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# Contents

## ■ The past ten years – experiences and conclusions 5

*Lars Heikensten*

A new monetary policy regime based on inflation targeting was introduced in Sweden just over ten years ago. At the same time, the Riksbank's management set a course for the organisation whereby the Bank, besides focusing on its core tasks: monetary policy and financial stability, would aim to achieve greater transparency. This article summarises some of the experiences from the past ten years.

## ■ Monetary policy and unemployment 15

*Villy Bergström and Robert Boije*

In the debate about monetary policy's impact on unemployment it has been argued, for instance, that inflation below the targeted rate has led to 50,000–70,000 more people being unemployed, that monetary policy has been conducted asymmetrically and that the stabilisation policy regime, including the choice of inflation target, has led in itself to higher unemployment than in the preceding decades. These arguments rely to a high degree on unrealistic assumptions and unfounded expectations about what monetary policy can achieve and are liable to overshadow the need for structural measures that are ultimately far more important for the labour market's development.

## ■ The future relationship between financial stability and supervision in the EU 49

*Eva Srejber and Martin Noreus*

Financial stability, supervision and regulatory design have traditionally been the responsibility of national central banks, supervisory authorities and governments. These regimes are now being challenged by globalisation. To cope with this it is necessary for the authorities involved to focus on their core tasks and to invent new ways to perform those tasks. In the long run, the logical step would be to create a European Financial Supervisor.

## ■ The Swedish market for balancing liquidity 62

*Pia Kronstedt Metz*

Banks borrow and lend large sums, with a maturity of up to one week, on their own and customer accounts. This they do because of a temporal imbalance in the daily flows of payments by the banks and customers. Bank fees for borrowing and lending kronor are influenced by the Riksbank's management of interest rates. The article describes how the Swedish market for balancing liquidity functions, the financial contracts that are used and the criteria for pricing the contracts.

- Notices 86
- Monetary policy calendar 87
- Statistical appendix 89
- Articles in earlier issues 98

# ■ The past ten years – experiences and conclusions

BY LARS HEIKENSTEN

Lars Heikensten is Governor of Sveriges Riksbank.

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*A new monetary policy regime based on inflation targeting was introduced in Sweden just over ten years ago. At the same time, the Riksbank's management set a course for the organisation whereby the Bank would endeavour to focus on its core tasks: monetary policy and financial stability. In addition, the Riksbank would aim to achieve greater openness in relation to external parties. In this article – which is based on a speech that I gave during my last appearance as Riksbank Governor before the Riksdag Committee on Finance on 20 October 2005 – I summarise some of the experiences from the past ten years.*

## Developments in the past ten years

As we all remember, our country was hit hard by a deep economic crisis at the start of the 1990s. This crisis could generally be described as a dramatic end to almost twenty years of stabilisation policy problems. The Swedish economy had been characterised by an unsustainable rise in costs, which had originated in price and wage increases that constantly came on a collision course with the fixed exchange rate. The result was repeated devaluations, modest economic growth, poor productivity growth and more or less stagnant growth in real wages. The performance was markedly weak both compared with earlier periods and in relation to other countries. During the crisis years the situation was aggravated further. Unemployment increased fourfold in the course of a few years and the central government finances deteriorated dramatically. Interest rates rose unchecked and the interest rate differential vis-à-vis Germany – the benchmark at that time – occasionally came to several percentage points.

At the start of the 1990s our country was hit hard by a deep economic crisis.

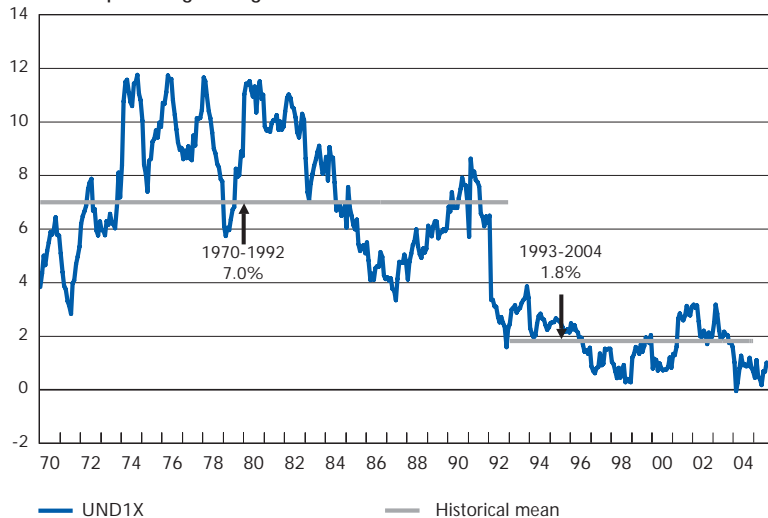
## Favourable results

Today, a little more than ten years after the crisis, the situation is completely different.

Today, a little more than ten years after the crisis, the situation is completely different. The new focus of stabilisation policy – which involved crucial changes in the framework for both fiscal and monetary policy – has meant that inflation now remains relatively stable around the target of 2 per cent (Figure 1). The lower inflation rate has not been associated with weaker growth in output, rather the opposite. GDP growth has averaged roughly half a percentage point higher a year in the past decade than in the two previous decades, and the fluctuations in the real economy also appear to have lessened (Figure 2). Productivity growth has been surprisingly robust – stronger than in the rest of the EU – and there now seems to be broad consensus that the long-term rate of productivity growth, and thus the economy's potential growth rate, has been raised. Real wages have also improved considerably; since 1995 they have risen by roughly 2.5 per cent a year on average, compared with less than 1 per cent on average during the 1970s and 1980s (Figure 3). Growth in employment has not been quite as good, but it nonetheless is worth pointing out that the situation today is far better than it was in the mid-1990s. At that time unemployment was commonly judged to have become entrenched around 8 per cent.

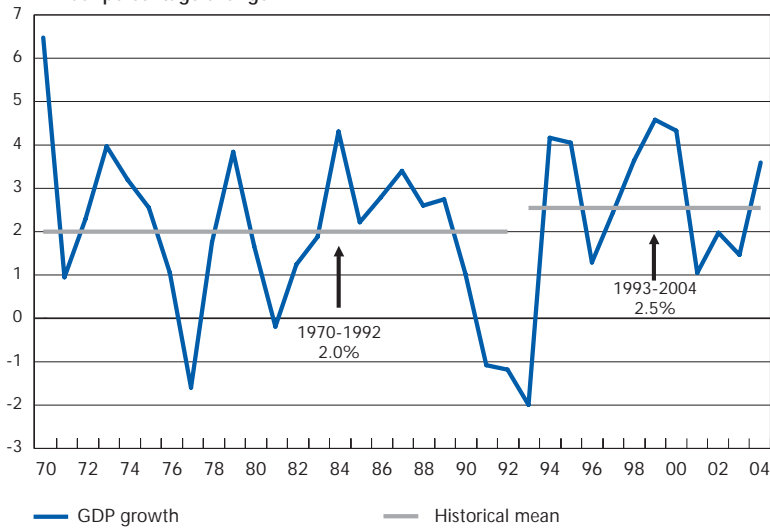
Those of us who experienced the crisis years know that this performance was by no means a certainty. That there was a shift in stabilisation policy is in itself perhaps not that surprising given both the seriousness of

Figure 1. UND1X inflation and historical mean  
Annual percentage change



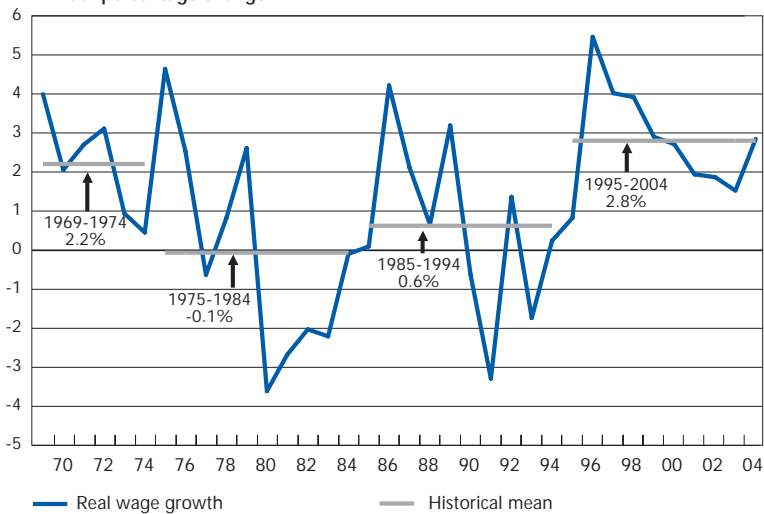
Sources: Statistics Sweden and the Riksbank.

Figure 2. GDP growth and historical mean  
Annual percentage change



Source: Statistics Sweden.

Figure 3. Real wage growth and historical mean  
Annual percentage change



Sources: National Mediation Office, Statistics Sweden and the Riksbank.

the situation at the time and the pressure imposed by an environment with free movement of capital. But the decisiveness and speed with which the changes were implemented is something that is still brought up when I speak with colleagues abroad. Compared with other countries it is perhaps above all the changes in fiscal policy that have made Sweden stand out, in spite of the fact that the limits in the fiscal policy framework have been stretched somewhat in recent years – inflation targeting is, after all,

The comparatively sound central government finances have been a great strength for our country over the past ten years.



now conducted in some twenty countries around the world and there also are other reasons than inflation targeting that have contributed to lower price increases globally. The comparatively sound central government finances have been a great strength for our country over the past ten years. In the years ahead demands will rise even further if Sweden is to meet the challenges posed by an ageing population.

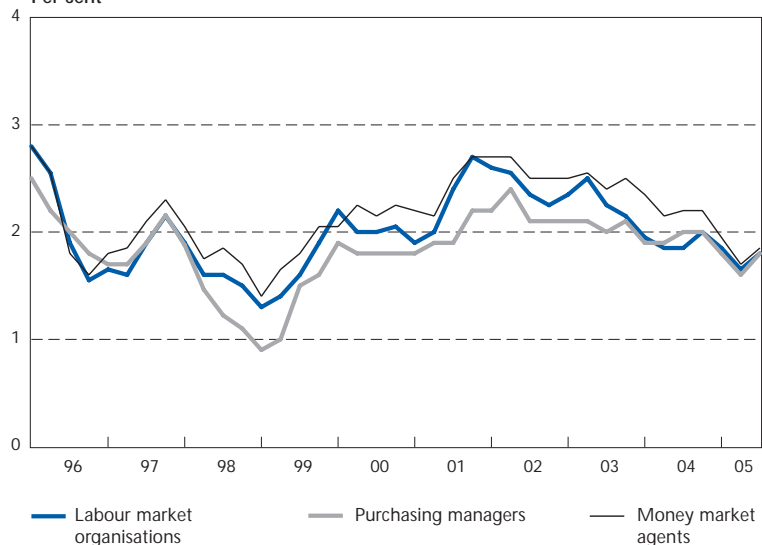
With the odd exception, wage formation in Sweden since the mid-1990s has worked well from a macroeconomic perspective.

More surprising, in a positive sense, has perhaps been wage formation. It is not that long ago since Swedish wage formation used to be highlighted in economic circles as a warning to other countries. But with the odd exception, wage formation in Sweden since the mid-1990s has worked well from a macroeconomic perspective. I think the fact that the Swedish Trade Union Confederation has said that “the Riksbank is a wage-earner’s best friend” clearly shows that something has happened. Real wages have grown positively in negotiations that have set out from stable inflation expectations (Figure 4). That is not to say that wage formation and the way the labour market functions are perfect. The future is likely to involve even greater requirements for a more productivity-based local or individual wage formation.

The vigorous productivity growth has been another positive surprise in the performance.

The vigorous productivity growth has been another positive surprise in the performance (Figure 5). At the start of the 1990s there were no indications that this would be the case. Why then would the Government have appointed a productivity delegation? The firm productivity gains have, of course, been crucial for the increases in real wages. But they also have meant that companies have not needed to hire new staff on the

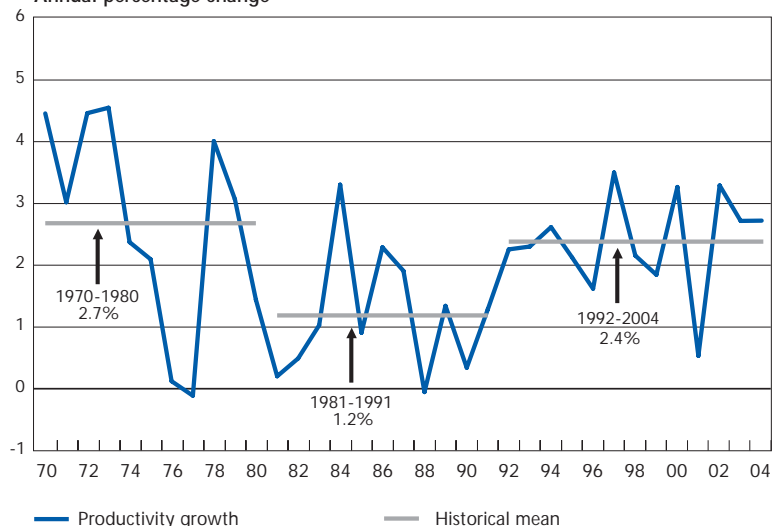
Figure 4. Different agents' expectations of inflation two years ahead  
Per cent



Source: Prospera Research AB.

same scale as before, which has contributed to the weak employment growth in recent years. We really do not know why productivity has improved so strongly even if there are a number of hypotheses according to which the IT explosion, deregulation and increased global competition are significant explanations. For the Riksbank, it is important to understand this better if we are to be able to produce accurate forecasts of inflation. Of even greater importance, of course, is to do what is possible through economic policy to ensure that the positive performance can continue. In the long run higher real wages presuppose increased productivity.

Figure 5. Labour productivity in the whole economy and historical mean Annual percentage change



Sources: Statistics Sweden and the Riksbank.

## TWO PROBLEM AREAS

However, not everything has been as positive. Labour supply has not developed as well as one might have hoped. There are currently large groups outside of the labour market and employment has increased at a slower rate than is desirable over the past ten years. Continued weak growth in the labour supply will mean in concrete terms that the Swedish economy will reach its capacity ceiling at an earlier stage and that the Riksbank may be forced to raise the repo rate at a lower growth rate than would otherwise have been the case. Another dimension of the problem is that the ageing population gives rise to greater expenditure on medical treatment, care of the elderly and pensions, which burden government budgets. At the risk of sounding repetitive, as this is something pointed

Labour supply has not developed as well as one might have hoped.

out by many in the debate, I would nevertheless like to emphasise that the only realistic means of alleviating these effects is for more people to work and pay taxes and for fewer to be dependent on the social welfare system. This area will offer one of the largest challenges to economic policy in the future.

Another factor that has proved surprisingly negative is the development of the krona.

Another factor that has proved surprisingly negative is the development of the krona. If someone had said to me ten years ago – when I first came to the Riksbank – that we would have as good macroeconomic growth as we have had, I would never have imagined that the krona would develop as weakly as it has done. The question is why this has happened? Traditional explanations based on competitiveness, relative inflation rates or growth rates are not sufficient. The Riksbank has therefore begun a large-scale study with the aid of external academics to try to understand this development. Questions relating to the taxation system, corporate location and investment trends will be examined in this context. At the same time, it is clear that the weak exchange rate has periodically been of assistance during, for instance, the latter part of the 1990s, when strong export growth was able to compensate for weak domestic demand. However, there is also another side to this issue. An excessively weak krona is not good for the Swedish people's standard of living.

#### A FEW WORDS ABOUT THE RIKSBANK

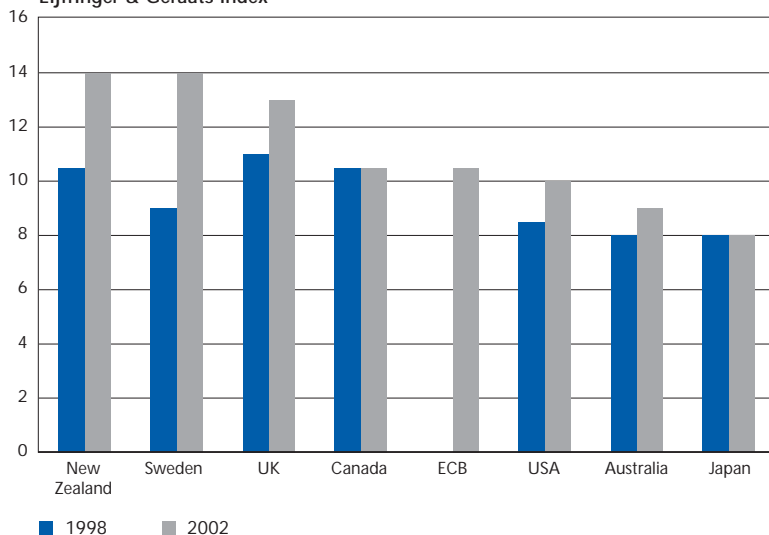
We would endeavour to concentrate on the Bank's core tasks and in addition, we would aim for greater openness.

In the mid-1990s we who formed the management of the Riksbank, my predecessor Urban Bäckström, my successor Stefan Ingves and myself, set a course for the organisation based on a few fairly simple principles. We would endeavour to concentrate on the Bank's core tasks: monetary policy and financial stability. The emphasis would be on building up increased analytical capacity and competence within these areas. In addition, we would aim for greater openness, both internally and externally. These have been the guiding principles for our work over the past ten years. The changes that have been made are quite substantial. The number of employees at the Riksbank, including the Bank's subsidiaries, has been reduced from over 1,200 to just over 400, which makes us one of the smallest central banks in Europe. Despite this, we have been able to significantly increase resources in our main fields. We now have a lot more people working on analysing issues related to monetary policy and financial stability than we had ten years ago. The academic level has also been raised substantially, which can be noted, for instance, in the fact that we have a much higher percentage of employees with postgraduate research degrees than we had ten years ago.

The emphasis on openness has also had clear consequences. We

publish a comprehensive report showing the reasoning behind our interest rate decisions, the Riksbank Governor attends hearings at the Committee on Finance and members of the Executive Board travel around the country taking part in discussions and giving information on the Riksbank's work. In studies of central bank transparency, the Riksbank is regularly ranked among the top few (Figure 6). In my opinion, this openness has been a central issue in gradually building up confidence in the Riksbank and its inflation target. It is also important to make it possible to regularly examine the Riksbank's work in a serious manner.

Figure 6. Index of Central Bank Transparency  
Eijffinger & Geraats index



Source: van der Crujisen & Demertzis (2005).

One indication that we are on the right path to achieving a solid monetary policy regime is what happened – or rather what did not happen – when Urban Bäckström announced his resignation in May 2002 and when I myself did the same thing a couple of weeks ago. In neither case were there any significant effects on either the exchange rate or interest rates. I think there is reason to be pleased about this; it shows namely that we have a monetary policy regime which is stable and not dependent on individuals.

We have a monetary policy regime which is stable and not dependent on individuals.

## Inflation targeting – some thoughts on the future

As I have mentioned, the macroeconomic outcome for Sweden has been relatively good over the past decade. Of course, this does not prevent there being questions worth discussing and much that can be improved.

What can one expect from monetary policy?

This also applies in the field of monetary policy. An important question in this context is what one can expect from monetary policy. If the expectations are excessive, there is a risk they will lead to the wrong issues being discussed and, if the worst comes to the worst, to political discontent that will undermine the current monetary policy system.

#### REASONABLE EXPECTATIONS

The legislator has been clear that low inflation should be the target for monetary policy because inflation is the only factor the Riksbank can govern in the long term.

According to the Sveriges Riksbank Act, the Riksbank is to safeguard price stability. We have chosen to implement this by keeping inflation at a target level of 2 per cent. The fact that the legislator has been clear that low inflation should be the target for monetary policy and nothing else, such as high growth or low unemployment, is because inflation is the only factor the Riksbank can govern in the long term. It is therefore unwise, and perhaps even counterproductive, to give a different impression. For instance, it is worth repeating that in order to reduce unemployment permanently, an attempt must be made to influence the structural component of unemployment, i.e. the component that is not due to fluctuations in the demand for goods and services in the economy. And this requires completely different measures than those of monetary policy. These measures must influence the functioning of the labour market and create a beneficial environment for new businesses and corporate sector growth. Of course, this does not prevent the Riksbank from contributing as far as possible to other economic policy targets being attained; this is quite in line with the preparatory works to the Sveriges Riksbank Act. The condition for this is that our own target of a low and stable inflation rate is not jeopardised.

The fact is that developments in recent years show that the task of ensuring inflation remains in line with our target is hard enough. There have been repeated structural changes that have been difficult to parry completely with interest rate adjustments. It is rarely possible to forecast structural changes well in advance, much less to estimate their quantitative effects on inflation. They can therefore often lead to inflation deviating from the target level. As I mentioned earlier, over the past ten years there have been a number of changes of a structural nature that have almost all contributed to holding back inflation.

Inflation targeting should be able to contribute to smoothing the business cycle. However, it is not reasonable to believe that fluctuations in economic activity can be eliminated entirely.

When the Riksbank uses changes in its key rate to affect inflation, this is mainly by way of influencing aggregate demand. To put it simply, we usually put the brakes on when economic activity is rising and we accelerate when it is falling. Inflation targeting should thereby often be able to contribute to smoothing the business cycle. It is also possible that it can reduce fluctuations in unemployment. However, it is not reasonable to believe that fluctuations in economic activity can be eliminated entirely.

It is therefore seriously misleading to make the Riksbank responsible for the difference between actual unemployment and what could potentially have been attained if it had been possible to abolish fluctuations in economic activity. What we can hope for is a slightly more stable development, which we appear to have attained over the past ten years, although it is too early to draw any completely certain conclusions.

#### THE POLICY IS FLEXIBLE

Another question which arises in the discussion now and then is how mechanical or how flexible the policy should be and how it should then be assessed. The Riksbank currently conducts what is known as flexible inflation targeting. We are definitely not what my British colleague Mervyn King would call “inflation nutters”. The focus lies not merely on stabilising inflation under any circumstances; as long as there is fundamental confidence in the policy, that we will have low inflation in line with our target, we also take into account other factors.

In January 1999 we published a clarification of our policy. There we made it clear that some deviations from the target level could be accepted, but that the Riksbank at the same time normally strives to bring inflation back to target level within two years. One reason for allowing deviations is that monetary policy does not make such a rapid impact and does not have the precision to closely steer inflation in the short term. Another reason is the need to be able to take account of other factors than inflation trends – for instance, growth in the real economy.

The principle of normally bringing inflation back in line with the target within two years can be interpreted as a restriction the Riksbank has imposed upon itself to make its policy more clear. This restriction helps clarify the consideration normally given to factors other than the price stability target. However, sometimes situations arise where flexibility with regard to the target needs to be greater to avoid the effects on the stability of the real economy – variations in production and employment – reaching unacceptable levels. In extreme cases the deviations from the inflation target may be so large that it is neither possible nor desirable to return inflation to target within the usual two-year perspective.

There are a number of examples of situations where considerations other than the assessment of CPI growth over the coming two years have affected our policy. During the mid and late 1990s we did not cut the repo rate as much as our normal principles might have recommended, as our assessment was that some of the fall in prices was due to our own interest rate cuts, which subdued the housing cost component of CPI, and to deregulation that was partly of a temporary nature. In the same way,

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There are a number of examples of situations where considerations other than the assessment of CPI growth over the coming two years have affected our policy.

we did not react as much as we could have done when inflation rose sharply for transient reasons in 2001 and 2003. A more recent example is the decision in March 2005 not to cut the key rate. Our reasoning then was that it might have been possible with the inflation forecasts we had, but that the expected high growth, combined with elevated house prices, called for some caution.

Our flexibility can also be said to include a preparedness to react to events where the final consequences are particularly difficult to survey. One such example is the acts of terrorism in the United States on 11 September 2001. In the wake of these attacks, many central banks around the world were quick to cut interest rates. This powerful response can be interpreted as a kind of “insurance” against a really poor outcome, rather than as the result of carefully-considered assessments of the most probable outcome.

It would be desirable, for a better understanding of monetary policy, to develop the principles governing how our reasoning in practice weighs future inflation against real or financial stability. However, this is for obvious reasons no simple task and there are no good examples of this from other central banks. Last spring, the Riksbank began work aimed at achieving this objective. One potential result of this work could be a development of the clarification from 1999.

A clearer picture of which deviations are allowed would also make it easier to communicate our policy and to assess it in a purposeful manner. At present, policy is often assessed solely on the basis of historical averages for inflation. While this can act as a natural starting point, the discussion should be taken further and include how the outcome of the policy relates to the considerations taken to various more transient price fluctuations. Real and financial developments should also be taken into account in contexts where they have affected the policy.

I imagine that these are questions to which the Committee will wish to return in future, both as a result of the work conducted within the Riksbank and perhaps also as a result of the external assessment of monetary policy the Committee intends to make. The Riksbank is also holding discussions with external parties on a regular assessment, where a preliminary starting point would be comparisons between the assessments made by the Riksbank and other forecasters in order to provide a better basis for a correct discussion.

A clearer picture of which deviations are allowed would also make it easier to communicate our policy and to assess it.

# ■ Monetary policy and unemployment

BY VILLY BERGSTRÖM AND ROBERT BOIJE

Villy Bergström, ass. professor in economics, is Deputy Governor of the Riksbank; Robert Boije, Ph. D., is an advisor at the Monetary Policy Department, Sveriges Riksbank.

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*In this article we scrutinise some arguments that have featured in the debate about monetary policy's impact on unemployment; for instance that inflation below the targeted rate has led to 50,000–70,000 more people being unemployed, that monetary policy has been conducted asymmetrically and that the stabilisation policy regime – including the choice of inflation target – that was adopted when the fixed exchange rate was abandoned has led in itself to higher unemployment than in the preceding decades. These arguments rely to a high degree on unrealistic assumptions and unfounded expectations about what monetary policy can achieve; or else they disregard other factors that may have contributed to unemployment, for example the unforeseen supply-side shocks that have affected Sweden's economy in recent years. The tendency in the past year to focus the discussion of unemployment solely on monetary policy's effects is liable to ignore the need for structural measures that are ultimately far more important for the labour market's development.*

Parts of this article are based on material published previously by the Riksbank, as well as on unpublished memoranda. We therefore wish to thank all those colleagues who have contributed in this way. In particular we are grateful to Mikael Apel, Per Jansson, Stefan Palmqvist, Karine Raoufinia and Anders Vredin. Valuable comments have also been received from members of the Riksbank's monetary policy drafting group. Our thanks go as well to Johanna Stenkula von Rosen for assistance with the figures.

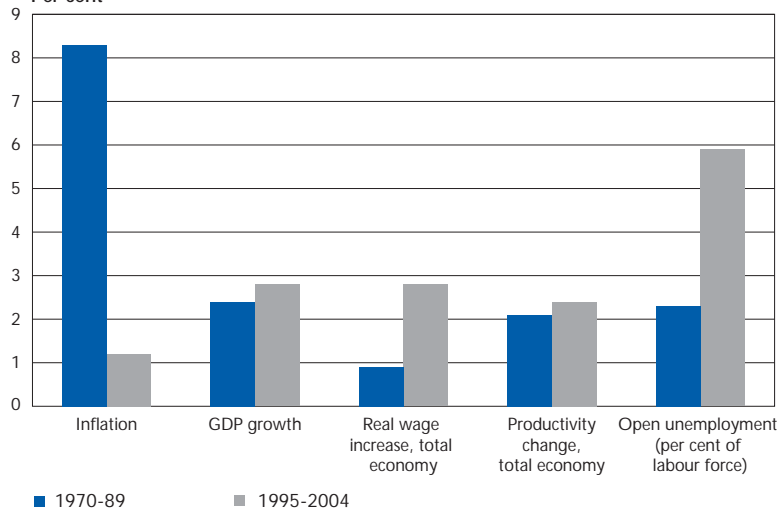
## Has monetary policy been too tight?

In the period since the inflation targeting regime was introduced in the mid 1990s, GDP and real income have both risen faster than the average rate in the preceding decades, whereas the picture of unemployment has been less favourable (see Figure 1). In the debate on economic policy, there has been a lively discussion of the reasons for this. Some have attributed much of the deterioration in the labour market to an inappropriate monetary policy.

There are those who have argued that monetary policy has been too restrictive and that this has contributed to unduly high real wages, leading in turn to an additional 50,000–70,000 persons in unemployment (see e.g. Vartiainen, 2005). Others consider that inflation has been below the targeted level solely because monetary policy has not been properly bal-



Figure 1. Inflation, GDP growth, real wage increase, change in productivity and open unemployment, 1970-2004  
Per cent



Sources: National Mediation Office, Statistics Sweden and the Riksbank.

anced and that this fully explains unemployment's cyclical component, that is, the gap between actual unemployment and its estimated equilibrium level (see e.g. Edin et al., 2004).<sup>1</sup> Here, too, the amount of unnecessary unemployment is assumed to be between 50,000 and 70,000 persons. With reference to inflation having been somewhat below the target on average, it has even been suggested in the debate that monetary policy has been *deliberately* conducted asymmetrically, in the sense that upward tendencies in inflation have elicited more vigorous countermeasures than downward tendencies and that this in turn has contributed to higher unemployment. Another criticism is that the Riksbank has chosen to target inflation at too low a level and that this has tended to generate unnecessarily high unemployment (see Lundborg & Sacklén, 2002, 2003).

The first two arguments concern the Riksbank's assessment of economic conditions, what monetary policy can be expected to achieve and the extent to which unemployment is influenced by an inappropriate choice of policy rate. The other two imply that there is something fundamentally wrong with the new framework for stabilisation policy.

The purpose of this article is to assemble arguments which the Riksbank has presented earlier about monetary policy's impact on unemployment and to supplement and elaborate certain aspects of the analysis in previous publications, for example Bergström et al. (2005). We begin

<sup>1</sup> Equilibrium unemployment refers here to the level of unemployment that can be maintained in the longer run without generating higher inflation.

by briefly discussing the paths of employment and unemployment since the changeover to the current stabilisation policy regime in the early 1990s, as well as whether unemployment and employment are satisfactory indicators of resource utilisation. This is followed by some sections on the relationship between inflation and unemployment, why low, stable inflation is desirable, what is meant by “normal” unemployment or equilibrium unemployment, and how monetary policy is constructed in practice. This brings us to a discussion of monetary policy’s impact on unemployment, where we first scrutinise the calculations behind the claim that an inappropriate monetary policy has led to 50,000–70,000 more people being unemployed. In the next section we consider possible explanations for unemployment being higher than in the preceding decades. Finally, we discuss some structural factors that should be of central importance for the long-term development of the labour market.

## The labour market after the change of stabilisation policy regime

Figure 2 presents three indicators of economic conditions: trend-adjusted series for employment, for open unemployment based on labour force surveys (both measured by numbers of persons in logarithmic form), and for GDP (likewise logarithmic) for the period 1980–2004.<sup>2</sup> Open unemployment is also presented as a percentage of the labour force (inverted to simplify comparisons).

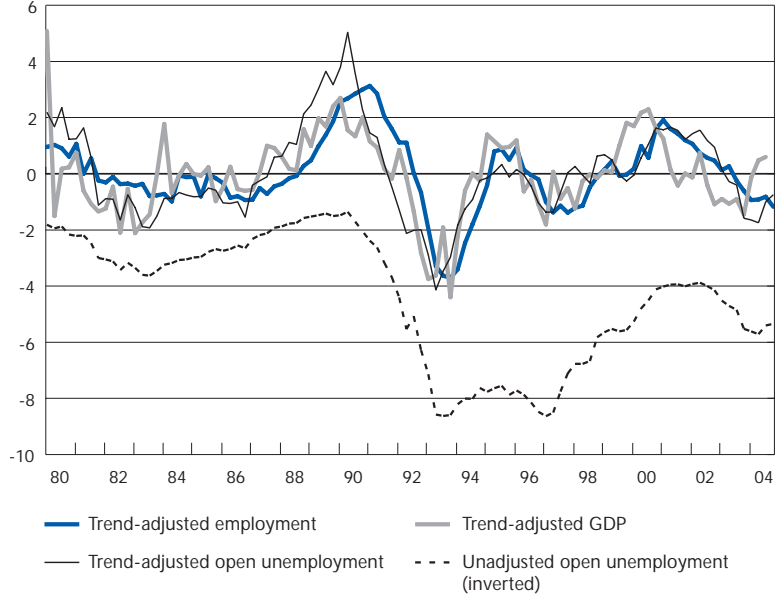
The figure shows that, on the whole, the three different indicators of economic conditions give similar pictures of the business cycle, albeit with some discrepancies in the timing of peaks and troughs. Open unemployment also shows a clear cyclical pattern. In the period as a whole, the level of open unemployment averaged 4.4 per cent. Since the crisis in the early 1990s, however, open unemployment appears to have “stuck” at a higher level than in the 1990s. Its average level in the period 1980–92 was 2.7 per cent as against an average of 6.3 per cent in the period 1993–2004.

Figure 3 reproduces these series but here, open unemployment is charted as its deviation from the average level in the period as a whole. This shows that, prior to the crisis in the early 1990s, unemployment was consistently below the total period’s average, whereas since the crisis, apart from two or three years, it has been above the average. However, the level of “normal” (or equilibrium) unemployment no doubt fluctuates

Unemployment appears to have “stuck” at a higher level after the crisis in the early 1990s.

<sup>2</sup> Trend adjustment with an HP filter. Open unemployment measured with the definition that applied before the labour force survey (AKU) statistics were reorganised.

Figure 2. Trend-adjusted series for employment, open unemployment (both in persons and logarithmised) and GDP (logarithmised); unadjusted open unemployment (inverted)  
Per cent



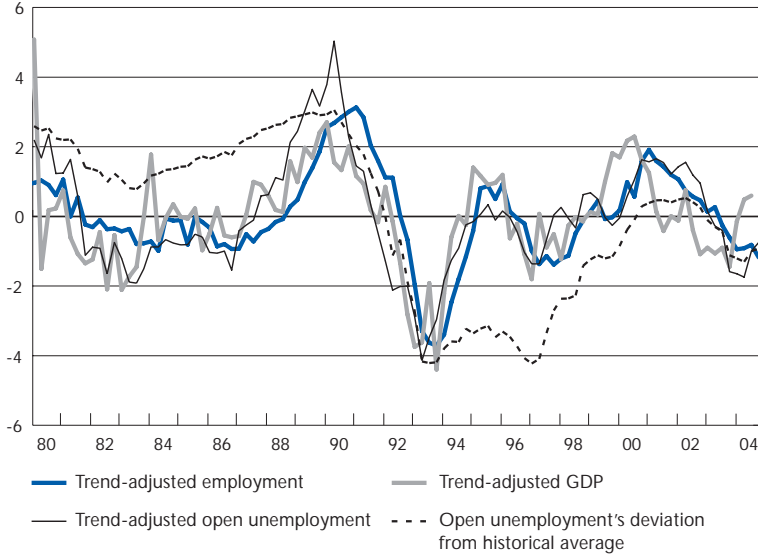
Sources: Statistics Sweden and the Riksbank.

over time and the higher level of open unemployment that appears to have become “permanent” after the crisis in the early 1990s may indicate that the “normal” level is now considerably above what it was in the 1980s. We shall be returning later on in this article to the issue of how to define “normal” unemployment and to the grounds for believing that in the 1970s and 1980s, unemployment was below the level that can be maintained in the longer run.

There is no simple relationship between open unemployment and total resource utilisation.

The timing of cyclical peaks and troughs differs somewhat between GDP and open unemployment for a number of reasons. Measures of labour market policy, altered conditions for study funds and other fiscal measures affect open unemployment relatively quickly without altering the general state of demand. In 2003, for instance, a sharp reduction of labour market measures contributed, all else equal, to an increase of 0.5 percentage points in the rate of open unemployment. Moreover, we know from experience that there is some lag before unemployment follows an upturn in the business cycle. In the initial phase of an upturn, hours worked (or average working hours) tend to rise before employment picks up. Productivity likewise tends to improve early in an upturn as firms utilise their existing labour and capital more intensively until the recovery becomes more “dependable”. Similarly, cyclical downturns are often accompanied by a temporary drop in productivity, because firms refrain

Figure 3. Trend-adjusted series for employment, open unemployment (both in persons and logarithmised) and GDP (logarithmised); open unemployment's deviation from the historical average  
Per cent or percentage points



Sources: Statistics Sweden and the Riksbank.

from laying off personnel in case the slowdown is brief.<sup>3</sup> Changes in open unemployment may also have to do with structural factors. As a result of all these circumstances, there is no simple relationship between open unemployment and total resource utilisation measured by GDP.

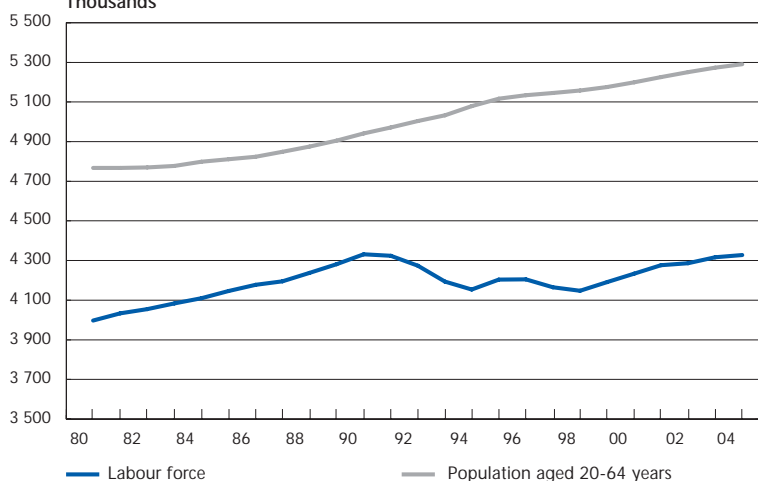
With a given number in employment, open unemployment is also susceptible to changes in the labour force. The labour force co-varies to some extent with the business cycle. A slowdown is usually accompanied by a contraction of the labour force. The explanation as a rule is that many job-seekers withdraw from the labour force because they see less probability of finding a job. When labour demand picks up again, many of these “latent job-seekers” re-join the labour force. Latent job-seekers accordingly constitute a labour reserve that is not included in unemployment as defined for the labour force surveys (AKU). This generally means that open unemployment does not vary as much as employment.

Besides the increase in unemployment, there is cause for concern about the picture of the labour force. As shown in Figure 4, the number of non-participants in the labour force rose sharply in connection with the economic crisis in the early 1990s, after which the high level seems to have become “permanent”. It is evident from the figure that this cannot be attributed to a diminishing population in the active age group. This is a major problem – both for stabilisation policy and in a broader macroeco-

Besides higher unemployment, the number outside the labour force rose markedly after the economic crisis.

<sup>3</sup> This phenomenon is commonly referred to as labour hoarding.

Figure 4. Population aged 20-64 years and number in the labour force; 1980-2004  
Thousands



Source: Statistics Sweden.

conomic perspective – that a focus on open unemployment is liable to overlook. A dwindling labour force weakens GDP growth and makes it harder to finance public sector activities, which adds up to a loss of welfare. Moreover, low potential GDP growth makes it more difficult to combine strong actual GDP growth with low inflation. Possible explanations for the low labour-force participation are considered later in this article.

## The relationship between inflation and unemployment

A natural *starting point* for a discussion about monetary policy's impact on unemployment is the Phillips curve. The original version of the Phillips curve, which dominated the discussion of economic policy in the 1960s, postulated an inverse relationship between unemployment and nominal wage movements. Because prices are largely set as a percentage mark-up on wage costs, this relationship was taken to indicate that unemployment is also inversely related to (price) inflation. Given a stable relationship of this kind, it followed that a permanent reduction of unemployment could be achieved via a higher rate of inflation.

Subsequent experience of economic policy and research have shown that while a trade-off between inflation and unemployment may exist in the *short run*, but is not straightforward, in the longer run there is no trade-off.<sup>4</sup> A distinction is therefore made between short-term and long-term Phillips curves.

<sup>4</sup> Later in this article we return to a discussion of the few studies that do indicate the possibility of a long-term relationship between inflation and unemployment.

The short-run Phillips curve indicates that an expansionary demand policy that boosts inflation in the short run may be capable of reducing unemployment. But if an expansionary policy is implemented systematically as a way of reducing unemployment via higher inflation, the higher rate will lead people to adjust their inflation expectations. In other words, because employees' concern is the real purchasing power of wages, expectations of higher future inflation would lead to higher nominal wage demands. Actual inflation would then rise and coincide with the expected rate. This implies unchanged real wages and thus no increase in labour demand, so unemployment would not fall. When inflation expectations have been adjusted to the higher actual inflation, unemployment would return to its "natural" level (the level at which actual and expected inflation coincide).<sup>5</sup> This helps to explain why there is unlikely to be a long-term trade-off between inflation and unemployment. Another way of putting this is to say that the Phillips curve is vertical. An expansionary policy aimed at boosting inflation and bringing unemployment down below the natural level would then simply result in higher inflation expectations and higher actual inflation.<sup>6</sup>

Increased inflation in the short run may be capable of reducing unemployment; but in the longer run there does not appear to be any trade-off between unemployment and inflation.

## Why is low, stable inflation desirable?

A vertical Phillips curve accordingly indicates that a long-term reduction of unemployment cannot be achieved by raising the rate of inflation. It might also be said to indicate that as long as nominal wages and the price level rise at the same rate, unemployment is not affected by the actual level of inflation. So what is it that makes low inflation desirable?

When inflation is high, its rate tends to fluctuate markedly. This interferes with the function of prices in the system of signals for the allocation of economic resources, because it is then harder to distinguish shifts in relative prices (price changes between product groups) from the general (variable) course of inflation. Uncertainty about future inflation makes it more difficult for households and firms to plan for the longer run and arrive at rational decisions, which impairs economic efficiency because it hampers an optimal allocation of resources over time as well as between economic sectors.

Uncertainty about future inflation complicates long-term planning, which impairs economic efficiency.

At the same time, it has been argued that unduly *low* inflation may

<sup>5</sup> The "natural" level of unemployment is sometimes also defined as the NAIRU, that is, the level that can be combined with normal resource utilisation and non-accelerating inflation. In this article we use the concepts of normal, natural, NAIRU and equilibrium unemployment interchangeably, even though their implications are not always the same.

<sup>6</sup> This somewhat simplified account is based above all on a theory by Friedman (1968). Alternative theories or explanations have been put forward for monetary policy's ability to affect unemployment in the short but not the longer run; see e.g. Lucas (1973), Fischer (1977) and Rotemberg (1982).

have a negative effect on resource allocation. This has to do with the downward rigidity of nominal wages, whereby very low inflation can obstruct necessary changes in relative wages. If above-average wage increases are needed for a large group in the labour market, for example to facilitate recruitment, targeting a very low rate of inflation would require that other groups accept nominal wage cuts. That is one reason why the Riksbank has chosen to define price stability as 2 (not 0) per cent inflation (we shall be returning to this aspect).

## Cyclical unemployment, inflation and monetary policy

The concept of natural unemployment, defined as above, appears to have been applied in the debate in a highly simplified way to theorise about how monetary policy ought to be conducted (see e.g. Edin et al., 2004). A rough outline of the argument seems to go as follows:

The rate of inflation is assumed to be constant when actual and natural unemployment coincide. If actual unemployment is below the natural level, inflation rises and vice versa. From this it follows that if monetary policy succeeds in stabilising inflation, actual unemployment will invariably coincide with the equilibrium level, thereby limiting the fluctuations in actual unemployment. Another common assumption in the debate is that, given 2 per cent inflation, (open) unemployment's natural level can be assumed to lie around 4 per cent. So if the Riksbank uses monetary policy to ensure that the rate of inflation is consistently 2 per cent, unemployment could be limited to 4 per cent.

Real life is much more complex than that, however. The Phillips curve is a simple formula that does not include many of the factors that affect inflation and influence monetary policy decisions. More recent research has shown, moreover, that basing monetary policy mainly on forecasts of the unemployment gap (unemployment's cyclical component) raises substantial problems. Let us take a closer look at these:

Natural unemployment can be decomposed into a frictional component (consisting, for example, of the lags that occur in matching job-seekers with vacancies even when the former have the necessary qualifications) and a structural component (consisting of the unemployed whose occupational profile is incongruent with labour demand).<sup>7</sup> If the labour market becomes less efficient (decreased labour market mobility, for example) and if certain industries are closed down or move abroad, the

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<sup>7</sup> Instead of being regarded as a separate concept, structural unemployment is sometimes taken to be an extreme form of frictional unemployment.

natural level of unemployment will rise, at least for a time. This is one reason why the natural level of unemployment is so difficult to estimate.

Furthermore, empirical studies have shown that natural unemployment varies a good deal over time and that, for a given type of estimation, the degree of uncertainty commonly amounts to several percentage points (see e.g. Staiger et al., 1997). Conducting monetary policy on the assumption that natural unemployment's level is precisely 4 per cent could entail major problems with inflation if natural unemployment is actually higher or lower than this. Orphanides (2002) argues that faulty assessments of the level of natural unemployment contributed to "the great inflation" in the United States in the 1970s.

In a systematic study on US data, using different types of estimated Phillips curves to forecast inflation one year ahead, Atkeson & Ohanian (2001) found that forecasts based on such estimates are not likely to be superior to the simple assumption that inflation one year ahead will match the level in the current year. This conclusion is supported by a study on Swedish data (Jansson & Palmqvist, 2005), showing that the correlation between the unemployment gap (unemployment's deviation from the estimated equilibrium rate as calculated by the Swedish National Institute of Economic Research; NIER) and various measurements of inflation varies considerably over time, that there are periods when the correlation has the unexpected sign, and that the unemployment gap is of little or no value for forecasting inflation. Atkeson & Ohanian conclude that statements about future inflation ought not to be based on an assessed level of unemployment or on the deviation from an estimated equilibrium level. Neither, they point out, do most other indicators that are commonly used to forecast inflation provide more accurate forecasts than a naïve model. One should therefore refrain from basing inflation predictions on individual indicators.

A strong argument against the existence of a simple relationship between inflation and unemployment, and one that supports Atkeson & Ohanian's conclusion, is that, as mentioned above, unemployment is by no means the only factor that influences inflation. Supply-side shocks can lead to a change in inflation even though actual and natural unemployment coincide initially. Jansson & Palmqvist (2005) show that supply shocks explain a very large part of the variation in inflation.<sup>8</sup>

An additional factor that makes the gap between natural and actual unemployment a poor basis for monetary policy is that estimations of natural unemployment often undergo marked revisions in the light of new

Natural unemployment varies a good deal over time and estimates of its level are highly uncertain.

Unemployment is by no means the only factor that influences inflation.

<sup>8</sup> Jansson & Palmqvist (2005) point out that the models and methods they have used are comparatively simple, with no claim that they are the "right" ones.



Estimations of natural unemployment undergo frequent, marked revisions.

data. When forecasting inflation, one is obliged to use the data that are currently available (real-time data), data that are often adjusted markedly later. Orphanides & Van Norden (2004) show that the output gap (or the unemployment gap) estimated on real-time information does not deliver reliable forecasts of inflation.<sup>9</sup>

This is illustrated for Swedish conditions by Flodén (2005), using the labour market gap as estimated by the NIER. He notes that for a long time the NIER considered that the labour market gap in January 2001 was *negative* (there was some unemployment of a cyclical nature), but that because actual unemployment remained at a high level, the estimation of the gap was revised. This led to an upward adjustment of equilibrium unemployment in earlier periods and it was now considered instead that the labour market gap in January 2001 had actually been *positive*. From this he drew the following conclusion (Flodén, 2005, p. 60, translated here): “Debates about monetary policy should be welcomed but they are liable to be harmful if they focus on how monetary policy has affected such an imprecise variable as the labour market gap”.

## Monetary policy in practise

If inflation about two years ahead is expected to be above (below) the 2 per cent target, as a rule the Riksbank raises (lowers) the policy rate.

The Riksbank has the overriding function of maintaining a stable value of money. If inflation about two years ahead is expected to be above (below) the 2 per cent target, as a rule the Riksbank raises (lowers) the policy rate. However, this does not mean that the Riksbank completely disregards real economic factors. One of inflation's chief determinants is total demand in the economy. Over the business cycle, employment usually increases if demand rises and vice versa, though, as mentioned, the response may be lagged. If the Riksbank judges that total demand will fall and that this will be accompanied by a slackening of inflation, as a rule the Bank will lower the policy rate. This *normally* has some positive impact on employment. With respect to fluctuations in demand, therefore, there is *normally* no conflict between stabilising inflation and employment. As mentioned earlier, however, the relationship between demand, inflation and employment is not straightforward. This is particularly the case in connection with supply shocks, for instance a temporary improvement in productivity. Even with strongly rising demand, this can contribute for a time to low inflation and increased unemployment. The Riksbank has also made it clear that in a situation where inflation is deviating markedly from the target and a prompt return is likely to entail

<sup>9</sup> Orphanides & Van Norden (2004) do show, however, that *certain ex post* estimations of the output gap may be of use for forecasting inflation.

unduly large real economic strains in the short run (in the form of increased unemployment, for example), there may be a case for bringing inflation back to the target more slowly. So by aiming for a gradual adjustment of inflation to the target a couple of years ahead (sometimes longer), the Bank takes the labour market and other aspects of the real economy into consideration.

Instead of constructing monetary policy solely on the basis of the situation in the labour market, the Riksbank forms a picture of future inflation and real economic prospects in the light of various indicators, such as alternative measurements of total resource utilisation (including the labour market situation), alternative measurements of imported inflation (which is affected by exchange rate movements and world market prices), productivity estimates, profit margins and wage statistics. In other words, sound forecasts of inflation have to take many different factors into account. Starting solely from an uncertain statistic on the gap between natural and actual unemployment would most probably result in very poor inflation forecasts and hence an inappropriate monetary policy that fails to fulfil the target.<sup>10</sup>

The Riksbank uses various indicators to form a picture of inflation and real economic prospects.

## Monetary policy's impact on employment

As mentioned earlier, it has been argued that monetary policy misjudgements, leading to inflation below the target, have landed perhaps an additional 50,000–70,000 people in unemployment. This raises the question of whether those calculations are reliable. Suppose the Riksbank's monetary policy had been based instead on the inflation forecasts for 2002 and 2003 that subsequently proved to be closer to the outcome than the Riksbank's predictions: would unemployment in the years in question have been appreciably lower? That is hard to tell because it involves counterfactual assessments. Still, estimates of how policy rate adjustments affect unemployment do provide an indication of the extent to which another construction of monetary policy might have led to lower unemployment. First, however, we shall scrutinise the calculations behind the claim that monetary policy misjudgements led to an additional 50,000–70,000 people in unemployment.

The effect of policy rate adjustments on unemployment provides an indication of the extent to which another construction of monetary policy would have led to lower unemployment.

<sup>10</sup> For a fuller account of how monetary policy is normally conducted, see Heikensten (1999).

## STATEMENTS ABOUT MONETARY POLICY'S IMPACT ON UNEMPLOYMENT

Given the premises that monetary policy can always fulfil the inflation target and that this would mean that actual and equilibrium unemployment coincide, one could calculate the extra unemployment occasioned by monetary policy misjudgements as the gap between actual and natural unemployment. The number of persons in the labour force is approximately 4,400,000. If the natural level of (open) unemployment is assumed to be 4 per cent and the actual level is 5.5 per cent, then the additional unemployment would amount to 66,000 persons [(0.055-0.04)4,400,000=66,000].

Our earlier discussion here warrants a number of objections to calculations of this type: (i) One concerns the assumption that unemployment's natural level is 4 per cent, which in view of the considerable uncertainty about such measurements, is not self-evident. If natural unemployment were instead to lie around 5 per cent, the calculated addition to unemployment would be 22,000 persons. (ii) The primary objective of monetary policy is to stabilise inflation, which may deviate from 2 per cent even if actual and (estimated) equilibrium unemployment coincide initially. (iii) Monetary policy primarily affects inflation expectations and general demand and there is no simple short-term relationship between these economic variables and open unemployment. (iv) Even if the goal were to be to stabilise unemployment around a given level, being on target all the time would not be feasible because the economy is exposed to shocks that are hard to foresee. This applies regardless of stabilisation policy's goal.

Vartiainen has intimated that in recent years inflation has been below the target by a cumulative figure of around 3 percentage points, leading to the loss of 60,000 jobs.

Vartiainen (2005) has intimated that in recent years (the exact period is not clear from his article), inflation has been below the target by a cumulative figure of perhaps 3 percentage points, leading to a real wage that is 3 per cent "too high" and employment *at the end* of the period that was 1.5 per cent lower than it need have been (equivalent to the loss of 60,000 jobs). The figures presuppose that the labour elasticity of demand is 0.5.<sup>11</sup> He considers that the high unemployment cannot be due to inefficient wage formation because wage increases in the same period complied with the 4 per cent norm (targeted inflation plus an assumed productivity growth of 2 per cent).

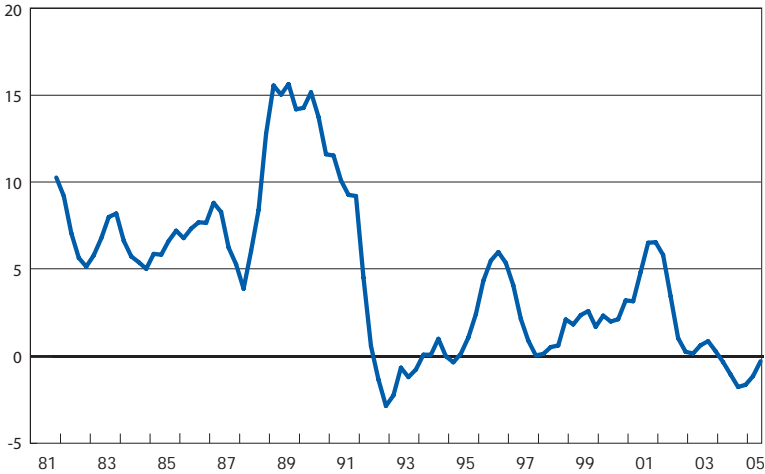
At the same time, Vartiainen notes that annual productivity growth in this period was as strong as 3 per cent (much higher than most forecast-

<sup>11</sup> With an elasticity of 0.5, a 1 per cent change in the real wage alters labour demand by 0.5 per cent. Thus, a 3 per cent real wage increase would reduce labour demand by 1.5 per cent (0.5x0.03=0.015). With 4,000,000 in employment initially and all else equal, a 3 per cent increase in the real wage would reduce the number in employment by 60,000 (0.015x4,000,000=60,000).

ers, including employee organisations, had counted on), but fails to see that this was an important reason why most forecasters overestimated inflation. Moreover, this productivity growth should have gone some way towards offsetting the “too high” real wage that the monetary policy “misjudgements” are claimed to have generated (higher labour productivity motivates higher real wages). The strongly rising productivity has also given a favourable development of unit labour costs in recent years (see Figure 5). So the negative effect on unemployment of the monetary policy “misjudgements” should have been considerably smaller than indicated by Vartiainen’s calculation. Furthermore, if employers and employees had anticipated the strong productivity growth, nominal wages would probably have been higher, leading in turn, all else equal, to higher inflation. It is true, on the other hand, that a longer period of increased productivity may contribute to a transient increase in unemployment for other reasons (we shall be returning to this).

Vartiainen notes that annual productivity growth was 3 per cent but fails to see that this was an important reason why most forecasters overestimated inflation.

Figure 5. Unit labour costs  
Percentage 12-month change, moving four-quarter average



Source: Statistics Sweden.

THE POLICY RATE’S EFFECT ON EMPLOYMENT

A lower policy rate in the years 2002–03 would have been feasible as far as inflation is concerned and, all else equal, it would probably have contributed to somewhat higher inflation in the following period. The uncertainty inherent in all forecasts makes it pointless to speculate about what the consequences for employment would have been if what we know today had been clear in 2002. But it may be of interest to look at the con-

A contractive monetary policy did not cause either the low inflation or the high unemployment in 2004 and 2005.

sequences for employment if instead the Riksbank had adopted the policy rate assumptions of other forecasters.

In a box in the Riksbank's *Inflation Report* 2005:1, on material for evaluating monetary policy in the period 2002–04, it was stated that in 2002–03 monetary policy was based on an economic assessment that did not differ markedly from what other forecasters foresaw. Moreover, while some observers' inflation forecasts were somewhat lower than the Riksbank's for 2004, the differences were slight. So if monetary policy had been based instead on those forecasts, neither monetary policy nor the deviation from targeted inflation would probably have been greatly affected. A great deal would have been required of monetary policy in order to bring inflation appreciably closer to the target than was actually the case. The Riksbank would have needed to predict a future that differed substantially from what other forecasters envisaged. In retrospect, the low inflation in 2004 and 2005 is attributable to stronger productivity growth, lower imported inflation and altered competitive conditions in the Swedish economy. A (deliberately) contractive monetary policy cannot be said to have caused either the low inflation or the high unemployment.

The policy rate in 2002–03 differed from what the NIER recommended by only 0.2 percentage points.

One of the first forecasters to adjust their inflation forecast downwards was the NIER, which also recommended a somewhat steeper reduction of the policy rate than the Riksbank opted for. Still, the policy rates that actually applied in 2002–03 differed from what the Institute recommended by an average of only 0.2 percentage points.<sup>12</sup> It goes without saying that the impact on unemployment of such a slight difference in the policy rate would have been marginal. The NIER has estimated that a 1 percentage point increase in the policy rate over a period of two years would increase the number in unemployment by less than 14,000.<sup>13</sup> Given this figure, about 2,800 fewer people would have been unemployed if the Riksbank had followed the NIER's policy rate assumptions for the years in question ( $0.2 \times 14,000 = 2,800$ ).

## Why has unemployment been higher since the 1990s?

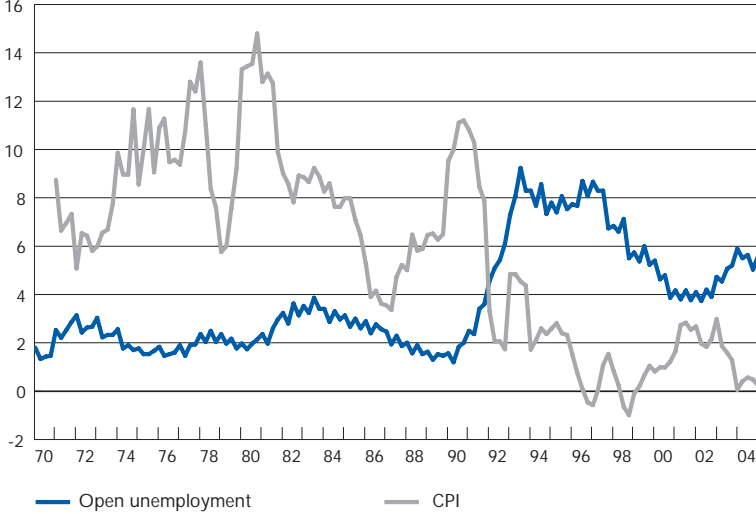
The average level of unemployment in the 1960s, 1970s and 1980s was considerably lower than in the latest decade, while inflation was markedly higher, particularly in the 1970s and 1980s (see Figure 6). This has prompted claims in the debate that the new low-inflation regime *per se* may have contributed to the increased unemployment. As we shall see,

<sup>12</sup> See Sveriges Riksbank (2005).

<sup>13</sup> The NIER allowed for the fact that the business cycle also affects the labour force. It should be underscored that such estimates have a considerable element of uncertainty.

there does not seem to be any convincing theoretical or empirical evidence for this claim. Instead, there are other, more probable explanations for why unemployment is so much higher at present than in the preceding decades.

Figure 6. Open unemployment in per cent of the labour force (moving four-month average) and CPI inflation (percentage twelve-month change); 1970-2004  
Per cent



Source: Statistics Sweden.

### ECONOMIC POLICY IN 1960-91

From 1950 to 1975, Sweden applied what is usually called a “Keynesian” stabilisation policy, whereby cyclical fluctuations were parried with an active fiscal policy. This regime was relatively successful up to the mid 1960s, when the goal of full employment induced politicians to follow an excessively expansionary line. Economic policy primed business activity in upward cyclical phases, leading to overheating and high inflation. In subsequent downturns it was sometimes necessary to check economic activity in order to combat inflation. The fluctuations in resource utilisation were accentuated, if anything, by this procyclical policy. The Riksbank’s main task was to maintain the fixed exchange rate and the social partners were to agree on an appropriate rate of wage increases. The rules of the International Monetary Fund excluded devaluation in principle up to 1971, which imposed discipline on the labour market.

The system broke down in the mid 1970s, when wage costs shot up and Sweden’s international competitiveness was eroded, leading to rising unemployment. In the interests of full employment, between 1975 and 1982 the Swedish krona was devalued five times, by a total of 25 per

From 1950 to 1975, Sweden applied a “Keynesian” stabilisation policy, relatively successfully up to the mid 1960s.

In the mid 1970s, wage costs shot up, eroding competition, and between 1975 and 1982 there were five devaluations to safeguard full employment.

cent. The policy of accommodation maintained Sweden's competitive position and kept unemployment at a low level. Increased public sector employment also helped to keep unemployment down. Between 1960 and the end of the 1980s the proportion employed in the public sector rose from 15 to 30 per cent. However, the repeated devaluations made it increasingly difficult to keep inflation under control. Employees demanded compensation for the poor development of real wages and employers had little incentive to resist. Everyone counted on another devaluation if the rate of price and wage increases became so high that competitiveness was in danger.

In spite of political commitments, in the early 1990s, to combating inflation as a primary goal of economic policy, in 1992 the "fixed" exchange rate had to be abandoned. The series of devaluations had robbed the fixed rate of its credibility.<sup>14</sup>

The devaluations and the expansion of public sector employment put off the need to tackle the overall problem of employment.

This, roughly, is why the stabilisation policy regime was changed in 1992. It also suggests that in the 1970s and 1980s unemployment was below the level that can be maintained in the longer run. The devaluations and the expansion of public sector employment put off the need to tackle the overall problem of employment. Forslund & Holmlund (2003, translated here) summarise the situation thus: "It appears ...[...]... exceedingly unlikely that unemployment at the extremely low levels we experienced around 1990 would be compatible with stable and low inflation, today as little as around 1990".

#### IS THE INFLATION TARGET TOO LOW?

A few academic studies do indicate that a higher inflation target could contribute to a permanent increase in employment.

A few academic studies, cited in the debate on economic policy, do indicate, however, that under certain conditions, a higher inflation target could contribute to a permanent increase in employment. They tend to rely on one of the following assumptions: (i) adjusting relative wages is harder when inflation is low because of the downward rigidity of nominal wages (see Holden, 1994 and Akerlof, Dickens & Perry, 1996), (ii) economic agents are not (entirely) rational, particularly when inflation is low, because their primary concern is nominal contracts (e.g. wage agreements) not real contracts (see Akerlof, Dickens & Perry, 2000 and Lundborg & Sacklén, 2002, 2003), and (iii) there is some lag, *even in the longer run*, before prices and wages adjust to changes in monetary policy (see Karanassou, Sala & Snower, 2003a, b), a somewhat abstruse argument. There are grounds for taking a closer look at some of these studies.

<sup>14</sup> See also Lindbeck (2005).

Akerlof, Dickens & Perry (1996, 2000), Lundborg & Sacklén (2003)

Akerlof, Dickens & Perry have questioned the long-term vertical Phillips curve on two grounds. The first (Akerlof, Dickens & Perry, 1996) is the observation of a resistance to nominal wage cuts, making it more difficult to adjust relative wages. In connection with low inflation, this can lead to increased unemployment. The second ground (Akerlof, Dickens & Perry, 2000) starts from the assumption that households disregard inflation at low rates, which leads to “unduly” low nominal wage demands. The “unduly” low real wages pave the way for increased employment. The higher the maximum rate of inflation is that households disregard, the greater is the potential gain in employment. So if the highest rate of inflation that households disregard were to be above the Riksbank’s targeted rate, a permanent increase in employment could be achieved by choosing a somewhat higher target. Real wages could then be reduced and employment would rise. Starting from an empirical study based on the hypothesis in Akerlof, Dickens & Perry (2000), Lundborg & Sacklén argue that raising the inflation target from 2 per cent at present to 4 per cent could lead to *permanently* higher employment in Sweden.

There are, however, a number of objections, both to the theoretical starting points and to the empirical conclusions:

Strong empirical support for the first hypothesis (Akerlof, Dickens & Perry, 1996) has been hard to find.<sup>15</sup> Even so, the Riksbank has chosen to define a stable value of money in terms of inflation at 2, not 0, per cent.<sup>16</sup> It would be theoretically feasible, given 2 per cent inflation, 2 per cent productivity growth and a 4 per cent average wage rise, to shift relative wages by, say, 8 per cent, provided that equally large groups of employees get and refrain from wage increases. As most observers (e.g. the NIER and the National Mediation Office) consider that wage formation has functioned satisfactorily in recent years, it is difficult to see that with the inflation target at its present level, the argument from relative wages is all that important in practice.

In the other hypothesis (Akerlof, Dickens & Perry, 2000), households are considered to be not entirely rational because they are assumed to disregard inflation at low rates (this behaviour is known in the literature as “near rationality”). The argument is perhaps reasonable at a particular point in time, when the consequences of accepting a wage that is “too low” are not substantial. Over time, however, *always* behaving in this

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<sup>15</sup> See Lundborg & Sacklén (2002).

<sup>16</sup> Another reason for not targeting 0 per cent inflation is that such a low level is liable to increase the risk of deflation. A third reason is that, in certain cases, the real interest rate may need to be negative; the policy rate can be lowered down to zero per cent; if inflation is then positive, the real interest rate will be negative.



way will have considerable consequences and presumably households ultimately realise this.<sup>17</sup> A more credible hypothesis is that households do in fact adapt but that this may take longer when inflation is low. Neither would there then be any trade-off between inflation and unemployment in the longer run.

Another argument against the theoretical foundations is that a credible inflation targeting regime should make it easier for households or employee organisations to make rational decisions about an appropriate benchmark for wage increases. A natural starting point for wage formation should, *on average*, be the Riksbank's inflation target plus total productivity growth. It should be added that the Riksbank strives for openness and transparency. A monetary policy based on its content being unclear to employees would run counter to this objective.

Another point to note is that when Lundborg & Sacklén (2003) refer to empirical support for their conclusions, they are alluding to a statistical material with only a small number of observations for Sweden's inflation-targeting period and *very few* observations that are particularly crucial for the method they have applied. This renders the conclusions uncertain and it should surely be difficult to draw such strong policy conclusions as those advocated by them.

In a review of the relatively limited academic literature in favour of a long-term trade-off between inflation and employment, Holden (2004, p. 15) summarises as follows:

"So far it would, nevertheless, be fair to say that the evidence of long-run inflation – unemployment trade-off is disputed. Among other things, several of these studies are based on rather restrictive assumptions; see for example the discussion of Akerlof et al. (1996) by Gordon (1996) and Mankiw (1996) ... ."

Against this background, *today* it is hard to find convincing arguments or empirical evidence that the level of the inflation target *per se* contributed to the higher unemployment since the crisis in the early 1990s. However, future research in this field needs to be followed.

Today it is hard to argue convincingly that the level of the inflation target *per se* contributed to unemployment.

The relatively high unemployment since the beginning of the 1990s is indicative of structural problems in the Swedish economy.

#### PERSISTENT UNEMPLOYMENT BEHIND THE CRISIS IN THE 1990s

The sharp increase in unemployment early in the 1990s was largely a consequence of extensive macroeconomic shocks, mainly generated internally on account of unsuccessful economic policy (see the earlier discussion). At the same time, studies suggest that equilibrium unemployment had been following a rising trend over a longer period up to the early 1990s

<sup>17</sup> See also Blinder (2000).

(Forslund & Holmlund, 2003). That relatively high unemployment has persisted since then points in the first place to structural problems in the Swedish economy. One indication of this is that at the high in the latest business cycle, unemployment had not fallen much below 4 per cent. Another, partial explanation could be that after the crisis in the early 1990s, the adjustment towards the long-term equilibrium level has been very gradual. Unemployment can be sluggish or *persistent*, while in extreme periods it may display *hysteresis*. Unemployment that is persistent returns, albeit gradually, to the equilibrium level, whereas with *hysteresis* the long-term level tends to be affected by how unemployment actually develops.<sup>18</sup>

### IMPAIRED MATCHING

There are signs that a partial explanation for the increased unemployment may be that the matching of unemployed persons with vacant jobs in the period 1995–2003 was considerably worse than in the first half of the 1990s. Thus, for a given level of unemployment, the vacancy rate was higher in the period 1995–2003, as can be seen from the Beveridge curve in Figure 7.<sup>19</sup> A combination of rising unemployment and falling vacancies is usually interpreted as a cyclical variation in labour demand. Simultaneous increases in unemployment and vacancies are usually interpreted instead as impaired matching. The former case is represented by a movement along a Beveridge curve, the latter by the curve shifting outwards.

Identifying possible causes of what appears to be a deterioration in matching is not an easy matter. One explanation could be an increased inflow to unemployment as a result of more rapid structural changes in the economy.<sup>20</sup>

There seems to have been some improvement in the matching process in recent years, though it does not appear to be working as well as in the early 1990s. Although it is true that labour market policy regulations are now being implemented more strictly, much of what seems to be an improvement in matching may be illusory. A large part of the improvement can probably be explained by increased sick leave: unemployed per-

Poorer matching of the unemployed with vacant jobs after 1995 may help to explain the increased unemployment.

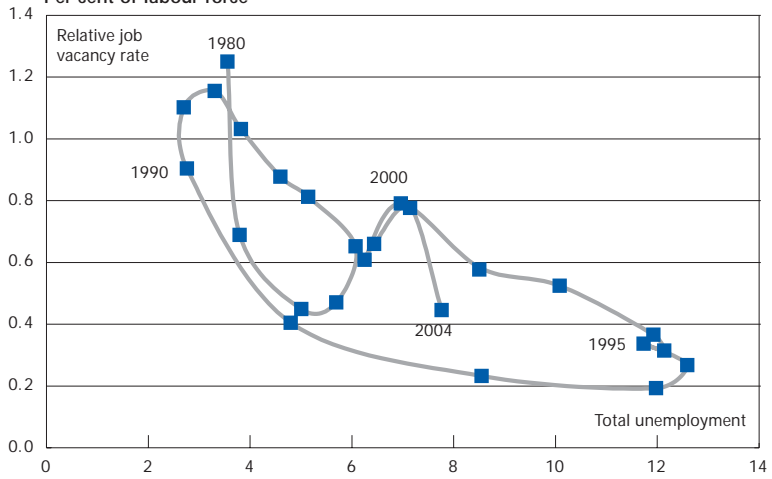
The matching process appears to have improved recently but this may be a result of increased sick leave.

<sup>18</sup> There are a number of theoretical explanations of persistence. One is that insiders (those who already have a job) wield more influence than outsiders (the unemployed), so that wages are determined by the interests of the former instead of being optimal for the situation of the latter. Another theory is that long periods of unemployment are liable to weaken the incentive to look for work, so that the downward effect on wages from high unemployment is reduced and the matching of unemployed persons and vacant jobs is impaired. A third theoretical explanation for persistence is that unemployment entails a loss of occupational skills, so that those concerned are less attractive to employers. For a review, see Björklund et al. (2000).

<sup>19</sup> See Sveriges Riksbank (2002a) and Konjunkturinstitutet (2004). An adjustment of the Beveridge curve for cyclical labour-market entries and exits gives a deterioration of the matching process that is not quite as marked (see Holmlund, 2003).

<sup>20</sup> See also Forslund & Holmlund (2005) och Konjunkturinstitutet (2004).

Figure 7. Beveridge curve; 1980-2004  
Per cent of labour force



Sources: Statistics Sweden and the Riksbank.

sons who are registered as sick are not included in the unemployment statistics. The stricter implementation of labour market policy regulations, combined with differences between the levels of unemployment and sickness benefits, has probably entailed a flow from unemployment insurance to sickness insurance.<sup>21</sup>

#### HAS INFLATION BELOW THE TARGET RAISED EQUILIBRIUM UNEMPLOYMENT?

The Swedish Trade Union Confederation (LO) and others have argued that, in the period as a whole since the inflation target was adopted, inflation has been below the targeted rate and this has meant that labour demand has been unnecessarily weak, thereby contributing to a loss of occupational skills among those who are out of work. If this has made employers less inclined to recruit these people, the equilibrium level of unemployment may have risen. To tackle this problem, LO considers that monetary as well as fiscal policy should be used more actively in the short term to avoid negative long-term effects on equilibrium unemployment, and that monetary policy ought to attach greater weight to real economic considerations.<sup>22</sup>

The fact that inflation has, on average, been somewhat below the target has been taken to indicate that the Riksbank has responded to risks of high inflation more vigorously than to risks of low inflation, that is, that monetary policy has been conducted asymmetrically, and that this in turn

<sup>21</sup> Today, however, an unemployed person who reports sick receives the lower of the two benefits.

<sup>22</sup> See LO (2005).

has contributed to unnecessarily high unemployment. This argument, as well as LO's view of how monetary policy may have affected equilibrium unemployment and what should be done about this, call for some comments. But first let us study the deviations from the inflation target.

The 2 per cent inflation target, which was adopted in 1993 but did not apply in full before 1995, is defined in terms of the consumer price index (CPI). For many years now, however, monetary policy decisions have been based on an index of underlying inflation, UND1X, which unlike the CPI excludes house mortgage interest expenditure, for example. In the period 1995–2004, UND1X inflation averaged 1.8 per cent. Measured by this performance, monetary policy cannot be accused of sizeable systematic misjudgements.<sup>23</sup> CPI inflation in the same period averaged only 1.4 per cent, but this was largely because the introduction of the new low-inflation regime was followed by a marked fall in the general level of interest rates and this reduced the interest expenditure component of the CPI.

In the period 1996–97, inflation was low as a result of a relatively high interest rate in the preceding years. A relatively tight monetary policy was justified in a transitional period to make the new inflation-targeting policy credible. Inflation expectations had been considerably above the targeted rate in 1994–95. The high interest rate probably did have a largely temporary negative effect on unemployment.

Inflation remained low in 1998–99 despite a low interest rate in the preceding years and rapidly rising demand. In these years, the low inflation was a result of deregulations, lower import prices and unexpectedly high productivity growth, that is, supply-side factors. As we noted earlier, the latter two factors also contributed to the low inflation in 2004.

In retrospect, then, the fact that, on average, inflation in the past decade has been somewhat below the target has natural explanations. Instead of being due to the Riksbank judging upward deviations from the target as more serious than downward deviations, it is a result both of the change from a high- to a low-inflation regime, and of supply-side changes that neither the Riksbank nor other forecasters foresaw.<sup>24, 25</sup>

LO's fears that a considerable period of high unemployment may lead of itself to a higher equilibrium level should be taken seriously. This

Since 1995, UND1X inflation has averaged 1.8 per cent.

The fact that, on average, inflation in the past decade has been somewhat below the target has natural explanations.

<sup>23</sup> The calculation is based on the CPI (and hence indirectly the UND1X) definitions that applied before 2005, that is, the definitions that were relevant for monetary policy up to 2004. At the turn of 2004, Statistics Sweden altered the method for calculating the CPI, so that, on average, measured inflation is 0.2 percentage points lower than before. With the new way of measuring the CPI, the average level of UND1X inflation up to 2005 Q3 is 1.6 per cent; however, 0.2 percentage points of the difference from the earlier figure is due to the altered definitions.

<sup>24</sup> See also Heikensten (2005a).

<sup>25</sup> A study by Adolfsson et al. (2005) supports the notion that unexpected supply shocks have played a crucial part in keeping inflation below the targeted level.

raises the question of whether, as LO proposes, the solution lies in a stabilisation policy that does more to fine-tune demand, rather than in measures for maintaining the unemployed's human capital and rendering the labour market more flexible. The economics literature is virtually unanimous that, in monetary as well as fiscal policy, the effect of *fine-tuning* is liable to be destabilising rather than stabilising. One reason lies in the considerable time lags between the identification of a need for stabilisation, a decision to take action and the effect of any measures. It is preferable to implement a policy for making the labour market less vulnerable to shocks.

#### PERMANENTLY HIGHER PRODUCTIVITY GROWTH

The relatively strong increase in productivity growth may help to explain the higher unemployment since the early 1990s.

Another explanation for the considerably higher unemployment since the early 1990s may be the relatively strong increase in productivity growth (this has also contributed to the low inflation). Having slackened prior to the crisis in the early 1990s, productivity growth then picked up relatively strongly, no doubt partly for cyclical reasons initially (see Figure 8). But even after the mid 1990s, productivity growth has remained high, which indicates a more permanent change. The crisis did entail a rapid redistribution of labour from low to high productivity industries as well as from the public to the private sector. Moreover, labour-intensive production processes have been transferred to emerging market economies with lower wage costs. These structural changes may have contributed to the weak picture of employment from the mid 1990s up to the present. In time, however, this process and the attendant improvement in productivity will probably lead to new job opportunities in Sweden.<sup>26</sup>

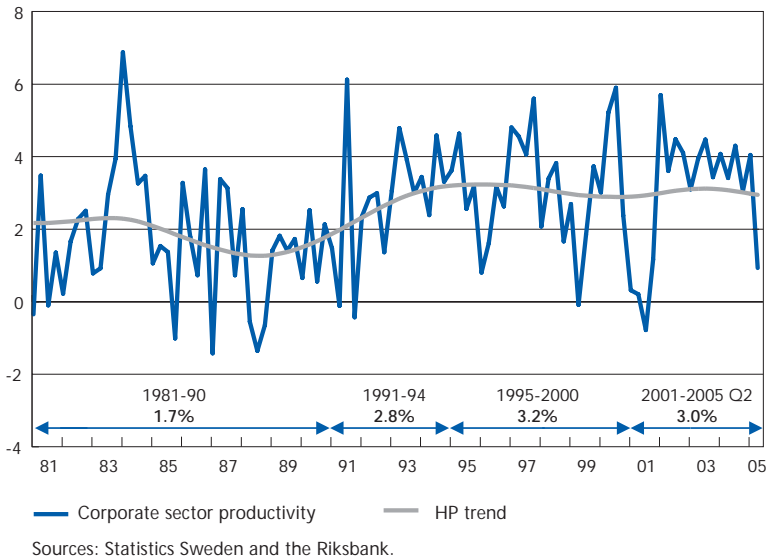
The issue of whether productivity growth leads to higher or lower employment is still being discussed.

It should be noted, however, that the issue of whether increased productivity leads to higher or lower employment is still being discussed in the literature on macroeconomics.<sup>27</sup> One topic is whether higher productivity, which goes hand in hand with higher real wages, tends to raise or lower labour supply. A higher real wage has both a substitution effect that tends to increase the supply of labour (because working becomes more rewarding compared with not working) and an income effect that tends instead to reduce labour supply (with a higher income for a given labour input, a person can take more time off and still maintain the standard of consumption from before the real wage increase). As we noted earlier on, the growth of real income has been above the average rate in the preced-

<sup>26</sup> For a fuller discussion of the increase in productivity growth, see Sveriges Riksbank (2004).

<sup>27</sup> See e.g. Christiano et al. (2004) and Galí (1999).

Figure 8. Corporate sector productivity; 1980-Q2 2005  
Per cent



ing decades. If the higher real incomes have tended to reduce the supply of labour, that in itself may explain a part of the decline in hours worked.

## What has happened to the labour force?

Today's high unemployment is definitely a major problem. In a macroeconomic perspective, however, the very slack labour supply in recent years, despite favourable demographic conditions, is perhaps an even greater problem (see Figure 4). A part of the weak labour market performance is probably a consequence of increased inputs for higher education (and possibly also of a decreased labour supply in connection with rising real incomes) but a major part presumably lies in other, more negative, factors.

During the 2000s there has been a large increase in sick leave and disability pensions even though there are no medical factors that point to a deterioration in public health. At the beginning of 2005, "activity and sickness allowances" (the former disability pension) were being paid to a total of 541,700 people, which is equivalent to 10 per cent of the economically active age group (16–64 years). Over a million people (calculated as full-year equivalents), or almost one in five in the active age group, are now living solely on various benefits.<sup>28</sup>

Labour supply has been very slack in recent years despite favourable demographic conditions.

<sup>28</sup> See Konjunkturinstitutet (2005a). Benefits refer here to sickness and rehabilitation benefits, "activity and sickness allowances" (the former disability pension), labour market compensation for unemployment or in connection with measures of labour market policy, and social welfare.

There is reason to consider some possible explanations for the increases in sick leave and dependence on benefits, as well as the weak labour market performance in general.

#### POSSIBLE EXPLANATIONS FOR THE INCREASED ABSENTEEISM FOR SICKNESS

Changes in the organisation of work may have led to greater psychological pressure.

Some argue that changes in the organisation of work, with more decentralisation and more individual responsibility, may have increased the psychological pressure on certain groups of employees. However, sickness absenteeism has not risen in other countries where there have been similar organisational changes.<sup>29</sup>

Increased stress may also have played some part in the higher sickness rates.

Increased stress, particularly among double-duty women (whose participation rate has risen in recent decades), may also have played some part in the higher sickness rates. The fact that sickness rates have risen among women in particular supports this argument but the increase probably has more to do with a general lack of time that is not necessarily connected with working conditions. The problem may be accentuated by large tax wedges that make it costly to buy household services (apart from subsidised child care and care of the elderly).<sup>30</sup>

Hans Karlsson, economist at the LO, has claimed that half of those with a disability pension or long-term sick leave are actually capable of working.<sup>31</sup> An observation that supports this is that the sickness rate in Sweden is well above the EU average without there (so far) being any plausible explanations for this. Life expectancy in Sweden is longer than in the rest of Europe, which could be expected to point instead to a relatively good state of health. Another factor that may lend some support to Hans Karlssons' claim is that regional comparisons show a strong correlation between sickness and unemployment rates (see Edling, 2005).<sup>32</sup>

Another possible factor is altered social standards.

Altered social standards are seen by Lindbeck (2003) as a factor behind the increased sickness rates. With the expansion of the welfare sector and more and more people dependent on benefits, living on benefits has probably become more socially acceptable. Greatly increased unemployment in certain regions has tended to establish "unemployment cultures" that make a life based on benefits more acceptable than before. Higher unemployment in northern Sweden is accompanied by sickness and disability rates that are also higher than in the south without there being much medical evidence to explain this. The higher sickness rates in

<sup>29</sup> Lindbeck (2003).

<sup>30</sup> Lindbeck (2003).

<sup>31</sup> See Dagens Industri (2005).

<sup>32</sup> Such a correlation could admittedly also indicate that long periods of unemployment contribute to more ill-health.

these regions are probably attributable in part to many of the unemployed receiving sickness benefits when they ought to be getting unemployment benefits.

The notion that altered social standards may have contributed to the increased sickness rates in Sweden is supported, according to Lindbeck, by the above-mentioned absence of any medical explanations as to why the state of health in Sweden has deteriorated compared both with other countries and with earlier decades. Lindbeck cites an opinion poll in which 41–48 per cent of the respondents considered they had a right to report sick without actually being ill. Moreover, 20 per cent considered they had this right if they are dissatisfied with their job or their boss. This suggests that health insurance has come to be used for other purposes than traditional sickness.

The currently high rates of sickness and ill-health that is not verifiable on strict medical grounds indicate, moreover, that there may be fundamental problems with the routines for reporting sick. It has been found that in up to 90 per cent of cases, it is only when the patient suggests it that the doctor proposes sick leave as a form of treatment; moreover, a patient who asks to be sick-listed is seldom refused.<sup>33</sup>

#### INCENTIVES IN BENEFIT AND TAX SYSTEMS

For labour supply, other types of problem are associated with incentives in benefit and tax systems:

The social welfare system probably harbours a considerable element of moral hazard, that is, over-utilisation because individuals adapt their behaviour to qualify for benefits. Systematic studies suggest, for example, that rules whereby unemployment benefits are available over a very long period tend to prolong the duration of unemployment.<sup>34</sup> The notion that moral hazard is a problem in the Swedish health insurance system finds support in a study by Johansson & Palme (2005).

Fiddling benefits probably occurs, too. A recent study by Thoursie (2004), for instance, shows that young men have utilised sickness insurance to a high degree in connection with major sporting events.

#### *Improved economic incentives to work*

The slack tendency in the size of the labour force is even more troublesome when one considers that, in the coming four decades, the population aged 20–64 years is expected to decline in relation to the younger

There are signs of exploitation in the social security system because individuals adapt their behaviour to qualify for benefits.

<sup>33</sup> For references, see Konjunkturinstitutet (2003).

<sup>34</sup> For references, see e.g. IFAU (2003).



The economic policy debate must focus on the need for an increased labour supply.

and older age groups. This makes it absolutely essential to focus the economic policy debate on the need for an increased labour supply. In that context it would be a mistake if ways in which the tax and social security system influences work incentives are disregarded on the grounds that the present system is motivated by other considerations.

Since 2004, the NIER publishes an indicator (the net compensation rate) of the share of an increase in labour costs that goes to the employee after deductions for taxes (including income tax, employer contributions and VAT), increased charges and decreased allowances (e.g. housing allowances). In other words, the net compensation rate shows how much someone already in work gains from additional earnings generated by longer working hours or a wage increase. The NIER calculates that in 2005 the average net compensation rate is 40.2 per cent.<sup>35</sup> For about 5 per cent of all those in employment, the rate is below 30 per cent.

Another indicator of the work incentive is the level of compensation, which indicates the effect on a household's disposable income when a member who has been unemployed, sick-listed or on social welfare becomes employed. An official study (Annex 3 to the 2005 Budget Bill) shows that the level of compensation can be extreme: for parents who are both entirely dependent on social security and have two children, a monthly wage of at least SEK 24,000 would be needed for the household to benefit from one of the parents becoming employed.

Compensation rates and levels throw light on the incentives to find work or to work more.

Compensation rates and levels do not tell us how behaviour is influenced by taxes and benefits; they simply point to the incentives to find work or to work more. A good deal of empirical research has been devoted to how changes in taxation influence the supply of labour from those who already have a job (only a few studies concern persons living on benefits). The results suggest that the labour supply from mothers and women with low incomes is more sensitive to altered work incentives than the supply from other groups. Perhaps that means that the labour supply from the former groups could be stimulated. In higher income groups, however, empirical studies indicate that labour supply is less sensitive to altered work incentives,<sup>36</sup> and this is sometimes taken as evidence that high marginal tax rates on large incomes are not a major problem for labour supply. This calls for some comment.

High marginal tax rates on earned income lower the return on education; this could harm economic growth in the longer run.<sup>37</sup> Large tax

<sup>35</sup> See Konjunkturinstitutet (2005b).

<sup>36</sup> For a review, see e.g. *Vem tjänar på att arbeta?*, Annex 14 to LU 2003/2004.

<sup>37</sup> As the number of students in tertiary education has risen markedly over time – due in large measure to an increased capacity in connection with higher appropriations – empirical support for these fears is probably hard to find.

wedges on earned income may hamper the ongoing structural shift from employment in manufacturing to jobs in service industries.<sup>38</sup> Moreover, other factors suggest that earlier empirical studies may have underestimated the elasticity of labour from high-income groups. Most of the studies refer to the 1970s and 1980s, when earned and capital incomes were taxed together, which may account for the low labour elasticity (Sacklén 2005). Prior to the tax reform, the tax system as such was highly progressive. However, with considerable scope for tax planning and tax allowances, often resulting in zero-ratings, the progressive element was far smaller than the formal tax scales suggested. In Sweden's current tax system, opportunities for tax planning are highly restricted and earned income is taxed separately from capital income. So the situation differs from the 1970s and 1980s and Sacklén (2005) argues that this can lead to changes in taxation having larger effects on labour supply.

The need to study labour supply anew is relevant not least with reference to whether tax reforms can stimulate labour supply at a time when demographic factors are tending to reduce the supply, with negative effects on economic growth and the public finances. In the latter context there is also a great need of empirical studies to find out how taxes and benefits affect household behaviour in terms of living on benefits as opposed to finding a job.

Another relevant aspect when it comes to raising labour supply is how to persuade the older segment of the labour force to refrain from retiring unduly early. As the Riksbank has pointed out on a number of occasions, the system for private pension saving with tax benefits may mean that more people choose to retire before their 65th birthday (under the present rules, the pension disbursements can start from the age of 55), which would reduce the supply of labour.<sup>39</sup>

A discussion of how to increase the supply calls for a review of the work incentives in the system of taxes and benefits. In so far as the weak state of employment is a result instead of rapid structural adjustment in the Swedish economy, it is also important to discuss how the labour market can be made more efficient and how the forces that drive entrepreneurs can be strengthened.

In a time of rapid structural change, low labour market mobility and flexibility added to the cost in the form of increased unemployment. Measures for promoting labour market mobility and an adaptable educational system are and will continue to be urgent. The measures to do with supply that we have now touched on indirectly actually seem to be more

High marginal tax rates on earned income lower the return on education; this could harm economic growth in the longer run.

There is a need to review work incentives in the system of taxes and benefits.

<sup>38</sup> See also Henrekson (1998).

<sup>39</sup> See e.g. Sveriges Riksbank (2002b).

crucial for achieving permanently higher employment and GDP than the marginal contributions to the real economy that a more expansionary economic policy can achieve in the short run.<sup>40</sup>

## Our conclusions in brief

*In our view, the debate in the past year, above all in the media, about monetary policy and unemployment has formed a picture of monetary policy and what it is capable of achieving that is directly misleading. This article is intended to fill in the picture in a number of respects that we consider have been missing in the debate.*

There is no simple or stable relationship between cyclical unemployment and inflation.

The calculations which hold that monetary policy misjudgements have resulted in 50,000–70,000 more people in unemployment are based on unrealistic assumptions. In the first place there is the assumption that when actual unemployment coincides with the equilibrium level, inflation will always be 2 per cent. There is no simple or stable relationship between cyclical unemployment and inflation. Moreover, cyclical unemployment is difficult to measure at all accurately, varies appreciably over time and is a very poor indicator of future inflation. The figures cited in the debate on monetary policy's impact on unemployment also completely disregard the *unexpected supply shocks*, in the form of higher productivity growth and low import prices, that have affected the Swedish economy in recent years and which primarily explain the low inflation. These shocks are one reason why inflation has been overestimated not only by the Riksbank but also by other forecasters, which highlights the need to improve the possibility of predicting supply-side shocks. The Riksbank is working continuously to this end.

A lower policy rate in the period 2002–03 would have been feasible with reference to inflation. When evaluating whether monetary policy has contributed to higher unemployment, however, the analysis should focus on whether the monetary policy decisions were reasonable in terms of the information that was currently available. Here it can be noted that some forecasters, for example the NIER, did predict somewhat lower inflation in 2004 than the Riksbank but the differences were so small that setting the policy rate in accordance with those forecasts would not have had any decisive consequences for unemployment. Our estimate, admittedly uncertain, is that if the Riksbank had opted instead for the NIER's policy rate assumptions for the years in question, the number unemployed would have been only about 2,800 fewer. This figure is based on the NIER's

<sup>40</sup> See also Heikensten (2005b).

estimation of the relationship between the policy rate and unemployment.

As regards the criticisms of the construction of the new stabilisation policy regime, we consider that there is no convincing evidence *at present* that either the level of the inflation target or an asymmetric monetary policy lay behind the high unemployment. *Firstly*, from a review of the few studies which suggest that a higher inflation target could have led to lower unemployment, we find that this conclusion rests on a limited statistical material and broad assumptions about households' behaviour. *Secondly*, we find clear reasons why inflation has been below the targeted rate and this was not due to the Riksbank systematically treating upward deviations from the target more seriously than downward deviations. It is possible, on the other hand, that unemployment in 1996–97 was affected negatively because the interest rate had been high in the preceding years. The high interest rate was motivated, however, to gain confidence in the new low-inflation regime; in 1994–95, inflation expectations had been considerably above the targeted rate.

So if neither monetary policy nor the new stabilisation policy regime has made a significant contribution to unemployment, how is one to explain why unemployment in the past decade has been so much higher on average than in the preceding decades? *Firstly*, we find it misleading to compare the level of unemployment after the regime change in stabilisation policy with the levels in the 1970s and 1980s. In those decades, an economic policy that, on average, was unduly expansionary, with repeated devaluations and greatly increased public sector employment, kept unemployment below the level that can be said to be sustainable in the longer run. *Secondly*, there are studies which indicate that although unemployment remained low, its equilibrium level followed a rising trend over a longer period up to the early 1990s. *Thirdly*, the increase in unemployment after 1992 was a consequence of the economic crisis in the early 1990s, caused to a large extent by several years of unsuccessful economic policy. *Fourthly*, the continuation of high unemployment up to the present presumably has to do with structural factors. Much of the unemployment that followed the crisis in the early 1990s may have become persistent. This is indicated by the fact that at the peak of the latest business cycle, open unemployment did not fall much below 4 per cent. To some extent, moreover, the high unemployment may have to do with the rising trend for productivity growth in the second half of the 1990s, though an increase for this reason would seem to be a transitional problem. Stronger pressure from structural changes as a consequence of globalisation may have contributed to impaired matching in the labour market and increased unemployment.

There is no convincing evidence at present that either the level of the inflation target or an asymmetric monetary policy lay behind the high unemployment.

There is a pressing need of measures to strengthen work incentives and render the labour market more efficient.

Our concluding observation is that, in the one-sided debate in the past year about open unemployment and how it can be influenced with measures of stabilisation policy, other problems in the Swedish labour market are liable to be disregarded. Despite favourable demographic conditions, the proportion of those aged 20–64 years who belong to the labour force has decreased markedly since the early 1990s. One explanation for this is the greatly increased numbers of sickness-benefit days and disability pensioners. The slack labour supply may be partly due to weak work incentives in the system of taxes and social security benefits, as well as to altered attitudes to what is an acceptable use of, above all, health insurance and disability pensions. Measures for strengthening work incentives and making the labour market more efficient are urgently needed, besides being particularly relevant in the light of the unfavourable demographic conditions that lie ahead, with a declining labour supply, as well as the rapid structural changes associated with ongoing globalisation. A narrow focus on what short-run stabilisation policy can achieve for unemployment, be the measures fiscal or monetary, is liable to distract attention from the need for structural measures that are far more important for the labour market in the longer run.

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# ■ The future relationship between financial stability and supervision in the EU

BY EVA SREJBER AND MARTIN NORÉUS

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This article is based on a speech held by Ms Srejber at the 33rd Economics Conference of the Oesterreichisches Nationalbank.

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*Financial stability, supervision and regulatory design have traditionally been the responsibility of national central banks, supervisory authorities and governments. These national regimes are now beginning to be challenged by the ongoing internationalisation – globally and in the EU – of financial markets, infrastructures and institutions. One important component of this change is that banks and other financial companies work more along global business lines and less along national borders. Hence, governments, supervisors and central banks will have to adapt to a new reality. To be able to cope with this change and find new solutions it is necessary for the authorities involved to focus on their core tasks and to a certain degree invent new ways to perform those tasks.*

This paper is structured in the following way. First, there is a brief discussion on the relationship between supervision and financial stability on a national basis, with the institutional set-up in Sweden as a case in point. Then follows a description of how the cross-border integration now taking place in the EU:s financial sector is challenging the ways in which supervisors and central banks traditionally have been working. The paper concludes with a discussion on some of the proposed alternatives for how EU policy-makers can respond to these challenges.

## The relationship on a national basis: the Swedish case

Prior to the banking crisis in the early 1990s, the cooperation between the Riksbank and the Swedish Financial Supervisory Authority (FSA), then the Banking Inspection, was limited to high-level contacts. In their day-to-day activities, however, the two authorities worked in different silos – the

The crisis in the early 1990s clarified the strong link between the health of individual banks and financial stability.

Riksbank with monetary and exchange rate policy and the FSA with regulating and supervising financial institutions. The crisis made it very clear to the Swedish authorities that there is a strong link between the soundness of financial institutions and macro financial stability, and hence a need for close cooperation between the FSA and the central bank.

This economic link is mirrored by a parallel link spanning at least three aspects of regulatory involvement in the financial sector – crisis prevention, crisis management and crisis resolution. In Sweden, these aspects of regulatory involvement are shared between the supervisor, the central bank and the Ministry of Finance.

The supervisor has the regulatory tools to influence the institutions, while the central bank can act as a lender of last resort.

In crisis prevention, the supervisor has the tools for regulating and supervising the institutions, while the central bank might play a supporting role through monitoring the stability of the system and the links to the real economy. In crisis management, the supervisor lacks the financial resources to back any intervention, while the central bank has the power to act as a lender of last resort. In other words, the likelihood that the central bank will have to provide liquidity support to a financial institution is partly determined by the quality of supervision. At the same time, the central bank may very well need the supervisor's analytical support or information to be able to decide on whether, and how, to intervene. Finally, in crisis resolution, even if the Ministry of Finance takes the lead, it is likely to rely extensively on the supervisor and the central bank for advice and action.

Since there is a link between the soundness of institutions and financial stability, then supervisors must be interested in crisis management and resolution and central banks must be interested in certain aspects of supervision.

In the last decade the macro and micro perspective have grown gradually closer.

In the last decade, at least in Sweden, the macro and micro perspective have grown gradually closer. Indeed, the Swedish FSA now has an explicit interest in the stability of the system, while the Riksbank has taken a greater interest in the stability of single institutions, if they are judged as systemically relevant. There are regular contacts to share information and assessments and to coordinate policy.

## The times they are a-changin'

This seemingly happy relationship could have been the end of our story but recently there have appeared challenges to this set-up. All over the globe, the financial markets are becoming more integrated and financial institutions as well as financial infrastructure companies are consolidating domestically as well as cross-border. The challenge touches all the aspects

of regulatory involvement – crisis prevention, crisis management and crisis resolution.

#### CROSS-BORDER INTEGRATION OF FINANCIAL MARKETS ...

In the EU, the process of cross-border integration has been actively promoted by the creation of the euro and the ongoing harmonisation of regulation and supervision – in recent years epitomised by the Financial Services Action Plan (FSAP). Admittedly, financial markets integration in the EU has so far been a mixed bag.

Until now, integration has mostly taken place in wholesale markets, such as the money market and the bond markets. Many investment banking segments such as capital raising and mergers and acquisitions (M&A) for large corporations are also dominated by global giants. In contrast, retail financial services are still to a very large extent controlled by domestic players, at least in the old member states.

Until now integration has mostly taken place in wholesale markets, such as the money market and the bond markets.

#### ... AND INSTITUTIONS ...

Probably cross-border integration is only just beginning. Banking integration will probably not primarily take place through direct cross-border provision of services but through cross-border bank M&A. Integration of ownership will result in integration of lending/funding, organisation, products and services.

Integration of ownership will result in integration of lending/funding, organisation, products and services.

According to a study by the European Central Bank (ECB), 43 banks and banking groups are active in more than three EU countries.<sup>1</sup> Only some years ago, crossborder banking M&A in the EU was only taking place between small countries or vis-à-vis the new member states – Austrian and Swedish banks' expansion into some central European and Baltic countries are well-known examples of this phenomenon. Now this is changing. Today major banks from large countries are all trying to build European platforms. For instance, Spanish Grupo Santander now owns the fifth largest UK bank, and Barclays of the UK owns the sixth largest private sector bank in Spain. And this year, the medium sized Italian bank Antonveneta was acquired by the Dutch bank ABN Amro, while the largest Italian bank, UniCredito, acquired the third largest German Bank, HVB.

<sup>1</sup> Banking Supervision Committee (2004), "Cross-border banking and its possible policy implications", December.

... IS GOOD NEWS FOR THE ECONOMY BUT CREATES  
CHALLENGES FOR SUPERVISORS AND CENTRAL BANKS

The Riksbank believes financial market integration is positive for economic efficiency.

The Riksbank welcomes this development. The bank believes financial market integration is strongly positive for economic efficiency and hence for growth and welfare in the EU. But at the same time, the bank admits that integration presents some complex and multifaceted challenges to the authorities.

The problem is that the regulatory framework is not designed for a single market for financial services.

At the outset, integration is obviously hindered by differences in language, business culture and national laws and regulations. But once it happens, integration tends to follow the logic of business, and not the "logic" of country borders or national law. For instance, for financial groups which are expanding cross-border a part of the synergies is derived from centralising functions. Hence, the group's credit risk model might be developed in the parent bank, while the group's liquidity is managed through a foreign subsidiary, and the group's derivatives trading is done in yet another subsidiary. That is why integration gives rise to a structure that often seems to be in conflict with the present regulatory structure. But the problem is not integration – the problem is that the regulatory framework is not designed for a single market for financial services.

For example, in the Nordic and Baltic countries – excluding Iceland – there are six banking groups with significant cross-border activities. Each one of these cross-border groups has regulatory contacts with seven supervisors and eight central banks.<sup>2</sup> It is commonplace to note that Western Europe is over-banked. It would not be outrageous to say that it is also over-crowded with regulatory authorities.

The national governments and authorities in the EU must solve the issues that integration gives rise to, rather than preventing integration.

Our conclusion is that the national governments and authorities in the EU must solve the issues that integration gives rise to, rather than preventing integration. This might sound very obvious, but some governments and authorities still only pay lip service to the idea of the single market. Or they love the idea of the single market as long as it means that their own banks survive as national champions and are able to expand abroad.

The most important and difficult question that policymakers will have to answer is how to shape and balance the relationship between authorities – central banks and supervisors – in different countries in the EU. It goes without saying that since laws and regulations and the division of responsibilities between authorities are ultimately decided by the govern-

<sup>2</sup> The Bank of Lithuania also has supervisory responsibility.

ments of the member states, the challenge of integration inevitably also concerns finance ministries.

## Back to basics

What will be the roles of national supervisors and central banks in an integrated EU financial market? If central banks and supervisors have not done it before, cross-border integration will force them to think hard about their responsibilities, mandates and tools.

What will be the roles of national supervisors and central banks in an integrated EU financial market?

In order to do this, they will have to go back to the beginning and find their “raison d’être”. What is special about the financial system and why are authorities regulating, supervising and monitoring financial markets and institutions? Who or what are supervisors and central banks protecting and which tools do they need?

Whether authorities want to defend the status quo or reform the regulatory framework, they will need to prove their case to politicians as well as to each other. By itself, this might very well improve the way supervisors and central banks work. One may call this a positive external effect of integration.

There are many issues at the table, but in the context of this paper we would like to divide them into two categories.

Cross-border integration forces national central banks and supervisors to find their “raison d’être”.

The first category includes the issues of what regulations should be imposed on institutions and markets in the EU. How can laws and regulations be designed flexible enough to fit all countries reasonably well, while strict and “harmonised” enough to support a single market?

The second category is essentially about the relationship between supervisors and central banks in different countries – the division of labour, power and responsibilities. This category of issues has come to be broadly referred to as the home-host issues. The next section gives a short comment on the regulatory issues, while the rest of the paper is devoted to the home-host issues.

## REGULATION

Regulation at EU-level first of all faces the same basic trade-off as at country level. The Riksbank’s view is that since almost all regulation involves costs – in terms of lower efficiency and growth – it should be a last resort and used only when there is a clear case of market failure.

All regulation involves costs; it should be used only when there is a clear case of market failure.

Some regulation is surely needed to ensure a stable and sound financial system and necessary consumer protection. But too much or too strict regulation will give rise to new costs that are higher than the original costs that regulation initially aimed to address.

Regulation at EU-level also faces another trade-off that is not present at national level – that between the value of a *level playing field* and the cost of an overly detailed or inadequate regulation. A completely level playing field presupposes detailed rules that are applied in the same way in every market. But overly detailed rules at EU-level risk being inadequate at national level since national markets often differ widely. This could give rise to costly overregulation hampering financial development or driving financial institutions to settle elsewhere. Hence, it might be wise to leave some degree of freedom to the member countries. Historically, institutional competition has proved to be very positive for development in the long run.

The starting point for EU rules should be the lowest common denominator.

At the same time, EU directives (as most international rules) tend to leave plenty of room for *national discretions*, effectively reducing the value of the convergence/harmonisation that was probably the motivation for the directive in the first place. There is the risk of ending up with the worst of two worlds – very detailed rules on the EU level and numerous discretions at national level. This makes the rules opaque and their implementation difficult to predict for the private sector. The starting point for EU rules should be the lowest common denominator. Today instead, it often seems like the starting point is the sum of all member states' national rules.

Representatives of national authorities may all be convinced that their national discretions are worth fighting for and take pride when they are included in the final drafts. Perhaps everybody should ask themselves more often whether the discretions are motivated by a fundamental need or just deep-rooted tradition or, even worse, the unconscious caving in to special interest groups. Why not take this opportunity for change and think new instead of designing EU regulation on the basis of existing, often imperfect, national regulation?

One of the main objectives of the CEBS is to promote convergence of supervisory rules and practices.

The need for a *common rule book* for large cross-border banking groups is often raised by the industry. In principle, one can be sympathetic to this wish. If a common rule book means "just" common rules the developments are certainly going in that direction. One of the main objectives of the Committee of European Banking Supervisors (CEBS) is to promote convergence of supervisory rules and practices. However, in the sense of common or centralised decision making by authorities, it is probably still far away from being realised. As long as the implementation and interpretation of directives and rules is done on a national level it will take time before there is a common rule book.

Still, the aim should be to eliminate or reduce these differences as much as possible. Any remaining differences in supervisory practices between countries should be clearly disclosed in order to improve the pre-

dictability of the EU regulatory system – which is another area where the CEBS is doing important work. Another practical example of how to reduce the regulatory burden would be for countries to agree on a common and centralised reporting standard for large cross-border groups.

The aim should be to eliminate or reduce differences as much as possible.

#### THE HOME-HOST RELATIONSHIP ...

The home-host relationship is the underlying theme running through a number of issues in the regulatory debate. Broadly speaking, the home-host relationship is about how to divide tasks, powers and responsibility between different countries when it comes to supervising, monitoring and, in the worst case, sorting out financial institutions in distress.

The home-host relationship is about how to divide tasks, powers and responsibility between different countries.

Formally, the home-host relationship only refers to the division of responsibility between supervisors, which is currently based on the principle of home country control. The home country is the country where the bank is licensed. For a bank, this means that the home country is responsible for supervising the bank and its foreign branches. The home country's deposit insurance also covers its banks' foreign branches. In the case of a group, it means that the home country is also responsible for supervising the entire group on a consolidated basis, while the host countries are responsible for their respective subsidiary banks and deposits. This autumn, the CEBS is finalising the so-called home-host paper giving guidance on how the home-host supervisory relationship should be arranged given existing EU legislation.

Even if there are no legally-binding rules regarding the relationship between countries in crisis management or crisis resolution, these aspects of regulatory involvement have borrowed the terminology of the supervisory home-host concept. For example, when discussing lender of last resort in crisis management and burden sharing in crisis resolution, references are made to home and host central banks and finance ministries, respectively. This is natural, since legally the financial liabilities for a group are ultimately carried by the parent bank. Of course, a parent can choose to let a subsidiary fail, but it will then have to bear the capital loss. Subsequently, in practice, the ultimate public responsibility over a group rests with the home country.

#### ... COMES UNDER STRAIN ...

At first glance, the home country principle seems very neat. But a closer look reveals that this set-up was not designed for a fully integrated market. Essentially, there is a gap between, on the one hand, legal powers and mandates and, on the other hand, de facto abilities and responsibili-

The home country principle was not designed for a fully integrated market.



ties. Home countries are given powers over branches and subsidiaries but might be unable or unwilling to use them, while host countries are losing powers that they have been willing to use. This gap becomes a problem once there is a banking group or bank that is systemically relevant in a host country (see table 1). Even if there are not so many of these cases yet, the number will most certainly increase. The potential conflicts of interest and coordination problems are of many kinds. Below are some examples:

TABLE 1. THE HOME-HOST RELATIONSHIP (FOR A BANK OR BANK GROUP)

	Systemic relevance in HOST country	
Systemic relevance in HOME country	Significant	Non-significant
Significant	Potential conflicts of interest and coordination problems	Not a big problem
Non-significant	Potential conflicts of interest and coordination problems	Not a big problem

... WHEN BRANCHES AND SUBSIDIARIES BECOME SYSTEMICALLY RELEVANT

Suppose there is a banking group of roughly equal systemic relevance in the home country and the host country. The home country supervisor is the consolidating supervisor and coordinates the activities vis-à-vis the group. If cooperation works well, the host supervisor will receive information from the home supervisor. But in the event of a crisis in the banking group, all authorities have a clear mandate to protect only their depositors and systems. One can easily imagine a situation where the group has surplus capital in one of its parts, extra liquidity in another and the cause of the problem is in a third part. The lack of coordination might very well result in a poorer (more costly) outcome for all involved.

In the event of a crisis host authorities can only hope that home authorities will take its situation into account.

If the presence in the host country is a branch and not a subsidiary, the host supervisor has only limited means of obtaining information about – or taking actions against – the bank. In the event of a crisis it can only hope that the home country will take the host country's situation into account when managing the crisis. The home country, on the other hand, faces a situation where it could be necessary for its central bank to provide emergency liquidity assistance (ELA) to support a bank which has a large part of its activities in other countries. Should the bank need to be reconstructed it would be the home country's tax payers that would have to foot the bill – either by supplying the necessary capital to the bank or by supporting the deposit guarantee system with the funds needed to pay out insurance to the bank's depositors.

The imbalance between home and host countries may be further deepened by differences in size between the two countries. One case will be that of a big home country and a smaller host country. The banking group's exposure to the host country is then probably relatively small on a consolidated basis. This results in the home country authorities spending relatively limited resources – in terms of staff – on the foreign subsidiary's activities in the host country. If such a banking group runs into problems, the home country authorities will not necessarily view it as systemic, while the host country authorities certainly will do.

The imbalance between home and host countries may be further deepened by differences in size between countries.

## How to deal with the home-host asymmetry?

In all these examples host authorities have a legitimate interest in being able to influence supervision, share assessments and have a say in the event of a crisis situation. They have been given the task of protecting the soundness and stability of their financial sector and the general public in the host country will rightly expect their authorities to be able to do this. At the same time, the home authorities should have an interest in sharing resources in crisis prevention and risks and costs in crisis management and resolution with the host countries. In the current setting, however, this is only possible to a very limited extent.

First, there is a need to share information between the home and the host. This should be the least difficult, but in practice everyone who has tried to share information between authorities knows it can be a complicated and cumbersome process, at least until there is an established routine. Even when there are no confidentiality concerns there are many practical obstacles to overcome. Information sharing is not only about sending data back and forth, but more importantly, it is about explaining information and sharing assessments. If hosts are under the impression that they know a lot less than the home, it will be very difficult to achieve cooperation.

There is a need to share information and ...

Second, there is a need to cooperate on actions vis-à-vis the bank or the group and its components. If host authorities cannot influence the process of supervision or crisis management, their trust in and use of the information from the home authorities will be very limited.

... there is a need to cooperate on actions vis-à-vis the bank or the group.

Sharing information and cooperating on regulatory actions may be problematic already in normal times, but is probably much more difficult in a crisis situation when economic risks and costs are clearly visible. So far, cooperation and coordination in crisis situations is dealt with in the EU by various Memoranda of Understanding (MoU). Even if these MoUs are not legally binding, they are valuable documents. They provide a basis

So far, cooperation and coordination in crisis situations is dealt with in the EU by various Memoranda of Understanding.

from which more operational crisis cooperation agreements can be developed by the countries and authorities that see the need to do so.

But looking at this increasingly complex patchwork of supervisory colleges, central bank networks and MoUs that is now being created, one cannot help wondering whether there are no better alternatives for cross-border cooperation.

## Future alternatives to the home-host model

What are, in the medium or long term, the alternative models to the current home-host set-up? In the EU, there is a commitment to create a single market for financial services. But do governments and authorities really believe that the home-host model is the best one in the long run?

After all, several serious alternative models have been suggested. The pros and cons of the three main models are reviewed in an interesting paper by Oosterloo & Schoenmaker.<sup>3</sup>

### THREE ALTERNATIVES FOR SUPERVISION

The first alternative is to give the home supervisor the role of lead supervisor.

The first alternative is to give the home supervisor the role of *lead supervisor* with full responsibility for EU operations, branches as well as subsidiaries. This is the proposal from the European Financial Services Round Table (EFR).<sup>4</sup> The lead supervisor would be the single point of contact for reporting and would validate and authorise internal models, approve capital and liquidity allocations and decide about on-site inspections. In short, the lead supervisor would have full supervisory responsibility. The lead supervisor would be complemented with a college of supervisors, which would “serve as a conduit for close information-sharing and interaction amongst supervisors” and ensure that host countries’ interests are taken into account. Disagreements between supervisors would “be resolved by means of a mediation mechanism”. In a crisis situation, the lead supervisor would coordinate a management team representing the college of supervisors. This team would also have to coordinate with central banks, deposit guarantee schemes and finance ministries. For central banks, the EFR suggests that these would create an arrangement that mirrors that of the lead supervisor, with the home national central bank taking the role as

<sup>3</sup> Oosterloo & Schoenmaker (2004), “A lead supervisor model for Europe”, *The Financial Regulator*, Vol.9.3, 34–42.

<sup>4</sup> See “On the lead supervisor model and the future of financial supervision in the EU”, European Financial Services Round Table, June 2005. It should be noted, however, that the EFR points out that the lead supervisor model was “motivated by the need to find a near-term arrangement for financial supervision in the EU”. In the long-term, the EFR seems to be in favour of a European System of Financial Supervisors (ESFS) modelled on the European System of Central Banks (ESCB). This long-term model is basically one possible form of “the third alternative” as presented in this paper.

a “lead lender of last resort”, although being obliged to consult with the relevant host central banks.

The second alternative, which is put forward by Oosterloo & Schoenmaker, is to give the home supervisor the role of *lead supervisor with an EU mandate*. The lead supervisor would basically work as in the EFR model, with the difference that the lead supervisor is given a “European mandate to ensure that the interests of all depositors/countries are taken into account”. In this model there is a decision-making agency of European Financial Supervisors at the centre, which is delegating the task of supervision to each respective home supervisor. Hence, there is no need for a college of supervisors or a mediation mechanism. Regarding financial stability and crisis management issues, the home country central bank would also be involved, acting on behalf of the European System of Central Banks (ESCB). Since financial stability and lender of last resort are presently the responsibility of the national central banks, this would also imply a change to the mandate of the ESCB.

The second alternative is to give the home supervisor the role of lead supervisor with an EU mandate.

The third alternative is both the most obvious and the most radical and would be to create a *European Financial Supervisor*.<sup>5</sup> This simply means having one authority acting with full supervisory powers over branches and subsidiaries of cross-border European banks. The system could be tiered (like in the United States) in the sense that the EU supervisor would only be responsible for banks and banking groups with significant cross-border operations, while purely domestic banks could remain the responsibility of the national supervisors. As is the case with the lead supervisor with an EU mandate, a European Financial Supervisor would imply a parallel centralisation of the responsibility for lender of last resort.

The third alternative would be to create a European Supervisor.

## A EUROPEAN FINANCIAL SUPERVISOR

All three of these alternatives, even the first one, are considerably more far-reaching than what is currently under construction. The first alternative with a lead supervisor addresses the problem mainly from the cross-border bank’s perspective of minimising the regulatory burden. This is important but does not solve the underlying conflicts of interest between the home and the host countries. It seems this alternative would be very dependent on the mediation mechanism, which, in practice, would have to determine the balance between different interests. At the same time, if the mediation mechanism is not backed by EU law it is hard to see why the outcomes of such a mechanism would be accepted by national

All three alternatives are considerably more far-reaching than what is currently under construction.

<sup>5</sup> This idea has been put forward by, for example, Rolf Breuer, chairman of the supervisory board of Deutsche Bank and president of the Association of German Banks, in his speech “The future of the German banking sector” in February 2005.

To create a European Financial Supervisor is the logical, if radical, solution.

authorities. Furthermore, the operational set-up of the mediation mechanism would be crucial. For instance, are decisions supposed to be taken on a consensus basis or will there be a voting procedure? If there is a voting procedure there is the difficult question of how to allocate the votes between countries. Another open question concerns the relationship between the mediation mechanism and other EU institutions. What happens if a party that has been “overruled” in the mediation mechanism chooses to bring their case to the European Commission or the European Court of Justice? In short, it is a model which might work when the weather is fair and no deeper conflicts of interest are to be solved, but would have the same shortcomings as the present framework when faced with stormier weather. And there would still be a need for more or less ad-hoc cross-border cooperation or negotiation at the time of crisis.

The second alternative – the lead supervisor with an EU mandate – seems nice in theory and aims at solving the conflicts of interest by creating a central decision-making body. In practice, however, it could easily become very bureaucratic and inefficient. If a central decision-making body is established anyway, why act through 25 different authorities? Both the first and the second alternatives are half-way compromises trying to please different interests. The third alternative, although radical, is the logical solution. Beyond possible political considerations, there are two main arguments against the idea of a European Financial Supervisor – one relevant and one not very relevant.

The not very relevant argument is that the supervisor needs proximity to have knowledge about the markets where the institution operates. First, this is already a problem with the home-host model. Second, this is an organisational problem that can be solved. An EU supervisor would certainly employ staff from all EU countries and have local offices in the national financial centres. For instance, for a regional cross-border banking group, the supervisory team would presumably be based in the relevant region, perhaps in the same premises as the national FSA, and would consist of staff from that region.

The relevant argument against an EU supervisor is that supervisory power ultimately needs to be backed by financial muscle. In the present set-up, the financial muscle derives from the national central bank’s ability to act as a lender of last resort and the government’s ability to raise taxes. The EU lacks such power.

However, this problem is hardly insoluble. For instance, it is conceivable that the EU could build up a deposit insurance fund for cross-border banks supervised by the EU supervisor, which would be able to handle all but the largest banking failures. In fact, such an EU fund would be better diversified than the national funds are today, which all else being equal

would enable it to charge lower fees or hold a larger risk-adjusted buffer. In the event of really large banks or several large banks failing, there could be an established system of committed drawing rights, where the EU fund has the right to raise funds through national governments' ability to raise tax. Regarding liquidity support, the ECB would be given the role as lender of last resort.

To convince national governments to commit such guarantees would of course demand very strict and well thought-out rules governing what actions the EU fund should be allowed to take in the case of a bank failure. These rules could be inspired by the US Federal Deposit Insurance Corporation's very strict mandate to always choose the least cost solution. Among other things, this would in some cases mean allowing shareholders as well as uninsured depositors and debt holders to lose their money. Since today, most EU countries lack rules on how to handle large bank failures, it would also be very positive from a contingency planning and moral hazard point of view. With a strong legal framework, the EU would be able to allow investors in even the largest banks to take full financial responsibility.

## Concluding remarks

Tommaso Padoa-Schioppa, the former member of the executive board of the ECB, has remarked that there is no need for a European supervisor if national supervisors can prove that, when needed, they are able to act as one. However, it is hard to see how, in the long run, the EU could avoid establishing an EU financial supervisor. At the moment, supervisors and central banks are spending considerable resources on trying to construct arrangements that will enable them to work and act as one. Why not instead become one, and spend the resources on supervision and monitoring?

It is hard to see how, in the long run, the EU could avoid establishing an EU financial supervisor.

# ■ The Swedish market for balancing liquidity

BY PIA KRONESTEDT METZ

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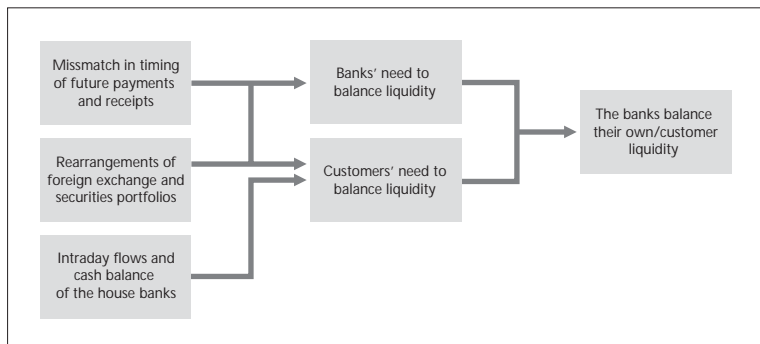
*Banks borrow and lend large sums, with a maturity of up to one week, on their own and customer accounts. This they do because of a temporal imbalance in the daily flows of payments by the banks and customers. Bank fees for borrowing and lending kronor are influenced by the Riksbank's management of interest rates. This article describes how the Swedish market for balancing liquidity functions, the financial contracts that are used and the criteria for pricing the contracts.*

## Balancing internal and external liquidity

All financial operations generate flows of payments. For financial as well as non-financial firms, there is seldom a perfect match in time between future krona receipts and payments, and difficulties also arise in balancing the unforeseen payments that occur during the day on account of customers' business transactions and cash holdings (see Chart 1). Large payment flows are generated, moreover, by bank and customer rearrangements of foreign exchange and securities portfolios.

Financial and non-financial firms form a picture of their payment imbalances by predicting liquidity. These forecasts are used to plan how a liquidity deficit (surplus) will be managed in terms of maturity and type of

**Chart 1. Reasons why financial and non-financial companies need to balance their daily liquidity**



contract. But even with reliable forecasts, there will be unexpected payment flows that call for access at short notice to a liquidity reserve or to borrowing or lending facilities. The ensuing liquidity deficit (surplus) is then managed in the coming days in what is referred to here as the market for balancing liquidity.

The market for balancing liquidity is important not just for firms but also for the implementation of the Riksbank's monetary policy. The formation of interest rates in this market is steered by the Riksbank, which accordingly influences how the market functions. The workings of this segment of the financial market have not been studied extensively before by the Riksbank and the purpose of this article is to make up for that.

Payments in the economy are channelled through the commercial banks, which accordingly have a central role in the market for balancing liquidity. The article therefore begins by describing how major banks handle daily krona imbalances on their internal transaction accounts. A similar balancing of internal liquidity is practiced by many other financial as well as non-financial companies. This is followed by a brief account of the balancing of external krona liquidity between the Riksbank, its primary monetary policy counterparties<sup>1</sup> and other market participants. Finally, there is a presentation of the financial contracts with which an imbalance is managed in the market for balancing liquidity, and the criteria for pricing these contracts. The article is based on interviews with the Riksbank's primary monetary policy counterparties<sup>2</sup>.

The market for balancing liquidity is important not just for firms but also for the Riksbank's monetary policy.

Payments in the economy are channelled through the commercial banks.

## Balancing internal liquidity

Each of the major banks has a central treasury function with responsibility for managing the banking group's deficit or surplus. The treasury function generally acts as an internal bank for the separate entities<sup>3</sup> that make up the group. Its role is to channel liquid funds from operations with a surplus to those with a deficit. If there is still an overall imbalance, this has to be adjusted outside the group. To make this process efficient, the liquidity inherent in the flows of group payments is forecast continuously.

The major banks have a treasury function with responsibility for managing the group's deficit or surplus.

Liquidity is forecast on the basis of known as well as estimated future

<sup>1</sup> The Riksbank's primary monetary policy counterparties (primary dealers) in the fixed interest market are currently ABN Amro Bank, Danske Bank/Consensus, E. Öhman J:or Fondkommission AB, Nordea, SEB, Svenska Handelsbanken and Swedbank (FöreningsSparbanken). Primary dealers are selected on the basis of criteria that ensure sound quality; they are required, for example, to (1) be active in the Swedish fixed interest market (have a sufficient turnover in Swedish treasury and housing paper), (2) be financially sound, and (3) observe sound market practice and industry practice.

<sup>2</sup> The interviews were restricted to primary counterparties with sizeable krona deposits and lending, which means that ABN AMRO Bank and E. Öhman J:or Fondkommission AB are not included in the study.

<sup>3</sup> Examples of separate entities are parent bank, house mortgage institution, finance company, foreign subsidiary and issuing company. The choice of the legal entity to use for a particular type of funding is influenced by the price, regulations and tax considerations, see Sveriges Riksbank (2004), p. 88.



receipts and disbursements in the next one to several months, with a view to identifying sizeable shortfalls or surpluses. The work of predicting the longer run is usually done by the treasury function, leaving the trading function to assess flows and expiries in the coming days. The goal of this work is, of course, to fund deficits as cheaply as possible and to place surpluses at the highest possible return.<sup>4</sup> The range of alternative sources for funding and investing increases with the length of the interval up to the date of the expected deficit or surplus. Mapping borrowing and lending maturities is relatively simple and the same applies to certain major business transactions. Making more detailed predictions for the next few days is more difficult, mainly because daily payment flows are affected by customers' business transactions, which are not always foreseeable. A large proportion of the unforeseen payments stems from portfolio rearrangements by asset managers and other financial participants.

To minimise daily imbalances, the risk-management function sets liquidity limits.

To minimise daily deficits and surpluses, the risk-management function sets liquidity limits for the group as well as for its separate entities. The limits stipulate how much of the predicted flows may be funded in the market for balancing liquidity. The application of these limits differs somewhat between the major banks, but there is generally a ceiling on the size of a liquidity deficit with a given maturity in a given currency. Moreover, a group's limits vis-à-vis individual counterparties restrict the range of alternatives for placing assets. On the other hand, the counterparty limits make it possible to extend credit to individual counterparties without this requiring a decision on each loan.<sup>5</sup> These limits are usually set by the bank's lending function in the light of the customer's debt-servicing ability and the collateral that is available for pledging. The collateral reduces losses in the event of default; unsecured loans therefore represent a larger credit risk.

As a rule, a major bank's treasury function delegates responsibility for short-term borrowing and lending, as well as for the group's cash holdings, to the trading function.<sup>6</sup> The trading function has the continual presence in the market that these operations require. The way in which the trading function balances a deficit or surplus on the group's transaction account varies from case to case. The choice depends on contract prices (see the section on pricing), counterparty and liquidity limits, the possibility of using the bank's liquidity reserve in the form of eligible securities,

<sup>4</sup> See Sveriges Riksbank (2001), p. 57.

<sup>5</sup> Limits tend to be set so that the function in question does not have to decide to increase a counterparty limit just because, on certain days, trade with a particular counterparty happens to be exceptionally high, see Sveriges Riksbank (1999), p. 43.

<sup>6</sup> For operations abroad, the short-term borrowing and lending is similarly delegated to the local subsidiary bank, see Sveriges Riksbank (2004), p. 88.

and the cost of capital cover<sup>7</sup> (which varies with the counterparty). How the trading function chooses between alternative financial contracts is described in more detail further on in this article.

## Balancing liquidity externally

In order to balance deficits and surpluses as efficiently as possible, the major banks, as mentioned earlier, forecast future payment flows as far ahead as possible. They have to cope with daily mismatches in the timing of incoming and outgoing payments, as well as with payment flows that could not be foreseen. The unpredicted flows are generated by customers' business transactions, as well as by rearrangements to foreign exchange and securities portfolios by asset managers and other financial agents. The Riksbank plays a major role in this respect by providing a central payment system, known as RIX<sup>8</sup>. Banks that participate in RIX have access during the day to interest-free loans from the Riksbank, with securities as collateral. Intraday facilities are also available on an interbank basis. When the payment system closes for the day at 5 p.m., each bank's transaction account in the Riksbank has to be balanced. In the event of a deficit or a surplus, the bank borrows or lends overnight in RIX by means of the Riksbank's standing facilities or fine-tuning operations (see the next section).

Market participants that do not take part directly in RIX make their daily transaction account adjustments with their house bank, which in turn adjusts any overall imbalance either interbank or in the Riksbank. Like the Riksbank, the house banks have borrowing and lending facilities for their customers. In addition, the house banks provide other short-term financial contracts (see the next section) for the daily balancing of liquidity.

As the price of overnight borrowing and lending in RIX (or in house banks for non-participants in RIX) is relatively high,<sup>9</sup> the banks prefer to adjust their transaction accounts by trading other short-term financial contracts in the market for balancing liquidity. Thus, the above-mentioned borrowing and lending facilities are final resorts for the daily imbalances that could not be managed in some other way. All financial contracts in the market for balancing liquidity are accordingly used to balance the market participants' transaction accounts and thereby achieve efficient cash management.

RIX participants have access to interest-free intraday loans from the Riksbank, with securities as collateral.

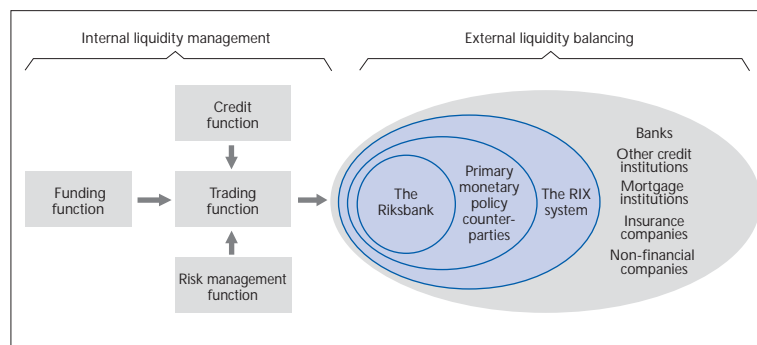
As overnight borrowing and lending in RIX is relatively costly for the banks, they prefer to trade other short-term financial contracts.

<sup>7</sup> The costs for capital cover are affected by the EU capital adequacy standards, which are set out in Basel II (the Basel Agreement).

<sup>8</sup> For a fuller account of how RIX functions, see Sveriges Riksbank (2005).

<sup>9</sup> The interest rate for the Riksbank's standing facilities is 75 basis points above/below the policy rate (the repo rate) and the fine-tuning rate is 10 basis points above/below the policy rate.

Chart 2. The connection between internal liquidity management and external liquidity balancing in the market



■ The bank system = participants in the RIX system with access to the Riksbank's standing facilities. Non-bank credit institutions, VPC (the Swedish CSD), BGC (the bankgiro centre), Stockholm Stock Exchange, and the Swedish National Debt Office participate in the RIX system but not in the bank system.

Chart 2 shows the connection between internal liquidity management by individual market participants and other participants in the market for balancing liquidity.

## Financial contracts in the market for balancing liquidity

Financial contracts are standardised products.

In the market for balancing liquidity, market participants use various types of financial contract to balance their transaction accounts on a daily basis. These contracts are so standardised that buyers and sellers only have to agree on the maturity, the nominal amount and the interest rate. The contracts involve foreign exchange swaps as well as interest-bearing assets, so liquidity is balanced in the fixed interest market and the foreign exchange market. Some contracts call for collateral in the form of underlying securities (treasury and housing bonds, treasury bills and certificates).

In the shortest segment of the market for balancing liquidity, payment commitments are formulated in terms of contracts with a maturity ranging from today to tomorrow (overnight). The division into other maturities in this market is presented below, together with methods for calculating interest and reporting amounts.

Very short maturities are managed with "deposit contracts", repos and short FX swaps.

It does not pay to issue securities specifically for the very short maturities that apply in the market for balancing liquidity. Instead, liquidity is smoothed with "deposit contracts" (DCs),<sup>10</sup> repos and short-term foreign exchange (FX) swaps. During the day, the banks can also resort to the Riksbank's and interbank intraday facilities. In addition, they can partici-

<sup>10</sup> To simplify matters in this article, the term "deposit contract" (DC) is used here for what the market refers to as "deposits".

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## CONVENTIONS IN THE MARKET FOR BALANCING KRONA LIQUIDITY

Day count basis:	Deposit contracts and repurchase agreements, as well as the Riksbank's repos and certificates, actual number of days/360 days per year (Actual/360)
Quotations basis:	Prices/interest rates expressed in decimals
Trade date:	Denoted as T0
Value date:	O/N (overnight) = Today (T0) to tomorrow (T1) T/N (tomorrow/next) = Tomorrow (T1) to the next day (T2) S/N (spot/next) = Day after tomorrow (T2) to the next day (T3) 1w (one week) = Day after tomorrow (T2) to a week thereafter (T2 to T9)

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pate in the Riksbank's monetary policy repo, besides borrowing and lending overnight in the Riksbank.

Chart 3 presents participants and financial contracts in the market for balancing liquidity. The Riksbank's monetary policy repo, fine-tuning and standing facilities are described briefly in this section.<sup>11</sup> The statistics here on DCs and repos do not include non-financial companies because, although these companies are significant players in this market, the available statistics do not catch their operations.

### INTRADAY FACILITIES (INTRADAY CREDIT)

Banks that participate in RIX have access to interest-free intraday credit in the Riksbank, with securities as collateral. The credit ceiling is set by the value of the securities less any deduction (hair cut). The intraday facility is the quickest way – no time lag at all in principle – of obtaining liquidity. If more collateral is needed, securities can be borrowed intraday from another bank up to the time when RIX closes.

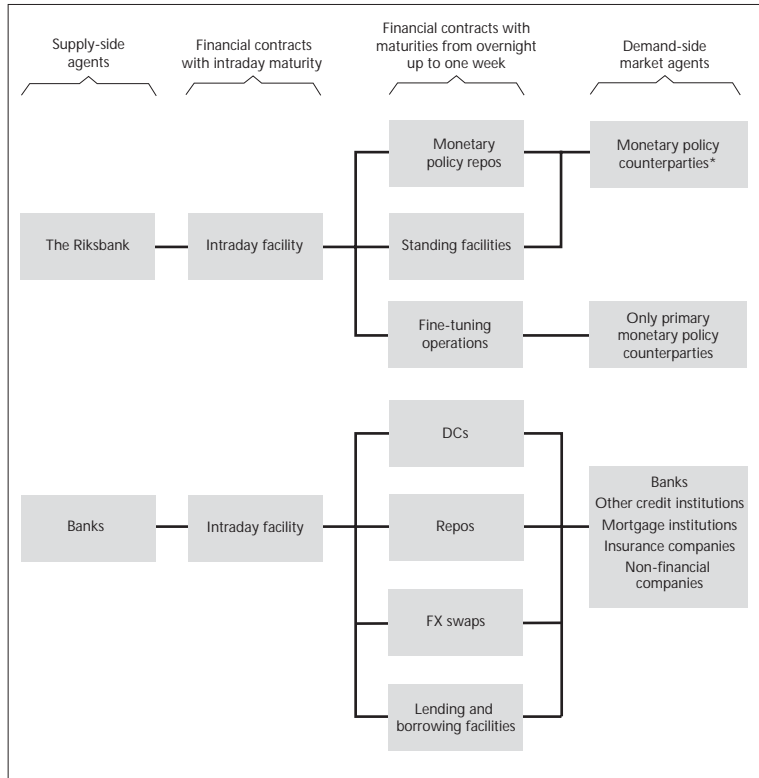
Banks that participate in RIX have access to interest-free intraday credit in the Riksbank, with securities as collateral.

In connection with a lack of collateral for intraday loans from RIX, some banks have an informal agreement whereby no interest is charged on interbank intraday credit. The counterparty limits constitute the ceiling on the volume borrowed by the banks. This facility is used mainly between when RIX opens and the early afternoon, by which time the banks have a picture of any transaction account imbalances. The banks that are parties to the agreement have seldom needed to use the interbank borrowing facility.

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<sup>11</sup> For a fuller account, see Otz (2005).

Chart 3. Participants and financial contracts in the market for balancing liquidity



\* The Riksbank's current monetary policy counterparties are: ABN Amro Bank, Citibank, Calyon, Danske Bank/Consensus, DNB NOR Bank, E. Ohman J:or Fondkommission AB, Länsförsäkringar Bank, Nordea, SEB, Skandiabanken, Svenska Handelsbanken and Swedbank (FöreningsSparbanken). Five of these counterparties have chosen not to participate in the monetary policy repos

### MONETARY POLICY REPOS

The Riksbank's weekly monetary policy repo can be used by banks to borrow against securities as collateral.

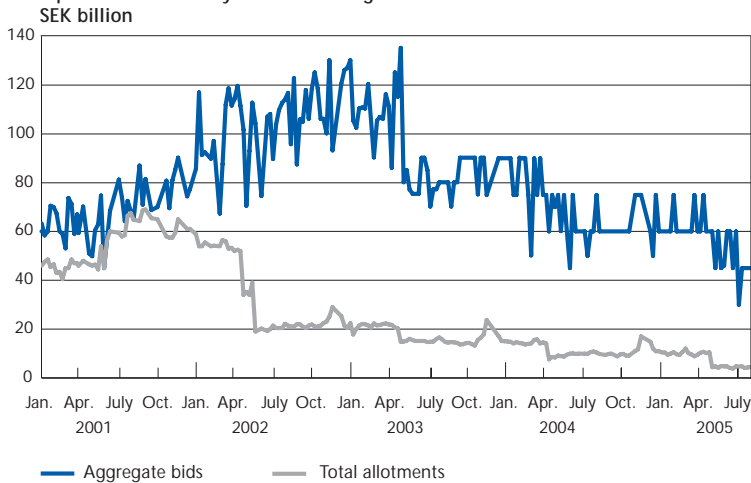
The Riksbank's weekly monetary policy repo, in which the banks submit bids for the allotment they require, provides the banking system as a whole with an opportunity of borrowing against collateral in the form of securities.<sup>12</sup> The Riksbank sets the minimum bid at SEK 200 million and the maximum at SEK 15 billion. A bank's decision whether or not to bid in a monetary policy repo depends on its (or its customers') liquidity requirement. The volume of bids is rather generalised, however, because banks that decide to participate, usually bid for the maximum amount.

Figure 1 shows the total sums bid by the banks in monetary policy repos, in relation to the Riksbank's total allotments. The banks usually bid for SEK 15 billion because, with the Riksbank's allotment procedure,<sup>13</sup>

<sup>12</sup> The size of monetary policy repos is dictated in large measure by changes in the general public's demand for notes and coins.

<sup>13</sup> The allotment to each bank is calculated by multiplying the bank's bid by the Riksbank's allotment percentage, defined as the amount of the monetary policy repo divided by the sum of all the banks' bids.

Figure 1. Aggregate bids and total allotments in the Riksbank's monetary policy repos from 30 January 2001 to 30 August 2005



Note. Factors behind the fall in allotments for the Riksbank's monetary policy repos between May and June 2002 were the transfer to the Treasury of approximately SEK 7 million of the Riksbank's earnings, and an extraordinary transfer by the Riksbank of SEK 20 billion to the Treasury.

Source: The Riksbank.

banks seldom obtain the full amount of their bids. This bidding behaviour ensures that the banks are able to borrow the maximum amount in relation to the Riksbank's allotment percentage, which during 2004 averaged 17 per cent.

#### FINE-TUNING OPERATIONS

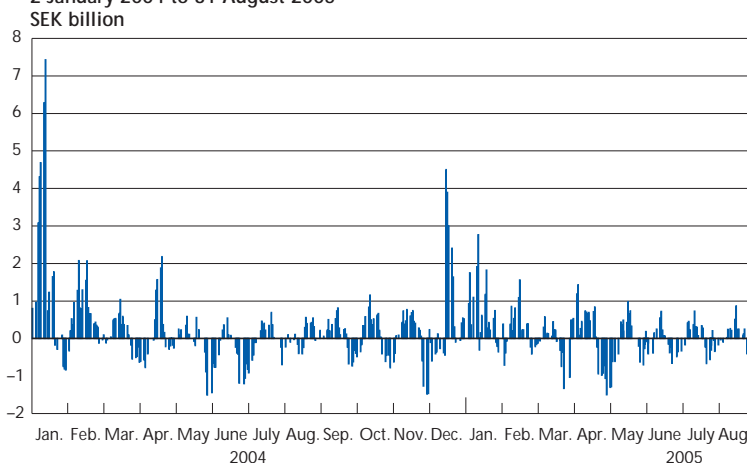
When the banking system as a whole has a day-end deficit or surplus vis-à-vis the Riksbank, participation in the Riksbank's fine-tuning operations is restricted to the primary monetary policy counterparties that likewise have a deficit or a surplus.<sup>14</sup> Thus, in the event of an overall surplus in the banking system, banks with a deficit are debarred from participating in the Riksbank's fine tuning.

The banking system's position vis-à-vis the Riksbank is fine-tuned by Riksbank on a (virtually) daily basis (see Figure 2). The adjustments are very small compared with the volumes of DCs and repos in the market for balancing liquidity. During 2004, the amounts deposited in the Riksbank at the fine-tuning rate averaged about SEK 790 million and amounts bor-

Riksbank fine-tuning operations involve small amounts compared with the volumes of DCs and repos.

<sup>14</sup> Fine tuning is done because the daily outcome of the banking system's lending to or borrowing from the Riksbank is liable to differ from the Riksbank's forecasts over the duration of a monetary policy repo. Explanations for the difference may be that the Riksbank predicts the banks' lending and borrowing requirements over the duration of a repo rather than for single days, and that the forecasts may be based on faulty assessments.

Figure 2. Borrowing and lending in the Riksbank's fine-tuning operations from 2 January 2004 to 31 August 2005



Note. Positive bars represent deposit lending in the Riksbank by its primary monetary policy counterparties; negative bars are borrowing by these counterparties.

Source: The Riksbank.

rowed averaged approximately SEK 480 million. Fine-tuning operations are largest in connection with the Christmas and New Year holidays. The maturities of monetary policy repos are then longer than usual, accompanied by large withdrawals and returns of notes and coins.

#### STANDING FACILITIES

Standing facilities comprise even smaller amounts than fine-tuning operations.

If there is an imbalance on a bank's transaction account in the Riksbank when RIX closes for the day, at the same time as the banking system as a whole is balanced vis-à-vis the Riksbank, the deficit or surplus is adjusted overnight in the Riksbank's standing facilities. With the Riksbank's system for steering interest rates, the amounts in the standing facilities are even smaller than those in fine-tuning operations. During 2004, borrowing from the Riksbank at the facility rate averaged approximately SEK 22 million and lending to the Riksbank averaged about SEK 70 million. These amounts are so relatively small that the banking system as a whole can be said to have been balanced. The lows in borrowing from the Riksbank and the highs in lending are typically due to primary monetary policy counterparties choosing not to participate in fine-tuning operations. Such situations occur when a bank considers that the additional costs for borrowing from or lending to the Riksbank at the fine-tuning rate are exceeded by its administrative costs for taking part in the balancing of liquidity.

Deposit contracts (DCs) standardise borrowing and lending both interbank and vis-à-vis customers at predetermined interest rates and maturities, without requiring underlying collateral. The borrowing is not unrestricted since the banks' counterparty limits set the ceiling. DCs affect the bank's balance sheet as well as its capital requirement, depending on the recipient.<sup>15</sup>

The maturity of DCs is chosen with reference to the market participants' inward and outward payment flows in the days ahead. The major banks assess that up to 90 per cent of DCs are traded with maturities up to two days (O/N and T/N), but maturities up to one week are also used. Overnight DCs (O/N) are used interbank as well as with customers. The interbank segment serves as a last resort during the day to manage a deficit or surplus on accounts that could not be balanced some other way. For administrative reasons, foreign participants usually use DCs from tomorrow to the day after (T/N) to cover their krona liquidity requirements.

Market participants do not usually use DCs for borrowing or lending with a maturity of more than one week because, for longer maturities, this type of contract is relatively more expensive than other financial contracts. Moreover, banks and large participants have their own securities programmes for borrowing or lending liquidity at longer maturities, though banks do provide longer DCs on request.

Besides krona contracts, DCs in the market for balancing liquidity are denominated in other currencies. Foreign currency may, for example, be borrowed on a DC from a bank in the country in question and then converted into Swedish kronor by using FX swaps.

Figure 3 shows Swedish and foreign credit institutions volume stocks of krona DC lending with a contracted maturity up to one Swedish bank day.<sup>16</sup> As statistics on volume stocks are not available for maturities from tomorrow up to one week (T/N, S/N and 1w), the figure is not a complete picture of DC lending in the market for balancing liquidity. The average level of krona DC lending by all credit institutions has been relatively constant since January 2002. It will be seen from the figure that the greater part of the krona DC lending occurs between Swedish credit institutions, for which the level during 2004 averaged about SEK 120 billion.

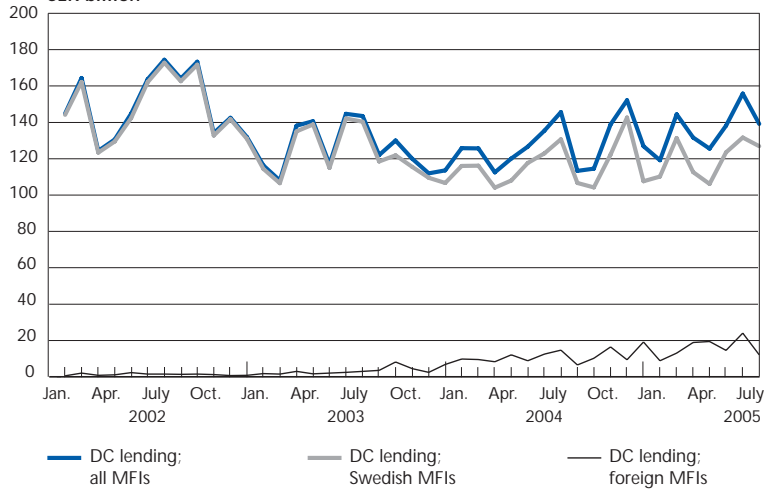
Deposit contracts standardise borrowing and lending both interbank and vis-à-vis customers at predetermined interest rates and maturities, without requiring collateral.

<sup>15</sup> Every loan via a DC affects the capital requirement to an extent that depends on the counterparty risk.

<sup>16</sup> Swedish credit institutions report their volume stocks of DC lending in specified currencies on a monthly basis to Statistics Sweden, which compiles the financial market statistics. The reporting institutions do not use a uniform definition of a Swedish bank day. The most common interpretation is that a Swedish bank day comprises DC lending with an overnight maturity but two major banks state that their reports comprise T/N as well as O/N maturities.



Figure 3. MFIs' outstanding volumes of month-end DC lending in SEK from 31 January 2002 to 31 July 2005  
SEK billion



Note. MFI=monetary financial institution, that is, banks, mortgage institutions and finance companies that accept deposits or close substitutes from others (not just other MFIs) and on their own account provide credit or invest in securities. The inclusion in the statistics as of December 2003 of EU counterparties is mirrored in the increase in foreign MFIs' deposit lending.

Source: Statistics Sweden.

The figure does not show the volume stocks of DC borrowing because, in principle, the sum of this borrowing by Swedish and foreign credit institutions should match the lending by the same sector.<sup>17</sup>

## REPOS

A repo involves agreeing to buy or sell securities in exchange for liquidity.

A repo (repurchase agreement) is an undertaking to sell a security in exchange for liquidity and simultaneously agreeing to buy back the security at an agreed price on a given future date. A repo transaction accordingly consists of two parts: a (spot) sale and a (forward) agreement to repurchase at a later date. The opposite – buying a security in exchange for liquid funds and agreeing to sell it back at a later date – is known as a reverse repo. Unlike the case with DCs, using repos to obtain liquidity requires a stock of eligible securities. On the other hand, repos are not restricted by the limits which apply in the DC market.

A repo can be likened to a loan against collateral over the life of the repo.

A repo can be likened to a loan against collateral over the life of the repo, just as a reverse repo can be said to be a loan of securities against collateral in cash. Pledged securities are not for sale during the period of a

<sup>17</sup> DC borrowing and lending do not balance for all credit institutions for reasons that cannot be discerned in Statistics Sweden's financial market statistics. Further analysis is needed to clarify the difference but lies outside the purpose of this article.

repo. If the borrower is unable to meet the commitment at the end of the period, ownership of the securities is transferred to the lender, so the lender's counterparty exposure is minimal.

All securities that are traded in the fixed interest market are, in principle, eligible as repo collateral. The market in treasury bonds and bills is highly liquid and risk is low. The composition of security portfolios varies among financial as well as non-financial companies; repo trading is therefore facilitated by the fact that counterparties do not always have to know exactly which treasury bonds and bills are included in a repo. The collateral in such repos is fully satisfactory and is known as general collateral (GC). If, for some reason, the market perceives a shortage of a particular security, repos with such collateral may be labelled "specials",<sup>18</sup> in which case the counterparty handles the repo separately. Repos where the underlying securities are less liquid and/or carry a higher risk than treasury bonds and bills are typically specials.

The major banks estimate that repos are traded to 90 per cent with maturities of not more than one week. In Sweden, overnight repos (O/N) are used interbank as well as with customers. These repos are usually completed earlier in the day than DCs and FX swaps because they require more administration. Swedish bank customers use repos mainly overnight to balance a transaction account surplus.

Repos have to be registered in the course of the day with Värdepapperscentralen (VPC, Sweden's central securities depository). A trade presupposes that the security is transferred, because VPC does not permit overnight short selling of securities. There is a penalty charge for repo transactions that are performed incorrectly. For administrative reasons, foreign market participants therefore prefer to do repos from tomorrow to the next day (T/N).

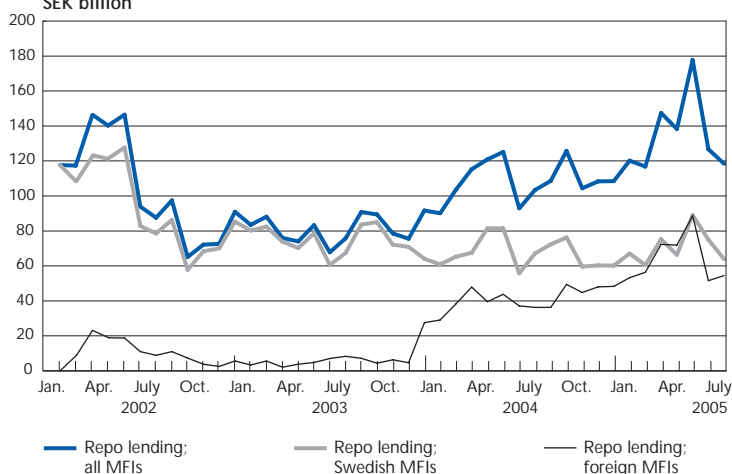
Figure 4 shows Swedish and foreign credit institutions' volume stocks of krona repo lending.<sup>19</sup> The statistics do not give a breakdown of the repos by maturities but, as mentioned, the major banks state that most repos have a maturity of not more than one week. Swedish credit institutions had a relatively constant average level of krona repo lending from January 2002 to July 2005. During 2004, repo lending averaged approximately SEK 70 billion. Volume stocks of repo borrowing are not shown in the figure because, in principle, this borrowing should match the same

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<sup>18</sup> Securities may be hard to come by in some periods, for example at quarter, half-year and year ends. Alternatively, market participants who have purchased a security may choose not to trade it, which affects the supply of that security. If demand for a security rises without a corresponding increase in the supply, the price will go up (what is known as a squeeze).

<sup>19</sup> Swedish credit institutions report their volume stocks of repo lending in specified currencies on a monthly basis to Statistics Sweden, which compiles the financial market statistics.

Figure 4. MFIs' outstanding month-end volumes of repo lending in SEK from 31 January 2002 to 31 July 2005  
SEK billion



Note. MFI=monetary financial institution, that is, banks, mortgage institutions and finance companies that accept deposits or close substitutes from others (not just other MFIs) and on their own account provide credit or invest in securities. The inclusion in the statistics as of December 2003 of EU counterparties is mirrored in the increase in foreign MFIs' repo lending

Source: Statistics Sweden.

sector's repo lending.<sup>20</sup> The stocks of repos in the market for balancing liquidity are considerably larger than the Riksbank's monetary policy repos.

#### FX SWAPS

An FX swap involves the spot purchase of a currency and the forward sale of the same currency on an agreed future date.

A daily transaction account deficit or surplus can also be balanced with FX swaps of different maturities. An FX swap is an undertaking to buy currency in the spot market and sell back the same currency in the forward market on an agreed future date. A market participant with, for example, a kronor payments deficit can obtain kronor by borrowing foreign currency in the spot market and exchanging this currency for kronor. To avoid exchange risk, the foreign currency is sold simultaneously for kronor in the forward market. In the case of a kronor payments surplus, the transactions are done in the reverse order. FX swaps are standardised, so those who use them do not have to perform all the transactions themselves.

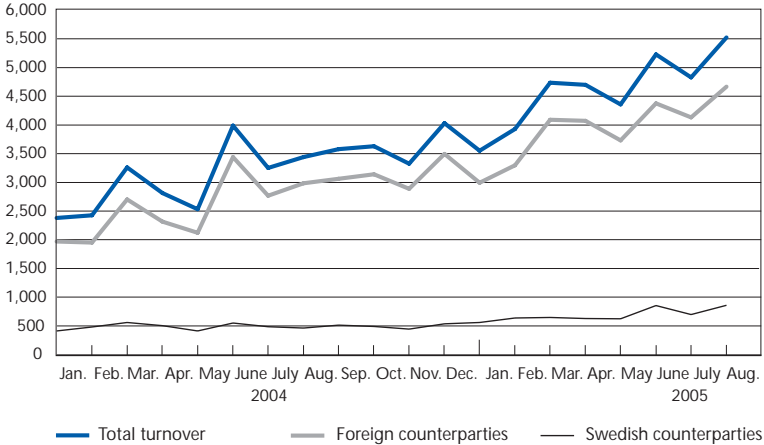
Financial and non-financial companies use FX swaps overnight (O/N) to balance their transaction accounts at the end of the day. The major banks estimate that FX swaps are traded to 80 per cent with maturities up

<sup>20</sup> Repo borrowing and lending do not balance for all credit institutions for reasons that cannot be discerned in Statistics Sweden's financial market statistics. Further analysis is needed to clarify the difference but lies outside the purpose of this article.

to two days (O/N and T/N). In the case of foreign participants, the shortest maturity as a rule is from tomorrow to the next day (T/N), both for technical reasons to do with settlements and because it is then easier to match opposing currency interests.

As FX swaps with different maturities are not included in Statistics Sweden's financial market statistics, the extent of these contracts has to be illustrated instead with the Riksbank's turnover statistics for the foreign exchange market. The latter do not provide information about the size of the stocks that represent the market for balancing liquidity but do indicate the level of activity in this market.<sup>21</sup> The turnover statistics are restricted to swap transactions, with Swedish kronor as one of the components, by the Riksbank's foreign exchange counterparties<sup>22</sup> mutually and with their counterparties. Figure 5 shows the total monthly turnover of this group of counterparties in short FX swaps (O/N and T/N) in the Swedish foreign exchange market. During 2004, this group's average turnover in FX swaps with Swedish counterparties amounted to 15 per cent of the total average turnover with all counterparties (approximately SEK 3,800 billion per month). Thus, a majority of the counterparties in FX swaps were foreign participants. The currency pair with the largest turnover was SEK/USD.

**Figure 5. Monthly turnover of short-term FX swap transactions by the Riksbank's foreign-exchange policy counterparties mutually and with their counterparties from 1 January 2004 to 1 August 2005**  
SEK billion



Source: The Riksbank.

<sup>21</sup> About two-thirds of trading in the foreign exchange market is interbank trading, see Sveriges Riksbank (2005), p. 37.

<sup>22</sup> The Riksbank's foreign exchange policy counterparties are ABN AMRO Bank, Calyon, Citibank, Danske Bank, Deutsche Bank, JP Morgan Chase Bank, Nordea, SEB, Svenska Handelsbanken, Swedbank (FöreningsSparbanken) and UBS AG.

## Choosing financial contracts for balancing liquidity

The trading function of each major bank manages financial contracts in the market for balancing liquidity on behalf of the bank and its customers. It is difficult to tell just who initiates a transaction because customer business tends to generate interbank trading to neutralise customer positions. As mentioned earlier, the trading function has considerable freedom to choose which financial contracts will be used for the daily balancing of the bank's transaction account. The trading function may also provide bank customers with recommendations for balancing liquidity.

The choice of a particular financial contract depends on whether the daily deficit or surplus is either large or small and temporary.

The trading function's choice of a particular financial contract depends on whether the daily deficit or surplus – after liquidity has been balanced internally – is either large or small and temporary (see Chart 4). A deficit or surplus that is sizeable or likely to continue for some time is managed with DCs, FX swaps and repos. If the transaction account imbalance is small or short-lived, either the market for balancing liquidity or the Riksbank is chosen. Amounts that are borrowed from or lent to the Riksbank represent the residual of the trading function's operations.

The trading function then selects a maturity for the borrowing or lending with which the daily deficit or surplus is to be balanced. As predictions of liquidity one week ahead are uncertain, the trading function has to estimate when and to what extent future receipts and payments are likely to offset the borrowing or lending. When managing liquidity, however, the trading function typically prefers the shortest possible maturity, both for technical reasons to do with settlements and because it is then easier to match opposing currency interests.

When it comes to deciding how to manage the bank's transaction account imbalance, the trading function tends to choose the financial contract that gives the best price subject to given counterparty limits. The price is affected by numerous factors and a complete account of them would go beyond the purpose of this article. The primary factor behind the price is the Riksbank's repo (policy) rate because it sets the general price level for contracts. This factor is considered in the next section. Another factor behind contract prices is that banks which are frequent participants in the market for balancing liquidity obtain better prices from counterparties than banks that are less active (name recognition). A large imbalance on interbank liquidity flows in markets in Sweden as well as abroad may also affect prices.

However, the choice of financial contract for balancing liquidity is not invariably determined by the best price. The trading function may, for example, want to use FX swaps as much as possible in order to lower counterparty risk. Neither are contract prices decisive for the trading func-

tion when it comes to adjusting balance sheets (at month, quarter and year ends). On such occasions, contracts are chosen so that the bank's transaction account is balanced as simply as possible with reference to liquidity reserves, counterparty limits, balance-sheet considerations and the cost of capital cover.

The best price is not always decisive for the choice of financial contract for balancing liquidity.

The balance sheet is affected when the trading function chooses DCs or repos, whereas this is not the case with FX swaps. The cost of capital cover<sup>23</sup> may have to be taken into account when adjusting the balance sheet, though this cost is marginal for the shortest maturities (O/N and T/N). If the cost of capital cover is to be held constant, repos or FX swaps are chosen instead of DCs.

Liquidity reserves can be used, as mentioned earlier, by the trading function to adjust a daily imbalance with the aid of the bank's foreign exchange and securities portfolios. Unlike the case with DCs, this avoids encroaching on the bank's counterparty limits. As a FX swap is just an exchange of currencies, the impact on counterparty limits is marginal.<sup>24</sup> Neither do such transactions require any collateral. Using FX swaps to adjust the bank's transaction account deficit is appropriate when counterparty limits are fully utilised with the counterparty that has an equivalent surplus and therefore cannot accept additional exposure to credit risk. Repos do not affect a bank's counterparty limits either, but using them to manage a transaction account deficit calls for collateral.

Chart 4 presents a schematic picture of the trading function's decision-making process.

## Pricing in the market for balancing liquidity

Prices for the financial contracts presented above influence how market participants choose to adjust their daily transaction account imbalances. The general starting points for setting contract prices are outlined in this section.

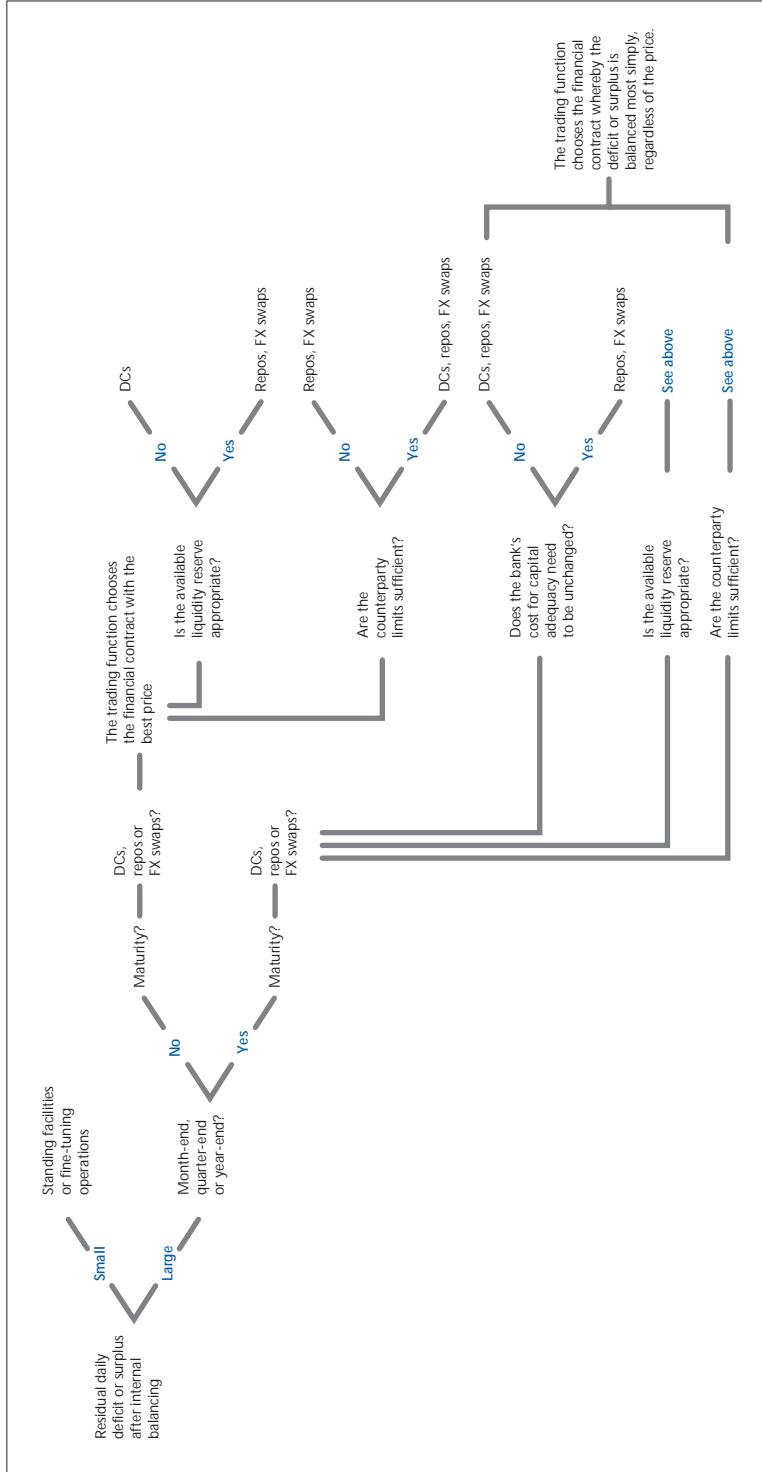
### THE BANKING SYSTEM'S SHORT-TERM REFERENCE INTEREST RATES

The pricing of financial contracts in the market for balancing liquidity is steered by the Riksbank via its overnight deposit and lending rates in RIX.

<sup>23</sup> The costs for capital cover are affected by the EU capital adequacy standards, which are set out in Basel II (the Basel Agreement).

<sup>24</sup> FX swaps do, however, entail a settlement risk (the risk that the counterparty fails to deliver the agreed currency). This risk can be so large that it dissuades the trading function from making the contract with that counterparty.

Chart 4. How the trading function chooses between financial contracts in the market for balancing liquidity



The Riksbank's aim is to fulfil the primary objective of monetary policy (price stability).<sup>25</sup> This steering is done by using the repo (policy) rate to signal what the overnight market rate (the O/N rate) will be during the life of the current monetary policy repo (normally one week). As the overnight rate is the last resort as an alternative to borrowing or lending with longer maturities, it affects the formation of interest rates throughout the economy.

While the repo rate serves as a reference rate for the overnight rate, it is the Riksbank's fine-tuning operations that hold the overnight rate close to and stable around the repo rate (see Figure 6). Banks use the overnight rate as a reference rate for the daily adjustment of their transaction account imbalances. The interest rate for the Riksbank's fine-tuning operations is the repo rate  $\pm 10$  basis points. In the market for balancing liquidity, this rate represents the marginal cost for balancing liquidity overnight.

When an adjustment to a daily transaction account imbalance is needed in the interval from tomorrow up to one week (T/N, S/N and 1w), market participants use the reference rate that mirrors expectations of the future repo rate. For these maturities the reference rate is Stibor (one week)<sup>26</sup>. From Figure 6 it is evident that the Riksbank's reference rate steers the banks' T/N rate. The overnight (O/N) rate is not shown here because, as it is so close to and stable around the repo rate, the Riksbank does not record it in the form of daily statistics. The overnight rate is used in turn as the reference rate for calculating the interest rates for customer borrowing and lending facilities as well as the overnight prices for DCs, FX swaps and repos.

The banks' transaction account deficits with the Riksbank are also balanced in the course of the day. Intraday loans are provided free of interest, with securities as collateral. Some banks provide each other with interest-free intraday loans on an informal basis but charge a fixed fee that mirrors the alternative cost of borrowing from the creditor bank. Thus, no reference rate is used for intraday borrowing in the market for balancing liquidity.

Banks use the overnight interest rate as a reference rate for the daily adjustment of their transaction account imbalances.

When an adjustment to a daily transaction account imbalance is needed in the interval from tomorrow up to one week, the reference rate is Stibor.

In principle, no reference rate is used for interbank intraday loans.

## THE BANKS' EXTERNAL SHORT-TERM INTEREST RATES

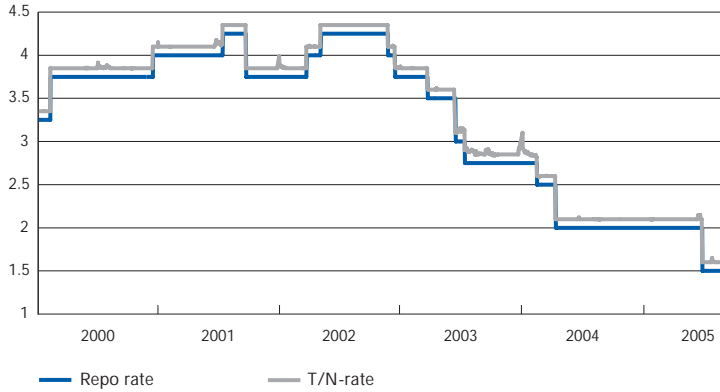
The internal interest rate is the rate the major banks use to steer internal liquidity. Various considerations may lie behind the internal interest rate;

<sup>25</sup> For a fuller account of how the Riksbank manages interest rates with a view to fulfilling monetary policy's primary objective, see Otz (2005).

<sup>26</sup> Stibor (Stockholm Interbank Offered Rate) is a reference rate that is computed from Swedish deposit rates for different maturities. Stibor is quoted T/N, 1W and one, two, three, six, nine and twelve months.



Figure 6. Repo and T/N-interest rates from 3 January 2000 to 31 August 2005  
Per cent



Note. The T/N rate is the rate from tomorrow to the next day.

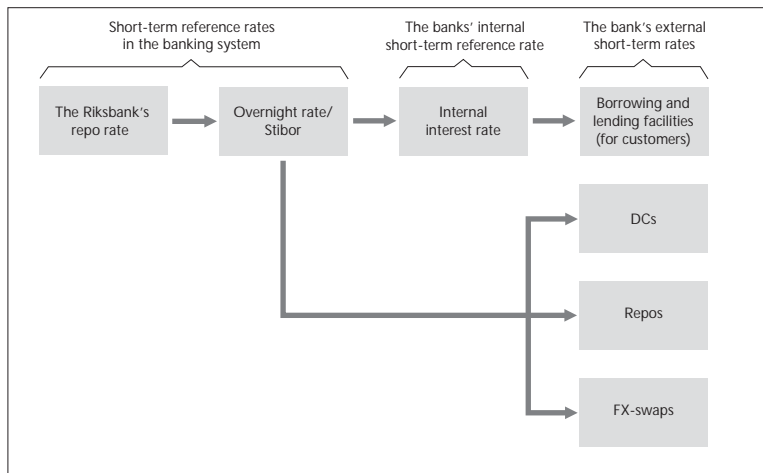
Source: The Riksbank.

to mirror the cost of overnight borrowing, the reference rate is usually the overnight rate (see Chart 5). For maturities from tomorrow up to one week (T/N, S/N and 1w), the reference rate is often Stibor (one week). The major banks' internal rate serves as a benchmark in the calculation of interest rates for short-term customer deposits and loans. Conventional mark-ups for credit risk, administrative costs and so on are added, with the overnight and the Stibor rates as the base.

Bank prices for DCs, FX swaps and repos influence how participants arrange the daily adjustment of transaction account imbalances.

Bank prices for DCs, FX swaps and repos influence how participants arrange the daily adjustment of transaction account imbalances. The banks generally consider that the Riksbank has been successful in maintaining a balance vis-à-vis the banking system, which does away with the risk of being forced to use the Riksbank's deposit and lending facilities at

Chart 5. Reference interest rates in the market for balancing liquidity



rates that are unfavourable for the banks. This creates a sense of security for all market participants, with the result that the overnight rate remains stable and close to the repo rate. When setting prices for DCs, FX swaps and repos, the banks therefore start from the Riksbank's repo rate. With the repo rate or Sibor as the base, contract prices are marked up for risk (credit, counterparty and liquidity risks), maturity, nominal amount and so on. Annex 1 summarises information about the major banks' general view of prices for DCs, FX swaps and repos.

The Riksbank's fine-tuning operations have paved the way for an informal interbank arrangement – a “gentlemen's agreement” – to assist one another in overnight (O/N) borrowing and lending, to everyone's benefit.<sup>27</sup> In this way, the interbank rate (the overnight rate) does not differ from the repo rate. That in turn affects the picture of prices for DCs, FX swaps and repos. The low level of prices for all financial contracts in the market for balancing liquidity means that there are no sizeable profits to be made in this market, though contract prices do need to cover administrative costs. Instead, the major banks focus on balancing liquidity as simply as possible at the best possible price. Thus, a bank with a substantial overnight liquidity surplus, instead of using this position to benefit from other banks that have a sizeable deficit, lends the funds at the repo rate. The major banks consider that overnight market volatility will remain very low as long as the Riksbank continues to steer interest rates in the same way as at present and accordingly balances the banking system's position vis-à-vis the Riksbank by means of fine-tuning operations.

The Riksbank's fine-tuning operations create a situation whereby the banks can assist one another to everyone's benefit.

## Summary

Financial operations generate flows of payments. As it is not possible to form an exact picture of all future payment commitments, there is liable to be a mismatch in the timing of payment inflows and outflows. Market participants forecast liquidity in order to plan payment flows as reliably as possible, so that transaction account imbalances can be minimised. Any daily deficit or surplus is smoothed by means of various financial contracts with a maturity of one week. In addition to DCs, FX swaps and repos, banks that participate in RIX have access for this purpose to the Riksbank's overnight deposit and lending facilities. For RIX participants, moreover, the Riksbank offers interest-free intraday credit against collater-

<sup>27</sup> The fine-tuning operations mean that a bank with a transaction account deficit (surplus) can be certain that the other banks as a group have an equivalent surplus (deficit). There is no incentive to deviate from the repo rate as the price for overnight balancing of liquidity because a bank cannot tell how its position will change from day to day. It does not pay to raise the price (the interest rate) of an overnight loan on days when a bank has a surplus because on other days the bank may find itself managing a deficit.

al, which facilitates liquidity adjustments. Some banks also have access to interest-free interbank intraday borrowing and lending. Non-RIX participants adjust their transaction accounts in a similar manner, except that this is done vis-à-vis the house bank and usually without access to intraday funds.

All short-term liquidity adjustments are done in what this article refers to as the market for balancing liquidity. Even though market participants plan the management of liquidity well in advance and strive to restrict the use of short-term financial contracts, turnover in this market is very large. This is because the unforeseen payment flows are also considerable and mostly stem from customer transactions and from rearrangements of foreign exchange and securities portfolios by asset managers and other financial participants.

The major banks perceive the market for balancing liquidity as being highly efficient, as indicated by very low interest-rate volatility.

Does this article's description of short-term financial contracts and the conditions for setting their prices warrant any observations about the efficiency of the Swedish market for balancing liquidity? The market participants who were interviewed, consider that the very low interest-rate volatility indicates that the market is highly efficient. This is because the Riksbank's system for steering interest rates is constructed so that in the management of daily transaction account imbalances, market participants turn in the first place to one another and use an interest rate that is close to the Riksbank's repo rate. The Riksbank's fine-tuning operations ensure that no agent is left involuntarily with a large overnight liquidity imbalance that has to be managed at an unfavourable interest rate. The fine tuning also means that prices for DCs, FX swaps and repos are set at or close to the repo rate and that their volatility is very low. The system for steering interest rates is so predictable that market participants can rely on liquidity facilities always being available in the market for balancing liquidity. The system is implemented so that the balancing of liquidity is managed in the market as far as possible and that the role of the Riksbank is confined to what is required to steer interest rates. Briefly, as the volatility of all contract prices is low and the amount of borrowing and lending in the standing facilities is relatively small, the market for balancing liquidity can be said to function well.

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## Annex 1. A general picture of the turnover and pricing of deposit contracts (DCs), repos and FX swaps \*

Financial contract	Affects balance sheet		Maturity				
			O/N (T0 to T1)	T/N (T1 to T2)	S/N (T2 to T3)	1W (T2 to T9)	
Deposit contracts (DCs)	Yes	Traded mainly by:	Swedish banks and customers (foreign agents that have an SEK account)	All Swedish and foreign agents	All Swedish and foreign agents	All Swedish and foreign agents	
		Turnover	These maturities are used for 90 per cent of total DC turnover				
		Typical amount per transaction	SEK 0.5–2 billion				
		Reference rate for price	Overnight rate = repo rate	Repo rate and, where applicable, Stibor			
		Pricing	The price of DCs is stable and at or close to the repo rate, that is, 0.5 basis points above/below the repo rate for borrowing/lending		The price of DCs is stable and close to the repo rate, that is, one or some basis points above the O/N and T/N rates		
Repos	Yes	Traded mainly by:	Swedish banks and customers (lending)	All Swedish and foreign agents	All Swedish and foreign agents	All Swedish and foreign agents	
		Turnover	These maturities are used for 90 per cent of total repo turnover				
		Typical amount per transaction	SEK 0.5–5 billion				
		Reference rate for price	Overnight rate = repo rate	Repo rate and, where applicable, Stibor			
		Pricing	Repos are traded at rates that are stable and close to the repo rate. As repo loans are collateralised, the price is one or some basis points below the DC rate. The price range over maturities up to one week is minor. Repo prices are also affected by the price of underlying securities. Every security is priced uniquely, depending on the yield curve; a high price on the yield curve tends to make borrowing the security expensive and vice versa. Securities are typically chosen among those that are highly liquid. Strong demand for a security, giving rise to a squeeze, usually leads to a better price for lending the security in a repo. As a result, market participants prefer repos with a short maturity because if demand for a security rises while the security is included in a repo, the lender is not in a position to benefit from the price rise.				

FX swaps	No	Traded mainly by	Swedish banks and customers	All Swedish and foreign agents	All Swedish and foreign agents	All Swedish and foreign agents	
		Turnover	These maturities are used for 80 per cent of total FX swap turnover				
		Typical amount per transaction	SEK 0.5–2 billion				
		Reference rate for price	Overnight rate = repo rate	Repo rate and, where applicable, Stibor			
		Pricing	FX swaps are traded with a very narrow spread around the repo rate. The swap price for a currency pair rises by approximately one basis point per day in the market for balancing liquidity. As spreads mirror the differential between the Swedish and the relevant foreign interest rate, prices are affected by expectations of future interest rates in the foreign country. The price of FX swaps with a maturity from tomorrow to the next day (T/N) fluctuates more than the overnight price (O/N) because, for administrative reasons, foreign agents typically choose FX swaps with the former maturity. The price of FX swaps is sometimes below the repo rate because a foreign bank has a large surplus in its national currency and therefore offers a lower price than other participants for this currency. A Swedish market participant can purchase the currency via the international deposit market and then swap it for kronor.				

\* The information presented here consists of estimates of prices and turnover in the market for balancing liquidity, based on interviews with the Riksbank's primary monetary policy counterparties.

### *Direct investment in Sweden and abroad*

The Riksbank's annual survey of direct investment, published on 8 November 2005, shows that the value of Swedish direct investment abroad increased by SEK 102 billion in 2004, while the value of foreign direct investment in Sweden rose by SEK 172 billion.

The value of Swedish direct investment assets abroad at the end of 2004 totalled SEK 1,400 billion. The largest asset holdings were in the United States and Finland. Foreign direct investment assets in Sweden amounted to SEK 1,316 billion. The largest owners were companies in the United States and the Netherlands.

Income on Swedish-owned assets abroad in 2004 totalled SEK 141 billion, while income on foreign-owned assets in Sweden amounted to SEK 92 billion. Income on direct investment in 2004 thus generated a positive contribution of SEK 49 billion to the current account.

A full report can be found on the Riksbank's website, [www.riksbank.se](http://www.riksbank.se), under Statistics/Balance of Payments/Surveys.

### *Riksbanken inleder samarbete med externa forskare om växelkursers bestämningsfaktorer*

Riksbanken har inlett samarbete med externa forskare för att komplettera bankens löpande studier med en bredare och djupare analys av kronans utveckling och bestämningsfaktorer.

För att öka kunskapen om såväl kortsiktiga som långsiktiga variationer i kronan har Riksbanken bett experter granska, förutom traditionella frågor som tillväxtens, inflationens och bytesbalansens betydelse för valutakursen, även mer mikroekonomiska aspekter på valutamarknaden. Det handlar bland annat om drivkrafterna bakom företagens direktinvesteringar och andra kapitalflöden mellan olika länder samt användningen av olika valutor i prissättning och betalningar.

Riksbanken har inget mål för växelkursen, men kronan är tillsammans med en rad andra faktorer som inflationsförväntningar, löner, produktivitet, efterfrågeutveckling och resursutnyttjande en viktig faktor för inflationsprognoserna. Resultatet av projektet kommer att redovisas andra halvåret 2006.

De externa forskare som hittills knutits till projektet är: Nicolas Coeurdacier och Philippe Martin, Université Paris-I-Panthéon-Sorbonne; Richard Friberg och Fredrik Wilander, Handelshögskolan i Stockholm; Galina Hale, Yale University; Ethan Kaplan, UC Berkeley och Institutet för internationell ekonomi vid Stockholms universitet; Philip Lane, University of Dublin; samt Dagfinn Rime, Norges Bank.

## ■ Monetary policy calendar

- 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 The *reference rate* is confirmed by the Riksbank at 4.0 per cent for the period 1 January 2003 to 30 June 2003.
- 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.
- 06-30 The *reference rate* is confirmed by the Riksbank at 3.0 per cent for the period 1 July 2003 to 31 December 2003.
- 07-04 The Riksbank decides to lower the *repo rate* from 3.0 per cent to 2.75 per cent, to apply from 9 July 2003. Furthermore, the Riksbank decides that the *deposit* and *lending rates* shall be adjusted to 2.00 per cent and 3.50 per cent respectively.



- 2004-01-01 The *reference rate* is confirmed by the Riksbank at 3.0 per cent for the period 1 January 2004 to 30 June 2004.
- 02-06 The Riksbank decides to lower the *repo rate* from 2.75 per cent to 2.50 per cent, to apply from 11 February 2004. Furthermore, the Riksbank decides that the *deposit* and *lending rates* shall be adjusted to 1.75 per cent and 3.25 per cent respectively.
- 03-31 The Riksbank decides to lower the *repo rate* from 2.50 per cent to 2.00 per cent, to apply from 7 April 2004. Furthermore, the Riksbank decides that the *deposit* and *lending rates* shall be adjusted to 1.25 per cent and 2.75 per cent respectively.
- 06-30 The *reference rate* is confirmed by the Riksbank at 2.0 per cent for the period 1 July 2004 to 31 December 2004.
- 2005-01-01 The *reference rate* is confirmed by the Riksbank at 2.00 per cent for the period 1 January 2005 to 30 June 2005.
- 06-20 The Riksbank decides to lower the *repo rate* from 2.00 per cent to 1.50 per cent, to apply from 22 June 2005. Furthermore, the Riksbank decides that the *deposit* and *lending rates* shall be adjusted to 0.75 per cent and 2.25 per cent respectively.
- 06-30 The *reference rate* is confirmed by the Riksbank at 1.50 per cent for the period 1 July 2005 to 31 December 2005.

## ■ Statistical appendix

- 1 Riksbank's assets and liabilities 91
- 2 Money supply 92
- 3 Interest rates set by the Riksbank 93
- 4 Capital market interest rates 93
- 5 Overnight and money market interest rates 94
- 6 Treasury bill and selected international rates 95
- 7 Krona exchange rate: TCW index and selected exchange rates 96
- 8 Nominal effective TCW exchange rate 97

Statistics from Sveriges Riksbank are to be found on the Internet ([www.riksbank.se](http://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](http://dsbb.imf.org)). Dates of publication are also available on [www.riksbank.se](http://www.riksbank.se).



# 1 Riksbank's assets and liabilities

## ASSETS. PERIOD-END STOCK FIGURES. SEK MILLION

		Gold	Lending to banks	Fixed assets	Other	Total
2004	Jan	18 029	15 901	146 891	12 110	192 931
	Feb	18 029	14 887	146 551	11 828	191 295
	March	19 130	14 509	151 951	11 897	197 487
	April	19 129	14 975	150 885	12 255	197 244
	May	19 129	10 001	149 736	2 866	181 732
	June	17 719	10 760	146 234	3 182	177 895
	July	17 718	10 635	153 528	2 897	184 778
	Aug	17 718	10 801	150 035	2 800	181 354
	Sept	18 095	10 269	150 885	2 718	181 967
	Oct	18 095	10 405	147 908	2 807	179 215
	Nov	18 095	11 063	150 093	2 706	181 957
	Dec	17 392	17 002	145 256	5 935	185 585
2005	Jan	16 436	11 101	145 391	5 725	178 653
	Feb	15 952	10 210	147 097	5 575	178 834
	March	16 558	12 016	148 366	5 503	182 443
	April	16 558	11 042	155 500	5 858	188 958
	May	16 558	11 286	152 090	5 966	185 900
	June	18 730	4 955	165 709	3 158	192 552
	July	18 730	5 346	166 846	3 370	194 292
	Aug	18 730	4 781	167 749	3 107	194 367
	Sept	19 845	4 937	162 401	3 245	190 428
	Oct	19 729	5 194	163 605	3 359	191 887
	Nov	19 642	5 440	164 246	3 317	192 645

## LIABILITIES. PERIOD-END STOCK FIGURES. SEK MILLION

		Notes and coins in circulation	Capital liabilities	Debts to monetary policy counterparties	Debts in foreign currency	Other	Total
2004	Jan	101 954	80 697	64	8 408	1 808	192 931
	Feb	100 615	80 697	61	7 774	2 148	191 295
	March	100 295	80 697	98	6 079	10 318	197 487
	April	100 863	80 697	68	4 769	10 847	197 244
	May	102 008	65 317	95	3 099	11 213	181 732
	June	102 858	65 317	190	4 159	5 371	177 895
	July	102 747	65 317	37	10 883	5 794	184 778
	Aug	102 979	65 317	280	6 821	5 957	181 354
	Sept	102 670	65 317	79	8 900	5 001	181 967
	Oct	102 821	65 317	25	5 326	5 726	179 215
	Nov	103 297	65 317	101	6 557	6 685	181 957
	Dec	108 894	65 317	613	7 448	3 313	185 585
2005	Jan	104 438	65 317	36	5 817	3 045	178 653
	Feb	103 557	65 317	94	6 453	3 413	178 834
	March	104 269	65 317	640	3 021	9 196	182 443
	April	103 876	65 317	31	10 138	9 596	188 958
	May	103 760	65 317	378	6 490	9 955	185 900
	June	105 489	55 813	153	5 421	25 676	192 552
	July	106 024	55 813	205	6 730	25 520	194 292
	Aug	105 600	55 813	117	6 864	25 973	194 367
	Sept	105 884	55 813	43	5 490	23 198	190 428
	Oct	106 063	55 813	17	6 367	23 627	191 887
	Nov	106 631	55 813	37	6 398	23 766	192 645

## 2 Money supply

### END-OF-MONTH STOCK

		SEK million		Percentage 12-month change		
		M0	M3	MO	M3	
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	March	5.6	6.5
	April	88 666	1 049 030	April	2.6	7.6
	May	88 818	1 025 757	May	2.4	4.3
	June	89 383	1 053 910	June	2.4	4.1
	July	88 631	1 037 162	July	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	Oct	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	1 092 435	March	2.2	5.8
	April	92 334	1 095 256	April	4.1	4.4
	May	92 346	1 097 622	May	4.0	7.0
	June	92 296	1 106 661	June	3.3	5.0
	July	91 608	1 090 284	July	3.4	5.1
	Aug	93 324	1 109 725	Aug	3.8	5.5
	Sept	92 451	1 113 021	Sept	3.2	4.9
	Oct	92 364	1 114 967	Oct	3.2	6.0
	Nov	93 070	1 107 251	Nov	2.9	3.6
	Dec	98 481	1 119 288	Dec	2.7	3.1
2004	Jan	93 087	1 109 798	Jan	3.3	2.2
	Feb	92 465	1 117 521	Feb	1.0	4.2
	March	92 399	1 116 429	March	0.5	2.2
	April	92 653	1 130 152	April	0.3	3.2
	May	93 032	1 132 356	May	0.7	3.2
	June	94 732	1 115 315	June	2.6	0.8
	July	92 962	1 115 744	July	1.5	2.3
	Aug	94 355	1 126 201	Aug	1.1	1.5
	Sept	93 992	1 147 965	Sept	1.7	3.1
	Oct	93 657	1 149 198	Oct	1.4	3.1
	Nov	95 163	1 161 091	Nov	2.2	4.9
	Dec	98 239	1 171 218	Dec	-0.2	4.6
2005	Jan	95 017	1 159 637	Jan	2.1	4.5
	Feb	94 810	1 165 401	Feb	2.5	4.3
	March	95 494	1 156 486	March	3.3	3.6
	April	94 646	1 171 692	April	2.2	3.7
	May	95 314	1 185 822	May	2.5	4.7
	June	96 426	1 220 530	June	1.8	9.4
	July	96 316	1 205 762	July	3.6	8.1
	Aug	96 671	1 196 390	Aug	2.5	6.2
	Sept	96 655	1 212 644	Sept	2.8	5.6
	Oct	97 446	1 246 357	Oct	4.0	8.5

### 3 Interest rates set by the Riksbank

#### PER CENT

	Date of announcement	Effective from	Repo rate	Deposit rate	Lending rate	Period	Reference rate <sup>1</sup>
2002	03-19	03-20	4.00	3.25	4.75	2002:2hå	4.50
	04-26	05-02	4.25	3.50	5.00	2003:1hå	4.00
	11-15	11-20	4.00	3.25	4.75	2003:2hå	3.00
	12-05	12-11	3.75	3.00	4.50	2004:1hå	3.00
2003	03-18	03-19	3.50	2.75	4.25	2004:2hå	2.00
	06-05	06-11	3.00	2.25	3.75	2005:1hå	2.00
	07-04	07-09	2.75	2.00	3.50	2005:2hå	1.50
2004	02-06	02-11	2.50	1.75	3.25		
	03-31	04-07	2.00	1.25	2.75		
	06-21	06-22	1.50	0.75	2.25		

<sup>1</sup> 1 July 2002 the official discount rate was replaced by a reference rate, which is set by the Riksbank at the end of June and the end of December.

### 4 Capital market interest rates

#### EFFECTIVE ANNUALIZED RATES FOR ASKED PRICE. MONTHLY AVERAGE. PER CENT

		Bond issued by:					
		Central Government				Housing institutions	
		3 years	5 years	7 years	9-10 years	2 years	5 years
2004	Jan	3.22	4.00	4.46	4.65	3.39	4.35
	Feb	3.04	3.86	4.42	4.55	3.19	4.19
	March	2.72	3.53	4.16	4.31	2.85	3.86
	April	2.77	3.75	4.40	4.55	2.88	4.09
	May	2.96	3.97	4.55	4.68	3.09	4.36
	June	3.01	4.03	4.60	4.72	3.11	4.40
	July	2.86	3.88	4.45	4.57	2.95	4.22
	Aug	2.75	3.85	4.29	4.42	2.83	4.05
	Sept	2.80	3.90	4.26	4.37	2.86	4.02
	Oct	2.68	3.75	4.13	4.25	2.75	3.84
	Nov	2.56	3.60	4.01	4.13	2.62	3.69
	Dec	2.34	3.33	3.76	3.90	2.38	3.38
2005	Jan	2.62	3.16	3.58	3.84	2.79	3.20
	Feb	2.53	3.10	3.51	3.76	2.70	3.12
	March	2.55	3.20	3.61	3.86	2.73	3.22
	April	2.43	2.97	3.35	3.58	2.61	3.31
	May	2.20	2.72	3.10	3.34	2.35	3.05
	June	1.93	2.44	2.85	3.11	2.06	2.76
	July	1.88	2.40	2.81	3.06	2.01	2.71
	Aug	2.06	2.57	2.93	3.14	2.20	2.87
	Sept	2.06	2.50	2.82	2.98	2.21	2.76
	Oct	2.40	2.87	3.01	3.17	2.33	2.98
	Nov	2.60	3.08	3.22	3.39	2.51	3.20

## 5 Overnight and money market interest rates

### MONTHLY AVERAGE. PER CENT

	Repo rate	Interbank rate	Treasury bills			Company certificates		
			3-month	6-month	12-month	3-month	6-month	
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
	June	3.16	3.26	2.81	2.71	2.61	3.03	2.94
	July	2.82	2.92	2.68			2.87	2.82
	Aug	2.75	2.85	2.71	2.81		2.88	2.90
	Sept	2.75	2.85	2.71	2.73	2.91	2.88	2.92
	Oct	2.75	2.85	2.73			2.89	2.93
	Nov	2.75	2.85	2.72	2.75		2.88	2.93
	Dec	2.75	2.85	2.69	2.70	2.83	2.86	2.87
2004	Jan	2.75	2.85	2.60			2.77	2.74
	Feb	2.59	2.69	2.46	2.38	2.47	2.59	2.59
	March	2.50	2.60	2.27	2.23	2.28	2.43	2.40
	April	2.10	2.20				2.15	2.18
	May	2.00	2.10	1.99	2.07	2.33	2.15	2.23
	June	2.00	2.10	1.98	2.07	2.38	2.15	2.24
	July	2.00	2.10				2.15	2.24
	Aug	2.00	2.10	2.03	2.13		2.15	2.25
	Sept	2.00	2.10	2.00	2.13		2.15	2.26
	Oct	2.00	2.10				2.16	2.27
	Nov	2.00	2.10	2.03	2.12		2.14	2.25
	Dec	2.00	2.10	2.00	2.05		2.12	2.16
2005	Jan	2.00	2.10				2.10	2.12
	Feb	2.00	2.10	1.97			2.06	2.08
	March	2.00	2.10	1.97	1.99	2.08	2.06	2.07
	April	2.00	2.10				2.06	2.08
	May	2.00	2.10	1.89	1.83	1.85	2.02	2.01
	June	1.85	1.95	1.66	1.64	1.65	1.80	1.78
	July	1.50	1.60				1.60	1.60
	Aug	1.50	1.60	1.50	1.57	1.78	1.61	1.65
	Sept	1.50	1.60	1.47	1.55	1.75	1.62	1.67
	Oct	1.50	1.60	1.48			1.68	1.78
	Nov	1.50	1.60	1.52	1.80	2.10	1.68	1.78

## 6 Treasury bill and selected international rates

### MONTHLY AVERAGE. PER CENT

		3-month deposits				6-month deposits			
		USD	EUR	GBP	SSVX <sup>1</sup>	USD	EUR	GBP	SSVX <sup>1</sup>
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
	June	1.03	2.09	3.55	2.81	1.00	2.02	3.48	2.71
	July	1.04	2.08	3.38	2.68	1.05	2.04	3.37	
	Aug	1.05	2.09	3.43	2.71	1.11	2.12	3.52	2.81
	Sept	1.06	2.09	3.60	2.71	1.10	2.12	3.70	2.73
	Oct	1.08	2.09	3.72	2.73	1.12	2.12	3.87	
	Nov	1.08	2.10	3.88	2.72	1.17	2.17	4.07	2.75
	Dec	1.08	2.09	3.93	2.69	1.15	2.13	4.08	2.70
2004	Jan	1.04	2.03	3.96	2.60	1.10	2.06	4.11	
	Feb	1.03	2.02	4.08	2.46	1.09	2.03	4.19	2.38
	March	1.02	1.97	4.21	2.27	1.07	1.95	4.34	2.23
	April	1.06	1.99	4.30		1.19	2.01	4.45	
	May	1.16	2.03	4.44	1.99	1.44	2.08	4.63	2.07
	June	1.41	2.06	4.69	1.98	1.72	2.13	4.91	2.07
	July	1.54	2.06	4.77		1.80	2.13	4.93	
	Aug	1.66	2.06	4.86	2.03	1.87	2.11	4.98	2.13
	Sept	1.85	2.06	4.84	2.00	2.01	2.14	4.93	2.13
	Oct	2.01	2.10	4.80		2.15	2.13	4.85	
	Nov	2.24	2.12	4.77	2.03	2.42	2.16	4.81	2.12
	Dec	2.44	2.12	4.76	2.00	2.65	2.16	4.78	2.05
2005	Jan	2.60	2.10	4.75		2.85	2.15	4.77	
	Feb	2.76	2.09	4.79	1.97	2.98	2.13	4.84	
	March	2.95	2.09	4.87	1.97	3.21	2.14	4.95	1.99
	April	3.07	2.08	4.83		3.31	2.11	4.88	
	May	3.19	2.07	4.78	1.89	3.42	2.08	4.78	1.83
	June	3.36	2.05	4.72	1.66	3.54	2.05	4.69	1.64
	July	3.56	2.08	4.56		3.78	2.09	4.47	
	Aug	3.74	2.09	4.50	1.50	3.96	2.10	4.49	1.57
	Sept	3.84	2.09	4.50	1.47	3.98	2.11	4.47	1.55
	Oct	4.11	2.14	4.49	1.48	4.29	2.21	4.48	
	Nov	4.29	2.31	4.53	1.51	4.49	2.44	4.54	1.80

<sup>1</sup> Treasury bills.



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

### MONTHLY AVERAGE

		SEK					
		TCW index	EUR	GBP	USD	JPY	CHF
2002	Jan	135.7390	9.2292	14.9642	10.4398	0.0788	6.2594
	Feb	135.6543	9.1869	15.0223	10.5603	0.0791	6.2179
	March	133.8096	9.0600	14.7064	10.3396	0.0789	6.1690
	April	134.8265	9.1331	14.8742	10.3105	0.0788	6.2300
	May	135.2764	9.2236	14.6763	10.0519	0.0796	6.3300
	June	132.6093	9.1190	14.1612	9.5591	0.0774	6.1959
	July	134.3652	9.2705	14.5199	9.3400	0.0791	6.3380
	Aug	134.3777	9.2524	14.5486	9.4641	0.0795	6.3235
	Sept	133.2278	9.1735	14.5449	9.3504	0.0775	6.2617
	Oct	132.1625	9.1053	14.4489	9.2793	0.0749	6.2156
	Nov	131.3311	9.0785	14.2485	9.0655	0.0746	6.1869
	Dec	131.0292	9.0931	14.1771	8.9458	0.0732	6.1861
2003	Jan	130.9609	9.1775	13.9590	8.6386	0.0727	6.2767
	Feb	129.7272	9.1499	13.6813	8.4930	0.0711	6.2358
	March	130.3167	9.2221	13.5031	8.5298	0.0720	6.2777
	April	128.9566	9.1585	13.2756	8.4370	0.0704	6.1248
	May	127.1076	9.1541	12.8520	7.9229	0.0676	6.0426
	June	126.3154	9.1149	12.9638	7.8108	0.0660	5.9211
	July	127.6987	9.1945	13.1295	8.0807	0.0681	5.9417
	Aug	128.9600	9.2350	13.2074	8.2825	0.0697	5.9957
	Sept	126.7679	9.0693	13.0143	8.0861	0.0703	5.8616
	Oct	125.3358	9.0099	12.9077	7.6966	0.0703	5.8195
	Nov	125.2370	8.9908	12.9783	7.6831	0.0703	5.7642
	Dec	124.3958	9.0169	12.8514	7.3632	0.0682	5.8001
2004	Jan	125.3707	9.1373	13.1985	7.2493	0.0681	5.8343
	Feb	125.9654	9.1814	13.5574	7.2599	0.0682	5.8367
	March	127.6783	9.2305	13.7500	7.5243	0.0694	5.8922
	April	127.6519	9.1711	13.7941	7.6501	0.0711	5.9008
	May	126.7383	9.1312	13.5751	7.6061	0.0679	5.9248
	June	127.0144	9.1422	13.7711	7.5332	0.0688	6.0193
	July	127.3590	9.1954	13.8041	7.4931	0.0685	6.0222
	Aug	127.3415	9.1912	13.7313	7.5444	0.0683	5.9753
	Sept	125.7140	9.0954	13.3500	7.4484	0.0677	5.8943
	Oct	124.8272	9.0610	13.1085	7.2557	0.0666	5.8730
	Nov	123.3656	9.0036	12.8863	6.9390	0.0662	5.9155
	Dec	122.4392	8.9786	12.9405	6.7030	0.0646	5.8495
2005	Jan	123.7464	9.0538	12.9620	6.8996	0.0668	5.8527
	Feb	124.4271	9.0839	13.1666	6.9778	0.0665	5.8614
	March	124.2160	9.0860	13.1189	6.8755	0.0654	5.8669
	April	125.8007	9.1650	13.4189	7.0796	0.0660	5.9230
	May	126.6878	9.1942	13.4357	7.2482	0.0679	5.9511
	June	129.1463	9.2585	13.8466	7.6079	0.0700	6.0170
	July	130.9115	9.4284	13.7113	7.8281	0.0699	6.0507
	Aug	129.3670	9.3426	13.6266	7.6002	0.0687	6.0158
	Sept	129.6486	9.3367	13.7798	7.6215	0.0686	6.0279
	Oct	131.0017	9.4231	13.8250	7.8368	0.0683	6.0845
	Nov	133.2427	9.5663	14.0761	8.1082	0.0685	6.1906

Note. The base for the 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. TCW 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 Nominal effective TCW exchange rate

INDEX: 18 NOVEMBER 1992=100



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

## ■ Articles in earlier issues

Swedish krona loans on international markets	<i>Loulou Wallman</i>	1990:1
Foreign exchange markets in April 1989 – a global study	<i>Robert Bergqvist</i>	1990:1
The balance of payments	<i>Gunnar Blomberg</i>	1990:2
Reinvested earnings and direct investment assets	<i>Fredrika Röckert</i>	1990:2
Foreign ownership – the law and current proposals	<i>Per Arne Ström</i>	1990:2
The international foreign exchange market in 1989 and 1990	<i>Robert Bergqvist</i>	1990:3
Exchange deregulation – short and long-run effects	<i>Christina Lindenius</i>	1990:3
The Swedish credit market, January through September 1990	<i>Marianne Biljer and Per Arne Ström</i>	1990:4
Fewer loans and larger mortgage payments – the Riksbank's household survey, January–June 1990	<i>Anna Thoursie</i>	1990:4
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Competition and regulation: trends in financial systems	<i>David T. Llewellyn</i>	1990:4
Foreign bank branches and Riksbank loan facilities	<i>Loulou Wallman</i>	1991:1
The EMU process in 1990 – a résumé	<i>Gustaf Adlercreutz</i>	1991:1
The Norwegian krone to Ecu	<i>Christina Lindenius</i>	1991:1
The 1990 balance of payments	<i>Fredrika Röckert</i>	1991:2
Swedish holdings of foreign portfolio shares	<i>Martin Falk</i>	1991:2
Profits in commercial banking	<i>Bo Dalheim, Peter Lagerlöf and Per Arne Ström</i>	1991:2
International capital adequacy rules – the work continues	<i>Göran Lind and Åke Törnqvist</i>	1991:2
Safeguard the monetary role of the IMF	<i>Margareta Kylberg</i>	1991:2
Finance companies – structural changes	<i>Marianne Biljer</i>	1991:3
The Swedish krona pegged to the Ecu	<i>Hans Lindberg and Christina Lindenius</i>	1991:3
The private Ecu – characteristics and tendencies	<i>Jonny Nilsson</i>	1991:3
The international foreign exchange market in 1990 and 1991 – expanding EMS block	<i>Robert Bergqvist and Leif Johansson</i>	1991:4
The EEA agreement and the Riksbank	<i>Jan Nipstad</i>	1991:4
Household borrowing in 1991:1	<i>Siw Stjernborg</i>	1991:4
The Riksbank and primary dealers	<i>Robert Bergqvist and Ann Westman Mårtensson</i>	1992:1
Economic and monetary union – Maastricht points the way	<i>Gustaf Adlercreutz</i>	1992:1
European monetary union – convergence criteria and adjustment	<i>Christian Nilsson</i>	1992:1
Bank results in Sweden and other Nordic countries	<i>Bo Dalheim, Göran Lind and Anna-Karin Nedersjö</i>	1992:2
Market deregulation for krona certificates and bonds	<i>Loulou Wallman</i>	1992:2
Foreign acquisitions of shares in Swedish companies	<i>Rolf Skog</i>	1992:2
The EEA agreement and financial markets	<i>Jan Nipstad</i>	1992:2
The budget deficit and fiscal policy	<i>Krister Andersson</i>	1992:3
Foreign investment in Swedish interest-bearing securities	<i>Martin Falk and Tomas Niemelä</i>	1992:3

The performance of banks in the UK and Scandinavia: a case study in competition and deregulation	<i>David T. Llewellyn</i>	1992:3
The foreign exchange market in April 1992	<i>Robert Bergqvist</i>	1992:4
The interest rate scale	<i>Ann Westman Mårtensson</i>	1992:4
The local government economy	<i>Maude Svensson</i>	1992:4
Monetary policy indicators	<i>Yngve Lindh</i>	1993:1
Payment systems in transition	<i>Hans Bäckström</i>	1993:1
Annus horribilis for EMU	<i>Gustaf Adlercreutz</i>	1993:1
The 1992 balance of payments	<i>Martin Falk and Anders Lindström</i>	1993:2
The Swedish credit market in 1992	<i>Marianne Biljer and Johanna Jonsson</i>	1993:2
The banking sector in 1992	<i>Bo Dalheim, Göran Lind and Anna-Karin Nedersjö</i>	1993:2
Structural saving deficiency – a long-standing problem	<i>Annika Alexius and Gunnar Blomberg</i>	1993:2
Capital cover for market risk	<i>Robert Bergqvist and Mats Ericsson</i>	1993:3
Securitisation on the Swedish credit market	<i>Willem van der Hoeven</i>	1993:3
Government indexed bonds	<i>Kerstin Hallsten</i>	1993:3
Estimating forward interest rates	<i>Lars E.O. Svensson</i>	1993:3
Debt consolidation in progress	<i>Daniel Barr and Kurt Gustavsson</i>	1993:4
Will Sweden follow Finland's path?	<i>Maria Landell</i>	1993:4
Monetary policy instruments in EMU	<i>Kari Lotsberg and Ann Westman</i>	1993:4
Monetary policy effects on interest rate formation	<i>Annika Alexius</i>	1994:1
The economic role of asset prices	<i>Claes Berg and Mats Galvenius</i>	1994:1
Stage two in the EMU process	<i>Louise Lundberg</i>	1994:1
The 1993 balance of payments with a flexible exchange rate	<i>Anders Lindström and Tomas Lundberg</i>	1994:2
Nonresident holdings of Swedish securities	<i>Mattias Croneborg and Johan Östberg</i>	1994:2
The Swedish credit market in 1993	<i>Johanna Jonsson</i>	1994:2
The banking sector in 1993	<i>Göran Lind and Anna-Karin Nedersjö</i>	1994:2
The Riksbank sets reserve requirements to zero	<i>Kari Lotsberg</i>	1994:2
The Riksbank's new interest rate management system	<i>Lars Hörngren</i>	1994:2
The 1993 household survey	<i>Eeva Seppälä</i>	1994:2
Central government debt, interest rates and the behaviour of foreign investors	<i>Thomas Franzén</i>	1994:3
Monetary conditions index – a monetary policy indicator	<i>Bengt Hansson and Hans Lindberg</i>	1994:3
Sweden's net external debt	<i>Robert Bergqvist and Anders Lindström</i>	1994:3
The Riksbank, the RIX system and systemic risks	<i>Daniel Barr</i>	1994:3
RIX – the Riksbank's system for clearing and settlement	<i>Bertil Persson</i>	1994:3
The international foreign exchange market in 1994	<i>Martin Edlund and Kerstin Mitlid</i>	1994:4
The yield curve and investment behaviour	<i>Lars Hörngren and Fredrika Lindsjö</i>	1994:4
Direct investment – interpretations and implications	<i>Johan Östberg</i>	1994:4
Price stability and monetary policy	<i>Urban Bäckström</i>	1995:1
The coordination of economic policy in the European Union	<i>Christina Lindenius</i>	1995:1
The bank's deposit monopoly and competition for savings	<i>Daniel Barr and Lars Hörngren</i>	1995:1

The Riksbank and primary dealers in the currency market		
<i>Robert Bergqvist and Ann Westman</i>		1995:1
The 1994 balance of payments – capital flows and exchange rate		
<i>Robert Bergqvist and Mattias Croneborg</i>		1995:2
Output gap and inflation in a historical perspective	<i>Mikael Apel</i>	1995:2
The Swedish credit market in 1994 – continued consolidation	<i>Felice Marlor</i>	1995:2
Banks and housing institutions in 1994		
<i>Björn Hasselgren and Anna-Karin Nedersjö</i>		1995:2
The 1994 household survey – increased financial saving	<i>Hans Dillén</i>	1995:2
Monetary policy in theory and practice	<i>Lars Hörngren</i>	1995:3
Estimating forward interest rates with the extended Nelson and Siegel method		
<i>Lars E.O. Svensson</i>		1995:3
Household saving in private bonds	<i>Lotte Schou and Marianne Wolfbrandt</i>	1995:3
Tourism dominates the travel item	<i>Fredrika Röckert</i>	1995:3
The Riksbank and european monetary cooperation	<i>Urban Bäckström</i>	1995:4
Strategy and instruments in EMU's third stage	<i>Claes Berg</i>	1995:4
EMU and employment	<i>Krister Andersson and Anatoli Annenkov</i>	1995:4
EMU's final objective – a single currency	<i>Stefan Ingves and Agneta Brandimarti</i>	1995:4
EU, EMU and the payment system	<i>Hans Bäckström</i>	1995:4
The management of the bank crisis – in retrospect		
<i>Stefan Ingves and Göran Lind</i>		1996:1
The krona's equilibrium real exchange rate	<i>Annika Alexius and Hans Lindberg</i>	1996:1
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<i>Hans Dellmo</i>		1996:2
The 1995 household survey	<i>Peter Lundkvist</i>	1996:2
Monetary policy, inflation and unemployment		
<i>Mikael Apel and Lars Heikensten</i>		1996:3
Potential output and output gap	<i>Mikael Apel, Jan Hansen and Hans Lindberg</i>	1996:3
Government's altered role in financial markets		
<i>Martin Blåvarg and Stefan Ingves</i>		1996:3
Aspects of Sweden's external debt	<i>Robert Bergqvist and Tomas Lundberg</i>	1996:4
The Riksbank's management of short-term interest rates	<i>Karolina Holmberg</i>	1996:4
Government's finance in a structural perspective	<i>Johan Fall</i>	1996:4
Monetary policy and unemployment	<i>Urban Bäckström</i>	1997:1
Macroeconomic indicators of system risk	<i>Felice Marlor</i>	1997:1
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<i>Hans Bäckström and Peter Stenkula</i>		1997:1
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EMU expectations and interest rates	<i>Hans Dillén and Martin Edlund</i>	1997:2
EMU 1999 – the current situation	<i>Jonas Eriksson and Loulou Wallman</i>	1997:2
The 1996 household survey – renewed upswing in new borrowing		
<i>Peter Lundqvist</i>		1997:2
The Swedish repo market	<i>Christian Ragnartz and Johan Östberg</i>	1997:3/4

Payment system float	<i>Johanna Lybeck</i>	1997:3/4
Lessons of the Dutch model	<i>Jonas A. Eriksson and Eva Uddén-Jondal</i>	1997:3/4
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Exchange rates and currency options as EMU indicators	<i>Javiera Aguilar and Peter Hördahl</i>	1998:2
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Efficiency in the payment system – a network perspective	<i>Gabriela Guibourg</i>	1998:3
Securitisation – a future form of financing?	<i>Martin Blåvarg and Per Lilja</i>	1998:3
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The current situation for monetary policy	<i>Urban Bäckström</i>	1999:4
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Dealing with banking crisis – the proposed new regulatory framework	<i>Staffan Viotti</i>	2000:3
The banking Law Committee's main and final reports		2000:3
The current situation for monetary policy	<i>Urban Bäckström</i>	2000:4
Credit rating and the business cycle: can bankruptcies be forecast?	<i>Tor Jacobson and Jesper Lindé</i>	2000:4
Accession countries' choice of exchange rate system in preparation for EMU	<i>Martin Ådahl</i>	2000:4
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The Riksbank's opinion on the report "Public administration of banks in distress" SOU 2000:66		2001:1
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The International Monetary Fund's quotas – their function and influence	<i>Anna-Karin Nedersjö</i>	2001:3
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Share-index options as forward-looking indicators	<i>Magnus Lomakka</i>	2001:3
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Households, stock markets and the financial system	<i>Urban Bäckström</i>	2002:1
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The Riksbank's statement regarding the report "Stabilisation policy in the monetary union" SOU 2002:16	2002:4
Should we welcome globalisation? <i>Villy Bergström</i>	2003:1
National stabilisation policy in the event of Swedish Eurosystem membership <i>Robert Boije and Hovick Shahnazarian</i>	2003:1
How is the economy affected by the inflation target? <i>Malin Adolfson and Ulf Söderström</i>	2003:1
The use of market indicators in financial stability analyses <i>Mattias Persson and Martin Blåvarg</i>	2003:2
Card payments in Sweden <i>Lars Nyberg and Gabriela Guibourg</i>	2003:2
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The Riksbank's submission on the final report Future financial supervision SOU 2003:22	2003:2
The road to price stability in the 1990s <i>Urban Bäckström</i>	2003:3
Behind the Riksbank's massive walls – establishing the inflation targeting policy 1995–2003 <i>Lars Heikensten</i>	2003:3
On central bank efficiency <i>Mårten Blix, Sonja Daltung and Lars Heikensten</i>	2003:3
An <i>Inflation Reports</i> report <i>Eric M. Leeper</i>	2003:3
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The financial accelerator and corporate investment <i>Claes Berg, Jan Hansen and Peter Sellin</i>	2004:2
Swedish monetary policy <i>Staffan Viotti</i>	2004:2
Assessment of the Riksbank's work on financial stability issues <i>Franklin Allen, Lennart Francke and Mark W. Swinburne</i>	2004:3
Cash-supply efficiency <i>Sonja Daltung and Mithra Ericson</i>	2004:3
Inflation and relative-price changes in the Swedish economy <i>Bengt Assarsson</i>	2004:3
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Households' inflation opinions – a tale of two surveys <i>Stefan Palmqvist and Lena Strömberg</i>	2004:4
Price-setting behaviour in Swedish firms <i>Mikael Apel, Richard Friberg and Kerstin Hallsten</i>	2004:4
Employment and the Riksbank <i>Villy Bergström, Annika Svensson and Martin Ådahl</i>	2005:1
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The “new economy” and productivity in Sweden in the 2000s <i>Björn Andersson and Martin Ådahl</i>	2005:1
On the need to focus more on the asymmetry problem within the EU Fiscal Policy Framework <i>Robert Boije</i>	2005:1
Thoughts on how to develop the Riksbank's monetary policy work <i>Lars Heikensten</i>	2005:2
Basel II – the new framework for bank capital <i>Göran Lind</i>	2005:2
Monetary policy expectations and forward premia <i>Jan Alsterlind and Hans Dillén</i>	2005:2
The Riksbank's management of interest rates – monetary policy in practice <i>Annika Otz</i>	2005:2
Dag Hammarskjöld as economist and government official <i>Assar Lindbeck</i>	2005:3
Time for choosing. Dag Hammarskjöld and the Riksbank in the Thirties <i>Hans Landberg</i>	2005:3
Civil servant or politician? Dag Hammarskjöld's role in Swedish government policy in the Forties <i>Örjan Appelqvist</i>	2005:3
Hammarskjöld, Sweden and Bretton Woods <i>Göran Ahlström and Benny Carlsson</i>	2005:3
Dag Hammarskjöld: The Economist <i>Börje Kragh</i>	2005:3