that is 1987 to 1994.

We present indicators for six banks over the period of the crisis. During the period 1987 to 1994 there were eleven banks listed on the Swedish stock exchange. However, only six banks lived through the entire period. Therefore, we present the indicators, when data is available, for a total of six banks. Three of the banks can be classified as having been in a fragile situation during the banking crisis, namely, Gota Bank, Nordbanken and Skandinaviska enskilda banken, SEB. The other surviving banks are Östgöta Enskilda Bank, JP Bank and Svenska Handelsbanken, SHB. In addition, indicators for the four large banks in Sweden during 1997–2003: SEB, SHB, Nordea, NDA, (formerly Nordbanken) and FöreningsSparbanken, FSPA, (formerly Sparbanken Sverige) are presented.

[3] For a more detailed description of the crisis, see Dress & Pazarbasioglu (1998) or Andersson & Viotti (1999).

The Swedish banking crisis

1990	The first problems in the financial system became apparent when the sector of finance companies suffered severe losses, and some companies suspended their payments. The finance companies were non-bank credit institutions, which to a large part funded loans to the real estate sector by issuing short-term commercial papers but also through bank funding. A substantial part of these companies reduced their businesses significantly or were liquidated. No government support was granted.
Autumn 1991	Nordbanken (the 3rd largest bank at the time, owned to 75 per cent by the state) had incurred large credit losses. It needed a capital infusion of SEK 5 billion[4] to meet its capital adequacy ratio, which was provided predominantly by the state on 10 October.
Autumn 1991	Första Sparbanken (one of the major banks in the savings banks sphere) had also incurred severe losses, and turned to the government for aid. It received a guarantee of SEK 3.8 billion. This guarantee was used and turned into a loan in March 1992.
Spring 1992	The government took full control over Nordbanken on 8 May.
September 1992	It became apparent that Gota Bank, the 6th largest bank, was insolvent. The major shareholder Gota AB refused to provide more capital. On 9 September, the government made a commitment to enable Gota Bank to honour their financial obligations. Later that autumn, the state took over the shares in Gota Bank. Gota AB suspended payments on 16 September.
September 1992	The currency crisis took place. The Riksbank intervened to defend the fixed exchange rate. After interventions in early September the crisis peaked on 16 September, when the marginal lending rate was raised first from 20 per cent to 75 per cent, and later the same day to 500 per cent.
September 1992	The general banking guarantee was presented by the government on 24 September. The state guaranteed all liabilities, but not equity, in Swedish banks.
Autumn 1992	The capital injections one year earlier to strengthen Nordbanken had not been sufficient, and the bank was reconstructed.
November 1992	The Riksbank left the fixed exchange rate regime on 19 November and the krona was allowed to float.
December 1992	SEB, the largest Swedish bank at the time, notified the government that it would probably need government assistance. An application was made on 17 February 1993, but the owners withdrew it later, after they managed to obtain a capital injection.

[4] 1 EUR ≈ 9 SEK and 1 USD ≈ 8 SEK.

1993	Bank problems were revealed to a further extent and support was given to several banks: Nordbanken, Foreningsbanken and Sparbanken Sverige, the result of a merger in 1992 of the larger savings banks. This meant that four large Swedish banks (rank 3 to 6) received support. The two largest, SEB and Handelsbanken, however, benefited from the general banking guarantee.

Market indicators of bank risk

MARKET INDICATORS BASED ON DEBT INSTRUMENTS

The most commonly used measure of risk where bond markets are concerned is the bond spread.

The most commonly used measure of risk where bond markets are concerned is the bond spread. The bond spread is defined as the difference in yield on an x-year bank's bond and a risk-free government bond of similar duration or maturity. Bondholders care more about the downside risk, since bondholders do not gain from increased risk-taking but face an increased likelihood of losses when the risks increase. In particular, spreads from subordinated bonds have a number of attractive features as an indicator. Holders of subordinated debt have more to lose in case of failure due to the low level of seniority and, hence, a greater incentive to monitor the issuer's risk. Bond spreads, and particular spreads on subordinated debts, should increase with increased asset risk and leverage and declining profitability. However, if the authorities are expected to support a failed bank this would probably result in downward bias on, both the size of and change in, the bond spread over time.

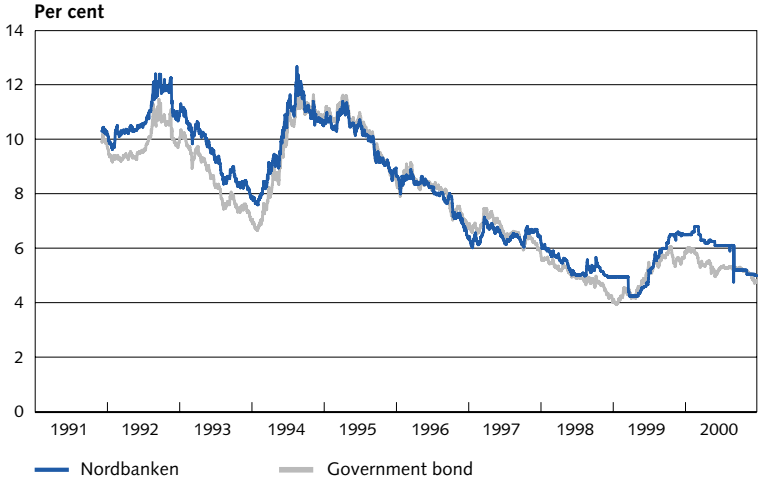
To use the subordinated debt spread as an indicator of the health or risk of Swedish banks, it is important that the bonds are traded in a relatively liquid market.

Academic research on how well bond prices reflect banks' risk has mainly looked at the relationship between the bond spread and other measures of default risk. In many cases, results based on US data before the early 1990s showed a weak to nonexistent relationship.[5] One explanation that has been put forward for the weak relationship is that investors during that time believed that bank regulators were implicitly following a too-big-to-fail policy.[6] They also found some evidence that pricing behaviour changed at the end of the 1980s and that investors were able to differentiate between individual banking firms' credit risk. A recent study by Evanoff & Wall (2001) found that subordinated debt spreads were better than reported capital ratios at predicting banking problems. In a European context, Sironi (2000) analysed the information content of subordinated debt spreads for European banks. The results showed that holders of subordinated debt rationally discriminated between the risk profiles of private banks, and that the risk sensitivity of

[5] See Flannery (1998) for a survey.
[6] See Flannery & Sorescu (1996).

spreads increased during the 1990s. Gropp, Vesala & Vulpes (2002) found that the bond spreads of European banks signalled problems up to six months before a bank went into financial distress. In the study, financial distress was proxied by Fitch/IBCA financial strength ratings downgraded to C or below. All major banks in Sweden issue subordinated debt and most issues are placed in Sweden or in the Eurobond market. However, not all issues are listed on an exchange, and in order to use the subordinated debt spread as an indicator of the health or risk of Swedish banks, it is important that the bonds are traded in a relatively liquid market. If only quotes are available or the market is illiquid, then the spread will also incorporate a liquidity premium.[7] Figure 1 displays the ask yield for a subordinated debt issued by Nordbanken, and traded on SOX, a part of the Stockholm stock exchange, as well as a government bond with a similar maturity for the period 1991–2001. The correlation between the two bonds is quite high and the spreads seems to vary over time (see Figure 1). The continuous data series and high volatility of the yields give the impression of actively traded securities. However, a closer scrutiny of the data reveals that the actual number of trades is very low; the average number of daily trades for the subordinated debt issued by Nordbanken during the period August 1999 to December 2001 is less than one.[8] Thus, the market for subordinated debt in Sweden cannot be characterised as

Figure 1. Yields for bank subordinated debts and a government bond 1991–2000
Per cent



Note: Closing daily ask yield for subordinated debts issued by Nordbanken and a government bond, both with a maturity of ten years.

Sources: SIX Trust and the Riksbank.

[7] The liquidity premium is probably correlated with the credit risk component of the spread, but this unclean spread will complicate the analysis of how much information is present in the spread concerning bank risk.

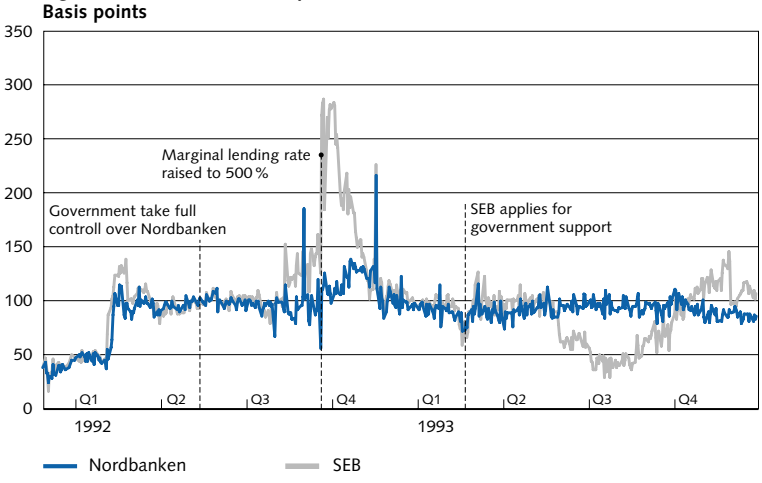
[8] Statistics are available only from 1999 onwards.

liquid. A consequence of bad liquidity is that movements in spreads may be the result of changes in liquidity rather than credit risk. Hence, the information contained in spreads is probably indistinct.

At present, the debts issued by Swedish banks do not seem liquid enough to be of use in the stability analysis, that may however, change in the future.

Figure 2 displays the spread between the yields on the subordinated debts issued by Nordbanken and SEB for the period 29 November 1991 to 30 December 1993, which is during the Swedish banking crisis. The spreads of the subordinated debts are highly correlated over the period and the average spread over the period is similar between the banks (see Figure 2). The average spread for SEB over the period is 97 basis points, and for Nordbanken 91 basis points.[9] As mentioned above, both Nordbanken and SEB can be classified as being in fragile situations during the banking crisis; nevertheless the difference in average spread between the two banks over the period is very small. In fact, it seems like the spreads are driven more by the general interest level and macroeconomic factors than credit risk (see Figure 2). The largest fluctuations in the spreads take place during the currency crisis in September 1992. It is interesting to note that the spread for SEB increases much more than for Nordbanken during the currency crisis. This may reflect the fact that Nordbanken was under government control and/or that the market considered the credit portfolio of SEB to have a higher exchange rate exposure. The liquidity is, as mentioned above, poor. Actual trading occurs on average in about 50 per cent of the trading days. Hence, it is not surpris-

Figure 2. Subordinated debt spreads
Basis points



Note: Daily spreds between subordinated debts issued by SEB and Nordbanken and a government bond of similar maturity.

Sources: SIX Trust and the Riksbank.

[9] The average spread for a subordinated debt issued by Föreningsbankernas Bank, with the same maturity and issued during the same period as the bonds in Figure 2, was during the period in Figure 2 equal to 103 basis points.

ing that the spreads do not seem to exhibit any difference between the banks. The Riksbank is, however, like everybody else attracted by the prospects of using subordinated debt spread as market indicators. But at present, the debts issued by Swedish banks do not seem liquid enough to be of use in the stability analysis. This may change in the future, however.

EQUITY-BASED MARKET INDICATORS

The equity market in Sweden is in general a liquid marketplace, and the four largest banks belong to the group of stocks with the highest daily turnover on the Stockholm stock exchange.

The equity market in Sweden is in general a liquid marketplace, and the four largest banks are traded frequently and belong to the group of stocks with the highest daily turnover on the Stockholm stock exchange. Markets are transparent and relatively information-intensive, with many market participants and a strong focus on the individual companies. Stock prices are more likely to incorporate new information faster than the bond market due to the fact that stocks are traded much more frequently than bank or corporate debt. An advantage of the use of stock market data is that the quality is better than debt market data. An additional advantage is the larger quantity of available stock data as compared to debt market data. As mentioned above, empirical results from the use of different market-based indicators are essential in the process of incorporating them into the stability analysis. Hence, when the Riksbank decided to incorporate market-based indicators into the financial stability analysis, the stock market was the first to be considered.

Equity prices

Equity prices are simple indicators that can be used to compare the development between different banks.

Equity prices are simple indicators that can be used to compare the development between different banks. The notion that central banks and regulatory authorities could use information from stock prices was first put forward by Pettway (1980). Pettway found, in a small sample of US banks, that stock returns of banks destined for failure signalled problems almost 38 weeks before regulators began their examination process which led to the bank being classified on the problem bank list. A more recent empirical study found that stock prices are relatively more efficient in reflecting firm-specific information than bond prices.[10]

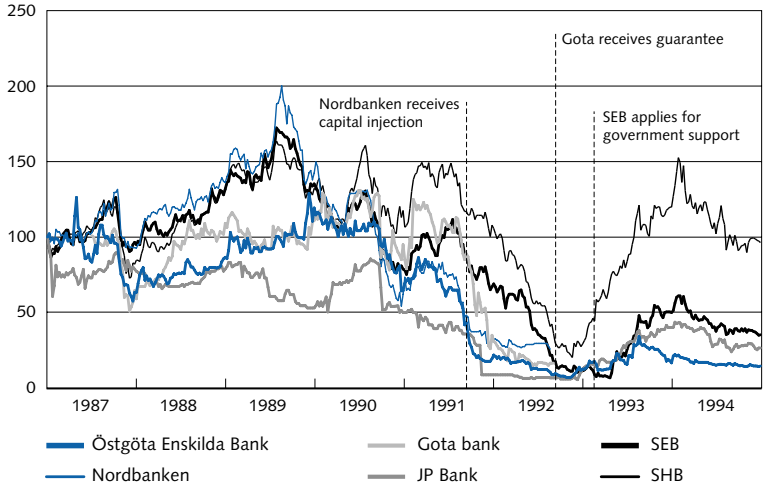
Although the main appeal of using stock prices is that the data is readily available, one shortcoming is that the link between stock prices and default risk is not absolutely clear. Stock prices should reflect the discounted value of all future dividends and an increase in the future profitability of the bank should increase the value of equity today. Likewise, a

[10] See Kwan (1996).

decrease in the future profitability should lead to a lower value of equity today. Hence, there is no unambiguous link between stock prices and default risk, because movements in bank stock prices are driven also by other factors besides default risk. Figure 3 shows equity prices (re-scaled) for a sample of Swedish banks for the period 1987 to 1994 on a weekly basis. The equity prices for all six banks fell dramatically during the banking crisis (see Figure 3). However, it seems that the failed banks fell well in advance as compared to the non-failed banks during the crisis.

There is no unambiguous link between stock prices and default risk, because movements in bank stock prices are driven also by other factors besides default risk.

Figure 3. Equity price developments for Swedish banks 1987–1994
Price indices



Note: Equity prices are re-scaled and adjusted for splits and dividends.

Sources: SIX Trust and the Riksbank.

A further step is to analyse whether stock prices contain any signals about bank health that can be discerned by looking at stock returns instead of the price levels. In order to analyse if there were differences in returns between the banks that ran into problems during the Swedish banking crisis and those that did not, we constructed two value-weighted portfolios. The first portfolio contains the banks that *survived* the banking crisis, that is, the portfolio includes Östgöta Enskilda Bank, JP Bank and SHB. Portfolio 2 consists of the *failed* banks, that is, Gota Bank, Nordbanken and SEB. Summary statistics of the annualised weekly returns for the two portfolios during the period January 1987 to December 1989 are displayed in Table 1. During this period there is no significant difference between the two portfolios, the annualised mean returns are the same but the volatility of portfolio 1, the surviving banks, is higher than the volatility of portfolio 2, that is, the portfolio of *failed* banks (see Table 1).

A further step is to analyse whether stock prices contain any signals about bank health that can be discerned by looking at stock returns instead of the price levels.

Table 1. Summary statistics of value-weighted portfolio returns January 1987 to December 1989

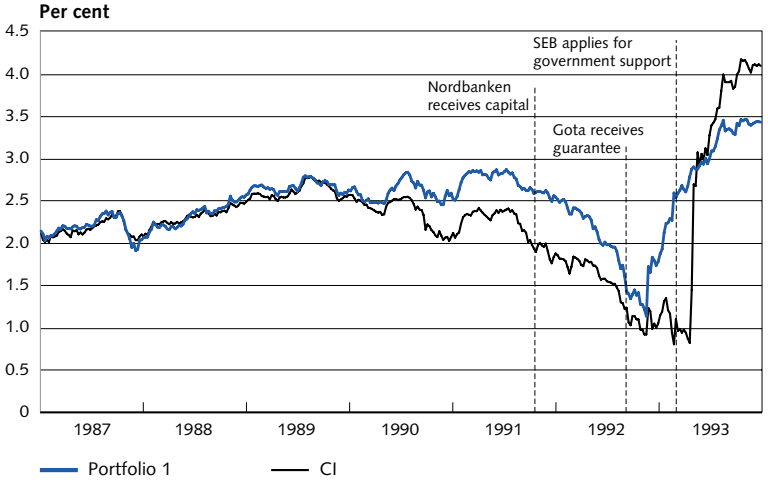
	Portfolio 1	Portfolio 2
Mean return	0.15	0.15
Standard deviation	0.24	0.21

Note. Annualised mean returns and annualised standard deviation of weekly stock returns. Portfolie 1 consists of Östgöta Enskilda Bank, JP Bank and SHB. Portfolio 2 includes Gota Bank, Nordbanken and SEB. Both portfolios are value-weighted.

In order to analyse if there were any differences between the two portfolios, we computed the cumulative weekly returns for the two portfolios (see Figure 4). The cumulative returns of the two portfolios are similar over the period up to 1990, but then the two curves start to diverge. Thus, it appears that the equity returns in the value-weighted portfolio of *failed* banks developed completely differently after 1990. Hence, it seems like the market priced the two portfolios differently after 1990. If the market were able to distinguish the more risky portfolio from the less risky portfolio, then a higher discount rate for portfolio 2 would, ceteris paribus, result in lower returns for portfolio 2 as compared to portfolio 1. It is also obvious that the two curves are close to each other during the autumn 1992, which probably reflects not only the currency crisis but also the fact that the crisis had become systematic and that the market realized that at this time.

In order to test if there are any significant differences in the cumulative returns between *survived* banks and *failed* banks, we calculate the difference in cumulative returns between portfolio 1 and the cumulative

Figure 4. Cumulative weekly returns for portfolio 1 and portfolio 2, 1987–1993
Per cent



Note: Cumulative weekly returns for portfolio 1 (Östgöta bank, JP Bank and SHB) and portfolio 2 (Gota, Nordbanken and SEB).

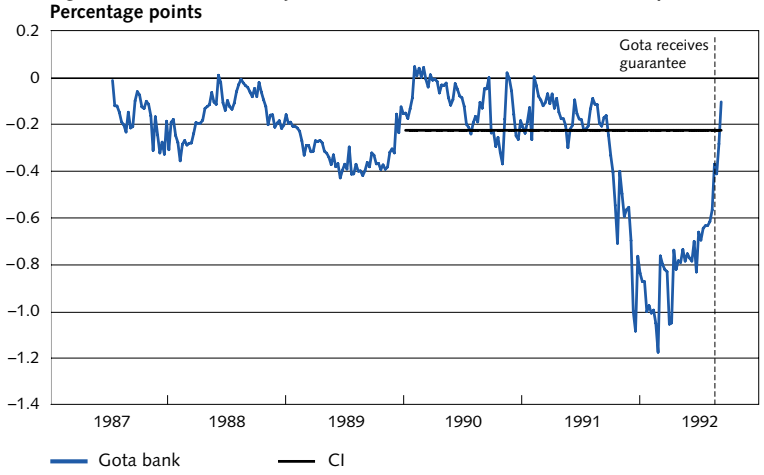
Sources: SIX Trust and the Riksbank.

returns of each bank stock in portfolio 2. That is, we calculate the difference in the cumulative weekly return between portfolio 1 and Nordbanken, and likewise for Gota Bank and SEB. This is done since the event window is overlapping for the banks that went into a distressed period during the Swedish banking crisis. The overlapping event window implies that the individual securities are correlated in the cross section and hence, the distributional results for abnormal returns are not applicable.[11] Hence, in order to obtain an estimate of the standard deviation of the difference in weekly cumulative returns we estimate the standard deviation for the difference over a period that can be classified as "normal". The standard deviations of the cumulative weekly return difference between bank i and portfolio 1 is estimated for the period January 1987 to December 1989 using the weekly observations, during this period the developments of the two portfolios were similar with almost identical mean returns and standard deviation (see Table 1 and Figure 4).

Figure 5 shows the cumulative weekly return difference between Gota Bank and portfolio 1, that is, the portfolio of non-failed banks. The dotted line shows the lower confidence interval on the 95 per cent level. The cumulative weekly return difference between Gota Bank and portfolio 1 is quite volatile over the period; still the difference between the two is significantly different up to 112 weeks before the bank received the guarantee. Thus, it seems like the returns signal a difference between Gota Bank and portfolio 1 well in advance of the crisis. Figure 6 shows the cumulative weekly return difference between Nordbanken and port-

It seems like the returns signal a difference between Gota Bank and portfolio 1 well in advance of the crisis.

Figure 5. Cumulative weekly return difference between Gota bank and portfolio 1
Percentage points



Note: CI denotes the critical value on the 5 per cent level.

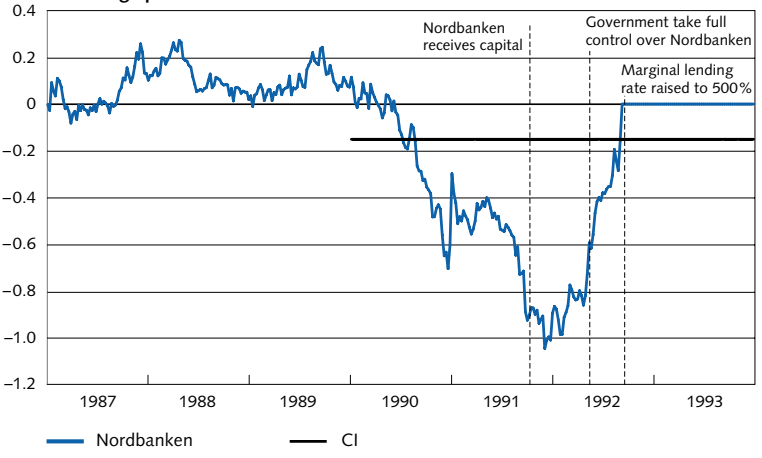
Sources: SIX Trust and the Riksbank.

[11] See Campbell, Lo & MacKinlay (1997).

folio 1, and Figure 7 the cumulative return difference for SEB. The cumulative return difference between Nordbanken and portfolio 1 is positive before the middle of 1990, thereafter the return turns downwards and turns to negative during January 1990. In fact, the return difference is significant for Nordbanken in July 1990, more than one year in advance of the capital injection during the autumn 1991.

For SEB, the difference is significant from June 1990, that is, well in advance of the fragile situation (see Figure 7). Thus, the difference is sig-

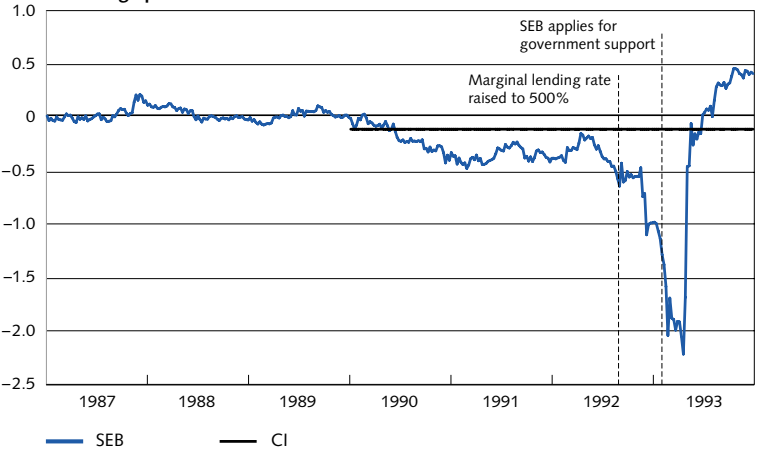
Figure 6. Cumulative weekly return difference between Nordbanken and portfolio 1
Percentage points



Note: CI denotes the critical value on the 5 per cent level.

Sources: SIX Trust and the Riksbank.

Figure 7. Cumulative weekly return difference between SEB and portfolio 1
Percentage points



Note: CI denotes the critical value on the 5 per cent level.

Sources: SIX Trust and the Riksbank.

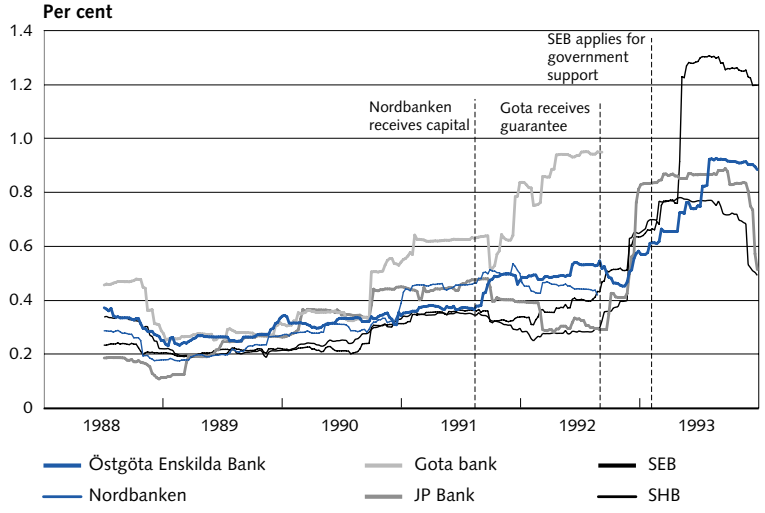
nificant almost three years in advance of the application for government assistance. Hence, stock returns of failed banks developed much differently as compared to non-failed banks before and during the actual banking crisis occurred. Even if all banks had negative returns during the period, the differences in cumulative returns are significant well in advance of the crisis. Stock returns signal significant differences between *failed* and *non-failed* banks up to almost three years in advance. Therefore, it seems like the market to some degree discounted the banks differently, and were able to distinguish more fragile banks from more healthy banks. Our results are well in line with, for example, Elmer & Fissel (2001) who also find that stock returns can help forecast bank failures in the US. Berger, Davies & Flannery (2001), find that supervisory assessments are generally less accurate than equity market indicators in anticipating changes in financial performance, such as earnings, except when the supervisory assessments are based on a very recent inspection.

For SEB the difference is significant almost three years in advance of the application for government assistance.

A further effort in extracting information from the stock market looks beyond the price level and focuses on the volatility of stock returns. Since stocks are residual claims on the bank's assets, the volatility in stock returns contains information about the banking firm's asset risk. An increased asset risk would lead to increased stock price volatility. The annualised volatility of the stock returns based on a 50-week estimation period is shown in Figure 8. The volatility of the banks that later went into a distressed situation is, on average, higher than the volatility of the banks that survived. Furthermore, it is evident that the volatility of banks destined for failure is

It is quite evident that the volatility of banks destined for failure is higher than non-failure banks well in advance of the crisis.

Figure 8. Annualised volatilities 1988–1993
Per cent



Note: Annualised volatility of stock returns based on a 50-week rolling estimation period.

Sources: SIX Trust and the Riksbank.

higher than non-failure banks well in advance of the crisis, and the largest changes in volatility during the period 1990 to 1993 occurs for banks that went into a distressed situation during the banking crisis, thus indicating a difference in default risk between failing and non-failing banks.

The results are well in line with the results in Persson (2003). Persson finds a significantly higher volatility for banks destined for failure during the Nordic banking crisis up to two years before the actual failure, as compared to the volatility of non-failed banks.

Volatility is one of the main market-based indicators used today by the Riksbank in its financial stability analysis.

Volatility is one of the main market-based indicators used today by the Riksbank in its financial stability analysis. Today, we are also able to further improve and extend our volatility estimates since the four large banks have options traded on their stocks. If we use option prices we can improve our estimates by calculating the implied volatilities from the option prices. Implied volatility does not inform us completely about bank risk in the sense of probability of default. Rather it provides us with a measure that reflects the market's view regarding the volatility of the market value of equity, which in turn reflects the market's view of the volatility of a bank's assets. Nevertheless, since asset volatility is directly related to default risk, this indicates that implied volatilities are an important dimension of a bank's default risk. Swindler & Wilcox (2002) find that implied volatilities contain information over and above that contained in stock returns and subordinated debt yields. Hence, implied volatilities both improve our volatility estimates and give us additional information.

The implied volatilities are calculated from exchange-traded put and call options.

The implied volatilities are calculated from exchange-traded put and call options, and only options with at least five days to the exercise date are incorporated in our implied volatilities. Options with a shorter time period than five days left are excluded in order to assure that the estimated volatility is not based on options with no trading. The average implied volatilities for the four large banks for 1999 to 2003 are displayed in Table 2. The implied volatilities are themselves quite volatile over the period. It is interesting to note that the market consistently, during the sample, discounts a higher volatility for both SEB and Nordea.

Table 2. Average implied volatilities 1999–2003
Per cent

	SEB	SHB	Nordea	FSPA
1999	41.73	32.71	40.52	37.00
2000	34.23	30.21	37.45	30.88
2001	32.90	28.13	34.15	30.97
2002	38.03	30.43	41.36	31.37
2003	44.88	33.03	50.42	36.14

Note. Average implied volatilities based on daily implied volatilities. The average Implied volatilities for 2003 are based upon data until 7 April.

A further improvement in extracting information from market prices is based on option-pricing theory, and treats the equity as a call option on the company. This approach relies on the fact that under limited liability, equity is equivalent to a call option on the issuer's assets. With the analogy to options, the technology of option pricing can be brought to bear, and information on investors' implicit views of risk can be extracted from stock prices. Merton (1974) first shows that equity can be modelled as a call option on the assets of the firm, that is bank, with an exercise price equal to the total book value of the debt. The shareholders do not receive anything if the face value of debt at maturity exceeds the market value of assets. Otherwise, they receive the difference between market value of equity and debt. The market value of equity therefore is

$$MV_{Equity} = \max[MV_{Asset} - Debt, 0]$$

Thus, option-pricing theory can be applied to derive the market value of assets and the volatility of assets from the observed market value of equity (MV_{Equity}), volatility of equity (σ_E) and the Debt (D). By applying the standard formula of Black & Scholes (1973), the market value of equity can be valued as:

$$MV_{Equity} = MV_{Asset}\, N(d_1) - De^{-r1}\, N(d_2)$$

$$\sigma_E = \frac{MV_{Asset}}{MV_{Equity}}\, N(d_1)\, \sigma_{Assets}$$

Where $N(\bullet)$ represents the cumulative normal distribution, r the risk free rate of return and t the time to maturity of the debt. The approach taken by the Riksbank is similar to the one proposed in Gropp et al. (2002). We work out the market value of assets and volatility of assets from the observed equity value, total debt and the volatility of equity.[12] Using these estimated parameters we obtain the future probability distribution of asset to liability ratio and the implied probability of default. The measure we use as an indicator is the distance-to-default, which indicates the number of standard deviations from the default point at maturity.

As inputs into the calculations we use the monthly market value of equity, and equity volatility is estimated as a moving average of the standard deviation of daily returns. The moving average is used in order to reduce noise in the volatility estimates.[13] The time to maturity of the debt structure is set equal to one year. During the period 1980 to 1995

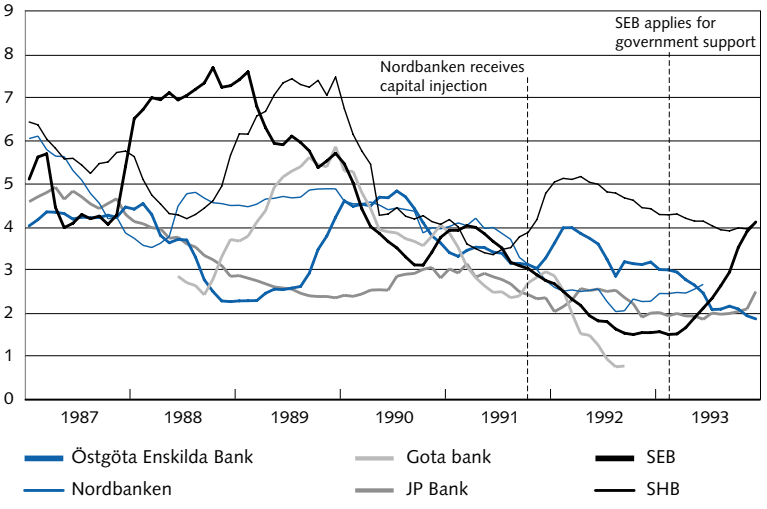
[12] A non-linear goal optimizing routine in Matlab is used to solve for MV_{Assets} and σ_{Assets}.

[13] The calculations are highly dependent on the estimated volatility, and it might be better to estimate a parametric model of the volatility.

The distance-to-default seems to signal increased fragility and, furthermore, is able to distinguish between failing and non-failing banks.

the monthly balance sheet data delivered to the Riksbank from the banks was used to obtain the monthly total debt of the banks. Total debt is actually biased downwards, since the debt from the the banks' subsidiaries are excluded. Figure 9 displays the distance-to-default during January 1987 to December 1993. The distance-to-default for the banks, who reached a fragile situation during the Swedish banking crisis, started to fall in 1990, whereas the distance-to-default for SEB had already started to fall in February 1989. The consistently low value for JP bank is driven by a low value of market value of equity to total debt and a high volatility. In general, the distance-to-default for *failed* banks signals problems before the problems were realized. It should be noted that the Riksbank does not use the distance-to-default as a level measure, rather we concentrate on changes in the distance-to-default. The reason behind this is that we think changes are more informative than levels. Furthermore, it is hard to have a priori opinions on what a reasonable level should be. The major changes in the distance-to-default in Figure 9 occur mainly in banks that came into a distressed situation during the banking crisis. For SEB the distance-to-default started to decline as early as 1989, almost four years before the bank applied for state support, while for Gota Bank the decline in the distance-to-default, that is, the increased probability of default, started in early 1990, almost two years before the bank received state support. Hence, the distance-to-default seems to signal increased fragility and, furthermore, is able to distinguish between *failing* and *non-failing* banks.

Figure 9. Distance-to-default for Swedish banks during the Swedish banking crisis
Per cent



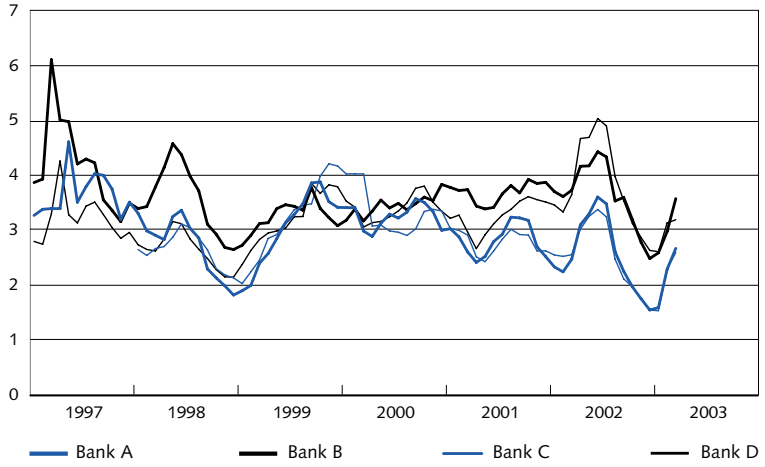
Note: A lower value indicates a higher probability of default.

Source: The Riksbank.

Today, the Swedish banks' subsidiaries have grown in importance, in particular through cross-border mergers. This means that we cannot use the balance sheet data of the parent bank, since the stock price reflects the asset risk in the group as a whole. The total debts in the banks are therefore obtained from the banks' quarterly reports. The quarterly observations of total debts are then converted to monthly observation through interpolation. The distance-to-default for the four large banks today is presented in Figure 10. The distance-to-default for the banks is quite stable over the years. Two banks are more risky according to the indicator, Bank A and Bank C, as compared to the other two banks. This observation could also be seen in the implied volatilities above. Thus, there seems to be a consistency between the two measures, and both measures signal an increased risk in the banking sector since autumn 2002. The change in levels between Figure 9 and Figure 10 is explained by the fact that different sources and different aggregation levels are used in the calculations of total debt. Figure 9 is based on the monthly reported balance sheet data, where subsidiaries are excluded, while in Figure 10 total debt is based on the quarterly reported balance sheet for the holding company.

Both measures signal an increased risk in the banking sector since autumn 2002.

Figure 10. Distance-to-default 1997–2003
Per cent



Sources: Bloomberg and the Riksbank.

Market indicators of corporate sector risk

As mentioned in the introduction, the Riksbank uses market indicators not only for banks, but also for the corporate sector. This, of course, is done in order to obtain the markets' assessment of the risk in the corporate sector, which should reflect the corporate sector risk in the credit portfolios of the banks. In order to assure consistency in the work on incorpo-

rating market-based information in the financial stability analysis, we use the same type of market-based indicators on the corporate sector. One difference is that the analysis of the corporate sector is targeted at industries rather than at individual companies. Still, it is important to recognize that market-based indicators only reflect the risk in a limited number of larger companies, since a large proportion of the companies in the banks' portfolios do not issue bonds and do not have stocks traded on the stock exchange. However, the corporate bond and stock market reflects the market view and expectations of the larger companies, which should also implicitly reflect to some degree the expectations of an industry as a whole, and possibly also lead the development of the non-listed companies in a particular industry.

A first measure of the risk in the corporate sector is obtained from credit spreads on corporate bonds.

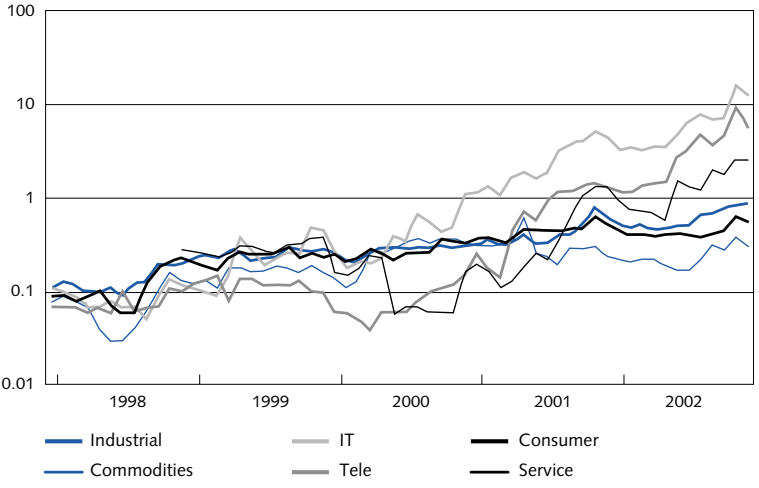
A first measure of the risk in the corporate sector is obtained from credit spreads on corporate bonds. The market for corporate bonds is more liquid than the market for subordinated debt, but the number of issuers is still quite small. In order to obtain a more forward-looking measure of the markets' expectations of the risk in the corporate sector, we use also the equity market. Through the equity market we use the issued options and calculate implied volatilities based on a broad Swedish stock market index, OMX. The credit spreads and implied volatilities are complemented by the use of a measure similar to the distance-to-default measure used for banks. Moody's KMV has commercially implemented a variant of the options-based model based on the same theory as the distance-to-default measure. Crosbie (1999) describes the Moody's KMV approach, in which the Expected Default Frequency, EDF, credit measure serves as a summary measure of default risk. The EDF is a measure of the implied default risk for a company or indices based on both equity and accounting figures. In essence, the EDF measure for a firm represents an estimate of the percentage of firms in the same financial condition that historically defaulted on an obligation within the next twelve months. We use KMVs EDF credit measure on industry indices in order to measure and follow developments of the credit risk on an aggregated industry level.

The risk has increased in general during 2002, and in particular in the telecommunication and IT sectors.

Figure 11 displays the EDFs for seven broad indices on the Swedish stock market. The risk has increased in general during 2002, and in particular in the telecommunication and IT sectors. The observation from Figure 10, that the risk in the banks has increased in the latter part of 2002, could be a consequence of increased risk in the corporate credit portfolio. The fact that the banks' distance-to-defaults move in the same direction, in general and as expected, implies that further knowledge behind what drives the distance-to-defaults for banks can probably be obtained by also looking at a similar measure for the corporate sector. It should be noted, however, that the consistency between the corporate

sector signals and their impact on the Swedish banks and the signals from market-based indicators have not yet been fully analysed, although this approach is now under development at the Riksbank.

Figure 11. EDFs for seven industries 1997–2002
Per cent



Note: Equally weighted indices constructed using Affärsvärldens industry indices and in logarithmic scale.

Sources: KMV Corporation and the Riksbank.

Conclusions

The Riksbank's view is that market information contains a lot of information about risks in banks and in the corporate sector. Empirical studies generally show that market indicators can signal increased risk efficiently and well in advance of the occurrence of events such as rating downgrades or actual failures. More specifically, a check of the indicators from the period of the Swedish banking crisis indicates that markets signalled the coming problems before the public debate began to focus on them. In essence, the markets give the right signals, and the information they provide is not redundant. For the corporate sector analysis, market indicators make it possible to follow the risk-level in particular industries and to make comparisons between different national markets, without in-depth knowledge of any one of these.

The Riksbank's view is that market information contains a lot of information about risks in banks and in the corporate sector.

For the Riksbank, market indicators are important as a complement and a reference point for the conventional analysis. If markets signal that the level of risk in a particular bank or an industry is increasing, the Riksbank can compare this signal with its own assessment. If there is a big difference, it is necessary to evaluate the reasons behind this more profoundly.

For the Riksbank, market indicators are important as a complement and a reference point for the conventional analysis.

Type-II errors seem to exist when looking at market indicators. This is another reason why it may be difficult to use them without evaluating them against the conventional analysis. However, in establishing any early-warning system, the desire is to minimise the misclassification of problem banks as non-problem banks (type-I error). To obtain classification information early, we should be willing to accept a higher type-II error (classifying non-problem banks as problem banks) to gain a lower type-I error. Additionally, the type-II misclassification error would only place healthy banks under closer inspection and analysis. This, of course, entails some cost. However, if only a few non-problem banks are misclassified the gain from early knowledge and early classification of potential problem banks would enhance the analysis further.

The Riksbank has chosen mainly equity-based indicators because of the better quality of data.

The Riksbank has chosen mainly equity-based indicators because of the better quality of data, in particular when it comes to liquidity, and the absence of too-big-to-fail problems with banks. The evidence from Swedish data gives strong support for this standpoint.

The main indicators that the Riksbank makes use of at present are:

- implied volatilities (for banks and the corporate sector),
- distance-to-default (for banks) and
- KMV EDFs on the level of industries (for the corporate sector).

The use of market indicators at present in the Riksbank can be seen as quite low, but they are expected to grow in importance when they have been tested for a longer period.

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Card payments in Sweden

BY LARS NYBERG AND GABRIELA GUIBOURG
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Consumers in the Nordic countries are frequent users of bank cards, much more so than their average European counterpart. Cash, however, is not used to any great extent. In 2000, an average of 64 card payments were made per capita in the Nordic region while the EU average amounted to 33. The average use of cash in the Nordic region during the same year, measured as the value of currency in circulation in relation to GDP, was somewhat higher than 3 per cent, compared to the EU average of 4.6 per cent. Sweden is lagging behind in this development, however; we perform fewer card transactions and use more cash than our Nordic neighbours.

The market for electronic payments has grown quickly over the past 10-15 years in the majority of industrialised nations.

The market for electronic payments has grown quickly over the past 10–15 years in the majority of industrialised nations. Several countries, although not all, have also experienced a continued decline in the use of cash. The extent to which electronic payments have replaced cash may provide a rough idea of the technical efficiency in each country's payment system.

Development of card and other non-cash payments

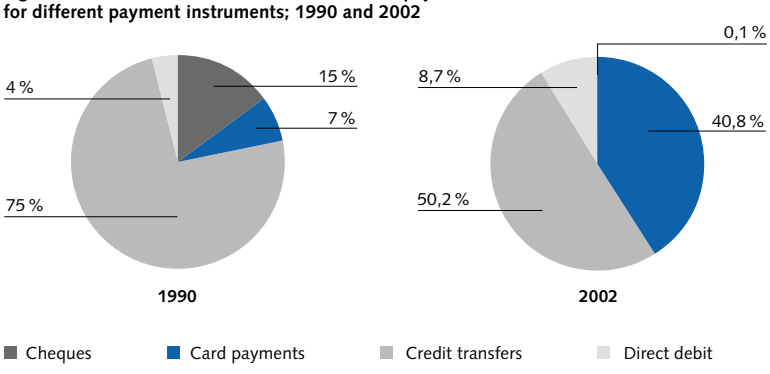
The number of card payments is rising while cash payments are decreasing. Cheques have largely disappeared in Sweden.

Different payment instruments are used for different types of transactions. Certain instruments can be used as substitutes while others don't even compete with each other. Cards compete with cheques and cash for small-value transactions, that is, payments that are often made over the counter. Credit transfers are used for recurring and relatively large payments, such as monthly bills.

Figure 1 shows the development in non-cash payments between 1990 and 2002. As can be seen, the importance of card payments has grown quickly in Sweden. During the period 1990–2000, the number of card transactions increased almost sixfold. Cards have increased their share of non-cash payments from less than 10 per cent in 1990 to just over 40 per cent today. In terms of value, the rise in the use of card payments was more modest, from 1 to 5 per cent, due to the more frequent

use of cards for small-value transactions. The rise in the number of transactions is reflected partly in a correspondent decrease in the proportion of cheque payments. In fact, cheques have virtually disappeared from the Swedish payment market. In 1990, every seventh transaction was paid for by cheque, and cheque payments accounted for just over one-tenth of the total value of non-cash payments. Today, cheque payments account for around 0.1 per cent of the number of transactions and 0.3 per cent of the total value of non-cash payments.

Figure 1. Share of the total number of non-cash payments for different payment instruments; 1990 and 2002



Source: The Riksbank.

However, the disappearance of cheques can not alone explain the rise in the use of card payments. In Sweden, the proportion of cheque payments has never been appreciably high, as credit transfers have traditionally accounted for a large percentage of non-cash payments.[1] It is primarily cash payments that have been replaced by cards, and not cheques. For obvious reasons, there are no statistics for the number of cash payments, which means that the use of cash must be estimated in some other way. The replacement of cash payments with card payments implies that an increasingly large share of all payments are registered. This is reflected in the statistics of non-cash payments through a sharp rise in the share of card payments and a simultaneous decrease in the share of credit transfers. However, the use of credit transfers has also increased in absolute figures. Direct debits, which are a fully automated and relatively cost-efficient form of giro payment, have also increased their share.[2]

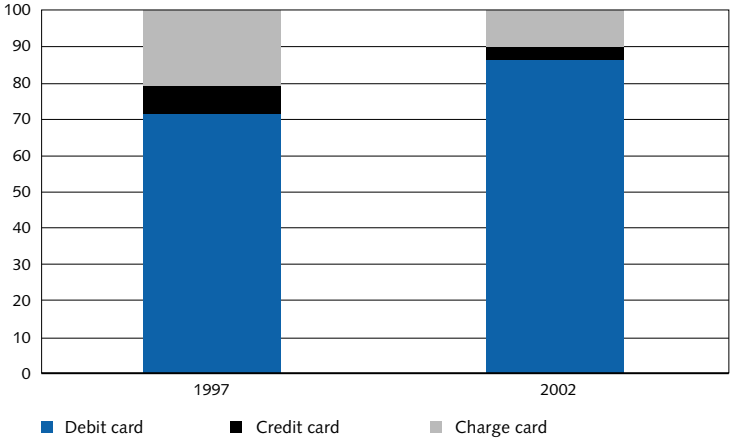
[1] In terms of value, it was credit transfers and direct debits that accounted for the major part of the total value of non-cash payments; furthermore, this share increased from 87 to 95 per cent between 1990 and 2002.

[2] Direct debit is an agreement which gives the payee the right to make withdrawals from the payer's account.

As regards the choice between debit cards and credit cards, there is a clear trend among Swedish card users to favour debit cards.

As regards the choice between debit cards and credit cards, there is a clear trend among Swedish card users to favour debit cards (see Figure 2 and definitions). In 2002, the number of debit card transactions accounted for 86 per cent of all card transactions, a rise of 16 percentage points since 1997. Charge cards dominated the remaining 14 per cent. Credit cards with revolving credit arrangements do not seem to appeal to Swedes. In this regard, the preferences of Swedish consumers are in line with the rest of the Nordic region and mainland Europe. Consumers in the Anglo-Saxon countries appear to perform transactions with credit cards to a larger extent. Cultural differences may account for the different preferences between credit and debit card products. At the same time, cultural differences or payment patterns can often be explained by economic factors. It is possible that Swedish consumers have relatively better access to bank credit for consumption purposes and that the banks offer more advantageous terms than credit card companies. The Swedish banks have comparatively stable customer relationships as well as access to excellent credit information services, thus facilitating credit ratings. Consequently, they are able to offer competitive alternatives to credit cards. In addition, it appears that the card market, when it matures, tends to involve a movement from credit cards to debit cards. From a European perspective, Sweden was one of the first countries to launch cards that were directly connected to a bank account.

Figure 2. Payments with debit cards, charge cards and credit cards as a percentage of the total number of card payments; 1997 and 2002



Sources: The ECB and the Riksbank.

Definitions: Different card products

Credit card: Card that gives the cardholder credit facilities up to an agreed limit. The debt is usually paid off gradually. Interest is charged on the outstanding amount. Some cards also carry an annual fee.

Charge card: Card that gives the cardholder credit facilities up to an agreed limit. The entire debt is paid off at regular intervals, e.g. monthly. As a rule, cardholders pay an annual fee for this service.

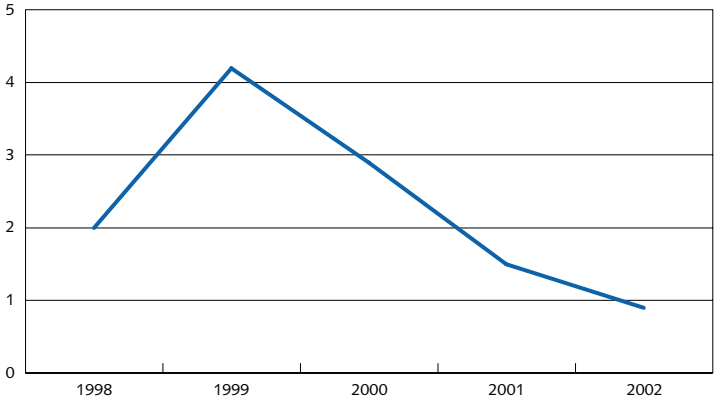
Debit card: Card which involves the amount of the transaction being drawn directly from the cardholder's bank account. There is no credit facility on a debit card, although the card can be combined with other functions.

Cash card: Card with an integrated chip which is built in to the card and can be loaded electronically with money.

One card product that has become technically possible in recent years is the Cash Card.

One card product that has become technically possible in recent years is the Cash Card. Cards with a chip that can be loaded electronically with money can be used for small-value transactions and are accepted at smaller points of sale. The terminals that accept Cash Card payments are inexpensive and adapted to small points of sale that can not afford to handle debit cards. Furthermore, Cash Cards have a lower transaction cost since the payments do not require real-time communication between points of sale and the card-issuing bank, as the money is loaded on to the card. In Sweden, three of the four largest banks, which together comprise the lion's share of the card payment market, have agreed on a common technology. Each bank issues its own e-money which can be downloaded into a small chip in the respective bank's particular Cash Card or regular debit, charge or credit card. The technology on which the system is based is common to all three banks. Loading and point-of-sale terminals accept the Cash Cards of all banks regardless of which bank is the issuer.

Figure 3. Number of Cash Card transactions; 1998-2002
Millions



Source: The Riksbank.

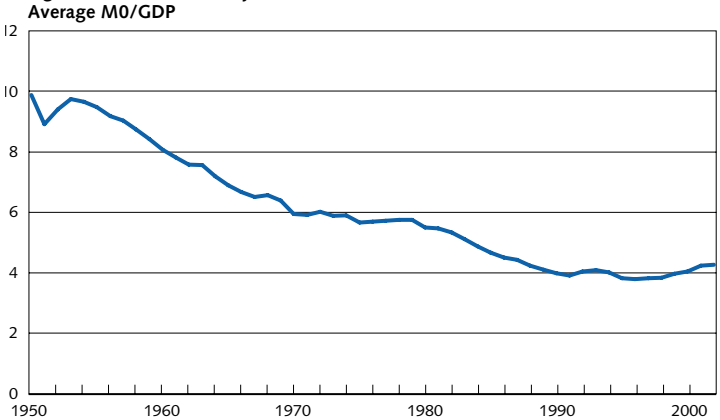
Thus far, the Cash Card has not won much acceptance in Sweden (this also applies to other markets for that matter) and, recently, growth has even been negative in terms of the number of transactions (Figure 3). However, the development of card-based e-money is still at an embryonic stage. Therefore, there is reason for caution when it comes to making forecasts of its future evolution.

Cash payments

The evolution of the card market can not be seen in isolation from the evolution of other markets.

The evolution of the card market can not be seen in isolation from the evolution of other markets. Above all, the evolution of the cash market is important as cards and cash are close substitutes for each other. As there is no statistics available for cash payments, different kinds of indicators must be used to estimate the use of cash. The value of currency in circulation in relation to GDP is often used for this purpose. From a long term perspective, the use of cash has decreased in Sweden (Figure 4). The ratio of currency to GDP (M0/GDP) has been more than halved since 1950, from 10 to 4 per cent. In recent years, however, the trend of waning demand for cash has come to a halt. At the same time, this is not entirely surprising. Cash is suitable for certain types of transactions, which means that the demand for banknotes and coins should have a lower limit. Cash can be used for savings or transactions where cards do not constitute a possible substitute. In addition, both inflation and interest rates have been low, which has entailed a low opportunity cost for holding banknotes.

Figure 4. Value of currency in circulation in relation to GDP; 1950-2002
Average M0/GDP



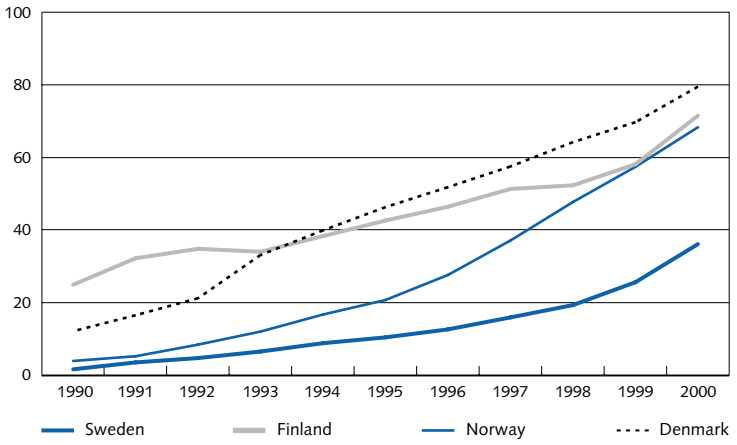
Source: The Riksbank.

Although the demand for cash has levelled out, it appears that the trend towards lower use of cash as an alternative for card payments has continued. According to the Riksbank's own estimates, the proportion of transactions in retail trade that was paid for with cash actually decreased from 76 to 58 per cent during the 1990s.[3] This indicates that cash is also being used for purposes other than payment in registered trade.

Nordic comparison

Although the Swedish card market overall has grown impressively in recent years, the use of cards still lags behind that in the other Nordic countries (Figure 5).

Figure 5. Number of card payments per capita and year



Sources: The ECB and Norges Bank.

At the beginning of 2000, the number of card payments per capita in Sweden was not more than half of the number in the other Nordic countries.

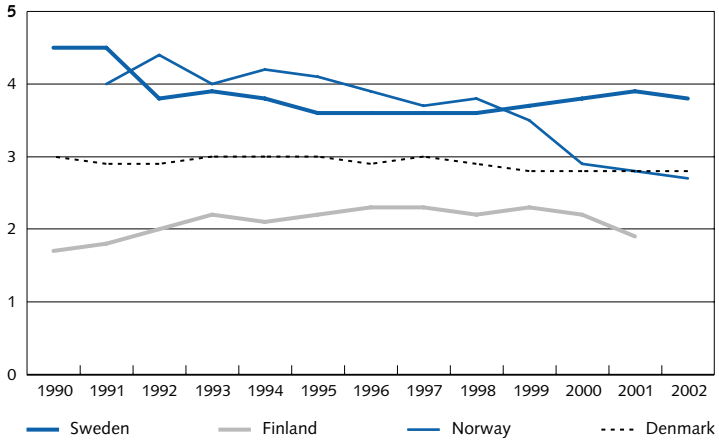
At the beginning of 2000, the number of card payments per capita in Sweden was not more than half of the number in the other Nordic countries. The number of cards per capita does not explain this difference.[4] For example, Swedes have greater access to cards than Danes but use them to a much lesser degree. This difference in card use is somewhat surprising considering that payments systems and payment patterns are otherwise quite similar in the Nordic countries. There is no convincing answer to why Swedish consumers are less willing to make card payments than their Nordic neighbours. One possible reason is that card payments in Sweden may be more expensive for retailers than elsewhere, which could limit the number of establishments where the cards are accepted. Another

[3] See Andersson & Guibourg (2001).

[4] The number of cards per capita in 2000 was 0.94 in Sweden, 0.65 in Denmark, 1.26 in Norway and 1.28 in Finland.

explanation could be that the statistics only include transactions with cards issued by banks or card companies. Transactions using cards issued by companies or chain stores, e.g. the ICA card or Coop card, are not included.[5] Whether these cards are used more in Sweden than in the rest of the Nordic region is unclear, however.

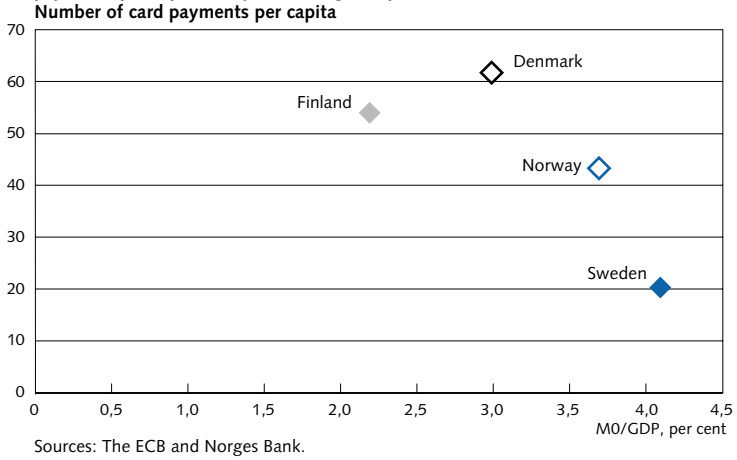
Figure 6. Value of currency in circulation in relation to GDP – Nordic comparison
Per cent



Note. Finland's figure for 2002 has not been included as the Eurosystem's procedure for the reporting of euro banknotes has had an effect on the items Banknotes in circulation and general public's holdings of banknotes and coins since January 2002. New values for M0 are not comparable with previous years.

Sources: The ECB and Norges Bank.

Figure 7. Value of currency in circulation in relation to GDP and number of card payments per capita and year; average for period 1995–2000
Number of card payments per capita



Sources: The ECB and Norges Bank.

[5] At present, ICA is a bank and ICA card transactions will be included in the statistics in the future. Figure 3 depicts developments up to 2000 only, however.

One conclusion is that there appears to be considerable potential for expansion in the card market, particularly in Sweden.

In the other Nordic countries, the ratio of currency to GDP has been stable or declining, but also considerably lower than in Sweden (Figure 6). Where Swedes require around 4 per cent of GDP to cover their cash needs, the Danes and Norwegians use 3 per cent, and the Finns only 2 per cent. This can most likely be explained in part by a more widespread use of cards in the other Nordic countries.[6] A clear relationship exists between the number of card payments per capita and the value of currency in circulation in relation to GDP; the higher the card use, the lower the volume of banknotes (Figure 7). One conclusion is that there appears to be considerable potential for expansion in the card market, particularly in Sweden.

Forces driving the development of the market

Supply and demand shapes the evolution of the card payment market in much the same way as in other markets.

If alternative means of payment exist, such as cards, fees for different forms of payment seem to be of great importance.

Demand is influenced by factors such as acceptance, convenience and relative prices. It has sometimes been argued that demand for payment instruments is not price elastic – that relative prices do not greatly influence users' preferences for different payment instruments.[7] The Nordic experience does not support this view. The rapid expansion of card payments and other electronically initiated instruments in Norway point to considerable price sensitivity. The shift in the preferences of Norwegian consumers followed immediately after the banks' change of pricing strategy. In Sweden, the use of cheques fell sharply when banks started to charge for their use. Thus, if alternative means of payment exist, such as cards, fees for different forms of payment seem to be of great importance.

The Norwegian experience demonstrates that substantial efficiency gains can be made through a transparent and cost-based pricing arrangement. As regards the pricing of card products – like other payment instruments for that matter – the Riksbank, in consultation with the banks, has launched a research project. The aim is to investigate how well the price structure for various payment services reflects the underlying production costs for these services.

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6 The use of cash for purposes other than registered transactions, however, does not appear to be different in the Nordic countries. See, for instance, Paunonen & Jyrkönen (2002) and Humphrey, Kaloudis & Øwre (2000).

7 See, for instance, Humphrey, Pulley & Vesala (1996). This is an econometric study of different factors affecting the choice of payment instruments. The price coefficient had no statistical significance in this study. However, the data set was poor. This result was later revised in the Norwegian study by Humphrey, Kim & Vale (1998).

The banks today incur considerable costs for handling cash as well as for other forms of payment. Cash withdrawals for the general public, however, are free of charge. If and when the banks begin to charge for cash withdrawals, the actual costs will become more palpable for consumers. It seems reasonable to assume that card payments will then appear even more favourable than is the case today and that the card market will expand as a result.

The banks today incur considerable costs for handling cash as well as for other forms of payment.

On the supply side, costs are obviously important. Clearly, the technological advances in IT and telecommunications have helped in cutting costs. Economies of scale and network effects are other important supply factors. Economies of scale imply that the cost per transaction falls when the number of transactions increases. Network effects imply that the number of terminals that accept a particular card greatly affect the utility of the user. The larger the number of terminals that a bank can install, the more satisfied the users will be and the larger the share of the card payment market the bank will have.

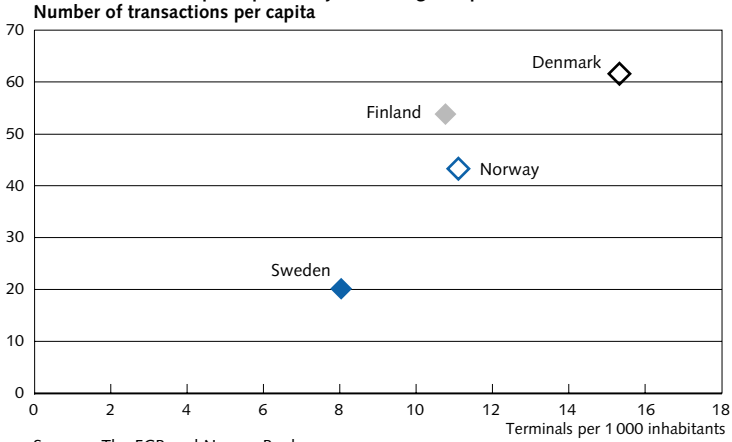
Economies of scale and network effects both increase the incentives for cooperation between card issuers in establishing common standards and communication methods between their systems. In Sweden and in the other Nordic countries as well, banks have a long tradition of cooperation in using common infrastructure and implementing common standards, perhaps more so than in many other regions. This is likely to have contributed to the rapid expansion of the card payment market in the Nordic countries. There are some country-specific differences, though. As should be expected, there is a clearly positive relationship between the number of payments per capita and the number of terminals installed. Denmark has the largest number of terminals and transactions, while Sweden is at the other end of the scale. For Sweden at least, there still seems to be positive network effects which should be able to contribute to a further expansion of the market (Figure 8).

For Sweden at least, there still seems to be positive network effects which should be able to contribute to a further expansion of the market.

Risk considerations are always important in payment transactions. Consumers in countries with a low crime rate, such as Switzerland, Japan and Sweden, tend to favour cash payments to a larger extent than in countries where the risks associated with carrying large amounts of cash are higher. Problems in the handling of risk are also likely to be behind the disappointing development of e-commerce. The evolution of a digital market has partly been hindered by the lack of sufficiently secure payment instruments. For card issuers and banks, matters of security are crucially important. There is, as always, a trade-off between the risk of incurring losses in card handling and the cost of avoiding risk by adopting security-enhancing technology. When security technology gradually

The evolution of a digital market has partly been hindered by the lack of sufficiently secure payment instruments.

Figure 8. Number of card terminals per 1 000 inhabitants and number of card transactions per capita and year; average for period 1995–2000



Sources: The ECB and Norges Bank.

becomes less costly, it will be used to a greater extent, which is likely to stimulate the development of e-commerce.

Incentives to reduce risks drive technological development. Costs for fraud are high and are increasing in most countries. Although card fraud is relatively less frequent in Sweden than in other countries, Swedish card issuers will also have to follow the global trend towards better security. Otherwise, the risk of attracting card fraudsters to the Swedish card market will increase.

In Sweden, plans are currently being made to change from magnetic stripe cards to chip cards through a migration to the global EMV standard.

In Sweden, plans are currently being made to change from magnetic stripe cards to chip cards through a migration to the global EMV standard.[8] This means that the card information that was stored on the magnetic stripe will now be stored instead in an integrated chip embedded in the card itself. The first pilot project started in spring 2003 and the national rollout will follow in the autumn. It is not easy to forecast how long the technology migration will take. All cards have to be replaced with the new EMV compatible chip and payment terminals need to be upgraded. This process may take some time. However, market participants expect that the change of rules announced by Visa and MasterCard regarding the distribution of risks may speed up the process considerably. Currently, card issuers bear full credit risk, but from January 2005, credit risk will fall on the party, card issuer, collecting bank or owner of the card terminal that has not implemented the EMV technology. If, for example, the card issuer has upgraded its cards with an EMV-compatible chip, but the acquiring bank does not offer the retailer an upgrade of terminals so

[8] EMV stands for Europay, MasterCard and Visa.

that these can read the information in the chip, the collecting bank must bear the credit risk if card fraud should be committed.

Conclusions

The Swedish card market has grown rapidly in recent years. Technological advances in combination with the deregulation of the telecommunications market has contributed to both lower costs and higher security for card transactions. Greater acceptance through the expansion of the number of terminals has also contributed to this growth. A comparison with other Nordic countries, however, indicates that there is still considerable growth potential in the Swedish card market.

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Errors and omissions in the balance of payments statistics – a problem?

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The balance of payments statistics cover all economic transactions between Sweden and other countries. The Riksbank is responsible for producing and publishing these figures. The statistics are very similar to traditional accounting and based on the principle of double entry bookkeeping. This means, quite simply, that the real and financial transactions should add up to zero. However, this is rarely the case, because of imperfections in the statistics. A special balancing item has been introduced to deal with this problem. The item has increased significantly for some years now, and an international comparison shows that the Swedish errors and omissions item is considerable. This article analyses the factors contributing to this item and discusses how it affects the interpretation of the balance of payments statistics and other economic statistics.

The significance of the balance of payments statistics as a base for monetary and foreign exchange policy has varied considerably over time. As a result, the attention given to the quality of the statistics has also altered. In this article we discuss the ways in which the uncertainty created by errors and omissions can affect the use and interpretation of economic and financial statistics where the balance of payments contributes a base.

Uncertainty in the balance of payments statistics – in retrospect

During the 1970s there was an intense debate on what conclusions could be drawn for stabilisation policy from the balance of payments statistics.

During the 1970s there was an at times very intense debate on which conclusions could be drawn for stabilisation policy with regard to the data reported in the balance of payments statistics. The current account showed a large deficit from the mid-1970s, which was connected to the deficit in public finances that arose at the same time. The current account deficit constituted a problem for stabilisation policy in that there was a risk it would threaten the fixed exchange rate and one solution to this was

more stringent fiscal policy. Sven Grassman, who was secretary of the balance of payments committee 1967–1971 (SOU 1971:31), considered that the current account balance gave an incorrect picture of financial net savings. He referred to other statistics, the Financial Accounts, which provided a more positive view of Swedish net savings vis-à-vis the rest of the world. Mr Grassman believed that stabilisation policy had been pursued on the wrong premises as it had relied on statistics that provided an exaggeratedly negative picture of net savings in an international comparison. In his opinion, this meant that the fiscal policy restraint then exercised was too far-reaching.

The discussion concerning the uncertainty in the current account statistics contributed to the creation of the Balance of Payments Committee in 1975.

The discussion concerning the uncertainty in the current account statistics contributed to the creation of the Balance of Payments Committee in 1975. This delegation, which included representatives of the Ministry of Finance, Statistics Sweden and the Riksbank, carried out an annual survey of trade in services and also established the current account balance on the basis of these surveys.

It is possible to observe, with today's experience of stabilisation policy, that it would have been worthwhile analysing other factors, such as inflation expectations, central government finances and the production gap, more than was actually the case. However, the significance of the balance of payments statistics must be regarded in the light of the fixed exchange rate, which then served as anchor for monetary policy. Financial transactions were strictly regulated through foreign exchange controls. Large deficits on the current account could lead to financing needs that would be difficult to master and thus threaten the fixed exchange rate. Among these causes, the current account balance was a variable that was closely monitored and where quality and measuring problems were apportioned great significance.

The significance of the balance of payments statistics must be seen in the light of the fixed exchange rate, which then served as anchor for monetary policy.

Current use of balance of payments statistics

Today the situation is quite different. The balance of payments statistics are only one of several bases used for assessing monetary policy. Deregulated foreign exchange markets and a floating exchange rate have also meant that other issues in the balance of payments statistics are now regarded as more important to analyse.

One issue is the size and content of the financial net savings.

One issue is the size and content of the financial net savings. The abolition of currency controls in 1989 led to a significant part of Swedish savings being channelled abroad. Moreover, the conditions for the Swedish general public's savings have changed radically through the lower inflation rate established during the 1990s and new conditions for saving in pension funds, which has had a major impact on financial flows

vis-à-vis the rest of the world. As the size of net savings is determined by the current account balance, while the allocation and disaggregation of net saving is acquired from the financial flows statistics, it is of interest that the balances of the real and financial flows are as similar as possible. Large unexplained errors and omissions limit the possibilities for correctly describing and analysing the content and allocation of net financial saving.

There are a number of other aspects why it is necessary for balance of payments statistics to be of acceptable quality:

- as a basis for the National Accounts with regard to the component of GDP that refers to foreign trade; i.e. net exports of goods and services,
- as a basis for structural statistics with regard to detailed information on direct investments to illustrate questions concerning foreign ownership of Swedish companies and vice versa, and
- as a basis for calculations of how the krona rate has been affected and for short-term analyses of the rate.

The Riksbank is responsible for compiling statistics regarding Sweden's external position, that is to say, the total financial assets and liabilities abroad, which can be used in calculations regarding the equilibrium rate of the krona.

Given the various fields of application for balance of payments statistics today, it is important to try to clarify how the disruption caused by errors and omissions may affect the usability of the statistics for different purposes. It is particularly important to clarify whether this uncertainty also means that the basis used for policy discussions and decisions could be misleading.

What are errors and omissions in the balance of payments statistics?

Errors and omissions in the balance of payments statistics arise when savings measured in real terms (i.e. the balance on the current account and capital balance[1]) do not correspond to the size of the financial flows measured in the financial balance statistics. The balance on the current account and the capital balance should, if all transactions have been correctly recorded, be equal to the size of the financial flow in the opposite direction. In other words, the balance of payments data is based on the principle of double entry bookkeeping. In order to create a counterweight to measurement errors and other imperfections in the balance of pay-

In order to create a counterweight to measurement errors and other imperfections in the balance of payments statistics, a special balance sheet item is introduced to ensure the transactions total zero.

[1] Capital balance corresponds to the concept used previously in the balance of payments entitled "Capital transfers etcetera".

ments statistics, a special balance sheet item (errors and omissions) is introduced to ensure the transactions total zero.

An example can be used to illustrate this. During 2001 a surplus was measured in the balance on the current account and the capital balance amounting to SEK 86 billion. At the same times, the financial flows showed a net inflow of SEK 17 billion. The total of these is SEK 103 billion and errors and omissions, which constitute the total net error in the balance of payments, thus corresponded to minus SEK 103 billion that year.

A negative errors and omissions items indicates, in simple terms, that either the outflows have been underestimated or the inflows have been overestimated in the balance of payments, or, of course, there has been a combination of incorrect estimates.

Measurement errors which create errors and omissions come in three different types:

- Coverage errors: All operators with business abroad have not been covered in the surveys. Alternatively, only part of their transactions abroad has been registered.
- Measurement errors (evaluation errors): The values registered are not correct, which can be due to definitions, information from the reporting bodies, and translation of currencies being incorrect (for example because of exchange rate fluctuations).
- Time errors (periodisation errors): Transactions are reported for the wrong period of time (do not cause accumulated errors and omissions errors, however).

Errors and omissions is a very rough measure of the quality of the statistics.

It should be pointed out that this item is a very rough measure of the quality of the statistics. Errors and omissions is a figure that only reflects the net amount of the respective overestimates and underestimates made in the balance of payments. It does not necessarily follow that countries reporting a small errors and omissions item maintain better quality statistics. As this item is a net figure, a small item for errors and omissions item can equally entail large errors in different parts of the statistics but that these counter-balance one another.

How do errors and omissions look?

Errors and omissions have shown negative figures since the mid-1990s.

The errors and omissions item in the balance of payments statistics began to grow at the end of the 1980s and has shown negative figures since the mid-1990s, with the exception of a few individual years. This means the Riksbank has either underestimated the outflows or overestimated the inflows during this period. If this item is accumulated from the beginning of the 1980s, the total net error at the end of 2002 would amount to approximately SEK 430 billion.

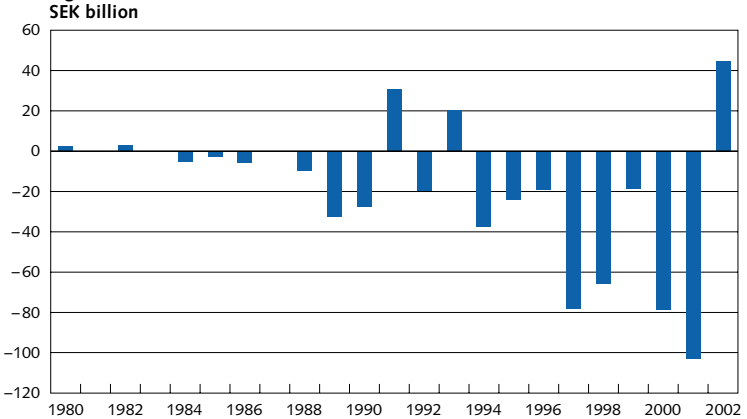
Have errors and omissions increased?

The size of this item is partly connected to the quality of the balance of payments statistics. It is therefore interesting to try to assess the size of errors and omissions and find out whether this item has actually increased over time.

To assess developments, it is more relevant to put errors and omissions in relation to other variables than to look at absolute figures.

When assessing how errors and omissions have developed over time, it is not sufficient to merely regard this item in nominal terms (see Figure 1). Economic activity and the scope of the transactions abroad have grown, which makes it more relevant to put errors and omissions in relation to variables such as GDP or the balance sheet total on the current account than to look at absolute figures. Figure 2 presents the relative development of errors and omissions since 1991 in three different ways: as a percentage of GDP, as a percentage of the current account and the balance of payments and as a percentage of the basic balance.

Figure 1. Errors and omissions; 1980–2002
SEK billion



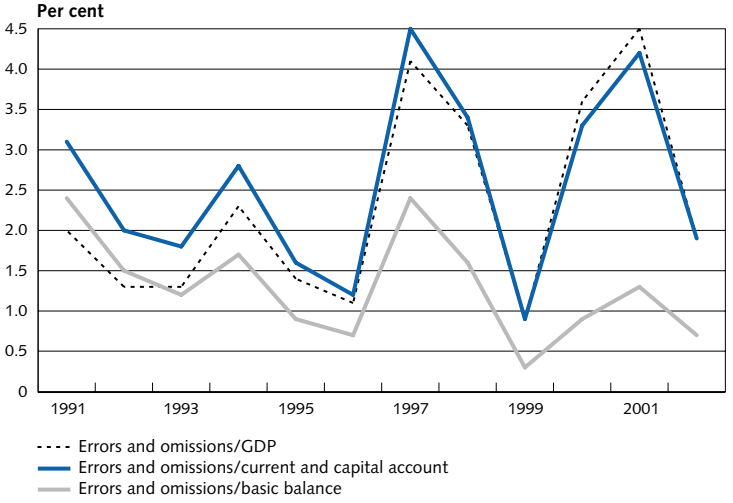
Errors and omissions as a percentage of GDP. Errors and omissions have increased markedly in relation to GDP during the period 1990 to 2001. While this is, of course, worrying it should be borne in mind that the errors and omissions item is probably only attributable to a small degree to such items in the balance of payments that are included in GDP.

Errors and omissions as a percentage of gross flows regarding current account balance and capital balance. The relation of errors and omissions to the gross total of real flows in the balance of payments also shows an increase, though this is not as marked as in the comparison with GDP.

Errors and omissions as a percentage gross flows of Basic balance[2]. Here, errors and omissions in absolute figures have been compared with the

[2] Basic balance is the accepted term for the current account, capital balance, direct investment and majority of securities trading.

Figure 2. Errors and omissions in relation to GDP, to gross flows regarding current and capital account and to gross flows regarding basic balance; 1991–2002
Per cent



items in the balance of payments containing information on the gross transaction flows, that is to say, the current account balance, the capital balance, direct investment and the majority of securities trading. The comparison base thus also includes financial flows, which have increased considerably during the period. This comparison takes greater account of the fact that the flows the balance of payments should include have increased dramatically. According to this comparison, errors and omissions have shown a relative decline during the period.

It is not possible to say definitely which of the above comparisons is the most correct. In international terms, the comparison using the current account and capital balance is the most common.

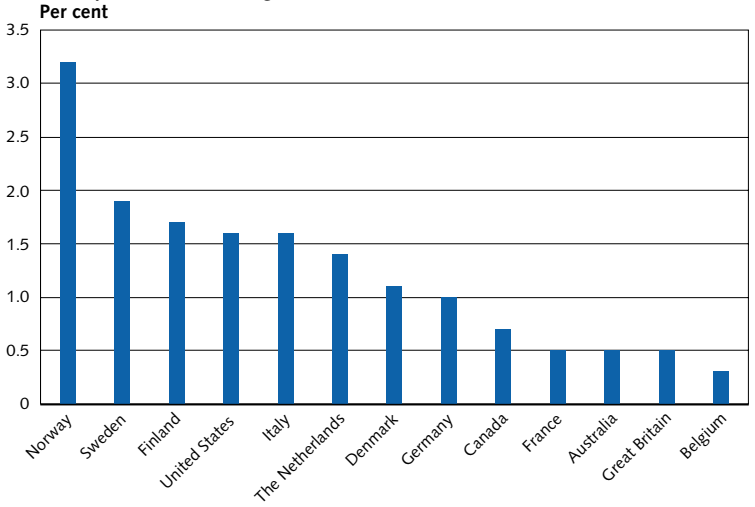
Errors and omissions in an international comparison

An international comparison has been made, in which errors and omissions were set in relation to the gross balance sheet total in the items current account balance and capital balance. Sweden came second out of a total of thirteen countries (see Figure 3). This indicates that the Swedish errors and omissions item is relatively large, in international terms.

There is no completely correct measure for making a comparison between the errors and omissions items in different countries.

The comparison measure used here has its shortcomings and there is no completely correct measure for comparing errors and omissions in different countries. This comparison, where errors and omissions are compared with the real flows in the balance of payments in different countries, does not take into account the fact that the significance of financial flows may vary from one country to another. From this point of view, it would be more relevant to compare this item to the basic balance, which also takes into account the fact that the turnover on the financial markets

Figure 3. Errors and omissions in relation to gross flows regarding current and capital account; average 1994–2001
Per cent



has increased. The comparison measure has largely been governed by which statistics were available. Despite the fact that it is impossible to make a completely correct comparison, the review shows that the problems of correctly capturing the flows that form part of the balance of payments figures are fairly large in Sweden.

What has caused the errors and omissions?

Factors contributing to the rapid increase in errors and omissions are the currency deregulation and the ensuing strong expansion in financial flows.

Factors which have most probably contributed to the rapid increase in errors and omissions at the end of the 1980s and beginning of the 1990s are the currency deregulation and the large expansion in the financial flows in particular in the form of securities and short-term transactions that followed on from this. Deregulation changed the conditions for collecting balance of payments statistics and, together with the continuing financial integration during the 1990s; this has significantly increased the difficulty of correctly covering all financial transactions. The floating of the krona in 1992 may also have led to greater uncertainty when assessing the transactions in the balance of payments.

The more or less specific explanations for errors and omissions include:

- *Overestimation of net export in foreign trade*. It is a well-known fact that the statistics on trade in goods within the European Union (EU) have resulted in a systematic overestimation of exports. Eurostat has compared the various EU countries' statistics on internal trade in goods. These comparisons can be used as a basis for assessing the size of the errors for different countries. The comparisons made for Swedish foreign trade with EU countries show an overestimate of

exports by approximately SEK 6 billion a year in both 1999 and 2000. This overestimate, which has arisen in connection with the new collection system for trade in goods within the EU introduced in 1995, could have provided a contribution to the negative errors and omissions for the years 1995 to 2001 of approximately SEK 40 billion.

- *Households' direct investment abroad.* Individual households' investments directly abroad (not via a Swedish intermediary) in the form of, for instance, stocks, shares or bank deposits, are only captured to a very minor extent in the balance of payments statistics. When these flows abroad are not captured in the balance of payments, they lead to a negative errors and omissions item. According to an expert report to the tax base commission (SOU 2002:47), the total flows of these investments up to 1999 were estimated at SEK 250 billion. However, both Statistics Sweden and the Riksbank assess that this is an overestimate, partly because the errors and omissions in the balance of payments statistics and the national accounts system show poor agreement over time, and partly because several other factors contribute to this item. Nevertheless, it is clear that households' direct investments abroad are an important explanation for the negative errors and omissions item and that this contribution is probably larger than the error in foreign trade statistics.
- *Securities trading*. The statistics on securities trading with other countries have occasionally demonstrated shortcomings in the coverage of redemption of Swedish securities held by foreign investors. This has meant that an outflow has avoided registration in the balance of payments figures, resulting in a negative errors and omissions item. It is not possible to estimate the size of this effect.
- *The banking sector's transactions abroad.* The banks' foreign transactions have on repeated occasions shown a strong errors and omissions connection, particularly when this item has shown substantial monthly fluctuations. Discussions with the banks have not provided any explanation for this. In addition to the severe fluctuations in this item from one month to the next, it is not possible to say to what extent it has contributed to the negative errors and omissions item over time.

A significant part of errors and omissions probably reflects short-term capital movements as liquidity transfers.

In addition to the areas mentioned above, where the Riksbank has identified contributions to measurement errors in the balance of payments, it is probable that a significant part of errors and omissions reflects short-term capital movements as liquidity transfers, which have avoided registration in the balance of payments. Such movements can be expected to give rise

to strong fluctuations in errors and omissions; fluctuations which primarily show up on a monthly basis, but sometimes also on an annual basis. It is possible that the large turnaround in errors and omissions during 2002 is due to this. In the same way as at the beginning of the 1990s, when positive errors and omissions items were noted, fluctuations in economic activity may have given rise to changes in liquidity requirements among companies. Changes in liquidity flows could in turn have caused the errors and omissions to change around at these points in time.

Errors and omissions and interpretation of economic statistics

The one-sided errors and omissions item could mean there is a systematic bias in the coverage of transactions abroad.

One important question is whether the balance of payments statistics, as a result of the errors and omissions, have given signals that have led to misinterpretation of economic developments in Sweden. This question must be regarded in the light of the errors and omissions in the balance of payments mainly moving in one direction and corresponding to unexplained outflows. The one-sided errors and omissions item could mean that there is a systematic bias in the coverage of the transactions abroad, which in turn affects the value of important economic aggregates. At the same time, certain components in the balance of payments statistics are essential from a policy perspective, while a higher degree of uncertainty can be accepted for others. On the basis of this description of the causes of errors and omissions, the picture described here is attained.

The fact that net exports of goods and services are reported at an excessively high value means that the size of Sweden's GDP is overestimated.

One effect of net exports of goods and services being reported at an excessively high value is that the size of Sweden's GDP is overestimated. An adjustment for the overestimation of trade in goods with EU countries, as reported, would lower the level of GDP by 0.2 to 0.3 per cent. On the other hand, the change figures for GDP would be only slightly affected by such an adjustment. This effect can to some extent be counteracted by the fact that the coverage of trade in services has been too low, for instance as transactions in services abroad are not always classified by the reporting companies as services. In addition, the collection has been affected by significant structural changes in trade in services in recent years.

An adjustment for households' direct investments abroad would entail a lower Swedish net debt.

One consequence of households' direct investments abroad not being covered in the statistics is that Sweden's net external position is more positive than is reported in the statistics. At the end of 2001, Sweden's total assets and liabilities abroad amounted to a net debt of approximately SEK 500 billion, or corresponding to around 24 per cent of GDP. An adjustment for households' "hidden" assets would mean the Swedish net debt was reported at a lower figure.

Gross national income would also be higher than is presently reported.

Sweden's gross national income, GNI, which includes the net flow of earnings on capital between Sweden and other countries, would also be higher than is presently reported if an adjustment was made for the earnings on hidden assets abroad. The earnings received by Swedish households would, even if they were reinvested directly abroad, be registered as income from earnings on capital and thus be included in gross national income. However, it is not possible to say how large these earnings are, as both the size and composition of the assets is unknown.

The errors and omissions item in the balance of payments has contributed to incorrect levels for GDP, GNI and net external position.

The errors and omissions item in the balance of payments has thus contributed to incorrect levels for GDP, GNI and net external position. With regard to interpretation of the flows and their fluctuations, it is primarily the financial balance that is affected. On the other hand, it is not likely that the errors and omissions item in the balance of payments has led to an incorrect picture of the size of developments in the real economy as a whole.

Errors and omissions in economic statistics

In the National Accounts system, differences between the balance of real and financial flows are measured for domestic sectors.

The errors and omissions item in the balance of payments figures is, as mentioned earlier, an expression of the difference between the balance of the real and financial net flows measured abroad. In the National Accounts system, differences between the balance of real and financial flows can be measured in the same way for domestic sectors. It is, of course, interesting to analyse these errors and omissions, in the same way as those for the balance of payments, as they comprise a basis for the work on quality assurance of the National Accounts. However, the Commission on the Review of Economic Statistics within Statistics Sweden (SOU 2002:118), which presented a final report earlier this year containing proposals for improvements in Swedish statistics, was limited to the real parts of the National Accounts. The committee did not have a mandate to examine the Financial Accounts and thereby the errors and omissions between the real and financial statistics.

The work on limiting errors and omissions and keeping them at a reasonable level requires immediate quality assurance work and adapting the collection of statistics to new conditions as they arise. The Riksbank has chosen to transfer responsibility for collection of parts of the balance of payments statistics, including trade in services abroad, to Statistics Sweden with effect from 2003, in order to focus on the collection and checking of financial flows and external position. This may facilitate the work on improving the quality and minimising the errors and thereby the size of the errors and omissions item in the Swedish balance of payments statistics.

Special drawing rights – oiling the wheels

By Anna-Karin Nedersjö
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The International Monetary Fund's (IMF) special drawing rights, or SDR, have come to head the agenda in the globalisation debate as a solution to the economic problems of poor countries. It is sometimes claimed that an SDR is "money for nothing". However, SDR are not "money for nothing". Nonetheless, they do offer members of the IMF a facility whereby they can convert assets into foreign means of payment, or money. In this article I would like to explain in broad outline how this can be arranged by describing the origins and function of SDR. Finally I will briefly comment on some of the problems to which the SDR debate gives rise.

The author wishes to express her thanks to everyone who has shared ideas with her, and especially Sonja Daltung, Kerstin Mitlid and Staffan Viotti for their stimulating discussions.

It is possible to limit the presentation of SDR to a technical description. However, as SDR are not merely of technical interest but also have a distinctly political dimension, it is interesting to put SDR in a historical context that involves the conditions for trade between countries in general and for payments between countries in particular. A simple but concrete description of the IMF's special drawing rights is to say that they enable member countries to effect payments in foreign currencies, which is essential if they are to be able to trade with each other. The need arose in connection with the expansion of international trade. The countries that are nowadays in need of SDR are the poor and developing nations whose own currencies cannot be converted into an acceptable currency on a foreign exchange market.

The IMF's special drawing rights enable member countries to effect payments in foreign currencies, which is essential if they are to be able to trade with each other.

The bulk of the trading on modern currency markets takes place in the currencies of industrialised countries. The reason is that the value of a currency in all essentials reflects a degree of confidence in a country's economy and its government's policies, including economic policy. Without confidence in a country's economy it will be difficult for the country to borrow to fill up its currency reserves.[1] Access to SDR enables

It is important for poor countries to have access to SDR.

[1] In order to finance a temporary payment deficit in a foreign currency, the part that has to make the payment should either have built up its reserves in the foreign currency or be in a position to borrow the foreign currency. As a rule, in poor countries the domestic currency is exchanged at the central bank so that payments in foreign currencies can be effected, which requires the country to build up its own currency reserves.

a country to exchange SDR against a foreign currency at a fixed "exchange" rate. In effect, the country has obtained a "conversion discount" on its own currency's exchange rate. Consequently, the country will be able to import goods, such as those needed for domestic investments. Having access to SDR is therefore of particular importance to poor countries.

Confidence in international payments

The formation of the IMF in 1945 was intended to organise access to means of payment at fixed prices to promote international trade.

The value of a poor country's currency is largely associated with the level of uncertainty. The current situation not only of poor countries but also of developing ones displays similarities with the situation faced by today's industrialised economies at the end of World War II, when the conditions needed for modern currency markets were still very remote. The great degree of uncertainty – a consequence of the post-war weakness of the world's economies and the collapse of the international payments system[2] – was an obstacle to the emergence and development of international trade. The formation of the IMF in 1945 was intended to organise the supply of means of payment at fixed prices to enable international trade to restart. The IMF was organised in the form of a co-operative bank that was funded by the member countries on the basis of their economic size and strength.[3] The American dollar, whose parent economy was the largest in the IMF, was designated as an international means of payment. It was around this time that the dollar became recognised as an international reserve currency. The value of the dollar was tied to the value of an ounce of gold. Other member countries' currencies were given a value in relation to that of the dollar, which was decided by each country's central bank in consultation with the IMF. The intention was that the exchange rates would then remain fixed. Each member country had immediate access to 25 per cent of its deposits with the IMF in the event of its own currency reserves being temporarily insufficient to exchange and use as payment of its imports. This exchange rate arrangement was retained until 1971.

However, as a result of the growth in global trade the bilaterally fixed exchange rates became a problem in those cases where a country did not have enough dollar reserves to finance its foreign payments. At this time, international capital movements were not permitted, and each country

[2] Today, the currencies of the industrialised countries are convertible, that is to say they can be readily exchanged into other currencies. At the end of World War II, they were not convertible, and their values rested on very shaky grounds.

[3] The IMF commenced operations in 1947. This organisational structure still serves as the foundation for the IMF's activities. See Nedersjö (2001) and the IMF's web-site.

could therefore only build up its reserves by limiting domestic demand as a means of generating an export surplus.[4] This could result in unemployment and falling prices. In such a deflationary spiral, falling prices represented a serious threat to economies that still had to develop and expand.

Political incentives

The USA provided economic support for European countries in the form of the Marshall plan.

In the aftermath of World War II, the USA was anxious to reconstruct Western Europe and its economies as means of attracting allies in its efforts to combat communism. It therefore provided economic support in the form of the Marshall Plan for the West European countries.

The USA invested in Western Europe and encouraged the European countries to export to the USA and add some of the export revenues to their reserves. Consequently, Western Europe's dollar reserves had tripled by the end of the 1950s, which the USA financed by printing more dollar bills, as a result of which these countries were able to generate current account surpluses, and could exchange their currencies for dollars to pay for their imports. Along with this, they imported inflation, which meant in practice that the dollar weakened against the other currencies.[5]

When the real value of the dollar began to be eroded in the 1960s the idea of the SDR was born.

When the real value of the dollar began to be eroded in the 1960s the idea of the SDR was born. The theoretical and practical processes that resulted in the SDR system went on for more or less the entire 1960s, a decade when currency movements were tightly controlled for political reasons. The USA's payment deficit grew and at the beginning of 1960s President Kennedy announced that there were only two things he was afraid of: nuclear war and an international payment deficit. The USA then imposed its own version of the later Tobin tax (interest equalization tax) on foreigners who wished to borrow on the American bond market or from US banks. On the banking market, restrictions were also introduced on foreign investments by imposing a lending ceiling on bank loans intended to finance foreign investments via corporations (known as the Foreign Credit Restraint Program).[6] Despite this awareness of the weakness of the dollar, the American government pushed up the money supply even further as a means of financing existing and new political commitments, such as the Vietnam War.[7]

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4 Nor was it possible to exchange their domestic currency outside the country. The currency market as we know it today simply did not exist. The only chance of building up a country's currency reserves was to import capital goods that could be used to gradually build up a permanent export surplus, or at least one that would last for a reasonable period of time.

5 The countries that had current account surpluses were Japan, Canada and Western Europe, excluding Britain, which tended to incur deficits.

6 The propensity to innovate was high, and a eurodollar market also came into existence.

7 It was mainly the USA's participation in the Vietnam War that pushed up its current account deficit (as services and materials for the war were mostly bought abroad and paid for in dollars) as well as the cost of financing a social program known as The Great Society Program.

One of the objectives behind the planning of SDR was to entirely replace the dollar; this was a political motive.

As far as Western Europe was concerned there were powerful political reasons for trying to change the monetary situation. On the one hand, Western Europe had become dependent on the dollar, while on the other the USA was imposing restrictions on its foreign financing. France's President, Charles de Gaulle, spoke out against the excessively strong monetary power wielded by the USA. His view was that the USA was privileged by comparison with other countries that could not make use of their payment surpluses (or rather their own currencies) in this way. A neutral reserve currency would therefore have to be invented. One of the objectives behind the planning of SDR was to entirely replace the dollar; this was a political motive. The French President also demonstrated his dissatisfaction in practice by selling the Banque de France's large surplus dollar holdings in return for gold. This was the first step that was ultimately to lead to the fall of the dollar and what was known as the gold standard. As the dollar really ought to have been devalued, gold was in particularly heavy demand.

Anecdotal box
As early as 1960, economist Robert Triffin[8] recognised the dilemma of the gold standard. He formulated this dilemma by observing that, on the one hand, although the global economy was dependent on the continuation of the USA's current account deficit, on the other hand, it meant that the ratio of the dollar to America's gold reserves rose, and thus reduced the value of the owners' reserves to their profound concern. What became known as Triffin's dilemma highlighted both quantitative and qualitative aspects of the supply of international liquidity at that time. The only solution that Triffin saw was for the IMF itself to be able to meet any legitimate demand for liquidity from a growing world economy.

In the USA Triffin's dilemma was acknowledged in 1962 when President Kennedy announced that one of the reasons for finding new sources of liquidity was that the country would no longer need to keep the rest of the world so amply supplied with dollars.

Fixed exchange rate caused deadlocks

Thanks to the willing support of the USA the major economies in Western Europe had become so strong during the 1960s that their currencies had gained acceptance as international means of payment. They could trade amongst themselves using their own currencies. It was now permitted to exchange currencies, but only for the purpose of carrying out trading transactions. However their exchange rates were still tied to the dollar, which should in reality have been devalued. The real relative strengths of their exchange rates had been turned upside down. This meant that other

[8] Mussa, Boughton & Isard (1996) p. 27.

countries than the USA had to hold excessively high dollar reserves in order to maintain the bilateral value of their currency against the dollar, since the more the value of the dollar declined the more of these dollars were needed to maintain the real purchasing power of each member country's currency reserves.

Anecdotal box
An anecdote from a G10 discussion of the monetary system[9], at which the French were taking the lead, tells of the way representatives of G10 attempted to analyse the problem by making a distinction between "happy" and "not so happy" holders of currency reserves. In order to avoid economic crises and in solidarity with the USA the "not so happy" ones refrained from converting their dollars into gold. In 1965 France converted all of its dollar reserves into gold and called for the abolition of the gold standard.[10]

Countering inflation was the second reason – the economic one – for developing SDR.

The IMF once again faced the challenge of maintaining confidence in the international payment system.[11] There was a risk that the economies that were entirely dependent on the dollar would gradually experience problems in paying for their imports, as it was still not possible to raise currency loans. The only option would have been to limit domestic demand as a means of generating a current account surplus, which in itself was a way of causing deflation. In this way, the measures to prevent deflation became the second reason, the economic one, for developing SDR.

SDR were to be used as a hard currency and valued in terms of gold.

The decision to allot special drawing rights to the IMF's member countries was taken in 1967 in Rio de Janeiro, but the rights were not actually allotted until 1970. The SDR were to be used as a hard currency and valued in gold. The intention was to create an international reserve currency (paper gold) but the IMF was overtaken by events arising from the emergence of international financial markets.

The ability to borrow abroad and convert currencies has entirely eliminated the need of the industrialised economies to turn to the IMF.

It can be claimed that a political milestone was passed in 1973, by when the most important industrialised countries had introduced floating exchange rates.[12] This released central banks from their dependence on the IMF in its role as the central bankers' banker. In other words, they had become masters over their own monetary policy destiny. One consequence of this was that the IMF ceased to value SDR in gold and started to value them in the most important transaction currencies. The IMF's fundamental principle of maintaining a fixed price for the dollar was thus

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9 The discussion related to the first systematic study made by G10 of the monetary system as it was at that time; see Mussa, Boughton & Isard (1996).

10 Initially, when the Bretton-Woods system was established, gold accounted for more than three quarters of the total reserves. By the middle of the 1960s, the proportion of the reserves held in gold had fallen to one quarter.

11 Previously, the IMF had overcome the shortage of dollars (means of payment) by raising quotas.

12 In an attempt to retain the fixed exchange rate the dollar had been devalued by 10 percent in December 1970 in relation to gold, and some of the more important currencies have been revalued. It lies outside the scope of this article to discuss this in detail. It has been both analysed and published as a minute in de Vries (1988).

being watered down. As confidence developed in one currency after another as a transaction currency and as the dismantling of currency controls began, foreign exchange markets also started to emerge. The ability to borrow abroad and exchange currencies has entirely eliminated the need of the industrial countries to resort to the IMF as a means of gaining access to foreign currencies. But as we all know, the same conditions do not apply to poor countries.

SDR redistribute money

The SDR system was intended to solve the dilemma of the payment system, which by then was becoming a threat to global trade.

The SDR system was intended to solve the dilemma of the payment system, which by then was becoming a threat to global trade. With the aid of SDR, foreign currencies could be made available to oil the wheels of foreign trade without this having any negative effects, such as stagnation or inflation, but also to restore the confidence of the member countries' central banks in the ability to hold international reserves. Article of Agreement XVIII in the IMF's statutes stipulates that SDR may only be allotted if this helps to provide long-term global liquidity for supplementing existing reserves in such a way as to further the IMF's objectives and prevent stagnation and deflation just as much as surplus demand and inflation. Formally, this article is still in effect, even though international capital markets are now free.[13]

SDR – neither money nor market instrument

A simple description is that SDR were created to oil the wheels for the movement of currencies within the IMF.

It is often claimed that it is easier to say what SDR *are not* than to say *what they are*. SDR are not an asset with a redemption date that can be sold on a market. Nor are they a substitute for any of the international currencies, since it is not possible to pay with SDR outside the IMF. SDR are therefore neither a financial market instrument nor ready money. In general it cannot be denied that the terminology used within IMF circles is fairly complex, which makes it even harder to understand what the SDR system is really all about. In order to properly understand and form a correct picture of what SDR are, it is necessary to explain the technique they are based on. To put it simply special drawing rights were created to oil the wheels for the circulation of currencies within the IMF, to ease the

[13] In Mussa, Boughton & Isard (1996) in which the contributions to the IMF's enonymous conference have been published Mussa (page 80) and Williamson (pages 112-113) claim that this article no longer applies. As nowadays the supply of reserves always corresponds to the demand, the idea of being able to rationally handle a certain stock of international liquidity and arrive at a need an SDR requirement on this basis is no longer relevant.

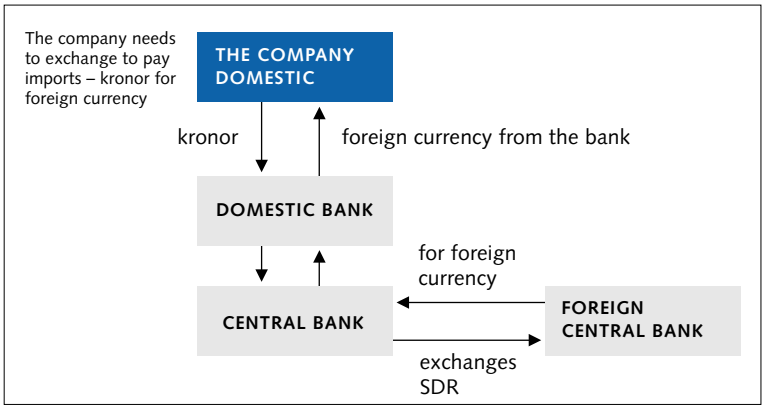
redistribution of currencies from member countries with payment surpluses to those with payment deficits.[14]

Technique behind SDR – a closed system

The technique that SDR represents – a means of oiling the wheels – involves member countries giving an undertaking to provide currency at the moment they receive an allocation of SDR. The other side of the coin is that they are also entitled to draw upon this credit to meet a temporary payment deficit. This is a mutual agreement that is binding on all the countries that are members of the co-operative association, which is what the IMF actually is. In this way, countries with large currency reserves[15] can convert some of them into SDR, so that a country that needs currency reserves can then convert them into currency. Then, on an occasion when the country has a currency surplus, the currency can be paid back. The currency is usually the dollar (see fact box page 58). In addition the country with surplus reserves can once again convert foreign currency into SDR. It is clear that since it simply involves the conversion of SDR into a currency, SDR do not create any significant currency reserves.

It is clear that since all it simply involves the conversion of SDR into a currency, SDR do not create any significant currency reserves.

Figure 1. SDR cannot be used as payment outside of IMF – exchange flow from one domestic company via the central bank



Banks in countries without access to the international foreign exchange market must exchange with their central bank. If the central bank does not have sufficient foreign currency reserves, it exchanges SDR for foreign currency with the central bank abroad.

[14] The actual object was to convince surplus countries in the IMF to lend to countries that were running current account deficits. Nowadays, this function is provided by international currency markets for those countries that have access to them. In practice, SDR also correspond to a line of credit in a foreign currency between counterparties that is denominated in SDR.

[15] At present countries with access to the capital market really don't have to maintain large currency reserves at their central banks as they can readily borrow on the currency market and then pass the currency on to a country that does not have such access.

Fact box

The IMF has allocated SDR generally to all member states in proportion to their quota on two occasions – in 1970 and 1978.[16] As several member states have joined since the last general distribution of quotas, a special allocation was agreed on in 1997. However, this has not been put into effect as the USA has not yet having ratified the Fourth Amendment. At the end of 2001, the amount of SDR in relation to the IMF's total reserves was around 10 per cent, which corresponds to some 215 billion Swedish kronor.

For the individual member country, an SDR allotment, i.e. the amount the country has undertaken to convert into currency in return for SDR, also means that the country's currency reserves will show a fictive increase. In the example below, the member state has been allotted – an obligation to convert – SDR corresponding to a value of 50 (passive side). This corresponds to a right – to convert currency into the SDR holding – for a value of 50. Consequently, the currency reserves will have increased by 50 in the member state.

When a central bank fulfils its obligation to buy SDR for the currency demanded direct from another central bank or from the IMF, the SDR are converted into the currency corresponding, say, to a value of 10. This means that the "real currency reserve" held by the central bank that accepts the SDR will decline by 10, which will increase the value of the central bank's holding of SDR by 10. The reverse is true if the country sells currency for SDR, that is to say it exercises its right to sell SDR. The country's total currency reserve after one transaction will thus be unchanged. The country's SDR allotment is only influenced by new undertakings.[17]

Table 1. Accounting treatment of SDR holding at a central bank
Billion SDR

Assets			Liabilities	
Currency reserve	400		Notes and coins	185
Gold	50		Other deposits	170
SDR holding	50	(60)	SDR allocation	50
Currency	300	(290)	Other liabilities	100
Other assets	250		Equity	45
			Result	100
Total assets	650		Total liabilities	650

UNIT OF MEASUREMENT WITH A FLOATING VALUE

An SDR corresponds to a basket of the most common currencies.

The IMF has been using SDR as a unit of measurement since the middle of the 1970s. All bookkeeping is expressed in SDR. The value of the SDR was changed for the first time in 1973 when it approached the valuation of the most widely used transaction currencies. Today, an SDR corresponds to a basket of the most widely used currencies: the US dollar, euro, yen and sterling.[18] The values of the currencies are weighted to

[16] According to the IMF's statutes, SDR allocations shall be discussed as least once every five years to determine whether measures need to be taken (basic period).

[17] The members' allocation of SDR as such generates no interest, but when the SDR are converted into currency, interest is paid; or, vice versa, when a currency is converted into SDR, interest is received, which is administered by the IMF. The current rate of interest is around 2 per cent. Interest rates on SDR are based on market rates and they have gradually tended to converge with the short market rate of interest known as the interbank rate. This means that the IMF has been able to relax its rules for SDR and instead to let the member states' incentive to be partly based on the alternative cost on the currency market.

[18] The basket is reviewed every fifth year. The currencies included at present are those that are most widely used in international transactions.

reflect their relative share of global trade and the financial system. In effect, the IMF is hedging its activities in SDR as their value reflects the most liquid currencies (the most widely used transaction currencies). The IMF's loans to a member state are denominated and paid in SDR, as are the loan repayments to the IMF. Repayment in SDR, as on the ordinary currency market, involves a currency risk that the borrowing country has to accept, since the value of the loan changes in line with developments in the international economy. But if a country is capable of paying back its loan it is probably also likely that its economy is back on track again, and thus regarded as fit for acceptance by international financial markets.

EFFECTIVE REDISTRIBUTION

The IMF functions as an intermediary in more or less all SDR transactions.

In organisational terms, the processing and bookkeeping of SDR transactions are performed by a separate department within the IMF – the SDR Department. The IMF functions as an intermediate in more or less all SDR transactions. Initially, the IMF felt itself compelled to guarantee the liquidity of each transaction, and the member states were given direct instructions by the IMF either to sell or buy SDR. In order to ensure the liquidity of the system, a legal platform was provided in the form of Article of Agreement XIX, which lays down conditions for the use of SDR and the factors that determine whether or not a member state's economy is strong enough for the country to be able to offer to accept SDR for conversion into currencies up to given limits.

Using a procedure known as "Transactions by Agreement" the IMF agrees with a member state on how many SDR the country is ready to exchange for the currency in question. In the case of some members, there is a further agreement about how much of the stated currency the country is ready to accept. Since this agreement was introduced in 1987, member states have, in principle, been allowed to trade currencies against SDR directly with each other. However, the IMF also co-ordinates these transactions, probably both as a service for the central banks, and in order to maintain liquidity on the SDR market more effectively.

SDR are really an enlargement of the facility for exchanging currencies over and above each member state's normal access to 25 per cent of its quota deposits.

So that it can guarantee that a member state experiencing problems with its current account deficit will always be able to immediately exchange SDR against foreign currencies, the IMF makes a quarterly liquidity assessment of the SDR, known as the Designation Mechanism.[19] In broad outline the purpose of this is to adjust the holding of SDR so that the financially strong countries, on average, keep their allotment for a given period of time. In reality, SDR are really an enlargement of the facili-

[19] For a more detailed description, see IMF (2001), page 94.

ty for exchanging currencies over and above each member state's normal access to 25 per cent of its quota deposits within the framework of the IMF's operative resources, known as the General Resources Account (i.e. the part that is not subject to conditionality conditions).[20]

Hopes and fears for SDR

SDR never became an international means of payment among the member states.

SDR never became an international means of payment among the IMF's member states. If they had, the IMF would have evolved into a monetary union with a single monetary policy by virtue of its role as a source of funds – lender of last resort – in the same way as the European Monetary Union (EMU). In fact SDR were launched too late to become a reserve currency as the abolition of the gold standard and the growing acceptance of floating exchange rates for the largest currencies had already begun. As economies are becoming increasingly globalised, the dollar is still the largest reserve currency, even though other currencies, such as the euro, are now also widely used in international trade and are therefore included by central banks in their currency reserves. Now that we have free movement of capital and floating exchange rates the supply of these currencies is based on demand. However, SDR live on within the IMF and from time to time they become the object of both hopes and fears, probably owing to a failure to understand how they actually function.

In the globalisation debate, discussions about SDR as a means to enable poor countries to overcome their problems have recently been returned to the agenda.

In discussions on globalisation, most recently at the Monterrey Conference[21] in 2002, the groups covered by the term Non-Governmental Organisations (NGO)[22] once again raised the possibility of using SDR as a means of enabling poor countries to overcome their problems. Their proposals express in a variety of fairly loose ways an idea (none have been described in detail) about using SDR to achieve fairer financing (to redistribute financial resources). A common feature of all these proposals is that they are based, often implicitly, on the belief that by issuing SDR the IMF would boost its total reserves. This could be one factor behind the misunderstanding of the nature of SDR that might sometimes also have induced some people to claim that SDR are "money for nothing". As I have explained above, nothing happens once the SDR have been issued as it is a strictly technical solution for entering an item that could be regarded as a contract to exchange a currency into/from SDR in a central bank's balance sheet.[23] It is only when the SDR are actu-

[20] For more about the IMF's lending arrangements, see International Monetary Fund (2001) and the IMF's web-site.

[21] The Conference on Financing for Development.

[22] NGO are the main interest groups questioning globalisation on grounds of injustice.

[23] The undertaking could be off-balance sheet, like an ordinary contract that corresponds to credit limits granted a bank but not yet drawn.

ally exchanged into a currency that a country gains access to the currency. At this point, several advantages for the various parties materialise. The members of the IMF all share the credit risk of a borrower country being able to exchange its currency back into SDR. Admittedly, the country that has received the currency is exposed to a currency risk, but as the value of the SDR is a weighted sum of the most widely used transaction currencies, this risk is limited (by comparison with exposure to a single currency).

Fears that SDR could be inflationary have been expressed repeatedly in connection with discussions on further SDR allocations. The allocation of SDR as such is not inflationary; on the other hand, "how" a country uses its SDR will determine whether they will cause inflation. Converting SDR into a currency could be inflationary in an individual country if the currency is then used for anything other than paying for imports of capital goods that the country can use to eventually eliminate its current account deficit. However, there is no immediately obvious, direct risk of inflation as the SDR are not a means of payment in the normal sense, circulating as they do exclusively within the IMF sphere. For each individual country (poor or not), the rule applies that has been developed on the international capital market, that each country itself determines its own fiscal and monetary policies. The same rules of the game, which are all about building up confidence in an economy, thus apply just as much to these countries as to other countries if they wish eventually to become accepted players on international currency markets. If the country imports consumer goods instead of capital goods, it could cause inflation, as the economy will then not grow fast enough to meet the increasing consumer demand. Within the limits of this argument, it is worthwhile highlighting the rule that an SDR allotment should be proportional to the borrower's quota of the IMF's assets, as this can limit not only its access to SDR but also the risk of inflation in the country in question.[24]

The allocation of SDR as such is not inflationary; on the other hand, "how" a country uses its SDR will determine whether they will cause inflation.

Another issue caused by the uncertainty that exists regarding SDR is the question of whether further SDR allotments can help to prevent a poor country's economic situation from deteriorating even further in the event of a global downturn or recession. In this context, it is worth looking at some of the misunderstandings that have arisen regarding SDR, which often prompt debate on whether SDR allotments should be increased or not. The most fundamental misunderstanding is the question of anxiety about the threat of global liquidity crises. For the past 20 years or more, the financial market has functioned in a way that means there is

[24] Each country's quota should broadly correspond to the relative size of its economy in the global economy. The definition of the quota formula is regularly discussed within the IMF, and the need to make adjustments to these quotas, individual or general, shall be reviewed at least every fifth year, according to the IMF's statutes.

no shortage of liquidity at a global level. Capital markets are now free.[25] This freedom involves opportunities for financing currency reserves, which, however, always comes at a price.

The reserves were created in a way similar to when, under the Bretton-Woods System, the USA undertook to print dollar bills, but now it is the currencies of several countries that are regarded as strong enough to be used as reserve currencies. As the capital market has developed a variety of instruments, it is now always possible for a country to effectively counter the effects of an increased money supply. Central banks can now immediately sterilise this by withdrawing liquidity from the market again to prevent the increase in the money supply from having a counterproductive effect on monetary policy. This means there is really no need to increase the allotment of SDR.

Lack of confidence in a country's economy means, as a consequence of the high risk, that its exchange costs will be excessive, even supposing that it can make the exchange.

For a country to exchange currencies on the capital market it has to have access to the market. If the level of confidence is too low, which is the case for most poor countries, nobody is willing to accept the high level of financial risk that buying a poor country's currency involves. Lack of confidence in a country's economy means, on account of this high risk, that its exchange costs will be excessive, even supposing that it can make the exchange.

There are also misunderstandings about the problem of where the SDR and reserves go. Greatly simplified, the fact is that if the industrial countries, that is to say those that have SDR, were to convert their SDR into foreign currency to cover their own current account deficits, they would end up in the hands of the countries they are importing from or of the countries with which they exchange their currencies – in other words, the poor countries. However, ever since the end of the 1980s, the situation has been quite the reverse. It can be seen from Table 2 that 26 industrial countries generally held more than their SDR allotment while 103 borrower countries on average hold significantly fewer SDR than their allocation. In the debate this gives rise to allegations that the industrial countries are sitting on the SDR and, by implication, not sharing them with other more deserving countries.

26 industrial countries have received more than their allotted SDR, while 103 borrowers have on average have received significantly less than their SDR allotment.

[25] By this is meant access to short-term credits, which are particularly common among foreign banks (known as inter-bank loans).

Table 2. SDR holdings of IMF countries by category
Per cent of total SDR allotments

	No.	October 1983	October 1992[1]	June 1998[1]	June 1992[2]	April 2000	April 2001
Lender country	26	86	123	115	107	101	105
Borrower country	103	10	18	41	34	40	29
Other[3]	54	58	59	75	60	80	82

[1] Before the increase in quotas at the 9th and 11th reviews.
[2] After the increase in quotas at the 11th review.
[3] This category shifts between lender and borrower, depending on circumstances.
Note. Five countries have not received SDR allotments as they became members of the IMF after the latest round of allocations in 1978.
Source: IMF – Financial Organisation and Operations of the IMF.

However, the industrial countries' large surpluses have arisen because large loan disbursements have been made in SDR. On these occasions, the industrial countries were responsible for exchanging SDR into foreign currency so that the borrowers could use the funds provided in their economies. The optimal solution, naturally, is for the SDR to circulate and for the industrial countries, the holders, to retain their allotment on average. When the borrower states have to service their loan commitments in SDR, i.e. they have either to pay interest or repay the loan, the interest/loan has to be converted into SDR before it can be paid to the IMF. In addition to this, the IMF pays the lender states (the industrial countries) interest in SDR.

The industrial countries' large surpluses have arisen because large loan disbursements have been made in SDR.

To sum up, it can be said that even though SDR have had little relevance as a means of international payment for a long time, and even though there is no lack of currency reserves in the international economy, poor countries can still benefit from using SDR, although they do not represent a financial solution for these countries. They do, on the other hand, provide a buffer stock of liquidity that could mean that poor countries can escape having to resort to the old, unfavourable means available (i.e. to curtail domestic demand) since they do not have access to the currency market to boost their currency reserves and cover their short-term currency requirements. Moreover, SDR are technically constructed so that a country can convert them at an average market price, as SDR are valued in terms of a weighted currency basket.

Even though there is no lack of reserves in the international economy, poor countries can still benefit from using SDR.

In principle, SDR complement the right of a member state to draw on 25 per cent of the capital it has deposited with the IMF as a means of temporarily covering a payments deficit. The distinction is not merely technical but also material in the sense that it costs a country to maintain reserves of 25 per cent, while it costs the country nothing at all until it

SDR complement the right of a member state to draw on 25 per cent of the capital it has deposited with the IMF.

converts SDR into foreign currency. Despite their original purpose, SDR are a fairly flexible, easy to use, means of payment, as they share common features with other currencies that are traded on financial markets, even though they can only be used within the IMF system.[26]

The conclusion is that SDR help poor countries that still do not have access to the currency market to engage in foreign trade.

The conclusion therefore is that SDR help poor countries that still do not have access to the currency market to engage in foreign trade. SDR serve as a sort of "ticket" (limited in number) for conversion into foreign currency for payments. SDR do not solve the problems of those countries that are more or less constantly running a current account deficit, as each country has limited access to SDR. But the SDR enable them to engage in foreign trade without accepting too high a currency risk or the risk of seeing their loans suddenly being called in if the borrowers start to get anxious about the level of risk exposure. Other means need to be adopted to build up a constant current account surplus and eventually build up enough confidence in their economy to enable them to gain access to international capital markets.

[26] Just before the end of 2002, the IMF published a Working Paper entitled "International Liquidity and the Role of the SDR in the International Monetary System". Arguing from the perspective of free capital markets, the authors conclude that the advantages of satisfying the growing demand for international reserves by issuing more SDR include efficiency gains and lower system risks, the latter being a consequence of the fact that SDR are to some extent a substitute for reserves that have been borrowed on the open market, and which creditors often call in rather suddenly in the event of crises arising from the risk exposure they have taken on.

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The Riksbank's submission on the final report *Future financial supervision*

SOU 2003:22

Sveriges Riksbank has been accorded the opportunity to comment on the final report "Future financial oversight", SOU 2003:22, presented by the commission of inquiry into the role and responsibilities of Finansinspektionen (the Swedish Financial Supervisory Authority). The Riksbank's views are reproduced below. Göran Lind and Tomas Flodén of the Financial Stability Department have composed the submission. This submission has the support of all of the Executive Board members.

Introduction

The commission of inquiry pursues a discussion in principle on the shaping of future financial oversight, which concludes in a number of proposals.

The report of the commission of inquiry is not primarily intended to lead to new legislation in the field. Instead there is a discussion in principle on the shaping of future financial oversight, which will conclude in a number of proposals. The Riksbank has therefore chosen to divide its comments on the submitted report into two parts. The first contains the Riksbank's views on the proposals put forward by the commission, while the second part conducts reasoning on the shaping of and requirements for future financial oversight. It also illustrates the current allocation of responsibilities between Finansinspektionen and the Riksbank, which may need to be reconsidered in the light of the new conditions described in the commission's report. The Riksbank is anxious to continue discussions on these issues.

The Riksbank's views on the commission's proposals

The Riksbank agrees with the commission's description of the problems and situation:

- Financial supervision will in future make greater demands of the supervisory authority's competence (Basel 2, EU requirements, more complex financial institutions and products).
- A number of government bills will make increased demands for supervision in general (Basel 2, new IAS regulations, supervision of auditors and accounting firms, increased follow-up of self-regulatory bodies, etcetera).

The Riksbank also supports the commission's main proposal that Finansinspektionen's work should be based more explicitly on fundamental socio-economic goals and on increased focus on core activities. The Riksbank would in particular like to emphasise certain aspects of a number of the commission's proposals:

The Riksbank would in particular like to emphasise certain aspects of a number of the commission's proposals:

- The Riksbank supports the proposed change to transfer statistical responsibility for the Financial Market Statistics to Statistics Sweden. As well as enabling Finansinspektionen to concentrate more on its core business, this will probably improve the quality and efficiency of the statistical production in that one authority will have total production responsibility for the statistics regarding the Financial Market Statistics, National Accounts, and so on.
- The Riksbank shares the commission's conclusion that insider trading investigations should be made by only one authority. In the view of the Riksbank, such an authority should have expertise in the fields of police work, finance and financial markets. To enable Finansinspektionen to intensify its work on its main activities to a greater degree, the new authority should not be organisationally placed too close to Finansinspektionen.
- The Riksbank has no objections to the proposal to transfer to the Patent and Registration Office (PRV) the responsibility for holding a register over certain categories of small financial companies and exempting them from supervision. These companies would nevertheless be covered by special legislation, even if they were not under supervision. It is therefore important that the opportunities to intervene against these companies are not reduced or forgotten. As Finansinspektionen has a consumer protection task, it is important that it should retain the possibility to intervene against these companies, as they offer products which sometimes risk being confused with products from companies under supervision. The opportunity to intervene should not be transferred to PRV, as it lies outside this authority's natural activities.
- The Riksbank believes it is important that Finansinspektionen, as the commission suggests, retains responsibility for accounting issues specific to financial companies. One important motive for this is that the regulation of banks is to a higher degree, such as through the Basel 2 requirements, based on certain views of accounting for financial business, which do not always coincide with those for other business activities.

- The Riksbank agrees with the commission's proposal that Finansinspektionen should not have a supervisory role with regard to auditors and accounting firms.
- The Riksbank also agrees with the commission's proposal that Finansinspektionen should retain consumer protection responsibility, even if its work is moved towards stability protection. As the commission points out, an increasing number of private persons are directly affected by developments in the financial markets and the complexity of the products is expanding all the time. Maintaining consumer protection requires insight into the companies offering financial services, an area where Finansinspektionen will always have an advantage over, for instance, the Swedish Consumer Agency. The Riksbank supports the commission's proposal for discussions between the authorities concerned regarding consumer protection with the aim of clarifying the allocation of roles. The Riksbank's opinion is that when allocating roles in this way, Finansinspektionen has an important role to play in increasing knowledge of financial products and services and in promoting insight into financial institutions. Finansinspektionen's role also gives it the competence to weigh consumer interests against financial stability interests, in cases where a conflict of interests might arise.
- The Riksbank supports the commission's proposal for increased financing through charges. This would give a clearer connection between the charges made and the services provided by Finansinspektionen and thereby the requirement for efficiency in the authority's work. The Riksbank also advocates a general increase in the degree of financing of Finansinspektionen's work through charges. This is an internationally recommended path to take, for instance, with the purpose of strengthening the authority's operational independence towards governments (see, for instance, the Basel Committee's Core Principles for Effective Banking Supervision).
- The Riksbank supports the proposal to appoint a practitioners panel to assess Finansinspektionen's work. One condition for the panel's work to provide the intended effect is that it is given the role of critically examining Finansinspektionen's activities and freely expressing opinions and that the sector is prepared to take the opportunity offered by such a group and seriously evaluate the authority's work on the basis of its objectives.

- As the Riksbank shares the commission's description and assessment of the increased requirements that will be made of the authority, the Riksbank also shares the commission's view that further resources must be allocated to Finansinspektionen. Personnel reinforcement should comprise both the number of employees and the competence of the employees.

Fundamental views on future financial oversight

The Riksbank and Finansinspektionen share the objective of promoting a safe and efficient financial system.

The Riksbank and Finansinspektionen share the objective of actively promoting a safe and efficient financial system and to a great extent complement one another in this work. It is therefore in the Riksbank's interests that the central government's total financial oversight should be organised as efficiently as possible and that Finansinspektionen should have the necessary resources and competence.

The Riksbank, Finansinspektionen and other parties concerned need to further develop the views on a number of issues regarding future financial supervision.

As the commission points out, rapid developments are taking place within the financial system and a number of government bills will have repercussions for the way financial oversight is conducted. At the same time, knowledge of financial stability and efficiency has developed considerably in recent years through research and work by authorities. Given the short time at the commission's disposal, it has not had an opportunity to highlight, far less fully illustrate, all of the aspects that are important in shaping future financial oversight. The Riksbank, together with Finansinspektionen and other parties involved, thus needs to further develop views on a number of questions regarding future financial oversight and how it should be organised. These issues are highlighted below for the purpose of stimulating such a discussion. A common denominator in these issues is the direction for Finansinspektionen's regulatory and supervisory work. On the one hand, these operations should be given a clear focus, that is to say, the target of achieving system stability by safeguarding stability among the individual institutions, systems and functions. On the other hand, there are a number of areas, including market oversight, consumer issues and efficiency, which cannot be kept outside regulatory and supervisory work, although these areas do not necessarily need to be completely managed by Finansinspektionen.

SYSTEM STABILITY

One of the main points in the report is that Finansinspektionen's oversight shall be based more explicitly on fundamental socio-economic goals, including reducing the risk of financial instability leading to disruptions to

society. According to the commission, this will primarily be achieved by safeguarding system stability. Using the approach that systemic problems arise in individual institutions, the commission focuses on oversight of these institutions. On page 29 of the report, the commission observes, for instance, that "monitoring the individual financial companies with regard to organisation, capital strength and risk management is therefore the crux of supervisory work, both in terms of system stability and consumer protection...".

The commission's description of the conditions for preserving system stability may need to be developed with regard to how and why stability problems arise and how society should work to reduce the risk of problems.

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

- The first is *the stability of the individual institutions*. This is the one on which the commission focuses and where it emphasises what needs to be supervised. Financial institutions, primarily banks, risk becoming unstable, which motivates monitoring of the stability in individual institutions (institutional supervision). The reason for the risk of instability within banks is quite simply that their financing is usually of a short-term duration and can rapidly disappear, while their assets have a long-term duration and cannot be realised instantly.
- The second pillar is *systemic risk*. Systemic risk is that when one institution experiences problems, there is a greater risk that other institutions also have, or will develop, problems. Systemic risk is the main explanation for the financial system being unstable and it comprises the base for the need of "system supervision" (as opposed to "institutional supervision"). There are several explanations for systemic risk; the institutions have credit exposures to one another through, for instance, loans or securities trading, they participate in the payment system and thus have liquidity exposures to one another, and finally they (the banks) have similar exposures and operations and thus risk being afflicted by the same problems, if these are based on macroeconomic events or other external factors. A further explanation for systemic risk is that the international community is aware of it and when problems arise in one institution, they tend to behave as though other institutions were also affected, whether or not these actually are affected. This behaviour reinforces systemic risk and can prove self-fulfilling.

- The third pillar comprises *the financial infrastructure*. This consists of the systems for trading, clearing and settlement of payments and securities trading. Well-designed systems reduce the risk of problems spreading from the financial markets, between the institutions or of the infrastructure itself causing problems through, for instance, operational disturbances.

The first pillar represents the evident core of Finansinspektionen's work. Problems in the major financial institutions, in particular the largest banks, are the greatest threat to financial stability, from an institutional perspective. The Riksbank therefore welcomes the commission's proposal that Finansinspektionen should aim its work at the larger financial institutions. In addition, Finansinspektionen has a role to play in the regulation and supervision of pillars two and three. The Riksbank is also active in promoting stability and efficiency in these two categories. It is therefore important to have regular co-operation and a clear allocation of responsibilities between the authorities.

The Riksbank welcomes the commission's proposal that Finansinspektionen should aim its work at the larger financial institutions.

The Riksbank's task of promoting a safe and efficient payment system entails regular oversight of the functioning of the financial system. The functions of the financial system that need safeguarding from society's point of view are the mediation of payments, the supply of capital and management of risk. From a functional perspective, the individual institutions are not under focus, rather their tasks. The Riksbank's focus is therefore primarily on the risk of several institutions at once suffering problems to the extent of threatening the functions. The Riksbank's oversight of the financial sector is in other words aimed at systemic risk.

The Riksbank's oversight of the financial sector is aimed at systemic risk.

The Riksbank also oversees system stability by monitoring and evaluating the financial infrastructure. As the Riksbank has ultimate responsibility for the liquidity of the payment system, the bank carries out regular surveillance of RIX, and of the financial infrastructure connected to RIX, such as VPC (the central securities depository), BGC (system for bank giro payments) and Stockholmsbörsen (the stock exchange). This is parallel to the Riksbank's regular assessment of the efficiency of the financial infrastructure as mentioned below.

In the Riksbank's opinion, the oversight of the financial infrastructure's functions is a separate form of oversight that cannot be included in the concept of market supervision. Market supervision is aimed at behaviour, dissemination of information and products available on the financial markets, which is essentially different from the infrastructure with regard to the design of systems for trading and payments.

In the Riksbank's opinion, the oversight of the financial infrastructure's functions is a separate form of oversight that cannot be included in market supervision.

Further improvement of the allocation of roles and the work on the common objectives requires greater understanding of the connections between the institutions, systems, infrastructures, financial markets and functions.

The Riksbank wishes, by means of the above reasoning, to point out that it requires more than supervision of the financial institutions to preserve the stability of the financial system. This is what is being done already and Finansinspektionen and the Riksbank complement one another's supervision and oversight by aiming their work at their respective areas of competence. Thereby the work of the two authorities covers the most important factors for system stability. Over the past year, Finansinspektionen and the Riksbank have worked on clarifying their respective roles in the work on financial stability, as well as the work on their other common objective – financial efficiency. This allocation of roles may need constant development and adaptation to take in new conditions in the financial sector. Further improvement of the allocation of roles and the work on the common objectives requires greater understanding of the connections between the institutions, systems, infrastructures, financial markets and functions.

FUTURE OVERSIGHT OF FINANCIAL INSTITUTIONS

Finansinspektionen needs to develop a clear intellectual framework with regard to the objectives and criteria for supervision as well as its design.

In future, increasingly high demands will be made by individual institutions for Finansinspektionen to motivate the supervision it exercises. The primary reason for this, as the commission points out, is the new Basel Accord rules. These entail both an overall concept to the supervision, where individual institutions are assessed on the basis of meeting quantitative and qualitative rules, and giving the institutions increased responsibility for developing risk management and control systems, while Finansinspektionen has the task of evaluating these and their application on the basis of the individual nature of each institution. This creates a completely new type of relationship between the institutions and Finansinspektionen. For example, Finansinspektionen will not be able to decide to approve or refuse to approve risk management systems on technical grounds alone, but must have in-depth knowledge of the operations and organisation in which the system is to be implemented. Finansinspektionen will be forced to gain an understanding of how individual institutions work in order to make decisions on possible additional capital adequacy requirements. The bank management in turn will make greater demands of Finansinspektionen to communicate in advance the thinking behind the decision to approve models or to require extra capital, in order to prioritise development projects and avoid solutions that will not gain Finansinspektionen's approval. Finansinspektionen will need to develop a clear intellectual framework with regard to the objectives and criteria of its supervision work, as well as its design, in order to meet the financial institutions' demands for predictability. The authority must also

have a well-developed intellectual framework for its international contacts, both with authorities and with banks that have cross-border operations.

The new Basel Accord rules apply to banks and securities institutions. However, they can be regarded as an example of a development in the supervisory work that will also cover other institutional categories, such as insurance companies. There is also a change in progress in the supervision, towards a more qualitative supervision, where greater demands are made of close, continuous cooperation between the institutions and Finansinspektionen.

MARKET SUPERVISION

The stability and efficiency of the financial system benefits from smoothly functioning financial markets. Broader and deeper markets create the conditions for a more efficient management of capital, liquidity and risk. A better risk spread in the financial system can improve the banks' ability to withstand an economic downturn with the ensuing increase in borrower failure, as the risks are spread not only to the lending banks but to the investors in, for instance, the securities markets. The consequences for the economy of problems in the banking sector will also be smaller if there are alternative channels for supplying capital. International studies show that countries with well-developed financial markets have greater chance of coping with severe bank crises or find it easier to manage the crises that can nevertheless arise. Market supervision is probably a necessary condition for the market's credibility among investors and other parties, which – all else being equal – increases the breadth and depth of the markets.

International studies show that countries with well-developed financial markets have greater ability to avoid severe bank crises.

As the commission indicates, market supervision is a relatively new area that brings partially new elements and aspects into financial supervision. The motives for market supervision and its design are not as developed as in the case of, for instance, stability supervision. At present market supervision is largely motivated by the need for confidence in the financial markets, and the commission appears, in line with the given mandate, to largely define Finansinspektionen's role in market supervision on the basis of a number of central EU directives. The Riksbank considers this basis to be too narrow. This is an area that requires further examination, in order to better motivate market supervision and to give it a clearer aim. The question of where this supervision shall be conducted should be left open. Given that supervision of the financial infrastructure is not included in the concept of market supervision, there is little to connect market supervision with Finansinspektionen's other supervisory work. This narrower definition makes market supervision rather similar to

As the commission indicates, market supervision is a relatively new area that brings partially new elements and aspects into financial supervision.

Finansinspektionen's consumer protection task and one could possibly call it investor protection rather than market supervision.

This becomes even clearer if one looks at the international minimum standards for market supervision. These summarise what is currently perceived to comprise market supervision. The standards include various regulations regarding supervision of institutions (e.g. securities institutions) and other participants (such as stockbrokers), markets and stock exchanges. The purpose of the regulations is consumer protection and to ensure the markets function efficiently, rather than system stability. In addition, there are codes of conduct for trading regulations and similar, e.g. that the rules for trade in certain financial instruments shall be stricter when the counterparty is a private person than when it is a professional investor, that minority interests shall be protected and on the design of rules to prevent insider trading and price manipulation. In addition, the standards take up the authorities' task of monitoring that institutions, trade and markets are not abused and, if abuse nevertheless occurs, of investigating the infringement and if necessary reporting it to the police or a court of law. One important international standard is aimed at preventing money laundering in the financial system.

International examples show that market supervision is in many respects considered to be specifically distinct from stability supervision.

The exact shaping of the supervision of the various components in market supervision should be left open. It can be noted that the Netherlands has recently decided to divide up supervisory responsibility so that one authority is responsible for "prudential regulation and supervision" (what the commission terms stability supervision), while another is responsible for "business conduct" (which most closely corresponds to market supervision). The mandate for the Financial Services Authority in the UK gives consumer protection a prominent role in market supervision. Both examples show that market supervision is in many respects considered to be specifically distinct from stability supervision.

EFFICIENCY

It is important that efficiency issues with a clear connection to Finansinspektionen's objective on stability protection and consumer protection should be given a prominent place in the intellectual reasoning behind the authority's operations.

The Government's current regulation with instructions to Finansinspektionen emphasises efficiency of the financial system as one of the main objectives for the authority, alongside stability and consumer protection. However, the commission tones down the efficiency objective in favour of the stability objective, which is expressed in the proposal that the instructions for Finansinspektionen should erase the concept of "efficiency" as a main objective. This makes efficiency a subordinate objective or perhaps a restriction for the stability work. However, it is important that efficiency issues with a clear connection to Finansinspektionen's objective on stability protection and consumer protection should be given

a prominent place in the intellectual reasoning behind the authority's operations. The commission could have emphasised more clearly how the work on efficiency should be conducted in future. New technology and an increased degree of internationalisation open up major opportunities for increased efficiency in the financial system; in some cases at the cost of higher systemic risk. This is an area where Finansinspektionen needs to formulate its opinions and considerations more clearly. A one-sided focus on the stability aspects risks leading to over-regulation to the detriment of the efficiency of the financial sector and its capacity to contribute to economic growth in Sweden.

Efficiency is an additional area where the work of the Riksbank and that of Finansinspektionen adjoin one another and it is essential to have a clear allocation of roles. The efficiency aspects are particularly clear in the shaping of the financial infrastructure, as this is characterised by economies of scale and a clear balance between stability and efficiency. Rapid developments are taking place in the infrastructure field, in terms of technology, legal issues and analysis. The commission does not go into any detail on future supervision of the financial infrastructure, neither from a stability perspective nor an efficiency perspective, but this is an area that will make new and greater demands on the authorities responsible for such issues. This will lead to a need for increased effort and a new way of thinking.

The future supervision of the financial infrastructure is an area that will make new and greater demands of the authorities with responsibility for these issues.

CRISIS MANAGEMENT

One area not discussed by the commission is Finansinspektionen's role in managing banks that are experiencing problems. The legislation in this field should include a broader range of possible measures for the authority to take against problem banks, including sanctions and heavy fines. It is also important that Finansinspektionen, like the Riksbank and the Ministry of Finance, further develops its intellectual thinking for crisis management and makes practical preparations. The final report of the Banking Law Committee contains modes of reasoning and proposals that could provide a good starting point. As a result of the financial companies' international integration (more about this below), crisis management issues are taking on increased international aspects, which leads to further complexity. The Riksbank supports the active role played by Finansinspektionen on issues of international cooperation in crisis management between supervisory authorities and, in some cases, central banks in various countries.

It is also important that Finansinspektionen, like the Riksbank and the Ministry of Finance, further develops its intellectual thinking for crisis management and makes practical preparations.

Another area of considerable significance to future financial supervision concerns the financial conglomerates.

Another area of considerable significance for future financial supervision is the financial institutions that increasingly have cross-border operations and also tend to operate across sectors, those known as financial conglomerates. Whether or not Sweden joins the Eurosystem, it is probable that the present trend of financial institutions that are active, and often on a large-scale, in several different countries will continue.

In a hypothetical case, where the Swedish market only comprised a minor part of the operations of banks active in Sweden and in particular if these banks did not have Sweden as a domestic market, Finansinspektionen would face new issues and methods of working. The stability of the institutions' Swedish operations would then be dependent on the stability of the entire groups. Monitoring this stability falls to the supervisory authority in the institution's country of domicile, according to international rules. Correspondingly, Finansinspektionen will be responsible for exercising supervision of the operations conducted abroad by financial institutions domiciled in Sweden. As an increasing number of institutions establish themselves across national borders and in some cases have significant, perhaps systemically important, operations in other countries, the principle of home country supervision has begun to be questioned. One reason is that the authority in the host country may feel concern over whether the authority in the country of domicile will sufficiently prioritise supervision of the institution in the host country.

Another development is that financial services and products are being offered and traded across national borders without the corresponding institutional establishment, for instance, via the Internet (e-banking).

These developments will require new ways of thinking with regard to the means and opportunities at Finansinspektionen's disposal for safeguarding the stability and efficiency of the Swedish financial system.

The trends described above make new demands on supervision, so that it can be conducted in a uniform manner, regardless of which country houses the financial institution's head office and which supervisory authority has responsibility for the supervision work. The commission illustrates this first and foremost from the perspective of resources with regard to participation in various international working groups and the development of forms for cooperation with authorities in the countries where the banks active in Sweden are domiciled. However, this is only a part of the issue. Developments will also require new thinking with regard to the means and opportunities at Finansinspektionen's disposal for safeguarding the stability and efficiency of the Swedish financial system and whether it will even be possible or relevant in future to speak of a Swedish system.

Notices

G10 report on asset prices

On 8 January 2003 the report "Micro policies and turbulence in asset markets" was published by a working group under the G10 umbrella. The working group had been led by Lars Heikensten and the report was mainly written by staff at the Riksbank, with valuable contributions from the central banks in the United Kingdom, Ireland and the Netherlands as well as from BIS and the IMF.

The report is available on Sveriges Riksbank's website (www.riksbank.se).

Distribution of work in the Executive Board

The Executive Board decided at its meeting on 19 January 2003 on the following distribution of work within the Board.

Lars Heikensten is Chairman of the Executive Board and Governor of the Riksbank. He is responsible for preparing matters from the Secretariat of the Executive Board with the Chief Legal Counsellor and for matters relating to the Internal Auditing Department. Mr Heikensten is a member of the ECB's General Council and a member of the board of the Bank for International Settlements, BIS. He is also Sweden's governor in the International Monetary Fund.

Eva Srejber is First Deputy Governor and responsible for drafting matters from the International Department, the IT Department and the Market Operations Department, as well as for coordinating the preparations by the Riksbank and the financial sector for a potential Eurosystem membership. Mrs Srejber is the Governor's alternate on the ECB General Council and a member of the EU's Economic and Financial Committee.

Villy Bergström is Deputy Governor and has responsibility for preparing matters from the Research Department and the Communications Department and for the Riksbank's responses to submissions. Mr Bergström is a member of the OECD's WP3 committee.

Lars Nyberg is Deputy Governor and responsible for preparing matters from the Financial Stability Department and the Risk Management Department. Mr Nyberg is Chairman of the Board of Svensk Kontantförsörjning AB and a member of the board at Crane AB (formerly AB Tumba Bruk). He has also been appointed by the Government to the board of Finansinspektionen (the Swedish Financial Supervisory Authority) and is the Riksbank's representative in the G10 cooperation at deputy central bank governor level.

Kristina Persson is Deputy Governor and has responsibility for preparing matters from the Administration Department. Mrs Persson is the Governor's alternate at the IMF.

Irma Rosenberg is Deputy Director and responsible for preparing matters from the Monetary Policy Department and for matters concerning the ownership of the Riksbank's subsidiaries. Mrs Rosenberg is the Governor's alternate at the BIS.

Changes in the routine for EU payments

In accordance with the European Commission's new rules and regulations (1997/2002, of 8 November 2002), payments to member states shall be made in euro as from 1 January 2003. As a rule, the Commission's payments to Sweden were previously made in Swedish kronor. This change means that the Riksbank, as intermediary for payments for the European Commission, will henceforth be required to exchange incoming EU payments in euro for Swedish kronor. These transactions have no monetary policy significance, and the Riksbank will act solely as an intermediary.

The Riksbank's Annual Report 2002; stronger krona reduced earnings

On 14 February 2003, the Riksbank presented its Annual Report for 2002 to the Riksdag (the Swedish parliament). The Riksbank reports a loss before appropriations of SEK 71 million for 2002. This can be compared with the previous year, when the Riksbank reported a profit of SEK 19.3 billion. The poor result for 2002 was largely due to the strengthening of the krona against the currencies in the foreign currency reserve. As the reserve is valued at market prices, a stronger krona leads to a decline in the Riksbank's earnings. The krona appreciation led to an exchange loss of SEK 13.2 billion. At the same time, lower interest rates meant an increase in the value of the Riksbank's holdings of bonds. This had a positive result of SEK 6.7 billion on earnings. Other costs largely consist of the costs for banknotes and coins, personnel, administration and changes in the valuation of the Riksbank's subsidiaries.

As a step towards reforming cash management and making it more efficient, the Riksbank's subsidiary with responsibility for this has been divided up into two companies; Svensk Kontantförsörjning AB and Pengar i Sverige AB. This division has been made to facilitate the sale of operations to private ownership. In the balance sheet the value of Svensk Kontantförsörjning AB has been written down by SEK 435 million, which is charged against the earnings for the year. A new organisation for cash management will come into force in February 2003 and work is under way to eventually transfer both companies to private ownership.

Allocation of the Riksbank's net income 2002

On 14 February 2003, the General Council of the Riksbank presented a proposal to the Riksdag regarding the allocation of the Riksbank's net income for the financial year 2002. According to the current guidelines,

80 per cent of the average income before appropriations over the past five years shall be transferred to the Treasury. The income used as a base for calculating the size of the transfer (dividend) is adjusted for exchange rate effects and changes in the market value of the Riksbank's gold reserve. According to these guidelines, the dividend for 2002 should be SEK 7.5 billion.

The General Council has therefore decided to propose to the Riksdag that SEK 7.5 billion be transferred to the Treasury. This sum will be taken from the Riksbank's own capital.

Agreement between the Riksbank and Finansinspektionen on the division of labour with regard to financial stability

Finansinspektionen (the Swedish Financial Supervisory Authority) and the Riksbank have signed an agreement regarding the division of labour and co-operation in the field of financial stability. The purpose of this agreement is to clarify each authority's work tasks and facilitate co-operation with regard to maintaining stability and promoting efficiency in the financial system. It clarifies the distribution of work and the working routines that already prevail. Similar agreements exist in other countries with a corresponding division of work between the central bank and the supervisory authority.

The agreement is available on both the Riksbank's and Finansinspektionen's websites (www.riksbank.se and www.fi.se respectively).

High-level principles for cooperation between the banking supervisors and central banks of the European Union in crisis management situations

The banking supervisory authorities and central banks of the EU have a regular cooperation through the Banking Supervision Committee. A working group of this Committee, led by Deputy Governor Lars Nyberg, has produced a document that establishes general principles for cooperation between different authorities in the event of a crisis situation.

A more detailed description of the background to, and contents of, the document can be found on the ECB's website, www.ecb.int, under the hearing Publications.

Statistics Sweden takes over the production of the Riksbank's financial market statistics

According to an agreement between the Riksbank and Statistics Sweden (SCB), which was signed in November 2001, SCB is commissioned by the Riksbank to collect, produce and publish the Riksbank's financial market statistics. Financial market statistics mainly comprise balance sheet statistics regarding credit institutions and similar. The statistics include data on lending, deposits and the money supply, as well as some securities statis-

tics. SCB took over production of the statistics with effect from 1 April 2003.

Publication of the statistics will be on SCB's website. The Riksbank's website (www.riksbank.se) will contain a link to this site.

Kerstin Hallsten new Deputy Head of Department

At its meeting on 3 April 2003, the Executive Board of the Riksbank appointed Kerstin Hallsten new Deputy Head of the Monetary Policy Department. Mrs Hallsten leads the work on the Inflation Report. She took up her new post on 7 April 2003.

Kerstin Hallsten has worked at the Riksbank since 1989. She received a PhD in economics in 2000 and was previously Head of the Division for Macro Economic Analysis in the Monetary Policy Department.

Manageable risks in the changeover process if Sweden adopts the euro 2006

The publication *The Euro in the Swedish Financial Sector – Progress Report 9* was presented on 14 May 2003. The report contains a summary and update of financial studies made earlier by the financial sector regarding necessary changes and lead times for adoption of the euro.

The report is available on the Riksbank's website (www.riksbank.se) under the heading Publications/EMU. An English version of the report was available a couple of weeks' later.

Monetary policy calender

1999-01-04 The *reference* (official discount) *rate* is confirmed by the Riksbank at 1.5 per cent as of 5 January 1999.

02-12 The *fixed repo rate* is lowered by the Riksbank to 3.15 per cent as of 17 February 1999. The Riksbank also lowers its *deposit* and *lending rates*, in each case by 0.5 percentage points. The deposit rate is set at 2.75 per cent and the lending rate at 4.25 per cent. The decision takes effect on 17 February 1999.

03-25 The *fixed repo rate* is lowered by the Riksbank from 3.15 per cent to 2.90 per cent as of 31 March 1999.

04-01 The *reference* (official discount) *rate* is confirmed by the Riksbank at 1.0 per cent as of 6 April 1999.

07-01 The reference (official discount) *rate* is confirmed by the Riksbank at 1.0 per cent (unchanged).

10-01 The *reference* (official discount) *rate* is confirmed by the Riksbank at 1.5 per cent as of 4 October 1999.

11-11 The *repo rate* is increased by the Riksbank from 2.90 per cent to 3.25 as of 17 November 1999.

2000-01-03 The *reference* (official discount) *rate* is confirmed by the Riksbank at 2.0 per cent as of 4 January 2000.

02-03 The *repo rate* is increased by the Riksbank from 3.25 per cent to 3.75 as of 9 February 2000.

04-03 The *reference* (official discount) *rate* is confirmed by the Riksbank at 2.5 per cent as of 4 April 2000.

12-07 The *repo rate* is increased by the Riksbank from 3.75 per cent to 4.0 per cent as of 13 December 2000. The Riksbank also increases its *deposit* and *lending rates* in each case by 0,5 percentage points. The deposit rate is set at 3.25 per cent and the lending rate at 4.75 per cent. The decision takes effect on 13 December 2000.

2001-07-05 The *repo rate* is increased by the Riksbank from 4.0 per cent to 4.25 per cent as of 11 July 2001. The Riksbank also increases its *deposit* and *lending rates* in each case by 0.25 percentage points. The deposit rate is set at 3.5 per cent and the lending rate at 5.0 per cent. The decision takes effect on 11 July 2001.

09-17 The *repo rate* is lowered by the Riksbank from 4.25 per cent to 3.75 per cent as of 19 September 2001. The Riksbank also lowers its *deposit* and *lending rates* in each case by 0.50 percentage points. The deposit rate is set at 3.0 per cent and the lending rate at 4.5 per cent. The decision takes effect on 19 September 2001.

2002-03-18 The *repo rate* is increased by the Riksbank from 3.75 per cent to 4.0 per cent as of 20 March 2002. The *deposit rate* is accordingly adjusted to 3.25 per cent and the *lending rate* to 4.75 per cent.

04-25 The *repo rate* is increased by the Riksbank from 4.0 per cent to 4.25 per cent as of 2 May 2002. The *deposit rate* is accordingly adjusted to 3.5 per cent and the *lending rate* to 5.0 per cent.

06-28 The *reference rate* is confirmed by the Riksbank at 4,5 per cent for the period 1 July 2002 to 31 December 2002.

11-15 The repo rate is lowered by the Riksbank from 4.25 per cent to 4.0 per cent as of 20 November 2002. The deposit rate is accordingly set at 3.25 per cent and the lending rate to 4.75 per cent.

12-05 The *repo rate* is lowered by the Riksbank from 4.0 per cent to 3.75 per cent as of 11 December 2002. The *deposit rate* is accordingly set at 3.0 per cent and the *lending rate* to 4.5 per cent.

2003-01-01

03-17 The Riksbank decides to lower the *repo rate* from 3.75 per cent to 3.50 per cent, to apply from 19 March 2003. Furthermore, the Riksbank decides that the *deposit* and *lending rates* shall be adjusted to 2.75 per cent and 4.25 per cent respectively.

06-05 The Riksbank decides to lower the *repo rate* from 3.50 per cent to 3.00 per cent, to apply from 11 June 2003. Furthermore, the Riksbank decides that the *deposit* and *lending rates* shall be adjusted to 2.25 per cent and 3.75 per cent respectively.

Statistical appendix

Statistics from Sveriges Riksbank are to be found on the Internet (www.riksbank.se). Dates of publication of statistics regarding the Riksbank's assets and liabilities including foreign exchange reserves plus financial market and the balance of payments statistics are available on the website of the International Monetary Fund (IMF) (dsbb.imf.org). Dates of publication can also be obtained from the Information Centre at Sveriges Riksbank.

1 Riksbank's assets and liabilities

ASSETS. PERIOD-END STOCK FIGURES. SEK MILLION

		Gold	Government securities	Lending to bank	Fixed assets	Other	Total
2002	Jan	17 436	–	59 249	153 172	3 008	232 865
	Feb	17 436	–	56 564	154 218	3 266	231 484
	March	17 436	–	55 400	157 307	1 749	231 892
	April	17 436	–	53 522	151 943	3 902	226 803
	May	17 436	–	35 455	165 959	2 881	221 731
	June	17 436	–	21 635	161 820	2 233	203 124
	July	17 436	–	21 631	159 602	2 381	201 050
	Aug	17 436	–	23 176	163 286	2 360	206 258
	Sept	17 436	–	22 393	157 865	2 280	199 974
	Oct	17 436	–	22 233	157 437	2 234	199 340
	Nov	17 436	–	23 582	157 993	2 369	201 380
	Dec	17 436	–	30 714	159 791	2 806	210 747
2003	Jan	18 210	–	22 849	153 407	11 021	205 488
	Feb	18 210	–	23 405	155 029	6 759	203 403
	March	18 210	–	22 619	151 184	11 678	203 691
	April	18 210	–	23 276	156 777	3 306	201 569
	May	18 210	–	15 938	157 470	7 006	198 624

LIABILITIES. PERIOD-END STOCK FIGURES. SEK MILLION

		Notes and coins in circulation	Capital laibilities	Debts to monetary policy counterparts	Debts in foreign currency	Other	Total
2002	Jan	98 571	70 890	402	10 203	52 799	232 865
	Feb	97 395	70 890	89	11 090	52 020	231 484
	March	98 790	70 890	59	10 991	51 162	231 892
	April	97 023	70 890	525	7 823	50 542	226 803
	May	97 140	82 943	204	9 666	31 778	221 731
	June	97 931	62 943	52	9 640	32 558	203 124
	July	96 728	62 943	413	8 085	32 881	201 050
	Aug	98 367	62 943	133	10 450	34 365	206 258
	Sept	97 648	62 943	79	4 699	34 605	199 974
	Oct	97 411	62 943	117	3 675	35 194	199 340
	Nov	99 061	62 943	17	3 673	35 686	201 380
	Dec	107 439	62 943	87	3 664	36 614	210 747
2003	Jan	99 614	62 943	58	3 674	39 199	205 488
	Feb	100 475	62 943	33	3 327	36 625	203 403
	March	99 701	62 943	33	3 300	37 714	203 691
	April	100 318	62 943	98	4 135	34 075	201 569
	May	100 483	50 556	22	3 323	44 240	198 624

2 Money supply

END-OF-MONTH STOCK

		SEK million			Percentage 12-month change	
		M0	M3		M0	M3
2000	Jan	82 276	949 834	Jan	10.2	8.5
	Feb	81 072	951 449	Feb	9.0	8.9
	March	81 105	944 846	Mars	8.0	8.1
	April	81 606	966 643	April	8.4	9.5
	May	81 866	984 906	Maj	7.3	10.7
	June	81 399	953 349	Juni	6.9	5.9
	July	81 370	944 491	Juli	6.0	5.7
	Aug	82 232	949 502	Aug	5.7	4.3
	Sept	82 947	966 556	Sept	6.0	4.9
	Oct	82 758	970 565	Okt	4.5	2.0
	Nov	84 004	975 144	Nov	4.4	4.1
	Dec	88 881	974 091	Dec	2.0	2.8
2001	Jan	84 327	960 545	Jan	2.5	1.1
	Feb	84 282	947 276	Feb	4.0	–0.4
	March	85 188	969 559	Mars	5.0	2.6
	April	86 379	975 366	April	5.8	0.9
	May	86 711	983 764	Maj	5.9	–0.1
	June	87 288	1 012 094	Juni	7.2	6.2
	July	86 705	977 812	Juli	6.6	3.5
	Aug	87 693	985 811	Aug	6.6	3.8
	Sept	87 892	1 008 439	Sept	6.0	4.3
	Oct	88 809	1 022 639	Okt	7.3	5.4
	Nov	89 947	1 039 646	Nov	7.1	6.6
	Dec	96 743	1 038 972	Dec	8.8	6.7
2002	Jan	89 737	1 031 807	Jan	6.4	7.4
	Feb	88 950	1 014 905	Feb	5.5	7.1
	March	89 998	1 033 020	Mars	5.6	6.5
	April	88 666	1 049 030	April	2.6	7.6
	May	88 818	1 025 757	Maj	2.4	4.3
	June	89 383	1 053 910	Juni	2.4	4.1
	July	88 631	1 037 162	Juli	2.2	6.1
	Aug	89 945	1 051 986	Aug	2.6	6.7
	Sept	89 567	1 061 341	Sept	1.9	5.2
	Oct	89 461	1 051 867	Okt	0.7	2.9
	Nov	90 465	1 068 389	Nov	0.6	2.8
	Dec	95 866	1 086 057	Dec	–0.9	4.5
2003	Jan	90 122	1 085 994	Jan	0.4	5.3
	Feb	90 505	1 072 732	Feb	2.9	5.7
	March	91 966	1 093 560	Mars	2.2	5.9
	April	92 334	1 096 286	April	4.1	4.5

3 Interest rates set by the Riksbank

PER CENT

	Date	Repo rate	Deposit rate	Lending rate	Period	Reference rate[1]
2000	02-09	3.75			2002:2 half-year	4.50
	12-13	4.00	3.25	4.75	2003:1 half-year	4.00
2001	07-11	4.25	3.50	5.00		
	09-19	3.75	3.00	4.50		
2002	03-20	4.00	3.25	4.75		
	05-02	4.25	3.50	5.00		
	11-20	4.00	3.25	4.75		
	12-11	3.75	3.00	4.50		
2003	03-19	3.50	2.75	4.25		
	06-11	3.00	2.25	3.75		

[1] 1 July 2002 the official discount rate was replaced by a reference rate, which, at the end of each half calender-year (end of June and end of December, respectively) is set by the Riksbank.

4 Capital market interest rates

EFFECTIVE ANNUALIZED RATES FOR ASKED PRICE. MONTHLY AVERAGE. PERCENT

		Bond issued by:					
		Central Government				Housing	
		3 years	5 years	7 years	9–10 years	2 years	5 years
2001	Jan	4.22	4.56	4.72	4.89	4.51	5.08
	Feb	4.15	4.51	4.71	4.86	4.41	5.04
	March	4.01	4.33	4.59	4.75	4.28	4.87
	April	4.12	4.51	4.78	4.93	4.36	5.03
	May	4.43	4.82	5.12	5.27	4.63	5.33
	June	4.75	5.03	5.26	5.38	4.98	5.59
	July	4.78	5.08	5.30	5.42	5.01	5.65
	Aug	4.49	4.77	5.01	5.16	4.71	5.29
	Sept	4.23	4.74	5.04	5.26	4.45	5.26
	Oct	3.98	4.60	4.92	5.17	4.16	5.10
	Nov	3.92	4.49	4.76	4.96	4.34	5.13
	Dec	4.21	4.90	5.09	5.24	4.67	5.49
2002	Jan	4.53	5.01	5.17	5.27	4.71	5.40
	Feb	4.76	5.18	5.28	5.36	4.94	5.57
	March	5.05	5.46	5.55	5.63	5.22	5.83
	April	5.10	5.46	5.56	5.69	5.28	5.85
	May	5.10	5.45	5.56	5.69	5.25	5.85
	June	4.94	5.27	5.39	5.52	5.09	5.65
	July	4.73	5.06	5.20	5.37	5.08	5.45
	Aug	4.52	4.83	4.96	5.13	4.86	5.21
	Sept	4.42	4.62	4.77	4.97	4.69	5.03
	Oct	4.29	4.62	4.80	5.07	4.52	5.07
	Nov	4.15	4.54	4.75	5.05	4.36	4.96
	Dec	3.99	4.39	4.59	4.89	4.16	4.79
2003	Jan	3.79	4.23	4.36	4.70	3.99	4.54
	Feb	3.56	3.97	4.11	4.47	3.77	4.27
	March	3.53	4.03	4.17	4.57	3.86	4.34
	April	3.59	4.17	4.30	4.72	3.93	4.57
	May	3.25	3.77	3.90	4.37	3.56	4.16

5 Overnight and money market interest rates

MONTHLY AVERAGE. PER CENT

		Repo rate	Interbank rate	SSVX[1]			Company certificates	
				3 months	6 months	12 months	3 months	6 months
2000	Jan	3.25	3.35	3.57	3.86		3.77	4.05
	Feb	3.61	3.71	3.90	4.22		4.11	4.43
	March	3.75	3.85	4.06	4.29	4.74	4.27	4.53
	April	3.75	3.85	3.99	4.16		4.21	4.45
	May	3.75	3.85	3.96	4.09	4.57	4.21	4.43
	June	3.75	3.85	3.94	4.04	4.56	4.15	4.44
	July	3.75	3.85	4.03	4.21		4.31	4.66
	Aug	3.75	3.85	4.00	4.21	4.59	4.23	4.50
	Sept	3.75	3.85	3.94	4.04	4.51	4.14	4.36
	Oct	3.75	3.85	3.99	4.09		4.15	4.31
	Nov	3.75	3.85	4.00	4.09	4.50	4.14	4.26
	Dec	3.89	3.99	4.07	4.22	4.37	4.19	4.38
2001	Jan	4.00	4.10	4.07	4.12		4.17	4.26
	Feb	4.00	4.10	4.01	4.07		4.14	4.23
	March	4.00	4.10	4.06	4.02	4.11	4.24	4.23
	April	4.00	4.10	3.94	3.98	4.01	4.12	4.11
	May	4.00	4.10	4.01	4.06	4.28	4.16	4.20
	June	4.00	4.10	4.17	4.27	4.48	4.39	4.46
	July	4.17	4.27	4.31	4.42		4.50	4.58
	Aug	4.25	4.35	4.28	4.31	4.37	4.45	4.48
	Sept	4.05	4.15	4.01	4.06	4.15	4.18	4.22
	Oct	3.75	3.85	3.70	3.72		3.90	3.91
	Nov	3.75	3.85	3.71	3.74	3.91	3.89	3.87
	Dec	3.75	3.85	3.71	3.76	3.97	3.96	3.96
2002	Jan	3.75	3.85	3.74	3.81		3.94	3.97
	Feb	3.75	3.85	3.87	3.99		4.01	4.14
	March	3.84	3.94	4.09	4.29	4.64	4.27	4.43
	April	4.00	4.10	4.25	4.41		4.52	4.69
	May	4.25	4.35	4.29	4.48	4.79	4.64	4.79
	June	4.25	4.35	4.28	4.42	4.71	4.88	5.00
	July	4.25	4.35	4.26	4.37		4.89	4.95
	Aug	4.25	4.35	4.19	4.29	4.43	4.83	4.87
	Sept	4.25	4.35	4.17	4.21	4.29	4.82	4.84
	Oct	4.25	4.35	4.07		4.14	4.67	4.64
	Nov	4.15	4.25	3.91	3.84	3.93	4.20	4.19
	Dec	3.85	3.95	3.66	3.68	3.77	3.97	3.95
2003	Jan	3.75	3.85	3.65			3.90	3.88
	Feb	3.75	3.85	3.61	3.40	3.55	3.85	3.79
	March	3.64	3.74	3.40	3.36	3.35	3.64	3.57
	April	3.50	3.60	3.42			3.62	3.59
	May	3.50	3.60	3.18	2.96		3.43	3.37

[1] Treasury bills.

6 Treasury bills and selected international rates

MONTHLY AVERAGE. PER CENT

		3-months deposits				6-months deposits			
		USD	EUR	GBP	SSVX[1]	USD	EUR	GBP	SSVX[1]
2000	Jan	5.93	3.28	6.00	3.57	6.14	3.50	6.25	3.86
	Feb	5.99	3.47	6.09	3.90	6.24	3.67	6.27	4.22
	March	6.12	3.70	6.10	4.06	6.34	3.89	6.29	4.29
	April	6.24	3.88	6.16	3.99	6.48	4.02	6.32	4.16
	May	6.66	4.29	6.16	3.96	6.93	4.48	6.31	4.09
	June	6.70	4.43	6.09	3.94	6.87	4.61	6.20	4.04
	July	6.63	4.52	6.05	4.03	6.83	4.76	6.16	4.21
	Aug	6.59	4.72	6.08	4.00	6.74	4.95	6.20	4.21
	Sept	6.58	4.78	6.05	3.94	6.67	4.96	6.15	4.04
	Oct	6.65	4.98	6.01	3.99	6.63	5.04	6.12	4.09
	Nov	6.64	5.03	5.95	4.00	6.61	5.06	5.97	4.09
	Dec	6.41	4.85	5.83	4.07	6.26	4.85	5.80	4.22
2001	Jan	5.62	4.71	5.69	4.07	5.47	4.62	5.59	4.12
	Feb	5.25	4.70	5.61	4.01	5.11	4.61	5.53	4.07
	March	4.87	4.64	5.41	4.06	4.72	4.51	5.31	4.02
	April	4.53	4.64	5.25	3.94	4.40	4.53	5.14	3.99
	May	3.99	4.58	5.09	4.01	3.99	4.50	5.07	4.06
	June	3.74	4.40	5.10	4.17	3.74	4.28	5.18	4.27
	July	3.66	4.41	5.11	4.31	3.69	4.33	5.18	4.41
	Aug	3.48	4.30	4.87	4.28	3.49	4.17	4.88	4.35
	Sept	2.92	3.91	4.56	4.01	2.89	3.78	4.49	4.06
	Oct	2.31	3.54	4.27	3.70	2.25	3.39	4.25	3.72
	Nov	2.01	3.32	3.88	3.71	2.02	3.20	3.86	3.74
	Dec	1.84	3.27	3.94	3.71	1.90	3.19	3.96	3.76
2002	Jan	1.74	3.28	3.94	3.74	1.85	3.28	4.04	3.81
	Feb	1.81	3.30	3.94	3.87	1.94	3.33	4.08	3.99
	March	1.91	3.34	4.03	4.09	2.15	3.45	4.23	4.29
	April	1.87	3.39	4.06	4.25	2.11	3.47	4.26	4.41
	May	1.82	3.40	4.05	4.29	2.01	3.56	4.26	4.48
	June	1.79	3.41	4.06	4.28	1.93	3.52	4.27	4.42
	July	1.76	3.34	3.94	4.26	1.82	3.40	4.07	4.37
	Aug	1.69	3.28	3.90	4.19	1.69	3.31	3.91	4.29
	Sept	1.73	3.24	3.88	4.17	1.71	3.18	3.89	4.21
	Oct	1.71	3.20	3.88	4.07	1.67	3.08	3.87	
	Nov	1.39	3.07	3.88	3.91	1.40	2.96	3.89	3.84
	Dec	1.33	2.86	3.92	3.66	1.34	2.81	3.92	3.68
2003	Jan	1.27	2.76	3.88	3.65	1.29	2.69	3.87	
	Feb	1.25	2.63	3.65	3.61	1.25	2.51	3.59	3.40
	March	1.19	2.47	3.56	3.40	1.17	2.39	3.50	3.36
	April	1.22	2.48	3.54	3.42	1.20	2.41	3.48	
	May	1.20	2.35	3.53	3.18	1.16	2.25	3.49	2.96

[1] Treasury bills.

7 Krona exchange rate: TCW-index and selected exchange rates

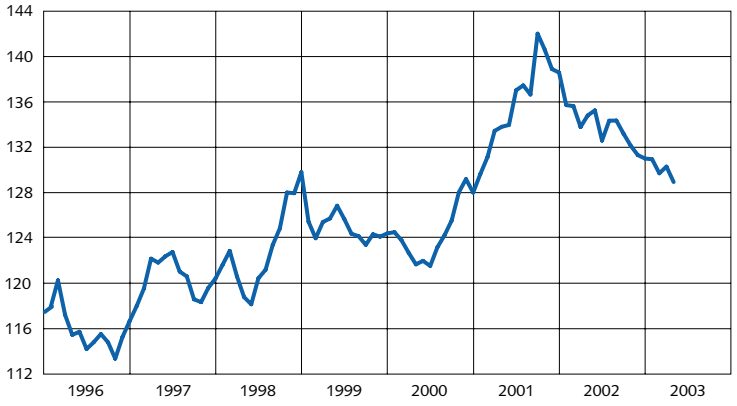
MONTHLY AVERAGE

			SEK				
		TCW-index	USD	EUR	GBP	CHF	JPY
2000	Jan	124.5383	8.4725	8.5956	13.8900	5.3370	0.0807
	Feb	123.8107	8.6462	8.5112	13.8519	5.2965	0.0791
	March	122.7089	8.6946	8.3950	13.7382	5.2317	0.0816
	April	121.6993	8.7208	8.2700	13.8088	5.2545	0.0828
	May	122.0044	9.0894	8.2388	13.7098	5.2930	0.0841
	June	121.5567	8.7433	8.3118	13.1997	5.3268	0.0824
	July	123.2005	8.9346	8.4080	13.4783	5.4206	0.0828
	Aug	124.2636	9.2702	8.3962	13.8107	5.4137	0.0858
	Sept	125.5703	9.6569	8.4121	13.8431	5.4968	0.0905
	Oct	128.0479	9.9618	8.5266	14.4711	5.6348	0.0919
	Nov	129.2156	10.0780	8.6271	14.3730	5.6705	0.0925
	Dec	128.0290	9.6607	8.6629	14.1196	5.7238	0.0862
2001	Jan	129.6612	9.4669	8.8963	14.0052	5.8170	0.0811
	Feb	131.1553	9.7350	8.9736	14.1555	5.8438	0.0838
	March	133.4701	10.0316	9.1254	14.4988	5.9416	0.0828
	April	133.8280	10.1987	9.1103	14.6320	5.9593	0.0824
	May	133.9895	10.3333	9.0536	14.7412	5.9019	0.0848
	June	137.0501	10.7753	9.2010	15.0876	6.0421	0.0882
	July	137.4779	10.7666	9.2557	15.2105	6.1150	0.0864
	Aug	136.6723	10.3343	9.3036	14.8466	6.1433	0.0851
	Sept	142.0389	10.6089	9.6670	15.5179	6.4799	0.0894
	Oct	140.6226	10.5630	9.5798	15.3446	6.4725	0.0871
	Nov	138.9180	10.5965	9.4131	15.2278	6.4196	0.0866
	Dec	138.6116	10.5594	9.4436	15.2024	6.4006	0.0832
2002	Jan	135.7390	10.4398	9.2292	14.9642	6.2594	0.0788
	Feb	135.6543	10.5603	9.1869	15.0223	6.2179	0.0791
	March	133.8096	10.3396	9.0600	14.7064	6.1690	0.0789
	April	134.8265	10.3105	9.1331	14.8742	6.2300	0.0788
	May	135.2764	10.0519	9.2236	14.6763	6.3300	0.0796
	June	132.6093	9.5591	9.1190	14.1612	6.1959	0.0774
	July	134.3652	9.3400	9.2705	14.5199	6.3380	0.0791
	Aug	134.3777	9.4641	9.2524	14.5486	6.3235	0.0795
	Sept	133.2278	9.3504	9.1735	14.5449	6.2617	0.0775
	Oct	132.1625	9.2793	9.1053	14.4489	6.2156	0.0749
	Nov	131.3311	9.0655	9.0785	14.2485	6.1869	0.0746
	Dec	131.0292	8.9458	9.0931	14.1771	6.1861	0.0732
2003	Jan	130.9609	8.6386	9.1775	13.9590	6.2767	0.0727
	Feb	129.7272	8.4930	9.1499	13.6813	6.2358	0.0711
	March	130.3167	8.5298	9.2221	13.5031	6.2777	0.0720
	April	128.9566	8.4370	9.1585	13.2756	6.1248	0.0704
	May	127.1076	7.9229	9.1541	12.8520	6.0426	0.0676

Note. The base for TCW-index is 18 November 1992. TCW (Total Competitiveness Weights) is a way of measuring the value of the krona against a basket of other currencies. TWC is based on average aggregate flows of processed goods for 21 countries. The weights include exports and imports as well as "third country"effects.

8 Nominell effective TCW exchange rate

INDEX: 18 NOVEMBER 1992=100



Note. TCW (Total Competitiveness Weights) is a way of measuring the value of the krona against a basket of other currencies. TCW is based on average aggregate of processed goods for 21 countries. The weight include exports and imports as well as "third country" effects.

9 Forward foreign exchange market. Forward net position with authorized currency dealers

END OF PERIOD. SEK MILLION

		Non-bank public		Bank abroad	The Riksbank	Total
		Resident (1)	Non-resident (2)	Net (3)	Net (4)	(1+2+3+4)
2001	March	–493 323	–17 304	350 014	0	–160 613
	April	–495 192	–15 971	293 878	0	–217 285
	May	–483 697	–14 993	238 561	0	–260 129
	June	–473 712	–28 931	326 895	0	–175 748
	July	–341 744	–30 030	190 190	0	–181 584
	Aug	–451 257	–25 654	221 546	0	–255 365
	Sept	–455 862	–18 079	244 130	0	–229 811
	Oct	–308 376	–18 025	170 595	0	–155 806
	Nov	–404 895	–16 742	196 365	0	–225 272
	Dec	–390 156	–16 763	198 322	0	–208 597
2002	Jan	–380 368	–29 553	229 071	–5 753	–186 603
	Feb	–378 895	–20 566	197 130	–4 226	–206 557
	March	–364 779	–14 558	170 705	–3 144	–211 776
	April	–357 495	–23 805	173 232	0	–208 068
	May	–359 267	–20 295	192 173	0	–187 389
	June	–360 494	–10 409	194 312	0	–176 591
	July	–358 252	–10 076	136 339	0	–231 989
	Aug	–313 551	–13 862	153 001	–5 161	–179 573
	Sept	–360 149	– 5 411	160 670	–5 143	–210 033
	Oct	–342 143	– 5 719	216 218	–4 924	–136 568
	Nov	–348 617	–2 260	228 042	–5 089	–127 924
	Dec	–368 834	–5 810	209 273	–5 215	–170 586
2003	Jan	–325 302	2 280	221 587	–8 275	–109 710
	Feb	–321 149	6 386	231 208	–5 113	– 88 668

Note. A positive position indicates that purchases of foreign currencies exceeds sales. A negative position indicates that sales of foreign currencies exceeds purchases.

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