The Riksbank's management of interest rates – monetary policy in practice

BY ANNIKA OTZ
Annika Otz works at the Market Operations Department.

The Riksbank's interest rate management is the operational component of its monetary policy process. Through its interest rate management, the Riksbank implements the Executive Board's monetary policy decisions by influencing the market's shortest interest rate, the overnight rate. Knowledge of how the Riksbank steers interest rates is thus important for those wishing to gain a more in-depth understanding of the Bank's monetary policy.

A previous article[1] *in this journal explained the Riksbank's interest rate management in the light of the traditional approach for inflation targeting given in textbooks, coupled with a comparison with the system used by the US Federal Reserve. The aim of this article, besides elucidating how monetary policy is implemented in practice, is to further clarify the connection between the steering of interest rates and the Riksbank's payment system.*

Fundamental conditions for the Riksbank's management of interest rates

The banks' borrowing or deposit requirement overnight constitutes the essence of the Riksbank's management of interest rates.

When banks need to borrow or deposit funds in kronor, they can do so with each other at different maturities. The most interesting maturity, which constitutes the essence of the Riksbank's ability to influence interest rates, is the banks' borrowing or deposit requirement *overnight*.

Interbank payment transactions require a common payment system.

Banks' need to borrow funds from, or deposit funds with, each other overnight stems from the payments that occur between them during the day. But in order for banks to be able to carry out these payment transactions at all, a common *payment system* is required.

1 Mitlid & Vesterlund (2001).

THE RIKSBANK'S PAYMENT SYSTEM – A PREREQUISITE FOR STEERING INTEREST RATES

The Riksbank provides a payment system, called RIX.

When households and companies pay their bills they do so through the bank in which they hold their accounts. The bank then forwards the payment to the recipient's account. If this account is held in a different bank the process requires a payment system, that is to say, an infrastructure that makes it possible to forward a payment from one bank to another. In Sweden the Riksbank provides such a payment system, called RIX.[2]

Payments in RIX are made in Swedish kronor only and go via the participant banks' accounts at the Riksbank. Those banks that do not participate in RIX have to go through the participant banks.

The Riksbank gives participants the opportunity to borrow interest-free funds if required, known as intraday credit.

To ensure that payments can be made smoothly in RIX the Riksbank gives participants the opportunity to borrow interest-free funds from the Bank during the day, known as intraday credit. The banks can do so on condition that they have provided sufficient eligible assets to the Riksbank.

The payments in RIX are processed one by one, known as real-time gross settlement, when payers have sufficient funds in their accounts or adequate collateral to obtain intraday credit.

DEPOSITS AND LOANS AT THE RIKSBANK SET THE BOUNDARIES FOR THE OVERNIGHT RATE

Before the payment system closes, the banks' accounts in RIX must be balanced. That means that banks with intraday credit at the end of the day have to finance this in some way. Likewise, banks with a surplus in their Riksbank accounts have to make sure that they deposit these funds.

Banks can turn to the overnight market or make use of the Riksbank's marginal lending and deposit facilities.

Banks can resolve this by turning to the overnight market or by borrowing or depositing funds at the Riksbank *overnight*, that is to say, by making use of the Riksbank's *marginal lending and deposit facilities* (the Riksbank's standing facilities). In other words banks can extend their loans overnight (through the marginal lending facility) or deposit funds overnight (through the deposit facility) at the Riksbank at interest rates announced in advance.

The lending rate is 150 basis points higher than the deposit rate, creating an incentive for banks to borrow from and deposit with each other.

The lending rate is 150 basis points higher than the deposit rate (see Figure 1). This interest rate differential creates an incentive for banks to borrow from, and deposit with, each other at a rate of interest between the Riksbank's deposit and lending rates, thereby setting the boundaries for the overnight rate.[3]

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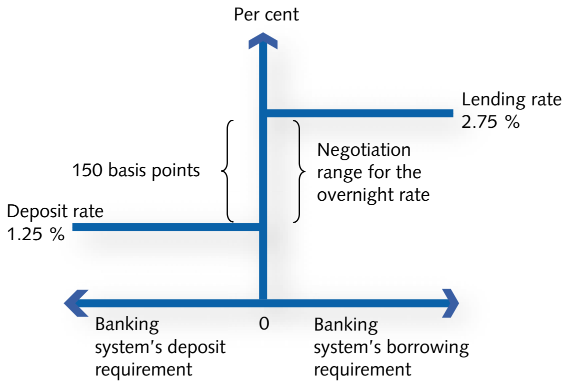
2 The Riksbank's payment system RIX is a hub of the Swedish payment infrastructure. For more information, see Sveriges Riksbank (2004a).

3 Banks usually have a liquidity plan that extends over a longer period than overnight. Nevertheless, the overnight market is important for banks to be able to manage the deficits and surpluses that arise in their payment flows on particular days.

Figure 1. The Riksbank's deposit and marginal lending facilities (standing facilities)



Note. Interest rate levels as at 29 April 2005.

The Riksbank's mode of procedure

The Riksbank wants the overnight rate to be close to and stable around the repo rate.

The Riksbank's steering of the overnight rate is not only aimed at bringing it within the interest rate corridor, however; the Riksbank also wants it to be *close to and stable around* the Bank's key interest rate – the repo rate. In other words the Riksbank wants the overnight rate to be predictable over the coming week and not to fluctuate within the interest rate corridor. That is because the Bank wants to give clear signals for longer-term market rates. Since short-term market rates (up to six months or so) represent an average of the expected overnight rate at the respective maturities, a fluctuating overnight rate could give rise to unnecessary volatility at these maturities. This could also create undue speculation over why the overnight rate is lying closer to the ceiling or the floor of the interest rate corridor. A sharply fluctuating overnight rate could therefore be misinterpreted as monetary policy signalling.

The first step towards achieving a stable overnight rate is to minimise the banking system's need to borrow or deposit funds through the standing facilities.

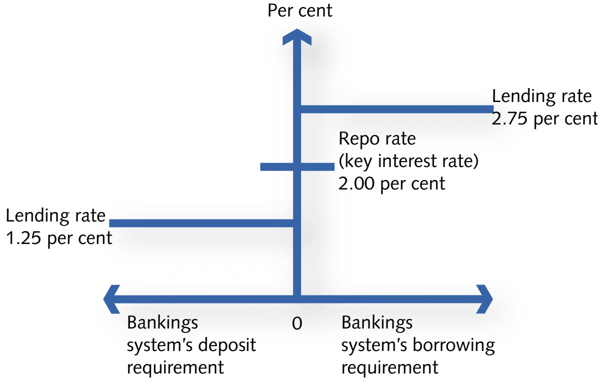
So how does the Riksbank ensure a stable overnight rate? The first step is to ensure that the banking system's need to borrow or deposit funds through the standing facilities is minimised. Before going into this in more detail, we need to look briefly at how the banking system's borrowing or deposit requirement vis-à-vis the Riksbank changes. The easiest way to explain this is to take a simplified picture of what happens when the public varies its demand for banknotes and coins.

When people demand more banknotes and coins they withdraw them from banks, which in turn acquire the corresponding amount of banknotes and coins from the Riksbank. However, the banks have to pay for these notes and coins, which essentially means that they incur a liability in relation to the Riksbank.[4] If public demand for notes and coins drops, the banks instead return the corresponding amount of notes and coins to the Riksbank, thus decreasing their liability vis-à-vis the Riksbank.

Currently, the banking system as a whole has a borrowing requirement.[5] In the absence of any Riksbank measures the banking system would borrow funds at the Bank's lending rate (the marginal lending facility) and the market's overnight rate would thereby be close to the lending rate. However, the Riksbank wants the overnight rate to be in the very middle of the interest rate corridor. For that reason the Riksbank has an arrangement whereby the banking system in the first place can borrow funds at the repo rate. This is done as follows: Every week the Riksbank forecasts the quantity of notes and coins that will be demanded by the public. From this forecast, the Riksbank can interpret how much the banks will want to borrow in conjunction with the Riksbank's *repo transaction* (repo)[6]. Through this repo the Riksbank satisfies the banking system's borrowing requirement and also signals the level at which it wants the overnight rate to be in the week ahead (see Figure 2).

The Riksbank has an arrangement whereby the banking system in the first place can borrow funds at the repo rate.

Figure 2. The Riksbank's official interest rates



Note. Interest rate levels as at 29 April 2005.

4 On condition that the banks can provide sufficient eligible assets to the Riksbank.

5 The banking system can just as well have a deposit requirement at the Riksbank. That is because the Riksbank's demand for assets to conduct monetary and exchange rate policy may exceed both the public demand for banknotes and coins and the Riksbank's capital. For example, under a fixed exchange rate, appreciation pressures may force the Riksbank to purchase such large volumes of foreign currency that the banking system as a whole needs to deposit funds at the Riksbank.

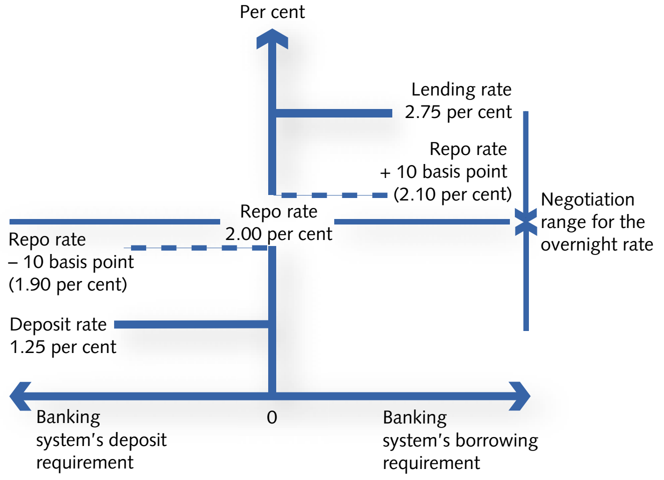
6 See step 2 for a description of a repo transaction (repo).

To prevent the overnight rate from fluctuating within the interest rate corridor, in spite of the repo, the Riksbank carries out fine-tuning operations.

Since the Riksbank's repo is based on a forecast for the following week the banking system's actual borrowing requirement will vary from day to day. That means that on certain days the banking system may need to avail of the Bank's standing facilities to borrow or deposit funds, and if the amounts are large this could cause the overnight rate to fluctuate within the interest rate corridor in spite of the repo. To prevent this from happening, the Riksbank carries out *fine-tuning operations*. These operations involve meeting the banking system's borrowing or deposit requirement on a particular day at a rate of interest that is 10 basis points above or below the repo rate.

In short, the Riksbank steers interest rates by providing standing facilities through which it can fix the market's overnight rate in the interest rate corridor. By means of weekly repo transactions and (almost) daily fine-tuning operations the Riksbank ensures that the overnight rate is anchored close to the repo rate (see Figure 3).

Figure 3. Negotiation range for the overnight rate



Note. Interest rate levels as at 29 April 2005.

The Riksbank's practical implementation of monetary policy

So what happens step by step when the Riksbank steers interest rates?

STEP 1. FORECAST OF THE SIZE OF THE MONETARY POLICY REPO

The forecast is based in practice on the item "banknotes and coins in circulation".

Every Tuesday the Riksbank forecasts how large the banking system's borrowing requirement[7] in relation to the Riksbank will be on average in the coming week, that is to say, from Wednesday to Wednesday. The forecast is based on an estimate of changes in the Bank's assets and liabilities (the balance sheet).

The Riksbank's *assets* comprise the gold and foreign exchange reserve, which, besides gold, consists of securities denominated in foreign currency and receivables from the International Monetary Fund (IMF). In addition, the Bank's assets are composed of other assets[8] as well as lending to banks, which, in simplified terms, is due to the banks obtaining notes and coins from the Riksbank. Thus, in principle, the item "lending to banks" should equal the item "banknotes and coins in circulation". However, in order to be able to intervene in the foreign exchange market and to generate as high a return as possible on its assets, the Riksbank has chosen to exchange some of its claims on the banking system for foreign currency.

The Riksbank's *liabilities* largely comprise banknotes and coins in circulation as well as capital. In addition, the Bank's liabilities are composed of deposits from banks and other liabilities[9] (see Figure 4).

FIGURE 4. THE RIKSBANK'S BALANCE SHEET (ADJUSTED) AS AT 31 DECEMBER 2004

Assets	SEK million	Liabilities	SEK million
Gold and foreign exchange reserve	162 649	Banknotes and coins in circulation	108 894
Lending to banks		Deposits from banks	
Monetary policy repos	16 473	Deposit facility	86
Marginal lending facility	2	Other liabilities	9 836
Other assets	3 205	Capital (incl. financial result for the year)	63 513
Total	182 329	Total	182 329

Note: The item "Monetary policy repos" includes fine-tuning operations (net).
Source: The Riksbank.

It is relatively easy to forecast changes in the Riksbank's assets because generally speaking these items are influenced by the Bank's own deci-

7 In cases where the banking system as a whole has a deposit requirement and thus needs to deposit funds during the week the Riksbank issues certificates (instead of implementing a monetary policy repo), which means that the Riksbank pays weekly interest to the banking system for the deposited funds.
8 Other assets include accrued interest income and fixed assets.
9 Other liabilities include liabilities denominated in foreign currency and revaluation accounts.

sions. This applies first and foremost to changes in the gold and foreign exchange reserve that are connected to sales or purchases of foreign currency, which as a rule derive from intervention in the foreign exchange market.

As regards the liability side it is generally only changes in the volume of banknotes and coins in circulation, that is to say, public demand for notes and coins, that needs to be forecast. This demand follows a clear and stable seasonal pattern, making the item "banknotes and coins in circulation" relatively easy to estimate. In the run-up to major holidays such as Christmas, demand increases sharply.

The other items on both the asset and liability side display only very small, predictable changes, for example payments to the State in connection with the allocation of the Riksbank's profits, which affects the Bank's capital, financial result and lending in Swedish kronor to the banking system.

When the changes in all the items have been estimated, the Riksbank arrives at the banking system's borrowing or deposit requirement.

When the changes in all the items have been estimated and summed up, the Riksbank can see how the banking system's average total borrowing or deposit requirement at the Bank over the coming week will change compared with the week before. In practice, this normally means that only the item "banknotes and coins in circulation" needs to be forecast. If the borrowing requirement has grown, the Bank increases the size of the monetary policy repo and vice versa (see step 2).

Figure 5 shows how the different items in the balance sheet contribute to the banking system's total borrowing requirement at the Riksbank. The example is based on the Bank's balance sheet as at 31 December 2004.

FIGURE 5. CALCULATION OF THE BANKING SYSTEM'S TOTAL BORROWING REQUIREMENT AT THE RIKSBANK AS AT 31 DECEMBER 2004

	SEK million
Banknotes and coins in circulation	108 894
Deposit facility	86
Other liabilities	9 836
Capital	63 513
Gold and foreign exchange reserve	– 162 649
Marginal lending facility	– 2
Other assets	– 3 205
Banking system's total borrowing requirement at the Riksbank and **size of the monetary policy repo** (or banking system's total deposit requirement and size of the Riksbank's certificate issue)	**16 473**

Source: The Riksbank.

STEP 2. IMPLEMENTATION OF THE MONETARY POLICY REPO

Having arrived at the liquidity forecast and calculated the banking system's average total borrowing or deposit requirement[10] the Riksbank implements a monetary policy repo (or issues certificates).

The Riksbank's repo[11] is designed in the same way as an ordinary repo instrument in the financial markets.[12] Repos in the financial markets are sale and purchase agreements whereby one party agrees to sell a security to another party and to repurchase the security at a predetermined price on a specific future date. The price of a repo is represented by the repo rate, that is to say, the lending rate over the maturity of the repo.[13]

As a rule, the monetary policy repo has a maturity of one week, from Wednesday to Wednesday. Thus, once a week the Riksbank buys securities from the banks and simultaneously agrees to resell them to the banks a week later.

As a rule, the monetary policy repo has a maturity of one week.

When the repo matures, the banks pay interest (the repo rate) on the past week's "loans". At the same time, the Riksbank implements a new repo, giving the banks the opportunity to renew their "loans" and thereby "borrow" from the Riksbank for another week. The size of the "loans" from the Riksbank may vary from week to week, however, depending on the Riksbank's forecast (see Step 1).

Because the repo in most cases has a maturity of only one week the Riksbank can change the repo rate each week.[14] In other words, one could say that over time the banking system borrows funds at a variable rate of interest from the Riksbank but that the rate is fixed for one week at a time.

So the starting point for the monetary policy repo is the banks' borrowing requirement in relation to the Riksbank. The fact that the repo is basically constructed as a purchase of securities in exchange for capital is a purely technical issue. The Riksbank could just as easily grant ordinary loans with a maturity of one week in return for interest, with securities as collateral for the loans.

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[10] It is usual to say that the banking system has a structural liquidity deficit or liquidity surplus, therefore indicating how much liquidity the Riksbank needs to provide or absorb in the market. This terminology creates some confusion, however, since the Riksbank neither provides nor absorbs liquidity in the market. For that reason it is more correct to say that the banking system has a borrowing or deposit requirement at the Riksbank.

[11] The term "repo" is short for repurchase agreement.

[12] Strictly speaking, the Riksbank's repo in this case is a "reverse repo" since the Riksbank first buys securities and subsequently sells them back. A repo is when a party first sells and then repurchase securities.

[13] The repo rate for a repo instrument in the financial markets should not be confused with the Riksbank's repo rate, which is in this case the Bank's key interest rate.

[14] In practice, the repo rate is adjusted in connection with the Bank's pre-announced monetary policy meetings, which as a rule are held eight times a year. Extra meetings may be called, as was the case when the repo rate was cut after the terrorist attack in New York on 11 September 2001.

If the banking system instead has a deposit requirement the Riksbank issues certificates. A Riksbank certificate is a debt instrument that represents a short-term claim on the Riksbank. The Riksbank sells these certificates to banks for a period of one week. When the certificates mature, the Riksbank repays the funds plus interest – the repo rate – to the banks.[15]

Whether the banking system needs to borrow or deposit funds at the Riksbank has no significance for the ability to steer interest rates.

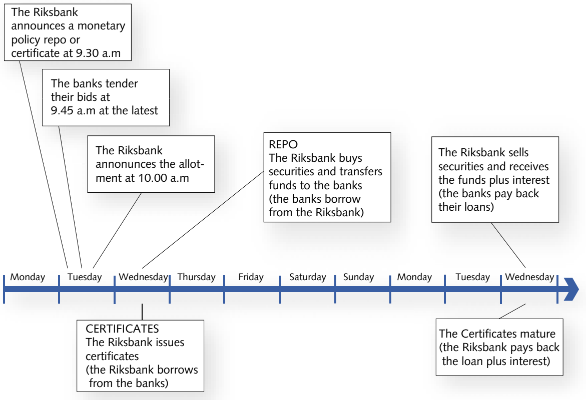
The banking system as a whole currently has a borrowing requirement at the Riksbank, which is why the description will focus on the monetary policy repo. Whether the banking system needs to borrow or deposit funds at the Riksbank has no significance, however, for the Riksbank's capability to steer interest rates.

The terms and conditions of the repo (or certificate issue) are announced every Tuesday at 9.30 a.m., covering the type of transaction (monetary policy repo or certificate issue), maturity, repo rate, and the minimum and maximum bids. The process is carried out in the form of an auction whereby the banks notify the Riksbank of how much they need to borrow. There is no obligation to submit a bid, however.

The banks must tender their bids to the Riksbank before 9.45 a.m. An allotment is then made according to a percentage share that is calculated on the basis of the Riksbank's intended size of the repo and its proportion of the banks' total bid volume. If, for example, the intended size of the repo is 50 per cent of the total bid volume, each bank will be able to borrow 50 per cent of its tendered bid. If the banks' bids fall short of the intended size the Riksbank fine-tunes the borrowing requirement.

The Riksbank announces the result of the repo at 10.00 a.m. Figure 6 shows the different steps involved in the implementation of a repo transaction. The figure also shows the steps in a certificate issue.

Figure 6. Schedule for the Riksbank's monetary policy repo or issue of certificates



[15] From July 1994 to May 1997 the Riksbank issued certificates as the banking system as a whole had a deposit requirement at the Riksbank. Since then the banking system has had a borrowing requirement.

STEP 3. IMPLEMENTATION OF THE FINE-TUNING OPERATIONS

The banking system's actual daily borrowing or deposit requirement at the Riksbank may differ from the Bank's forecast for the average requirement over the week. That means that the banking system may need to borrow or deposit funds through the standing facilities.

Since the Riksbank wants a stable overnight rate, the Bank therefore carries out fine-tuning operations.

If there are no matching positions between the banks the Riksbank performs a fine-tuning operation.

Those banks that have a borrowing or deposit requirement at the end of the day, and that have not managed to resolve this in the overnight market, will call the Riksbank after 4.20 p.m. to ask whether the Bank is offering fine-tuning. The Riksbank has details of both individual banks' account balances in RIX and of the banking system's total position in relation to the Riksbank. If the requested amount can be matched by another bank the Riksbank asks the enquiring bank to contact other banks. If there are no matching positions at the other banks the Riksbank performs a fine-tuning operation equal to the requested amount or parts thereof with the enquiring bank.

If, for example, the banking system as a whole has a borrowing requirement of 100 and the Riksbank is contacted by a bank with a borrowing requirement of 150, the Riksbank will only perform fine-tuning operations for 100. That is because a different bank (or several banks between them) needs to deposit 50, and the banks are thereby expected to balance this out in the overnight market.

The Riksbank performs fine-tuning operations between 4.20 p.m. and 4.40 p.m. as it is not until 4.20 p.m. that the Riksbank has full details of the banking system's borrowing or deposit requirement.[16]

Simple, market-oriented operational framework

The Riksbank's operational framework has a relatively simple design and is very similar to that employed by other central banks.

Since the Riksbank strives for a market-oriented operational framework, the current solution which evidently works well was the evident choice.

It is reasonable to ask, of course, whether it is possible to simplify the framework further. It is likely, for example, that an even narrower interest rate corridor would be able to achieve a stable overnight rate. The question, though, is how narrow the corridor can become before the shortest-term market, that is the overnight market, ceases to function as the incentives for the banks to borrow and deposit funds with each other disappear. In such a situation, the banks will decide to borrow and deposit funds at the Riksbank only. Since the Riksbank strives for a market-oriented operational framework, alternative solutions have been rejected in favour of the current framework, which evidently works well.

[16] The banks can return banknotes up to this time.

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