SPEECH

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■ The Riksbank's inflation targeting policy – the significance of the new interest rate assumption

I would like to start by thanking you for the invitation to come here and speak about the Riksbank and monetary policy.

Today I intend to concentrate on the assumption for the repo rate that we use for forecasts in the Inflation Reports. Towards the end of my speech, I will also comment briefly on the current monetary policy situation and why we chose to raise the repo rate by 25 points at the monetary policy meeting on 22 February.

It is, of course, important when making a forecast for inflation, GDP growth etc., to be clear about which assumption the future monetary policy forecasts will be based on. Previously we based our forecasts in the main scenario of the Inflation Report on the assumption of an unchanged repo rate. Since the Inflation Report in October last year, we are instead assuming that the repo rate will develop in line with market expectations as reflected in so-called implied forward rates.

In a speech I held in connection with our changing the interest rate assumption, I gave an account of the main advantages of the new procedure when we produce our forecasts.[1] I will also take this up today to some extent.

Our new assumption for the repo rate has given rise to quite a few questions, including questions about the way in which it is used as a basis for monetary policy decisions. It has been argued by some in the discussion that our new interest rate assumption has made it more difficult to anticipate our interest rate decisions. Personally, I believe it should make it easier to understand monetary policy, and I will therefore devote part of my speech to this issue.

I will also discuss the significance of our new interest rate assumption for future monetary policy. We can influence the general public's expectations of future interest rates by being clear about our view of economic development. Our ambition is to make it easier for the general public to gain a reasonable idea of future interest rate developments. At the same time, there is, of course, considerable

[1] See Rosenberg, I. "The Riksbank and monetary policy", speech at Danske Bank, 29 September 2005. See also the box "Changes in the Riksbank's forecasting methods", Inflation Report 2005:1.

uncertainty about this, in particular in the longer term, which is quite simply due to the uncertainty associated with the future development of the economy. Knowledge about this uncertainty is in itself relevant for firms, households and other market participants when they obtain an idea of what will happen with monetary policy in the future. This uncertainty also means that the Riksbank cannot bind monetary policy in *advance* to a particular path for the repo rate. It is important that the Riksbank makes this clear in various ways.

Before I go into these issues in more detail, let me say a few words about the basic principles for how we conduct monetary policy today in Sweden.

The monetary policy strategy

The objective of monetary policy, which has been established by the Riksdag (the Swedish parliament), is to maintain price stability. The Riksbank has specified this objective as limiting inflation measured by the consumer price index (CPI) to 2 per cent, with a tolerance interval of plus/minus 1 percentage point. Monetary policy is also guided by various measures of so-called *underlying* inflation. The measure most often used is the change of UND1X, which excludes mortgage expenditure and direct effects of changed indirect taxes and subsidies.

We normally try to conduct monetary policy in such a way that inflation is expected to be in line with the target within a two-year period. This time horizon can be justified by the fact that monetary policy actions have a time lag but also by a wish to contribute to holding back fluctuations in real economic activity. However, taking the real economy into consideration must not mean that the goal of price stability is set aside. The two-year horizon provides scope for flexibility while at the same time setting a limit for how far we can permit inflation to deviate from the inflation target in normal circumstances.

However, situations can arise where it is neither possible nor desirable to attain the inflation target within a two-year perspective. This applies, for instance, when the economy has been exposed to a disturbance that makes inflation deviate sharply from the target and a rapid return to the target would expose the real economy to excessive strains. In this case, we should explain our intentions as clearly as we can in connection with our monetary policy decision and point out that inflation will not be on target within the normal time horizon and state the reasons for this.

The significance of the interest rate assumption for the inflation forecast

As I said before, our inflation forecasts were previously based on the assumption that the repo rate would not change during the forecast period. The assumption of an unchanged repo rate in some ways made it easy to justify changes in monetary policy. Guided by this assumption, monetary policy could, somewhat simplified, be described by the following rule of thumb: if the forecast inflation, *given an unchanged repo rate*, deviated from the target, the repo rate should *normally* be raised or lowered.

Even though this arrangement worked fairly well from a communication point of view, there are clear advantages in basing forecasts on a more reasonable as-

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sumption of the development of the repo rate. Let me give a brief account of some of these:

The assumption that the repo rate would develop in accordance with implied forward interest rates should *in the long run* provide more realistic assessments of the future repo rate than the assumption of a constant repo rate. This is particularly the case when there are market expectations of considerable changes in the repo rate during the forecast horizon. For instance, it is difficult in such circumstances to combine the assumption of a constant repo rate with reasonable forecast paths for the exchange rate and long-term interest rates since these are affected by market expectations about movements of short-term interest rates. This in turn also affects the forecasts for growth and inflation. The new interest rate assumption therefore creates the prerequisites for making better inflation forecasts and also more coherent forecasts for individual macro variables. This will eventually improve the basis for monetary policy decisions.

Another advantage of making forecasts on the basis of a more reasonable assumption about future interest rates is that it will be easier to assess the forecasts. In normal cases, it is not realistic to assume that the repo rate will remain unchanged in a two-year perspective. An inflation forecast based on that assumption will therefore normally be inaccurate. It will thus also be difficult to make meaningful evaluations of the inflation forecasts. An additional advantage of basing the forecast on the assumption that the repo rate will develop in accordance with market expectations is that it will be easier to compare the Riksbank's forecasts with those of other forecasters, which are not normally based on an assumption of an unchanged repo rate.

In connection with our changing the interest rate assumption, we also extended the forecast horizon. A longer time horizon will, for instance, make it easier to show that certain types of disturbances only affect inflation temporarily and why it is not desirable to counteract them by monetary policy measures. This also justifies our moving from an assumption of a constant repo rate: the longer the forecast horizon is, the more improbable it will be that a constant repo rate is a reasonable description of future interest rates.

This is, roughly, the background to why we have chosen, with effect from the third Inflation Report last year, to base the inflation forecasts in the main scenario on an assumption of the repo rate developing in line with market expectations, as reflected in implied forward rates. The main reasons are thus to improve the basis for monetary policy decisions and also the opportunities for evaluations. This new procedure does not, however, entail any change in the basic monetary policy strategy in the sense that monetary policy will normally continue to be focused on keeping inflation on target within a two-year period.

Let me now go on to how the interest rate assumption is to be used and interpreted in connection with the monetary policy decisions.

Communication and the interest rate path

The interest rate path which the Riksbank uses in the Inflation Reports is based, as I have said, on implied forward rates, and these are calculated on the basis of interest rates on treasury bills and government bonds. The implied forward rate curve on which the forecasts are based is an average of 15 different daily implied forward rate curves. For instance, the interest rate path used in the latest Inflation

Report was based on an average of the daily curves between 20 January and 9 February 2006. The reason we have chosen to use an average is because we wanted to exclude temporary movements in the implied forward rates (see Figure 1). At the same time, this means that the implied forward rate curve, as we calculate it, does not reflect market expectations about the future repo rate at a particular point in time but instead the estimated *average* expectation during the selected 15-day period.

Despite the fact that we now base our forecasts on an interest rate assumption that is normally reasonably realistic, it is important to underline that this assumption does not necessarily coincide with the Riksbank's own expectations about future repo rates. Our assessment of how the economy will develop can differ from that made by market participants. The market may also have a different view from the Riksbank of how monetary policy will react to economic disturbances of various kinds. But we can express in different ways our assessments of policy as reflected in implied forward rates and in this way clarify our view in relation to that of the market. This also enables us to influence market expectations more directly in the short term. Let me illustrate this by some examples:

In connection with the Inflation Report in October last year, we said that we thought that the implied forward rate path on that occasion gave rise to reasonable inflation developments in the coming years. Consequently, no great changes occurred in market expectations when we published the report (see Figure 2). In connection with the December report, we considered that the market was correct in anticipating an increase in the repo rate at the beginning of 2006 but that the rise might be a bit quicker in the winter and spring than that reflected by the path of implied forward rates. When the monetary policy decision was announced, the market reacted consistently this time as well by the implied forward rate path shifting in a way that reflected the expected interest rate increases taking place earlier (see Figure 3).

Let me take the opportunity here to touch on a question that sometimes arises when we comment on market expectations of the development of the repo rate in connection with a monetary policy decision: What expectations do we normally relate to when making our interest rate decision? The expectations reflected by the implied forward rate path on which the forecasts in the Inflation Report are based, or the expectations applying at our monetary policy meetings?

It is unavoidable that some time passes from finishing the forecasting work to the publication of the Inflation Report. New information can become available during these days that affects the implied forward rate path. At the monetary policy meeting, the Executive Board always makes an assessment of whether the new available information since the forecasts were made gives rise to any change in the analyses and forecasts. If this is the case, it is explained in connection with the presentation of the report and the announcement of the monetary policy decision. However, the path of implied forward rates changes from day to day and over time as new information is received and new assessments are made. There is no reason for the Riksbank to comment on every small shift of the implied forward rate path in hundredths or tenths. The precision of the inflation forecasts is hardly so great that it is worthwhile attempting to distinguish the consequences of minor shifts in the interest rate path for our forecasts.

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Principles that guide the monetary policy decisions in the new interest rate assumption

When our forecasts were based on an unchanged repo rate, monetary policy could be explained by the simple rule of thumb that I described – the repo rate would normally be changed if the forecast showed inflation deviating from target. With the new interest rate assumption, monetary policy can no longer be described by a simple rule of thumb of this kind. How do we then reason instead when we make monetary policy decisions applying inflation forecasts based on our new interest rate assumption? If inflation is expected to be close to target in a two-year time perspective, given the interest rate path on which the inflation forecast is based, this could indicate that the interest rate movements expected by the market are desirable. However, to determine this we must also take into account the consequences for the whole paths of inflation and the real economy that this interest rate policy is expected to give rise to.

Let me illustrate this by explaining how we reasoned at the Executive Board meeting when we chose to raise the repo rate by 25 points in February, despite inflation being low during a large part of the forecast period and close to but still under target in a two-year time perspective.[2]

The interest rate path on which the inflation forecast was based reflected the fact that the market expected the repo rate to be raised by 25 points in connection with the monetary policy meeting on 22 February and then to be gradually increased during the remainder of the forecast period. We chose to raise the repo rate in February in accordance with expectations despite inflation being expected to be *clearly* below target for a large part of the forecast period. The inflation forecast could have justified waiting a couple of months before raising the repo rate. However, our assessment was that there were other circumstances that argued in favour of the repo rate being raised in February. At the same time, we considered that the repo rate could perhaps *subsequently* be increased at a somewhat slower rate than that indicated in the implied forward rates.

Our motivation was that the very expansionary monetary policy in recent years in combination with the weakening of the krona had entailed a substantial stimulation of the real economy and also contributed to household indebtedness and a faster increase in house prices than could be deemed sustainable in the long term. In a situation where demand was already growing quickly and growth was robust, the risks of future sharp fluctuations in the real economy would be greater if one attempted to push up inflation quickly through very expansionary monetary policy. A gradual increase in the repo rate, where the policy is brought step by step onto a less expansionary path, in my opinion reduces the risk of a development that would lead to abrupt adjustments in house prices and household indebtedness later on. This also thus reduces the risk of an unfavourable development of the real economy.[3] In this context, I would, however, emphasise that the reference to household indebtedness and house prices is not, as some have understood it, an expression for our having introduced new targets alongside the inflation target. There are though, as I have just explained, reasons to take into account the impact of these factors on the real economy and inflation, even in a longer perspective, and under different designs of monetary policy.

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[2] See also the Separate Minutes of the Executive Board, No. 4, 2006.

[3] See also Nyberg, L., "House price developments and monetary policy", speech at Evli Bank, 19 December 2005.

Uncertainty over the future repo rate path

We thus always try to be as clear as possible about our view of future macroeconomic developments, including the monetary policy with which this development is normally associated. One question that therefore deserves a comment, before I finally go on to discuss current moentary policy, is how accurately is the future repo rate depicted by market expectations as expressed in implied forward rates?

It is important to remember that our view of the development of the repo rate at the monetary policy meetings is based on the information available at the time of the decision. Our considerations may, of course, subsequently be changed due to new statistics becoming available or to the economy facing unforeseen shocks. Knowledge of the size of this uncertainty can in itself be relevant for those who wish to form an idea of how the repo rate will develop in future.

There are various methods that can be used to form an idea of how great *the probability* is of the repo rate being within a particular interval at a particular time in the future. We made an analysis in a box in the last Inflation Report as to how this kind of uncertainty interval can be calculated and presented two different methods.[4]

In the first method, the implied forward rates are calculated for various points back in time. A study is then made of how well the implied forward rates have anticipated the actual development of the repo rate. Based on the "forecasting errors" it is possible to calculate the uncertainty interval around the forecast given by the implied forward rate path. The method is thus retrospective. Unsurprisingly, the calculations show that the spread of the deviations (the standard deviation) increases with the length of the forecast horizon (see Figure 4). This illustrates the uncertainty about macroeconomic developments in general and that the probability for unexpected disturbances arising in the economy increases with the length of the forecast horizon.

In the second method, the uncertainty interval is instead calculated with the aid of the market's pricing of interest rate options. The current prices of interest rate options reflect expectations of future interest rates. This method is therefore forward-looking and based on the fact that the redemption price for identical options can vary. This variation reflects the market's assessment of the uncertainty in the future price of the asset on which the option is based. Since this variation can be observed, it is possible to construct an uncertainty interval around the implied forward rate curve. These uncertainty intervals are largely similar to the uncertainty intervals based on historical deviations (see Figure 5).

To summarise, the strategy for monetary policy is being maintained with the new interest rate assumption. We normally try to attain the inflation target within a two-year period and we take the real economy into consideration. However, monetary policy cannot as before be described by the simple rule of thumb that was based on the assumption of a constant repo rate. Instead the forecasts that are based on the assumption that the repo rate will follow implied forward rates are studied and assessed. It is the whole path of inflation and the real economy that is important in monetary policy decisions. If the forecasts for inflation and the real economy are assessed to show a desirable development, market expectations will provide a reasonable forecast for coming monetary policy decisions. However, it is important to remember that new data are being received all the

[4] See the box "Uncertainty regarding future interest rate movements", in Inflation Report 2006:1.

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time, which must be taken into account in our monetary policy. The fact that implied forward rates are being used in our forecasting work should not be regarded as a commitment regarding future monetary policy. There is considerable uncertainty over future macroeconomic developments, and this means that market expectations of the future repo rate path may often be incorrect. This is also illustrated by the considerable uncertainty intervals around the assumed interest rate path (see Figure 4).

The current monetary policy situation

The principles that I have just discussed apply primarily when we produce and publish complete forecasts in connection with Inflation Reports. At the intervening meetings, we start from the forecast that applied in the previous Inflation Report and study how the information received since then affects both the interest rate assumption and the forecasts. Our next monetary policy meeting on 27 April will involve making this kind of intermediate, more qualitative assessment.

The implied forward rates on which the forecast in the Inflation Report published on 23 February was based reflected a 15-day average as per 9 February. On 16 February, an unexpectedly low CPI outcome was published for January. This led to a downward movement of the implied forward rate, which we stated that we considered reasonable in the press release in connection with the interest rate decision. At present, the implied forward rate is slightly higher than it appeared immediately after publication of the unexpectedly weak CPI outcome for January. However, in the short term the differences are marginal. The current implied forward rate path entails the repo rate remaining unchanged until summer and then subsequently being increased gradually. We Executive Board members will thus take a stance with regard to which monetary policy conclusions can be drawn from the information received since the end of February at our meeting on 27 April. Let me say a few words here on my own view of the situation.

The February Inflation Report contained the forecast that international economic activity would remain relatively stable over the coming years. Since the Report was published, the oil price has risen by almost 10 dollars per barrel which is clearly higher than the forecast in the Report. The forward prices for oil have risen, which indicates that there may also be reason to expect a higher oil price for some time to come. Experiences from recent years are that the international upturn in economic activity has been surprisingly resilient to increases in the oil price.

Revised national accounts for the United States have been received, which show that growth was marginally stronger at the end of 2005 than was indicated by preliminary figures. The most recent labour market statistics for the United States indicate a continued favourable development, although the monthly statistics for household consumption indicated some slackening of demand. The purchasing managers index for the manufacturing industry in March indicated a small decline for the United States, while the index continued to improve for the euro area. Other indicators for the euro area such as the European Commission's surveys show a positive development recently. Growth in Asia has been stronger than we had assumed. All in all, my opinion is that international economic activity appears slightly stronger now than we assessed in the February Inflation Report.

For Sweden, the assessment in the Inflation Report was that GDP growth would be relatively high in the coming years. Statistics Sweden has since then published

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national accounts for the fourth quarter of 2005. These figures show that GDP growth was somewhat lower than expected, although the outcome for earlier periods was revised at the same time in such a way that the growth for the whole year 2005 remainedl in line with the forecast. Recently, indicators have shown a relatively positive picture of the development of economic activity, for example, the business tendency survey, the retail trade index and statistics for foreign trade. The purchasing managers index for the manufacturing industry has, as has been the case in the euro area, indicated a clear improvement in industrial activity since the middle of last year and this development has also continued recently. Altogether, the statistics indicate that the level of economic activity has improved in recent months after being weaker than expected at the end of last year. I believe that this indicates that the assessment of economic activity in Sweden that we made in the Inflation Report still largely holds true.

As regards the labour market, it was noted in the Inflation Report that there had been an improvement and that there is a lot to indicate that employment will continue to increase in future. Since the Inflation Report, the number of employed has developed largely as we estimated in February. The supply of labour has at the same time increased slightly more than expected. The information received does not change the overall assessment that there has been a gradual improvement in the labour market situation, however.

Our assessment in the Inflation Report was that inflation would increase in future although at a moderate rate. Recently, energy prices have increased more than expected. Electricity prices have gone up while the rising oil price has led to higher prices for petrol and heating oil. Overall, this has contributed to inflation being higher than forecast in the Inflation Report. In March, UND1X inflation increased to 1.2 per cent per year while CPI increased by 1.1 per cent. The outcome was 0.3 percentage points higher than forecast in the Inflation Report (for both CPI and UND1X). Inflation can be expected to be somewhat higher than this forecast for some time to come due to the higher energy prices, although, it is a matter, as I see it, of changes in a rather short time perspective. However, as we have earlier pointed out, there is also reason to assume gradually increasing inflationary pressures as the economic upswing leads to a rise in capacity utilisation both in Sweden and abroad. The basic assessment of inflation developments over the next few years still stands, given the new information received since the Inflation Report.

My overall conclusion is that the new information received since the Inflation Report in February mainly confirms the picture then outlined of economic activity in Sweden, while it indicates a slightly stronger development abroad. Inflation prospects in the next few years also appear to have held up rather well on the whole. In February, when we chose to raise the repo rate, our conclusion was that the interest rate should perhaps be increased at a somewhat slower rate than was anticipated according to the interest rate path on which the forecasts in the Inflation Report were based. Personally, I do not see any reason in the current situation to change that assessment, although international developments now look slightly better than we had anticipated in February. This is something I will discuss with my colleagues when we meet next week. The strong level of economic activity and the inflation forecast indicate, however, that it will again be necessary to gradually shift monetary policy onto a less expansionary path to ensure that inflation remains close to target.