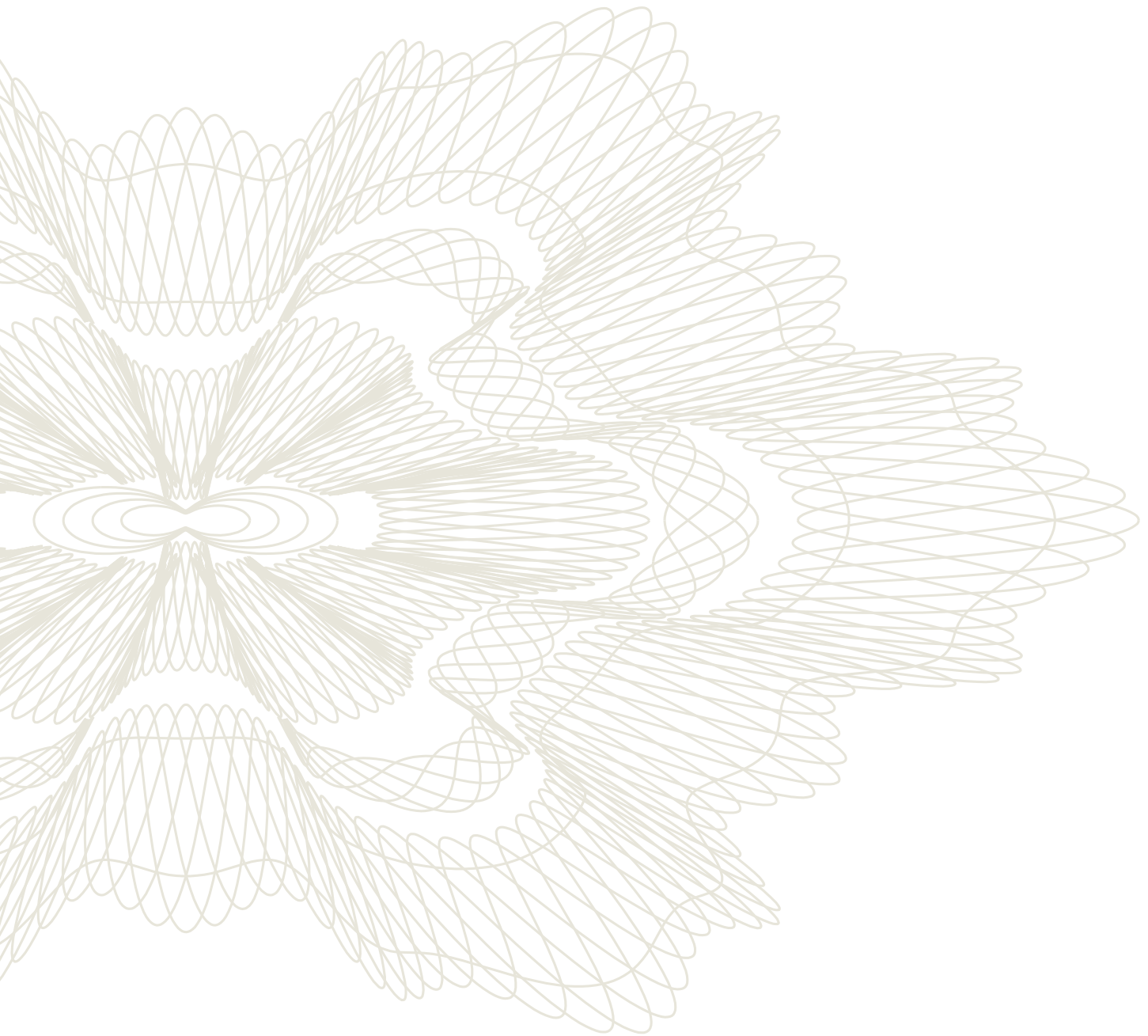


# 2005

Annual Report 2005

## Chapter 1 Monetary policy



# Chapter 1 Monetary policy

## Flexible inflation targeting

Monetary policy in Norway is oriented towards low and stable inflation. The operational objective of monetary policy is annual consumer price inflation of approximately 2.5% over time. In general, direct effects on consumer prices resulting from changes in interest rates, taxes, excise duties and extraordinary temporary disturbances shall not be taken into account. The operational objective provides an anchor for economic agents' expectations concerning future inflation. When there is confidence in the inflation target, monetary policy can also contribute to stabilising developments in output and employment.

### **BOX: The mandate for monetary policy in Norway (see appendix)**

Norges Bank operates a flexible inflation targeting regime, so that both variability in inflation and variability in output and employment are given weight in interest-rate setting. Flexible inflation targeting builds a bridge between the long-term objective of monetary policy, which is to keep inflation on target and provide an anchor for inflation expectations, and the more short-term objective of stability in the real economy.

Monetary policy influences the economy with long and variable lags. Norges Bank sets the interest rate with a view to stabilising inflation at the target within a reasonable time horizon, normally 1–3 years. The relevant horizon will depend on disturbances to which the economy is exposed and how they will affect the path for inflation and the real economy ahead.

Predictability is an important element of monetary policy. Norges Bank regularly publishes assessments of the outlook for the global and Norwegian economy and the key interest rate. When participants understand the central bank's response pattern, the reaction of market rates to new information about economic developments has a stabilising effect.

Interest-rate setting must be viewed in the context of Norges Bank's assessment of the current economic situation, inflation expectations and future developments in interest rates, inflation, output and employment. There is considerable uncertainty surrounding developments in these variables. Monetary policy cannot fine-tune economic developments, but it can avoid the largest effects when the economy is exposed to disturbances. In some situations, it may be appropriate to take into account particularly unfavourable developments.

### **BOX: Monetary policy instruments (see appendix)**

Decisions concerning interest rates and other important changes in the use of instruments will normally be taken at the Executive Board's monetary policy meeting every sixth week. The basis for the Executive Board's decisions and assessments are communicated in a press release and at a press conference. The press release includes a detailed account of the main aspects of economic developments that have influenced the decision. The interest rate decision is published at a pre-announced time.

### **BOX: Transparency with regard to the basis for decisions (see appendix)**

Three times a year, in connection with every third monetary policy meeting, an inflation report including monetary policy assessments is published at the same time as the interest rate decision. In the inflation reports, Norges bank analyses the current situation and the economic outlook. Up to *Inflation Report 2/05*, the analyses were based on technical assumptions that the interest rate would move in line with financial market expectations. Since *Inflation Report 3/05*, the analyses have been based on the Bank's own forecast for future interest rates. It is the Executive Board's assessment that the interest rate forecast provides a reasonable balance between the objectives of monetary policy. This forecast will in many cases be close to market expectations, but this will not necessarily be the case.

**BOX: Criteria for a good interest rate path (see appendix)**

The central bank influences economic developments primarily via expectations. Norges Bank's publication of its interest rate forecast may make it easier for economic agents to understand the Bank's intentions in its interest-rate setting. This may promote stability in output and employment and in inflation. Forecasts based on an interest rate path that is the most realistic in Norges Bank's view also facilitates the interpretation and evaluation of the Bank's projections.

**BOX: Interest rate forecast and uncertainty (see appendix)**

On the basis of the analysis in the *Inflation Report*, the Executive Board adopts a monetary policy strategy every fourth month for the next four months. The strategy is published at the beginning of the relevant strategy period, and it is conditional on economic developments that are broadly in line with projections. Interest rate decisions are based on this monetary policy strategy.

The conduct of monetary policy requires a reliable stream of information concerning economic developments. In 2005, 1400 firms and public enterprises in Norges Bank's regional network were interviewed about output and price developments and plans for investment and employment. Combined with available official statistics, the reports from the regional network form an important part of the decision-making basis. The reports are published in connection with the *Inflation Report*. For a more detailed description, see the box in the section entitled Performance in 2005.

Norges Bank exercises professional judgment in interest-rate setting. As a guide in the exercise of this judgment, Norges Bank utilises analytical tools and economic models that describe relationships in the economy. The models combine and apply empirical and theoretical knowledge on the functioning of the Norwegian economy, contributing to a consistent analysis of the interaction between different economic variables. Through 2005 Norges Bank further developed the use of models to analyse alternative scenarios for the interest rate, inflation and output. In the *Inflation Report*, particular emphasis was given to analysing the monetary policy response in the event of error on the part of the Bank regarding key features of the Norwegian economy, or if particular risk factors should dominate developments.

**BOX: Work on macroeconomic models (see appendix)**

To assure the quality of the analyses and the basis for decisions, the Bank maintains close contact with other central banks and the international academic community. Economists from other central banks and academic institutions in Norway and abroad are regularly invited to Norges Bank to evaluate the quality of the Bank's monetary policy analysis.

Monetary policy and monetary policy performance in 2005 are assessed in the following section. Performance in 2005 is influenced by the use of instruments in previous years. The use of instruments in 2005 will have a particular impact on performance in the years ahead.

## **Performance in 2005**

### **Inflation and capacity utilisation through 2005**

The cyclical upturn in the Norwegian economy, which began in the second half of 2003, continued in 2005. Capacity utilisation at the beginning of 2006 is probably somewhat above the normal level. Low interest rates, higher petroleum investment, strong global growth and an improvement in Norway's terms of trade have been the most important driving forces. At the beginning of the upturn, low interest rates contributed to high growth in private consumption and housing investment. The upturn gradually broadened, and last year exports and corporate investment in mainland Norway showed solid growth.

So far in this upturn, employment has not increased to the same extent as in previous upturns. One of the reasons for this is the sharp fall in sickness absence through 2004. In 2005, the number of person-hours worked increased relatively quickly, and productivity per employee was high. This may have curbed labour demand. Norges Bank assumes that production capacity in the Norwegian economy in both 2004 and 2005 probably rose somewhat more than normal. The result is that the economy has been able to grow more quickly without resulting in bottlenecks and cost inflation. Towards the end of 2005, the number employed also picked up as a result of continued strong output growth.

Inflation has risen somewhat, but is still low (see Chart 1). Consumer price inflation adjusted for taxes and excluding energy products (CPI-ATE) was 1.0% in 2005. Consumer price inflation edged up through the first half of the year, but an accelerating fall in prices for imported consumer goods pushed the CPI-ATE down somewhat towards the end of the year. A higher rise in prices for domestically produced goods and services contributed most to the rise in consumer prices. Of the domestic components, it was primarily prices for services with wages as the dominant factor that showed a marked rise, despite relatively low wage growth in 2005. Increased competition in a number of markets contributed to restraining inflation. Other measures of underlying inflation showed somewhat stronger inflation than the CPI-ATE for 2005 as a whole (see Chart 2). The difference was smaller than in the two previous years, however.

**BOX: The regional network in 2005 (see appendix)**

## Reasons for the deviations from the inflation target and output developments in 2005

In 2005, different measures of inflation stood at between  $\frac{3}{4}\%$  and 2%. Underlying inflation, as measured by the CPI-ATE, was 1.0% in 2005.

Monetary policy influences the economy with long and variable lags. In 2005, inflation and output and employment were primarily influenced by monetary policy in previous years. Low inflation in 2005 is the result of monetary policy trade-offs and of unforeseen disturbances to the economy.

Towards the end of 2002, new information emerged indicating that developments in output and employment might be weaker than projected and inflation might be lower. The key rate was therefore reduced in December 2002. New information gradually emerged about the outlook for other countries and the Norwegian economy, indicating that inflation might be very low. Up to March 2004, the key rate was reduced by a total of 5.25 percentage points to 1.75%.

Norges Bank's projections for inflation in 2005 showed little change in *Inflation Reports* through 2003 and the March 2004 *Report*. In the March 2004 *Report*, the Bank projected underlying inflation at  $2\frac{1}{4}\%$  in 2005 (see Chart 5).

Of the deviation of slightly more than one percentage point between projected inflation for 2005 in the March 2004 *Inflation Report* and actual inflation in 2005, about  $\frac{1}{2}$  percentage point can be attributed to lower-than-projected wage growth (see Table 1). However, it may be difficult to make a precise estimate of the contribution from wage growth as there is a reciprocal relationship between wage growth and inflation. Very low inflation and lowered inflation expectations prior to the 2005 wage settlement may have contributed to low wage growth. In addition, the labour market was somewhat weaker than assumed (see Chart 3).

**Table 1. Decomposition of the difference between actual and projected inflation in 2005 published in *Inflation Report* 1/04 and 1/05.**

	IR 1/04	IR1/05
Difference between actual and projected rise in CPI-ATE. Percentage points	-1 $\frac{1}{4}$	-0.1
<i>Decomposition of difference</i>		
Stronger exchange rate	-0.4	0
Lower international price impulses	-0.1	0
Lower wage growth	-0.4	-0.1
Direct effect of interest rate on house rents	-0.2	0
Other factors/unexplained <sup>1</sup>	-0.2	0

<sup>1</sup>Mainly related to the fall in imported consumer prices at the beginning of 2005.

The krone exchange rate was considerably stronger through 2004 and 2005 than assumed at the beginning of 2004 (see Chart 4). Exchange rate developments can ex-

plain about ½ percentage point of the deviation in inflation. The higher-than-expected value of the Norwegian krone may be due to weaker developments in global interest rates than indicated by forward rates at the beginning of 2004. External price impulses for the year as a whole were approximately as expected.

The direct effect on house rents of the interest rate reductions in 2003-2005 also pushed down CPI-ATE inflation.

The projections for CPI-ATE inflation through 2005 proved to be a fairly accurate forecast of actual developments.

In the light of the substantial uncertainty surrounding the calculations of capacity utilisation in the economy, the projections in the *Inflation Reports* in 2004 were fairly accurate for capacity utilisation in 2005 (see Chart 5). In *Inflation Report 3/04*, the projection was revised upwards slightly in relation to the previous two reports. The revision was due to slightly lower forward rates and the prospect of higher growth in housing and petroleum investment. The output gap estimate was revised downwards again through 2005 as a result of projected higher growth in potential mainland output.

In the Executive Board's strategy document from March 2004, the projections were based on forward interest rates, which implied a key rate that would move down towards 1½% in the coming months and increase gradually from autumn 2004. According to the Executive Board's assessment, this would provide a reasonable balance between the objective of bringing inflation back to target and the objective of reasonable developments in the real economy. The Executive Board noted that the risk of a persistent, large negative deviation from the inflation target seemed to dominate. There was reason to focus particular attention on factors that might delay a rise in inflation.

In *Inflation Report 2/04*, which was published on 1 July, the inflation projections for 2005 and 2006 were again revised downwards (see Charts 5 and 6). The krone had appreciated, and forward rates, on which the projections were based, were slightly higher than in the previous *Report*. It appeared that inflation would not reach target until summer 2007. The Executive Board pointed out that monetary policy should be oriented towards achieving a somewhat more rapid rise in inflation. Rather than reducing the interest rate further, it was the view of the Executive Board that the key rate should be left unchanged for a longer period than assumed in the baseline scenario.

In the November 2004 *Inflation Report*, an assessment was made of the trade-off between low inflation and high growth in the real economy. Since the previous *Report*, the inflation projection had been revised downwards, partly as a result of increased domestic competition and downward revisions of the rise in prices for imported consumer goods. At the same time, the output gap estimate was revised upwards. The projections were based on forward rates, which implied that the key rate would remain unchanged in the period to summer 2005, followed by a gradual increase. The Executive Board's assessment implied that inflation would continue to be low for a period, and that it would take longer than previously assumed to attain the inflation target.

The Executive Board considered an alternative monetary policy stance where the sight deposit rate was set at zero in the short term, followed by a rapid increase. Monetary policy influences the economy with long and variable lags. The effect on inflation in 2005 of a substantially lower interest rate from the end of 2004 would have been fairly small. The impact on total output over the next two years, however, might have been more pronounced. Monetary policy assessments in 2004 thereby implied that Norges Bank expected inflation to remain below target in 2005.

### **Variability in inflation and output**

Developments in inflation, adjusted for some temporary factors, provide a basis for assessing monetary policy performance. The operational objective of monetary policy is a rise in consumer prices of 2.5% over time, but not at all times. The degree of precision in attaining the inflation target that can reasonably be required of monetary policy must also be taken into account. Consumer price inflation may and will frequently deviate from the target, partly as a result of unforeseen disturbances and partly as a result of monetary policy trade-offs. In recent years, most events and disturbances have exerted downward pressure on inflation.

The level of consumer price inflation over a short period does not therefore provide an adequate basis for assessing whether long-term monetary policy objectives have been achieved. Chart 8 shows a ten-year moving average for annual consumer price inflation. Inflation stabilised early in the 1990s after falling from a high level in the previous decade. In the ten year period 1996-2005, average inflation was 2.0%, measured by the consumer price index.

The band around average inflation shows inflation variability. Variability is calculated as the standard deviation over a ten-year period, 7 years back and two years ahead. From longer perspective, variability has declined. Through the 1990s, inflation largely hovered around 1½- 3½%, but has varied slightly more in recent years. In a period of increasing cross-border labour flows, major technological advances, changes in competitive conditions and substantial changes in trade patterns we will, with our very open economy, probably experience somewhat greater variation in inflation, as we have witnessed over the past two to three years. Experience may indicate that inflation expectations remain stable even if inflation varies somewhat as long as the interest rate is used actively to moderate variations in inflation.

Under a flexible inflation targeting regime, monetary policy also gives weight to the objective of stabilising developments in the real economy. Chart 9 shows developments in the output gap since 1980 and output gap variability over a period of 10 years. Output gap variability seems to have been diminishing since the end of the 1990s.

### **Inflation expectations**

For monetary policy to contribute to stabilising developments in output and employment, economic agents must be confident that the inflation target will be reached. Expectations concerning inflation and economic stability are of crucial importance for

the foreign exchange market. Exchange rate expectations are influenced by growth in public expenditure and terms of trade, although stable inflation expectations will also have a stabilising effect on exchange rate expectations.

Inflation will not be on target at all times, but with confidence in monetary policy, expected inflation in the long term will be close to target. This alone contributes to stabilising inflation.

TNS Gallup has been commissioned by Norges Bank to carry out quarterly surveys on inflation expectations. The fourth quarter 2005 survey showed that expected inflation edged up towards the end of the year. Economists in the financial industry and academia expect annual inflation to reach 2.4% five years ahead. On average, employer and employee organisations expect inflation of 2.8% five years ahead. Average expected inflation two years ahead was 2.2% among economists in the financial industry and academia and 2.6% among employer and employee organisations (see Charts 10 and 11).

Another measure of inflation expectations is different institutions' forecasts for consumer price inflation in Norway. Twice a year, in October and April, Consensus Forecasts Inc. provides an overview of forecasts for inflation 5 and 10 years ahead. The overview in October 2005 showed that inflation expectations were low. At both the 5-year and 10-year horizon, inflation was projected at 2.3%.

The difference between expectations concerning money market rates (forward rates) ten years ahead in Norway and Germany may provide an indication of whether inflation expectations in Norway differ substantially from expectations in the euro area. Under the assumption that inflation expectations in the euro area are stable, a wider difference between forward rates may be interpreted as an increase in inflation expectations in Norway, or as an increase in the Norwegian risk premium. However, it must be taken into account that Norway's inflation target is higher than in the euro area. Even with confidence in the inflation target, it must be expected that forward rates in Norway will be somewhat higher than in the euro area. The forward rate differential may also reflect different liquidity premiums in the Norwegian and German markets. In the short term, disturbances related to market conditions might also affect the figures. The level of the differential should therefore be assessed over a period of time.

In the euro area, long-term inflation expectations remained at about 2.1% through 2005.<sup>1</sup> In 2005, the forward rate differential was fairly stable at an average 0.4 percentage point (see Chart 12).

Overall, these indicators suggest that there is confidence in the inflation target in the long term. Inflation in the shorter term is expected to be somewhat below 2.5%, reflecting generally low consumer price inflation in recent years.

---

<sup>1</sup> See ECB Monthly Bulletin, December 2005.

## Monetary policy in 2005

### Monetary policy decisions and the basis for decisions

The background for the interest rate decisions in 2005 was summarised in press releases and at press conferences following the monetary policy meetings. Moreover, the *Inflation Reports* published in 2005 provide an extensive account of the conduct of monetary policy through the year. As from *Inflation Report 3/05*, Norges Bank's interest rate forecasts have also been included.

Norges Bank's projections for inflation in 2005 were revised downwards slightly in *Inflation Report 1/05*, but were unchanged thereafter. The downward revision is mainly due to a weaker movement in prices for imported consumer goods than expected at the beginning of the year. The estimate for the output gap in 2005 was revised downwards somewhat through the year. The projections for inflation and output gap estimates for the years 2006-2007 were relatively unchanged through the three *Inflation Reports* in 2005 (see Charts 5-7).

The projections in the November 2004 *Inflation Report* implied that inflation would remain considerably below 2.5% for a period ahead and reach the target at the three-year horizon. The output gap was expected to be positive in 2005-2007. Based on the projections in the *Report*, the Executive Board adopted a monetary policy strategy that implied a sight deposit rate in the interval 1¼ - 2¼% in mid-March 2005. The Executive Board stated that particular emphasis should be placed on factors that could delay an increase in inflation.

At the monetary policy meetings from 11 March 2004 until 2 February 2005, the Executive Board had in various terms highlighted the importance of developments in external interest rates for Norges Bank's interest-rate setting.<sup>2</sup> The press releases following the monetary policy meetings between September 2004 and February 2005 stated the following: "*The prospect of continued low inflation in Norway implies that we should lag behind other countries in setting interest rates at a more normal level.*"

This wording was no longer used by Norges Bank following the statement made by the central bank governor at the meeting of the Supervisory Council of Norges Bank on 17 February 2005: "*The effects of our interest rates also depend on external interest rates. Many countries have raised their key rates during this cyclical upturn, also in several steps. Most recently, the Federal Reserve increased its key rate by 0.25 percentage point, and it has also announced further interest rate hikes. With the prospect of low inflation, Norway has lagged behind other countries in adjusting interest rates to a more normal level.*" Developments in key rates in Norway and other countries are shown in Charts 13a and 13b.

A summary of the monetary policy meetings and the *Inflation Reports* in 2005 is presented below.

---

<sup>2</sup>See Norges Bank's *Annual Report* for 2004.

### *The monetary policy meeting on 2 February 2005*

At the monetary policy meeting on 2 February 2005, the Executive Board emphasised that inflation had picked up, but was still below target. The key rate was low. Growth in the Norwegian economy was solid. The unusually low interest rate and developments in inflation and output implied that further interest rate reductions were less likely. On the other hand, with the prospect of continued low inflation for a period ahead, wide deviations from projected economic developments would be required before the interest rate should be increased in the strategy period to mid-March. Prospects of continued low inflation implied that we should lag behind other countries in setting interest rates at a more normal level. Norges Bank's Executive Board left the sight deposit rate unchanged at 1.75%. The Executive Board did not see any clear alternatives to leaving the interest rate unchanged.

### *The monetary policy meeting on 16 March 2005 and Inflation Report 1/05*

The objective of bringing inflation back to target and anchoring inflation expectations implied a continued expansionary monetary policy. External interest rates had risen, albeit slowly and from a low level. On average, our trading partners had increased their key rates by slightly more than  $\frac{1}{4}$  percentage point so far in the upturn. Norges Bank had lagged behind other countries in adjusting the interest rate to a more normal level. There were prospects of continued low inflation in Norway for a period ahead. Even if capacity utilisation in the Norwegian economy rose, there appeared to be little risk that inflation would rapidly move up to a level that would be too high. Inflation was unexpectedly low in the first months of 2005, but the Executive Board stated that in the light of Norway's highly open economy we might have to expect somewhat wider variations in inflation than some other countries. The Executive Board decided to leave the key rate unchanged at 1.75%.

The analyses in *Inflation Report 1/05*, published on 16 March, were based on a key rate that would shadow forward interest rates up to end-2006. This would imply a key rate that would rise to 2% in summer 2005 and then to  $3\frac{1}{4}$ % at end-2006 (see Chart 14). Norges Bank assumed that interest rates from 2007 onwards would increase somewhat more than implied by forward rates both in Norway and abroad. The krone exchange rate was assumed to remain fairly stable (see Chart 15).

With such a path for the interest rate and the krone exchange rate, there were prospects that activity in the Norwegian economy would rise at a fairly rapid pace in 2005 and 2006. Corporate profit margins might increase further, and wage growth might be somewhat higher. The extraordinary factors that had contributed to restraining the rise in prices for imported consumer goods were expected to have a diminishing impact in the years ahead. Inflation measured by the CPI-ATE might then rise from a little less than 1% to almost 2% in mid-2006. There were prospects that inflation would stabilise around  $2\frac{1}{2}$ % three years ahead (see Chart 16).

The Executive Board's assessment in *Inflation Report 1/05* was that the interest rate could after a period, and then gradually, be brought up to a more normal level. The objective of bringing inflation back to target and anchoring inflation expectations nevertheless implied a continued expansionary monetary policy. The Executive Board decided that the sight deposit rate should lie in the interval  $1\frac{1}{2}$ - $2\frac{1}{2}$ % in the period to the

publication of the next *Inflation Report* on 30 June 2005, conditional on economic developments that were broadly in line with projections. The upper and lower limits of the strategy interval were thus  $\frac{1}{4}$  percentage point higher than in the previous four-month period (see Chart 18).

#### *The monetary policy meeting on 20 April 2005*

At the monetary policy meeting on 20 April, the assessments in *Inflation Report 1/05* were maintained. Economic developments since the publication of the *Report* had been broadly in line with expectations. Key rates abroad were rising, albeit slowly and from a low level. Although a gradual rise in the interest rate still seemed to provide a good balance between the different objectives, the Executive Board concluded that it was too early to increase the interest rate at this meeting. The interest rate was therefore left unchanged.

#### *The monetary policy meeting on 25 May 2005*

As at the time of the monetary policy meetings in March and April, the Executive Board emphasised that an interest rate that was held at such a low level for a long period could contribute to a situation where capacity utilisation might become too high further ahead. It was pointed out that there was a risk that the high rise in property prices and debt accumulation might persist for a longer period and lead to instability in demand, output and inflation somewhat further ahead. This implied, in isolation, a higher interest rate. Inflation was still low, but prices had risen approximately in line with projections after the unexpected fall at the beginning of the year. At the same time the krone was fairly strong (see Chart 19). A path where interest rates rise gradually - in small, not too frequent steps - was assessed to provide a good balance between the different monetary policy objectives.

The outlook for inflation and activity had not changed appreciably since the March *Inflation Report*. As an alternative, the Executive Board considered increasing the interest rate. With the prospect of continued low inflation for a period ahead, the Executive Board did not find grounds to deviate from expectations in the money and foreign exchange market at that meeting. The sight deposit rate was kept unchanged at 1.75%.

#### *The monetary policy on 30 June and Inflation Report 2/05*

At the monetary policy on 30 June, the Executive Board decided to raise the interest rate by 0.25 percentage point to 2.0%. The increase was in line with the analyses in the two previous *Inflation Reports*. The key rate had last been raised on 3 July 2002, when it was raised to 7.0%. In the period between December 2002 and March 2004, the key rate was lowered to 1.75% and was left unchanged thereafter (see Chart 20).

In the Executive Board's assessment at this monetary policy meeting, the objective of bringing inflation back to the target of 2½% and anchoring inflation expectations implied a continued expansionary monetary stance. Oil futures prices had increased markedly (see Charts 21 and 22). Market interest rate expectations in other countries had been lowered since the March *Inflation Report*. There might therefore have been a risk of stronger krone in the following months. This suggested that the interest rate should be held unchanged for a longer period.

On the other hand, output growth was high. Inflation remained low, but had edged up over the past year. Partly as a result of low interest rates, it was assumed that capacity utilisation and inflation would rise further. The objective of stabilising developments in output and employment suggested a higher interest rate. It was pointed out that high capacity utilisation could lead to rising property prices and household debt accumulation and result in instability in demand and output somewhat further ahead. Even though recent developments with weaker growth prospects for Europe and tendencies towards a somewhat stronger krone might warrant postponing an interest rate increase, the Executive Board concluded that it was appropriate to increase the interest rate.

The analyses in *Inflation Report 2/05*, which was published on 30 June, were based on a baseline scenario where the key rate would shadow forward interest rates up to 2007, and then rise somewhat more rapidly. This would imply an increase in the key rate to about 2¼% towards the end of 2005 and 2¾% at the end of 2006. The increase was somewhat smaller than assumed in the *March Report* (see Chart 14). The interest rate path implied an expansionary stance throughout the projection period (see Chart 23).

The krone exchange rate was assumed to remain approximately unchanged, but at a somewhat stronger level than assumed in the previous *Report* (see Chart 15).

The output level towards the end of 2005 was put at about 1% higher than the level implied by a near-trend growth. Inflation might then increase gradually to almost 2% in the first part of 2007. There were prospects that inflation might be close to 2½% three years ahead.

The Executive Board's monetary policy strategy in *Inflation Report 2/05* was that the interest rate could gradually – in small, not too frequent steps – be brought back to a more normal level. The objective of bringing inflation back to target and anchoring inflation expectations nevertheless implied a continued expansionary monetary stance.

The Executive Board's assessment was that the sight deposit rate should lie in the interval 1¾-2¾% in the period to the publication of the next *Inflation Report* on 2 November 2005, conditional on economic developments that are broadly in line with projections. The upper and lower limits for the strategy interval for the interest rate for the next four months were thus increased again by a quarter percentage point in relation to the previous period (see Chart 18). The Executive Board argued that stronger trade shifts and increased labour market competition might, on the one hand, result in lower price and wage inflation. The unusually low real interest rate might, on the other hand, result in a higher-than-projected rise in output and inflation. A stronger krone would imply that inflation would take longer to reach the target.

#### *The monetary policy meeting on 11 August 2005*

The Executive Board held the interest rate unchanged at 2.00%. Developments in output, demand and underlying inflation had been broadly in line with the overall picture in the June *Inflation Report*. The Executive Board's assessment in the June *Inflation Report* was that the interest rate could gradually – in small, not too frequent steps – be brought up towards a more normal level if economic developments were

approximately as projected in the *Report*. New information did not warrant any deviation from the interest rate path presented in the *Inflation Report*.

#### *The monetary policy meeting on 21 September 2005*

The Executive Board pointed out that the objective of bringing inflation back to the target of 2.5% and anchoring inflation expectations implied a continued low interest rate. The krone exchange rate had appreciated since the previous monetary policy meeting in August. On the other hand, the objective of stabilising output suggested, in isolation, a higher interest rate. Inflation had gradually edged higher. The Executive Board's overall assessment was that developments in output, demand and underlying inflation had been in line with that projected in Norges Bank's *Inflation Report* published at end-June. In its assessment, the Executive Board pointed out that the interest rate could have been raised already at that meeting, but the Executive Board found it appropriate to leave the interest rate unchanged.

#### *The monetary policy meeting on 2 November 2005 and Inflation Report 3/05*

Interest rate setting since May had been oriented towards a gradual increase in the interest rate - in small, not too frequent steps - towards a more normal level. Against the background of the analyses in the *Inflation Report*, that strategy still appeared to provide a reasonable balance between the monetary policy objectives to be pursued by Norges Bank. The Executive Board assessed output growth as strong and in isolation this could have warranted a faster increase in interest rates ahead. That would have reduced the risk of bottlenecks in the economy, with rising cost inflation and continued debt build-up. On the other hand, raising the interest rate more rapidly would have increased the risk of an appreciation of the krone, which might have prevented inflation from reaching the target of 2.5%. The sight deposit rate was raised by 0.25 percentage point to 2.25%.

Unlike the projections in previous *Reports*, the projections in *Inflation Report 3/05* published on 2 November were based on the Bank's own interest rate forecast (see Chart 14). According to the Executive Board, the interest rate path in the *Report* provided a reasonable trade-off between the different objectives assigned to monetary policy. As in the June *Inflation Report*, developments implied that the interest rate would be raised gradually - in small, not too frequent steps - towards a more normal level. The path for domestic and external interest rates seemed consistent with a situation where the krone would remain approximately unchanged (see Chart 15).

Inflation, as measured by the CPI-ATE, was projected to edge up to 2 per cent in the beginning of 2007 and reach the target of 2.5% during the latter half of 2008 (see Chart 16). The output gap was projected increase to about 1% in 2006. The forecast implied that a gradually less expansionary monetary policy would after a period stabilise inflation close to the target.

The monetary policy strategy in *Inflation Report 3/05* was that the sight deposit rate should lie in the interval 2-3 per cent in the period to the publication of the next *Inflation Report* on 16 March 2006, conditional on economic developments that are broadly in line with the projections. The upper and lower limits for the strategy interval were thus a quarter percentage point higher than in the previous four-month

period (see Chart 18). The Executive Board stated that stronger trade shifts and increased labour market competition could, on the one hand, result in lower price and wage inflation. The unusually low real interest rate could, on the other hand, result in rising and higher-than-projected output and inflation.

#### *The monetary policy meeting on 14 December 2005*

The interest rate was left unchanged at 2.25%. The Executive Board's assessment was that growth in demand and output was still strong and in isolation could warrant a faster increase in the interest rate. This would reduce the risk of bottlenecks in the economy, with rising cost inflation and continued debt build-up. On the other hand, raising the interest rate more rapidly would have increased the risk of a renewed appreciation of the krone. This could have countered an increase in inflation towards the target of 2.5%. Developments in output, demand and inflation did not differ substantially from the projections in *Inflation Report 3/05*. There were still prospects that the interest rate might be increased further in small, not too frequent steps.

### **Was monetary policy in 2005 predictable?**

When market participants understand the central bank's response pattern, the reaction of market rates to new information about economic developments has a stabilising effect. One indicator of the predictability of interest-rate setting is the impact on money market rates around the Executive Board's monetary policy meetings. Substantial changes in market rates may indicate that the decision is unexpected.

Norges Bank's communication of monetary policy is partly aimed at influencing market interest rate expectations. Norges Bank's interest rate forecast and monetary policy strategy are published with a view to enhancing the predictability of monetary policy and facilitating the evaluation of monetary policy. Through 2005, the Executive Board placed considerable emphasis on communicating that the key rate would be raised gradually in small, not too frequent steps towards a more neutral level. Expectations of interest rate increase were lowered somewhat after the Norges Bank projected in *Inflation Report 2/05* a more moderate increase in the interest rate than in the *March Report*.

In 2005, Norges Bank raised the key rate on two occasions. The first increment of 0.25 percentage point was implemented on 30 June and was expected by both market makers in financial markets and a majority of macroeconomists at Norwegian financial institutions. As a result, the interest rate decision led to modest movements in money and foreign exchange markets. The second increment, which was decided on 2 November, was also in line with market expectations and led to small changes in money market rates (see Chart 24). At the other monetary policy meetings in 2005, the key rate was kept unchanged, as expected by most market participants.

Market participants seek to form a picture of how the central bank reacts to new information about the economy and how the key rate is set in response to developments in economic variables. The response pattern in interest-rate setting can be approximated using a reaction function where one attempts to explain historical interest rate changes through changes in macroeconomic variables. Such an estimated

relationship will not capture all the elements to be assessed. In particular, it does not capture specific assessments made at the various monetary policy meetings. An estimated reaction function for interest-rate setting will thus be a considerable simplification and will only provide an indication of how Norges Bank has on average reacted to selected variables. Estimation results will also depend on the data period and the econometric method used.

Chart 25 shows the interest rate path that follows from the Bank's average response pattern between 2000 and 2005 and actual developments in the sight deposit rate. The estimated equation includes developments in inflation, wage growth, Norges Bank's projections for GDP growth in mainland Norway and money market rates abroad. The interest rate in the previous period is also of importance. The chart indicates that interest-rate setting through 2005 was in line with the Bank's response pattern in the period from 2000.

Interest-rate setting may also be assessed in the light of simple monetary policy rules. The rules must be interpreted with caution and only provide a rough indication of the recommended level. Common to many simple interest rate rules is that the interest rate is set with a view to maintaining inflation around a specific target over time, while contributing to stabilising output.

The Taylor rule<sup>3</sup>, as estimated by Norges Bank, implies that the interest rate has been too low since the end of 2004 (see Chart 26). The Taylor rule gives weight to inflation and the output gap. The output gap cannot be observed directly, however, and is thus an uncertain variable. An alternative is to apply observed GDP growth<sup>4</sup> in addition to inflation. This rule also indicates that the interest rate has been too low for a period. The rules have some limitations for a small, open economy, however. An interest rate increase in line with the rules could have led to a marked appreciation of the krone and it might therefore take considerably longer for inflation to reach target. The external interest rate rule<sup>5</sup> results in a somewhat lower interest rate than the other rules. This is because external interest rates are low.

Nor does the rule take into account a normal horizon of 1-3 years for achieving the inflation target. The rules imply a considerably longer period for bringing inflation up to 2.5% from today's level, and the rules have limitations as a reference for monetary policy.

### **Liquidity management in the money market**

The Executive Board sets the interest rate on banks' sight deposits and overnight loans in Norges Bank. The purpose of Norges Bank's liquidity policy is to ensure that the

---

<sup>3</sup>The Taylor rule: Interest rate = Inflation target + equilibrium real interest rate + 1.5 (inflation – inflation target) + 0.5 output gap. See Taylor J.B. (1993): "Discretion versus policy rules in\* practice", Carnegie-Rochester Conference Series on Public Policy 39, pages 195-124. The CPI-ATE is used as a measure of inflation.

<sup>4</sup> Output gap is replaced with the difference between actual growth and trend growth in the economy (growth gap).

<sup>5</sup>Rule with external interest rate = 0.5 Taylor rule + 0.5 money market rate among Norway's trading partners.

Executive Board's interest rate decisions have a broad impact on short-term money market rates. Through its liquidity policy, Norges Bank ensures that the banking system has surplus liquidity every day, deposited as sight deposits with Norges Bank. Short-term money market rates will therefore normally be slightly higher than the sight deposit rate, which is Norges Bank's key rate. Developments in Norges Bank's interest rates and money market rates are illustrated in Chart 20.

The liquidity policy instruments consist of fixed-rate loans (F-loans), fixed-rate deposits (F-deposits) and currency swaps.<sup>6</sup> F-loans are Norges Bank's primary liquidity supplying instrument. Currency swaps have not been used in liquidity management since 2001. Norges Bank can withdraw liquidity in order to reduce the banking system's surplus liquidity via F-deposits. F-deposits have not been used since April 2003. Under the current monetary policy regime, it makes little difference whether the banking system's surplus liquidity is deposited as sight deposits or as F-deposits with Norges Bank.

Norges Bank draws up projections for banks' structural liquidity. The banking system's structural liquidity is banks' sight deposits in their sight deposit accounts at Norges Bank before the central bank supplies or withdraws liquidity through liquidity policy instruments. The banking system's structural liquidity is influenced by incoming and outgoing payments over the government's account in Norges Bank, government loan transactions, Norges Bank's transactions in the foreign exchange and government securities markets and changes in notes and coins in circulation. Government transactions result in substantial fluctuations in structural liquidity in the course of a year. The general pattern is that liquidity falls markedly on days where direct and indirect tax payments fall due and then accumulate again as a result of government spending and Norges Bank's foreign exchange purchases.

If structural liquidity is not regarded as adequate to keep short-term money market rates slightly higher than the sight deposit rate, Norges Bank offers to supply liquidity to banks through F-loans. The maturity of an F-loan will depend on the variations in the banking system's estimated liquidity requirements in the first few days. F-loans are auctioned to the banks through an Internet-based system. The interest rate on F-loans is normally set using American auction, and is usually slightly higher than the sight deposit rate.

In 2005, 39 F-loan auctions were held. The loans varied from NOK 3 to 56 billion. Loan maturities varied from 1 to 10 days.

Swings in banks' structural liquidity in 2005 were wider than in previous years, primarily reflecting record-high oil tax payments to the state as a result of oil price developments. Higher oil tax revenues result in higher transfers to the Government Pension Fund – Global, which are matched by liquidity-providing foreign exchange purchases. The objective is to spread the foreign exchange purchases evenly over the

---

<sup>6</sup> See Kran, Lars-Christian and Grete Øwre (2001), "Norges Bank's system for managing interest rates", *Economic Bulletin* no. 2/2001.

year<sup>7</sup>, while oil tax payments fall due twice a year. After these payments fall due, structural liquidity is low for a period (see Chart 27). As a result of the uncertainty associated with banks' scope for redistributing liquidity around the turn of the year, Norges Bank supplied more liquidity than normal towards the end of December. This was a means of ensuring that the Executive Board's interest rate decision would have a broad impact on short-term money market rates.

---

<sup>7</sup> Norges Bank's foreign exchange purchases are described in further detail in the section "Foreign Exchange Transactions" in Chapter 5.

## Appendix. Boxes to Chapter 1

### **The mandate for monetary policy in Norway**

Monetary policy in Norway is conducted by Norges Bank. The Bank's activities are subject to the Norges Bank Act, adopted by the Storting (Norwegian parliament) on 24 May 1985. Section 2 of the Act defines the relationship with the government authorities, while Section 4 deals with decisions concerning changes in the exchange rate regime for the krone. Pursuant to Sections 19 and 20, Norges Bank stipulates the conditions for the interest rates on banks' deposits with and loans from the central bank.

Pursuant to Section 2, third paragraph and Section 4, second paragraph of the Norges Bank Act, the Government issued a new regulation on monetary policy on 29 March 2001. Norges Bank's mandate for the conduct of monetary policy is laid down in the Regulation. Section 1 of the Regulation states:

*“Monetary policy shall be aimed at stability in the Norwegian krone's national and international value, contributing to stable expectations concerning exchange rate developments. At the same time, monetary policy shall underpin fiscal policy by contributing to stable developments in output and employment.*

*Norges Bank is responsible for the implementation of monetary policy.*

*Norges Bank's implementation of monetary policy shall, in accordance with the first paragraph, be oriented towards low and stable inflation. The operational target of monetary policy shall be annual consumer price inflation of approximately 2.5 per cent over time.*

*In general, the direct effects on consumer prices resulting from changes in interest rates, taxes, excise duties and extraordinary temporary disturbances shall not be taken into account.”*

Norges Bank issued its opinion on the mandate in its submission of 27 March 2001 to the Ministry of Finance. The submission stated the following:

*“Monetary policy affects the economy with considerable and variable lags. Consequently, the Bank must be forward-looking in its interest-rate setting. The effects of interest rate changes are uncertain and vary over time. Changes in the interest rate will be made gradually so that the Bank can assess the effects of interest rate changes and other new information on economic developments. If price inflation deviates substantially from the target for a period, Norges Bank will set the interest rate with a view to gradually returning consumer price inflation to the target. Norges Bank will seek to avoid unnecessary fluctuations in output and demand.”*

### **Monetary policy instruments**

At the monetary policy meetings, the Executive Board sets the interest rate on banks' overnight deposits in Norges Bank – the sight deposit rate. Experience shows that the sight deposit rate has a fairly pronounced impact on the shortest money market rates, i.e. overnight and 1-week rates. Market rates for loans with longer maturities are influenced by the sight deposit rate and by market expectations concerning developments in the sight deposit rate. Market expectations concerning the sight deposit rate reflect participants' perception of the central bank's response pattern in monetary policy and with regard to economic developments. The purpose of Norges Bank's communication of monetary policy, which includes Norges Bank's interest rate projections in the *Inflation Report*, is to contribute to the predictability of monetary policy. When Norges Bank's response pattern is predictable, the reaction of economic agents to new information about economic developments will have a stabilising effect.

Market rates have an effect on the exchange rate, securities prices, house prices and credit and investment demand. Changes in Norges Bank's key interest rate may also shape expectations concerning future inflation and economic developments. The interest rate operates through all these channels to influence total demand, output, prices and wages.

Norges Bank is in a position to intervene in the foreign exchange market at short notice, but will not normally use interventions to influence the krone. Exchange market intervention, whether it entails purchases or sales of foreign exchange, is not an appropriate instrument for influencing the krone over a longer period. However, interventions may be appropriate if the krone deviates substantially from the level that the Bank judges to be reasonable in relation to fundamentals, and if exchange rate developments weaken the prospect of achieving the inflation target. Interventions may also be appropriate in response to pronounced short-term fluctuations in the krone when liquidity in the foreign exchange market falls to a very low level. Norges Bank does not wish to act in a way that may give rise to a game situation that may amplify pressures in the foreign exchange market. Foreign exchange intervention rather than a change in the interest rate may give ambiguous signals to foreign exchange operators and a game situation may arise. The Bank will provide an account of any interventions and the background for them. Norges Bank did not intervene to influence the krone exchange rate in 2005.

## Transparency

According to Section 3 of the Norges Bank Act, Norges Bank shall inform the public about the monetary, credit and foreign exchange situation and about the assessments on which monetary policy decisions are based. According to Section 2 of the Regulation on Monetary Policy, Norges Bank shall regularly publish the assessments that form the basis for the implementation of monetary policy.

Table 1 provides an overview of the publications associated with the Executive Board's monetary policy decisions. The material is published in Norwegian and English simultaneously. There were no changes in the procedure for publication of the background data in 2005.

<b>Information for monetary policy meetings and time of announcement</b>	<b>Announcement</b>
<b>Information</b>	
Norges Bank's <i>Inflation Report</i> , with the Executive Board's monetary policy assessments and strategy and Norges Bank's interest rate projections, is published three times a year and is the reference document for the interest rate decisions made during the following four months.	2 pm on the same day as the monetary policy meeting
Press release with an account of the assessments underlying the interest rate decision	2 pm on the same day as the monetary policy meeting
Charts presented at the monetary policy meeting by the central bank governor or the deputy governor <sup>1</sup>	2 pm on the same day as the monetary policy meeting
A press conference where the central bank governor or deputy governor provides a more detailed explanation of the Executive Board's decision and the reasons for the decision. The press conference is webcast.	2:45 pm on the same day as the monetary policy meeting
Report from the regional network <sup>2</sup>	2 pm on the day after the monetary policy meeting

<sup>1</sup> Charts containing confidential information, such as forecasts from the OECD and the IMF which are not published, wage growth estimates for various groups based on confidential information from employers or employee organisations, data from specific enterprises or new, preliminary analyses from Norges Bank are not published.

<sup>2</sup> The report is not published in its entirety since it contains confidential information about individual enterprises.

### **Criteria for a good interest rate path**

In the *Inflation Report*, Norges Bank makes forecasts for developments in the real economy, consumer prices and the interest rate. The interest rate path forecast shall provide a reasonable balance between the objectives of monetary policy. In its forecasting, Norges Bank uses an approach that captures and juxtaposes many different elements. This is illustrated in the chart below. Current statistics and input from Norges Bank's regional network provide the basis for evaluating the current situation in the Norwegian economy. In our forecasting, we seek to build a bridge between our assessments of the current situation and long-term relationships in the economy. As part of this process, the Bank uses several macroeconomic models: a core model and a number of smaller models. In the core model, the interest rate and other economic variables are mutually dependent.<sup>1</sup>

The macroeconomic models provide a simplified description of the economy. As a guideline in its work to develop forecasts and use good judgement, Norges Bank has defined six criteria for a good interest rate path. A good interest rate path provides a reasonable balance between the various objectives of monetary policy. The criteria cannot provide a precise guideline as to how the interest rate should be set, but points to factors that Norges Bank should have taken into account and assessed. In some contexts, the various criteria may conflict. In these situations, it is particularly important to exercise judgment in the trade-off between the different objectives. The criteria are:

1. If monetary policy is to anchor inflation expectations around the target, the interest rate must be set so that inflation moves towards the target. Inflation should be stabilised near the target within a reasonable time horizon, normally one to three years. For the same reason, inflation should also be moving towards the target well before the end of the three-year period.
2. Assuming that inflation expectations are anchored around the target, the inflation gap and the output gap should be in reasonable proportion to each other until they close. The inflation gap and the output gap should normally not be positive or negative at the same time further ahead.
3. Interest rate developments, particularly in the next few months, should result in acceptable developments in inflation and output also under alternative, albeit not unrealistic assumptions concerning the economic situation and the functioning of the economy.
4. The interest rate should normally be changed gradually so that we can assess the effects of interest rate changes and other new information about economic developments.
5. Interest-rate setting must also be assessed in the light of developments in property prices and credit. Wide fluctuations in these variables may in turn constitute a source of instability in demand and output in the somewhat longer run.
6. It may also be useful to cross-check by assessing interest rate setting in the light of some simple monetary policy rules. If the interest rate deviates systematically and

substantially from simple rules, it should be possible to explain the reasons for this.

<sup>1</sup> See Norges Bank Staff Memo 2004/3 «A small calibrated macro model to support inflation targeting at Norges Bank». <sup>1</sup> See Norges Bank Staff Memo 2004/3 “A small calibrated macro model to support inflation targeting at Norges Bank”.

### **Interest rate projections and uncertainty**

Norges Bank seeks to achieve an interest rate path that provides a reasonable balance between the objective of stabilising inflation at target and the objective of stabilising developments in output and employment. In the Bank's earlier analyses, the interest rate was assumed to move in line with market expectations. *Inflation Report 3/05*, however, and for the first time, presented a forecast for future interest rates.

The forecasts for the interest rate and other economic variables are based on incomplete information about the current economic situation and about the functioning of the economy. If developments in economic driving forces differ from the assumptions or if the central bank changes its view of the functioning of the economy, developments in the interest rate and other variables may deviate from the forecasts. Thus, there is considerable uncertainty associated with these forecasts. The chart below shows the forecasts in *Inflation Report 3/05* with the fan chart showing the uncertainty surrounding the projections. The wider the fans, the more uncertain the projections are. The uncertainty around the projections is calculated on the basis of disturbances to the Norwegian economy in the period 1993-2005. Calculation of the fan charts is based on a number of assumptions and it is difficult to be precise about the degree of uncertainty surrounding the projections. The fan charts illustrate the uncertainty associated with developments in inflation, the real economy and future interest rates.<sup>1</sup>

<sup>1</sup> The uncertainty associated with the projections is discussed in further detail in *Inflation Report 3/05*.

### **Work on macroeconomic models**

In autumn 2003, Norges Bank began work to establish a new analytical and forecasting model. In 2004, a small, calibrated macro model was developed to provide support for the macroeconomic and monetary policy analysis.<sup>1</sup>

In 2005, the Bank continued its work to develop the modelling system. At the end of 2004, the Bank initiated a project to develop a somewhat larger macro model, NEMO (Norwegian Economy MOdel). NEMO belongs to a class of macroeconomic models that are referred to as DSGE models (Dynamic Stochastic General Equilibrium). A preliminary empirical quantification of the model has been conducted using Bayesian Maximum Likelihood estimation. The model's first "trial projection" was made in connection with *Inflation Report* 1/06. NEMO will be put to use in the Bank's analyses as we gain experience. The model and quantification will also be documented.

The Bank has also been working with various empirical models in addition to Nemo, such as the ARIMA and VAR models as well as a number of indicator models. The Bank has also attempted to quantify relationships between certain other economic variables, such as domestic and imported inflation and private consumption. These empirically-based models and individual equations are used to cross-check the output from the macro models, which to a further extent are based on theory. They are also used directly to make projections, especially short-term projections.

<sup>1</sup>See Norges Bank Staff Memo 3/2004.

### **The regional network in 2005**

In autumn 2002, Norges Bank established a regional network of enterprises, organisations and local authorities throughout Norway. In five rounds of talks in 2005, representatives for Norges Bank have engaged in discussions with business and community leaders on economic developments in their enterprises and industries. Each of the five rounds has comprised roughly 290 visits. Approximately 1500 individuals have been contacted in all, representing the production side of the Norwegian economy, both in terms of industry and geographic area. Six regional research institutions are responsible for the network in their respective regions and have conducted the contact meetings on behalf of Norges Bank. The research institutions are the Centre of Innovation and Entrepreneurship Ltd. in Bodø, the Centre for Economic Research at the Norwegian University of Science and Technology, Møre Research, Rogaland Research, Agder Research and the Eastern Norway Research Institute. In addition, Norges Bank covers a region consisting of four counties in Eastern Norway.

Some of the main impressions from the network in 2005 are:

- In 2005, there has been very solid growth in demand and output in all industries. Growth is expected to slow somewhat in the first half of 2006.
- The export industry has reported solid growth in 2005. Growth has been particularly strong in the technology industry, shipbuilding, fishing and fish farming. On the other hand, the process industry has reported more moderate growth due to high energy prices.
- Demand for domestically manufactured goods has been solid throughout the year. The strongest growth has been reported by suppliers to the construction sector and producers of consumer durables.
- Suppliers to the petroleum industry have reported accelerating growth in 2005, and growth is strong. This is a result of high oil prices and record-high investment in the petroleum sector. In Norway, this is primarily due to the Snøhvit and Ormen Lange field developments. Internationally, increased exploration activity and measures to increase production have contributed to growth.
- Building and construction are still experiencing solid growth, although growth slowed during the second half of 2005 compared with the first half of the year. The lower growth rate in the second half of the year reflects lower growth in residential construction. In commercial building and construction, growth has gathered pace in 2005. The market for office premises has also improved in 2005, particularly in Oslo.
- Retail trade has reported solid growth in demand in 2005, but growth slowed towards year-end. Growth has been strongest for consumer durables such as kitchens, furniture, electrical articles and building materials. On the other hand, there has been no growth in demand for motor vehicles in 2005. Service industries have reported solid growth throughout 2005. Growth has been strongest in corporate services. Growth has been particularly strong in banking/finance, temporary employment agencies, consulting services, law and architect firms and the transport industry.

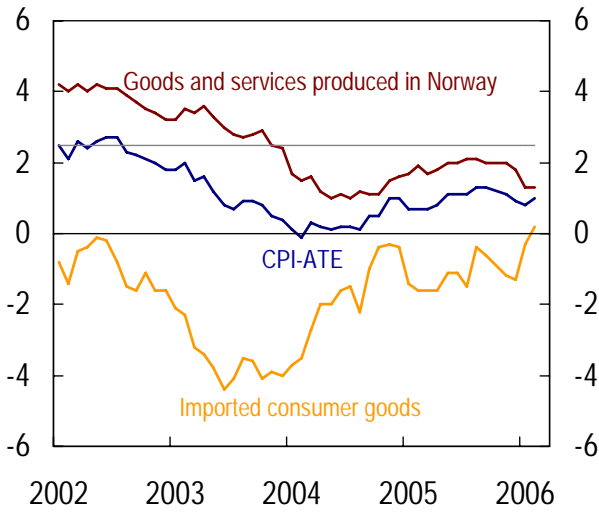
- In 2005, labour shortages have been reported in building and construction, petroleum-related industry and in a number of service industries. Capacity utilisation has been somewhat higher in the second half of 2005 compared with the first half of the year.
- On the whole, businesses have increased their investment plans at the end of 2005 compared with a year earlier. Manufacturing and the local government and hospital sectors in particular have increased their investment plans.
- Employment is increasing in the entire private sector, in pace with the economic upturn. Growth has been strongest in building and construction and service industries. Employment in the local government and hospital sectors has remained virtually unchanged through 2005.
- In general, it was reported that selling prices rose moderately through 2005. The rise in prices has been sharpest in building and construction and petroleum-related industries as a result of increasing resource shortages. The export industry has also experienced a marked increase in prices through 2005, primarily due to rising commodity prices. Inflation expectations for the next 12 months have been falling throughout the year.
- Profitability has increased in all industries in 2005. Increased demand, a rise in selling prices and generally low wage pressures have contributed to improved profitability.

In 2005, the network was also used to examine a number of current issues. The effects of higher oil prices, import shares, and costs related to the introduction of mandatory occupational pensions as well as the reasons for the decline in sickness absence in 2004 are examples of issues that received special attention last year.

#### **Norges Bank's interest rate decisions in 2005**

<b>Date</b>	<b>Key rate Percent</b>	<b>Change Percentage points</b>
<b>2 February</b>	1.75	-
<b>16 March</b>	1.75	-
<b>20 April</b>	1.75	-
<b>25 May</b>	1.75	-
<b>30 June</b>	2.00	0.25
<b>11 August</b>	2.00	-
<b>21 September</b>	2.00	-
<b>2 November</b>	2.25	0.25
<b>14 December</b>	2.25	-

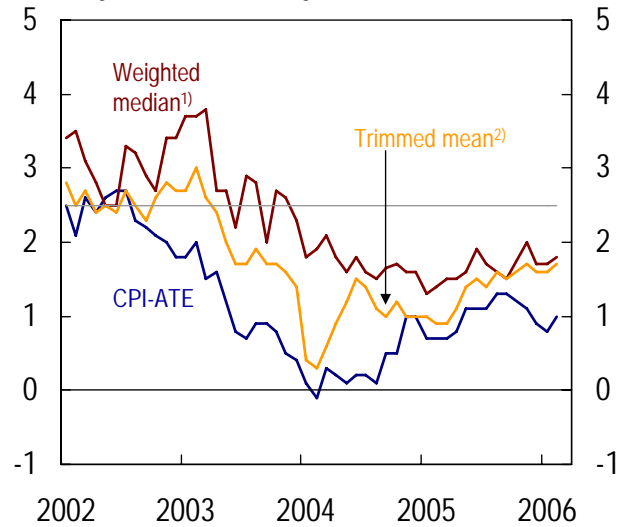
Chart 1 CPI-ATE<sup>1)</sup>. Total and by supplier sector <sup>2)</sup>.  
12-month change. Per cent.  
January 2002 – February 2006



<sup>1)</sup> CPI-ATE: CPI adjusted for tax changes and excluding energy products.  
<sup>2)</sup> Norges Bank's calculations.

Sources: Statistics Norway and Norges Bank

Chart 2 Indicators of underlying inflation.  
12-month change. Per cent.  
January 2002 – February 2006

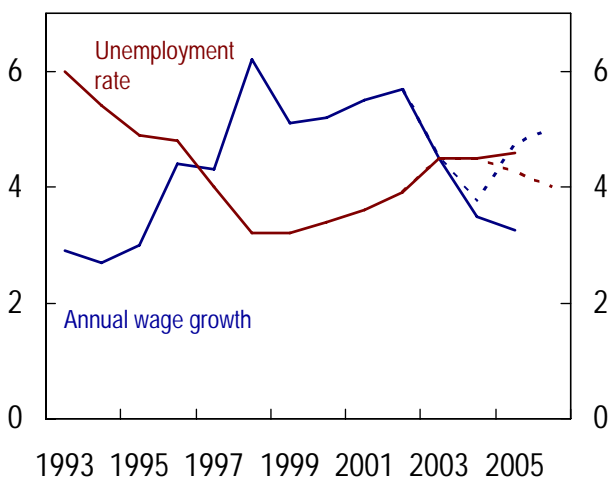


<sup>1)</sup> Estimated on the basis of 93 sub-groups of the CPI.

<sup>2)</sup> Price changes accounting for 20 per cent of the weighting base are eliminated.

Source: Statistics Norway

Chart 3 Annual wage growth<sup>1)</sup> and LFS unemployment <sup>2)</sup>.  
Projections in IR 1/04 (broken line) and actual  
developments (solid line). Per cent. 1993 – 2006

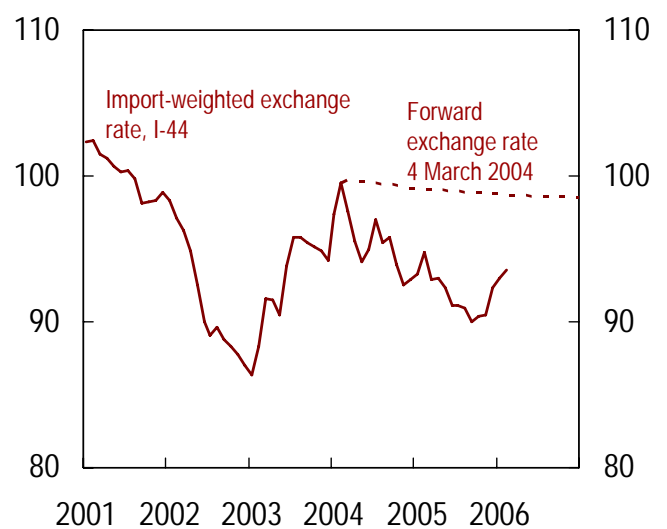


<sup>1)</sup> Average for all groups. Including costs associated with increase in number of vacation days.

<sup>2)</sup> LFS.

Sources: TRCIS, Statistics Norway and Norges Bank

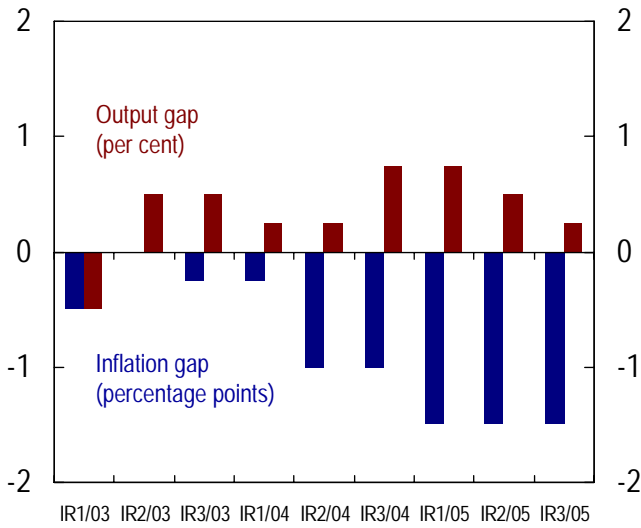
Chart 4 The krone exchange rate (I-44). Assumption  
in IR 1/04 (broken line) and actual developments (solid  
line). Index<sup>1)</sup>. January 2001 – February 2006



<sup>1)</sup> A rising curve denotes a weaker krone exchange rate.

Source: Norges Bank

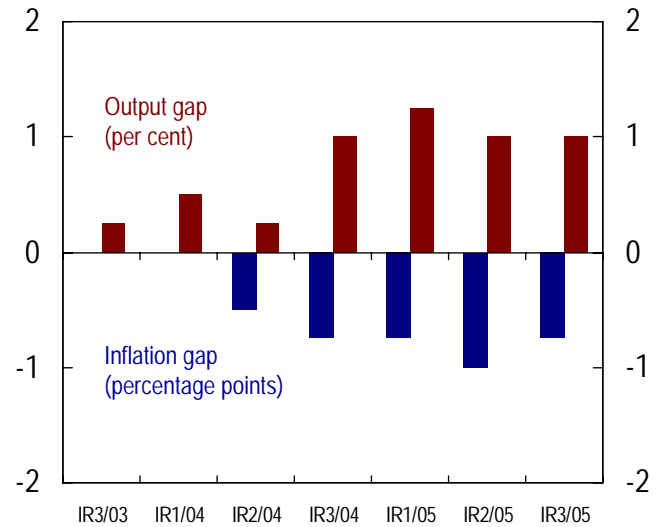
Chart 5 Developments in estimates of the output and inflation gap in 2005<sup>1)2)</sup>



1) The output gap measures the difference between actual mainland GDP and estimated potential mainland GDP. The inflation gap measures the difference between inflation and the inflation target.

2) The projections in IR 1/03 – 2/05 are based on market forward rates adjusted for an increase in credit risk over the period to maturity. The projections in IR 3/05 are based on Norges Bank's interest rate projections.  
Source: Norges Bank

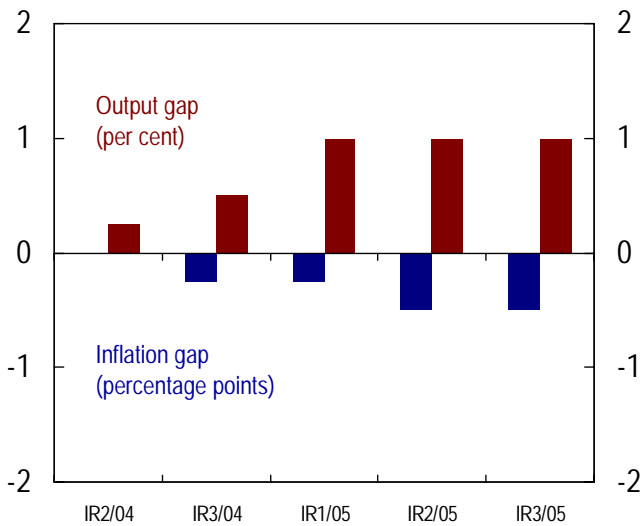
Chart 6 Developments in projections for the output gap and the inflation gap in 2006<sup>1)</sup>



<sup>1)</sup> See notes to Chart 5.

Source: Norges Bank

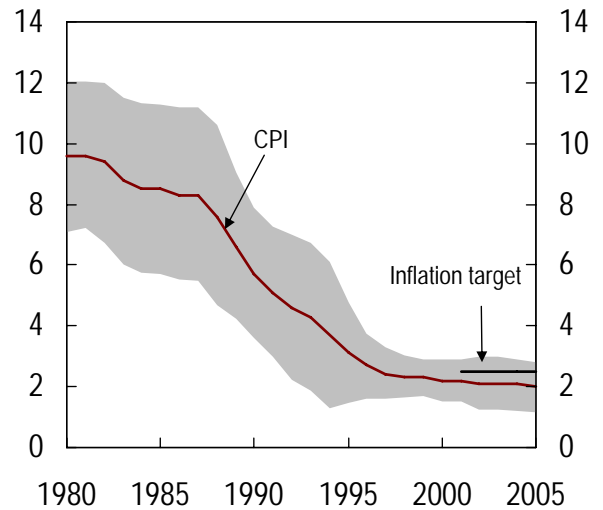
Chart 7 Developments in projections for the output gap and the inflation gap in 2007<sup>1)</sup>



<sup>1)</sup> See notes to Chart 5.

Source: Norges Bank

Chart 8 CPI. Annual change. 10-year moving average<sup>1)</sup> and variation<sup>2)</sup>. Per cent. 1980 – 2005<sup>3)</sup>



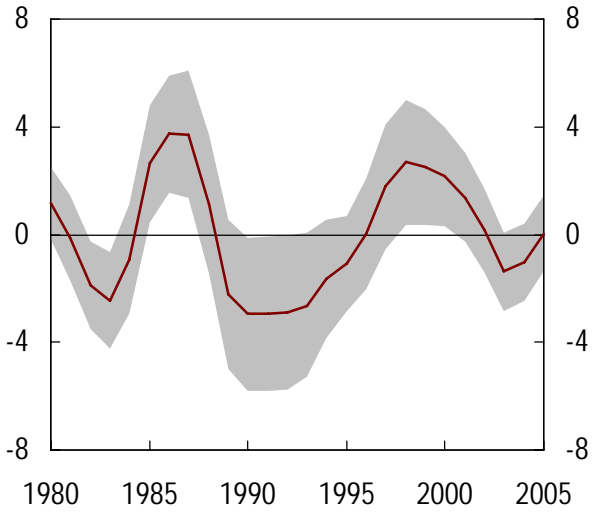
<sup>1)</sup> The moving average is calculated 7 years back and 2 years ahead.

<sup>2)</sup> The band around the CPI is the variation in the average period, measured by  $\pm$  one standard deviation.

<sup>3)</sup> Projections for 2006–2007 in *Inflation Report 1/06* form the basis for this estimate.

Sources: Statistics Norway and Norges Bank

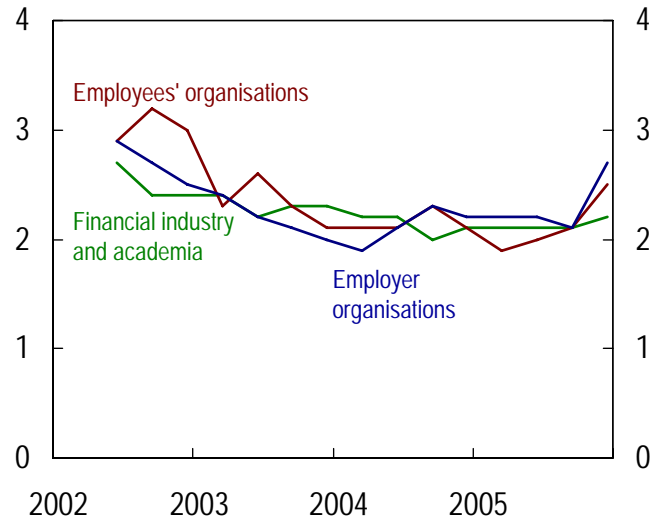
Chart 9 Estimates for the output gap. Level<sup>1)</sup> and variation<sup>2)</sup>. Per cent. 1980 – 2005



<sup>1)</sup>The output gap measures the difference between actual mainland GDP and estimated potential mainland GDP.  
<sup>2)</sup>The band shows the variation in the output gap measured by  $\pm$  one standard deviation. The variation is estimated as average standard deviation in a 10-year period, 7 years back and 2 years ahead.

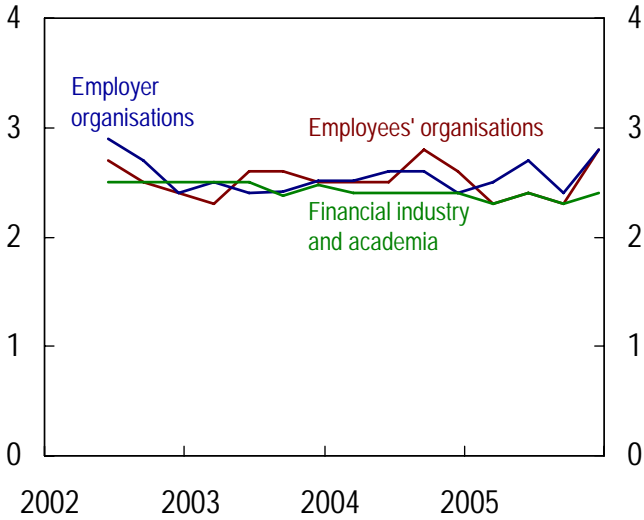
Source: Norges Bank

Chart 10 Expected consumer price inflation 2 years ahead. Per cent. 2002 Q2 - 2005 Q4



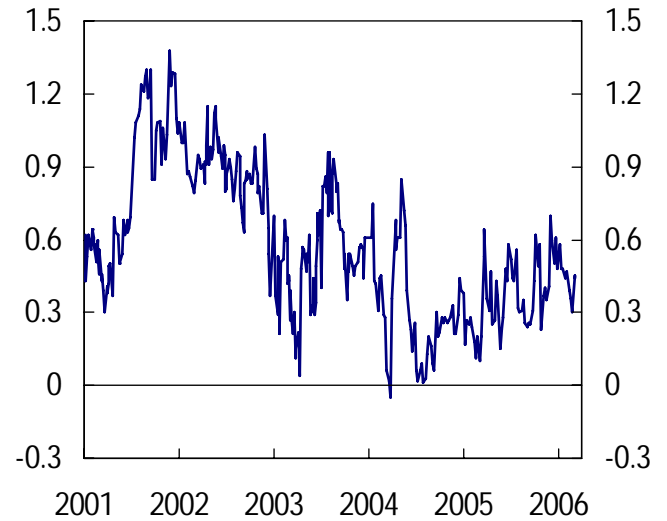
Source: TNS Gallup

Chart 11 Expected consumer price inflation 5 years ahead. Per cent. 2002 Q2 – 2005 Q4



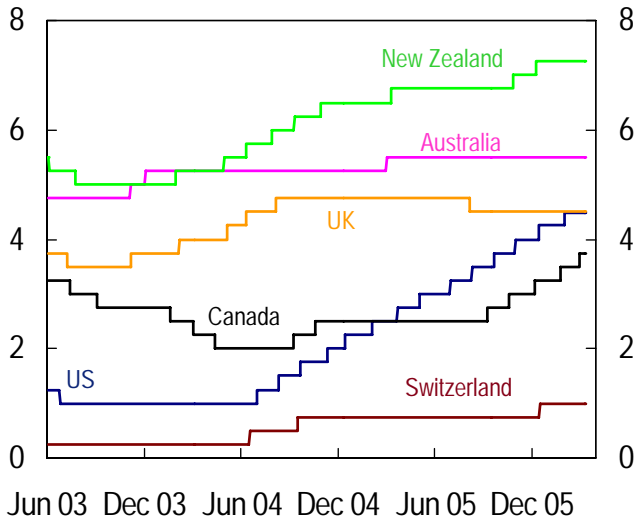
Source: TNS Gallup

Chart 12 Differential between Norwegian and German forward rates 10 years ahead. Percentage points. 2 January 2001 – 8 March 2006



Source: Norges Bank

Chart 13a Key rates in other countries. Per cent.  
2 June 2003 – 10 March 2006.



Sources: EcoWin and Norges Bank

Chart 13b Key rates in Norway and other countries.  
2 June 2003 – 10 March 2006. Per cent

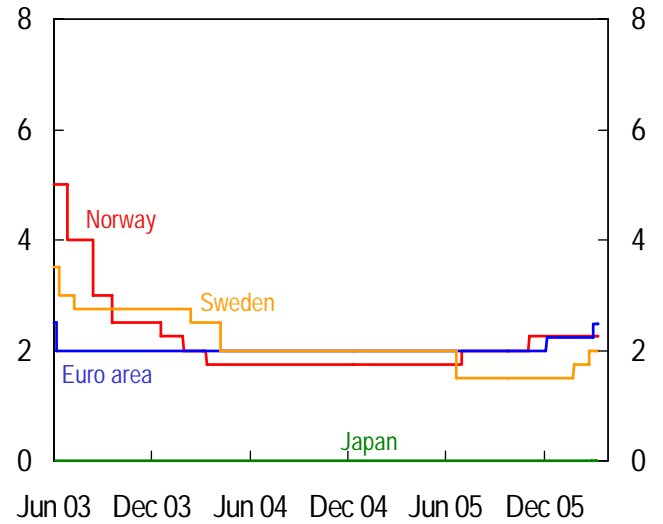
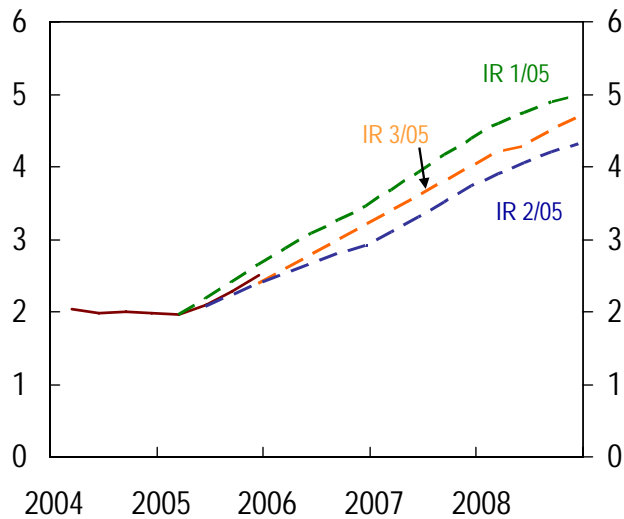
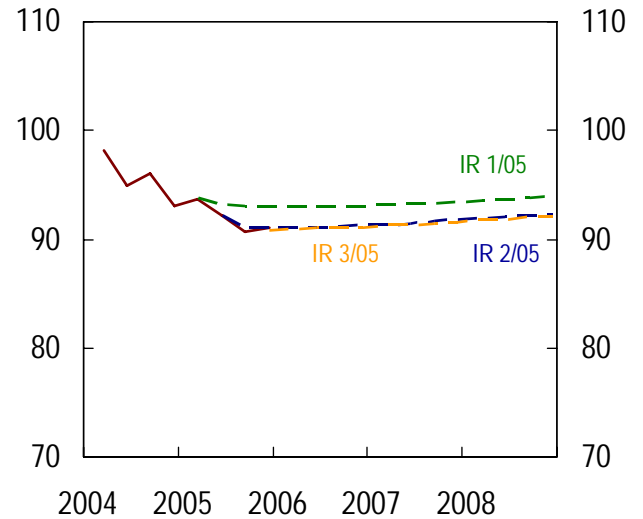


Chart 14 Assumptions for 3-month money market rates in baseline scenarios in *Inflation Report* in 2005<sup>1)2)</sup>. 2004 Q1 - 2008 Q4



<sup>1)</sup> The money market rate is normally about ¼ percentage point higher than the sight deposit rate.  
<sup>2)</sup> In IR 1/05 and IR 2/05 the assumption concerning the money market rate was based on the interest rates in the money and interest rate swap markets at the designated times. The interest rate in IR 3/05 is Norges Bank's interest rate forecast.  
Source: Norges Bank

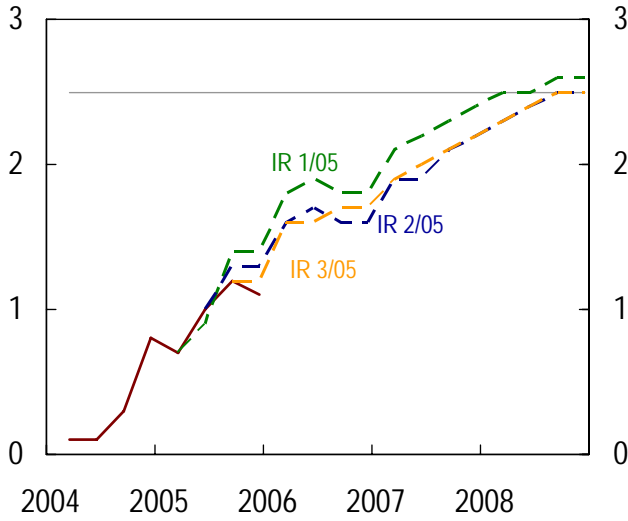
Chart 15 Assumptions for import-weighted exchange rate (I-44)<sup>1)</sup> in baseline scenarios in *Inflation Report* in 2005. 2004 Q1 – 2008 Q4



<sup>1)</sup> A rising curve denotes a weaker krone exchange rate.

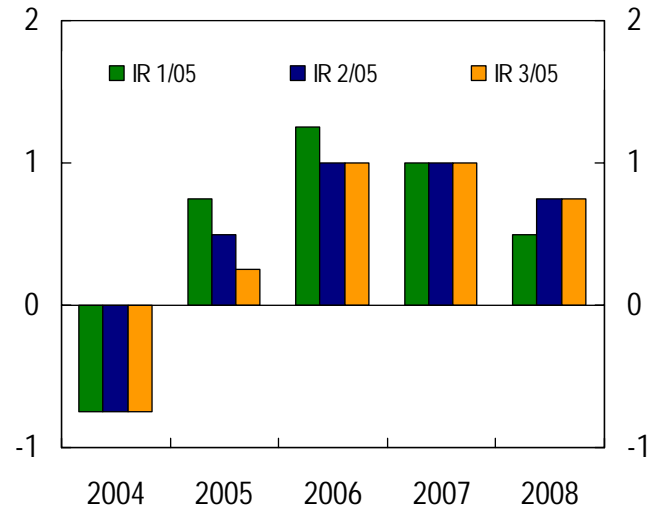
Source: Norges Bank

Chart 16 Projections for CPI-ATE in the *Inflation Report* in 2005. Per cent. 2004 Q1 - 2008 Q4



Sources: Statistics Norway and Norges Bank

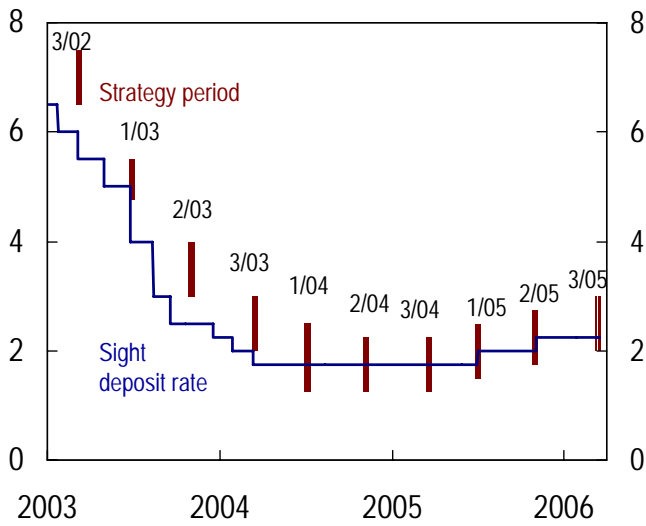
Chart 17 Estimates for output gap<sup>1)</sup> in the *Inflation Report* in 2005. Per cent. 2004 – 2008



<sup>1)</sup>The output gap measures the difference between actual mainland GDP and estimated potential mainland GDP.

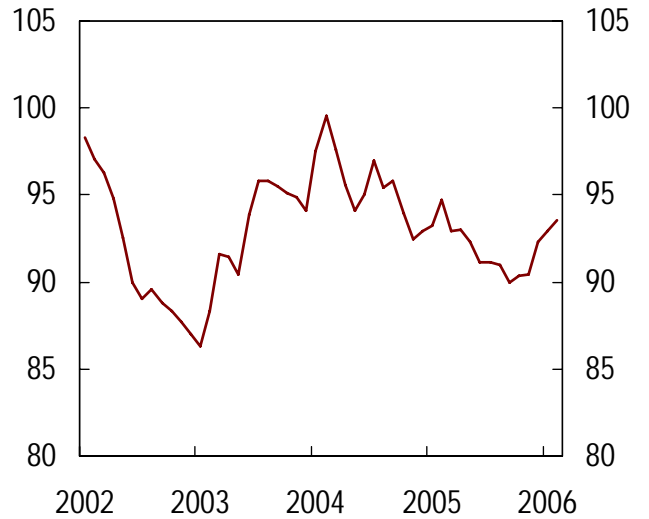
Sources: Statistics Norway and Norges Bank

Chart 18 Interval for the sight deposit rate at the end of each strategy period and actual developments. Per cent. 2 January 2003 – 16 March 2006



Source: Norges Bank

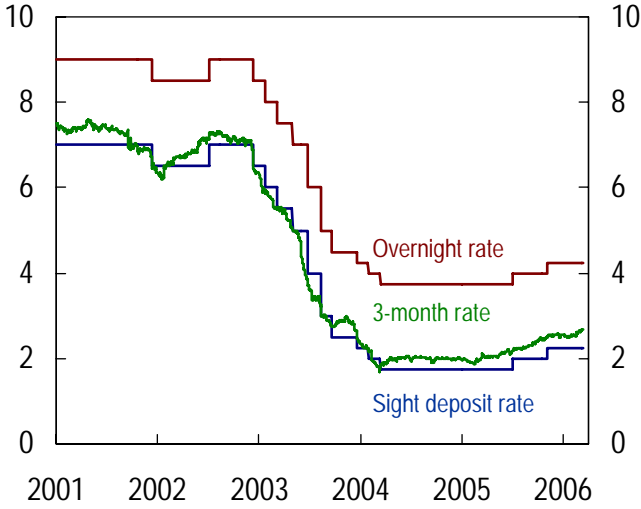
Chart 19 The krone exchange rate (I-44)<sup>1)</sup>. January 2002 – February 2006



<sup>1)</sup> A rising curve denotes a weaker krone exchange rate.

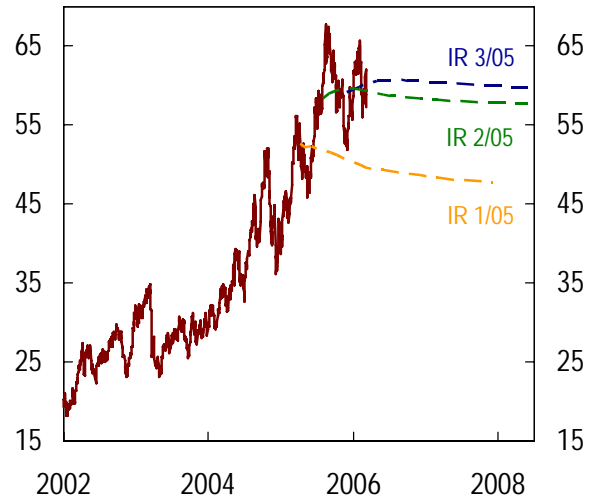
Source: Norges Bank

Chart 20 Norges Bank's interest rates and 3-month money market rate. Nominal rates. Per cent. 2 January 2001 – 10 March 2006.



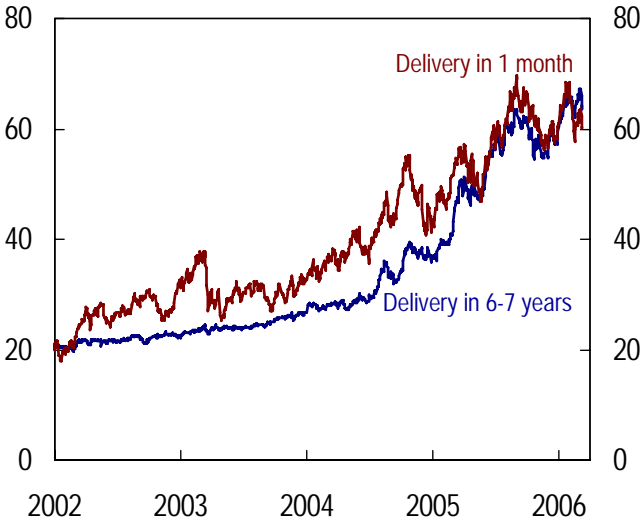
Source: Norges Bank

Chart 21 Oil price (Brent Blend) in USD per barrel. Futures prices from the *Inflation Report* in 2005. 2 January 2002 – 8 March 2006



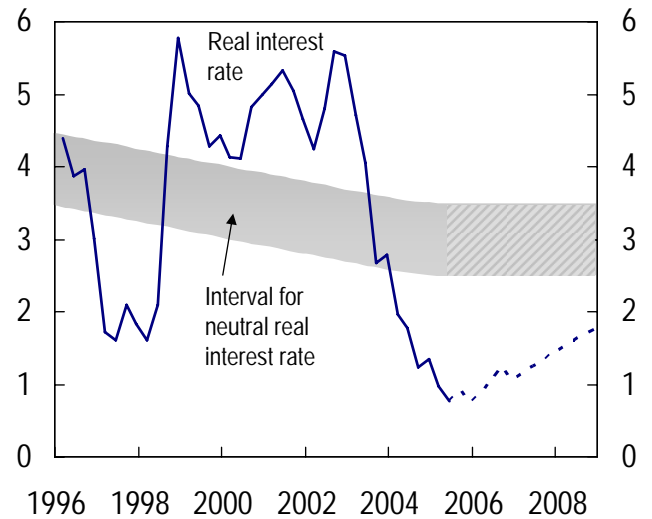
Sources: Reuters, IPE and Norges Bank

Chart 22 Oil price futures. USD per barrel light crude (West Texas). 2 January 2002 – 9 March 2006



Sources: NYMEX and Norges Bank

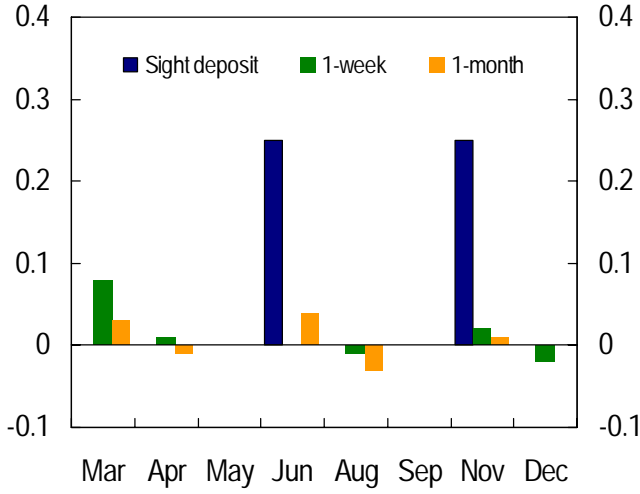
Chart 23 3-month real interest rate<sup>1)</sup> and the neutral real interest rate in Norway. 1996 Q1 – 2008 Q4 (Broken line is projections from *Inflation Report 2/05*)



<sup>1)</sup> 3-month money market rate deflated by inflation measured by the CPI-ATE.

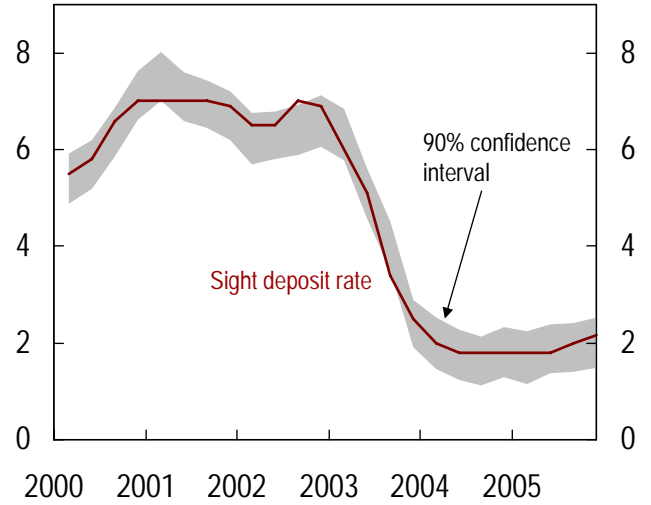
Source: Norges Bank

Chart 24 Change in sight deposit rate and impact on money market rates at monetary policy meetings in 2005. Percentage points



Source: Norges Bank

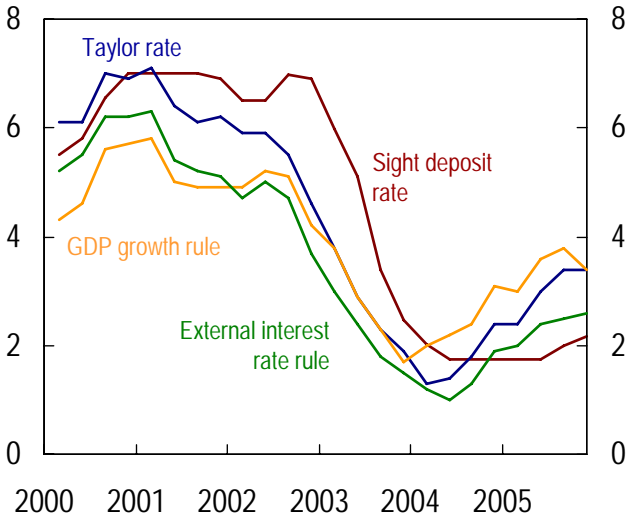
Chart 25 Sight deposit rate and interest rate developments that follow from Norges Bank's average pattern for interest-rate setting.<sup>1)</sup> Per cent. 2000 Q1 – 2005 Q4



<sup>1)</sup> The interest rate movements are explained by developments in inflation, mainland GDP growth, wage growth and 3-month interest rates among trading partners. See *Inflation Report 3/04* for further discussion.

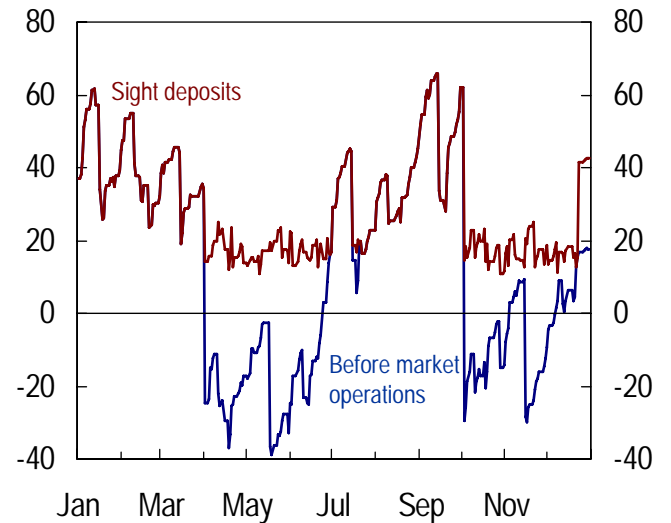
Source: Norges Bank

Chart 26 Sight deposit rate, Taylor rate, GDP growth rule and external interest rate rule. Per cent. 2000 Q1 – 2005 Q4



Source: Norges Bank

Chart 27 Banks' liquidity in 2005. Daily figures. In billions of NOK



Source: Norges Bank