



Centre for Monetary Economics

Norges Bank Watch 2003

An Independent Review of Monetary Policy in Norway

Thomas Ekeli, Pareto Securities

Anne Kari Haug, ECON

Kjetil Houg, Alfred Berg ABN AMRO

Erling Steigum, BI Norwegian School of Management

Norges Bank Watch Report Series No 4

Centre for Monetary Economics

BI Norwegian School of Management

30 September 2003

© Authors

2003

Norges Bank Watch Report Series No 4

ISSN: 1503-7339

Centre For Monetary Economics

BI Norwegian School of Management

Department of Economics

P.O.B. 580

N-1302 Sandvika

Phone: +47 67 55 70 00

Printing: Nordberg Hurtigtrykk

Table of contents

Preface	5
Executive summary.....	6
1 Introduction.....	13
2 What happened?.....	15
2.1 Economic stagnation and inflation target undershooting.....	15
2.2 The real appreciation	18
2.3 What caused the strong krone?	20
2.4 The powers of monetary policy	21
3 Norges Bank's monetary policy decisions.....	22
3.1 Three interest rate cycles	22
3.1.1 The move to ease policy at the end of 2001.....	23
3.1.2 Tight policy in the summer and autumn of 2002	24
3.1.3 The policy easing since December 2002	29
3.2 Key theme: Should uncertainty make central banks more careful about changing interest rates?	30
4 Evaluation of Norges Bank's forecasts.....	33
4.1 Factors behind the sharp drop in inflation in 2003	34
4.2 Evaluation of inflation projections.....	36
4.3 Controversies	38
4.3.1 Wage growth assumptions	38
4.3.2 Exchange rate assumptions and dynamics	41
4.3.3 Fiscal policy assumptions	44
4.3.4 International assumptions	46
4.4 The two-year horizon.....	49
4.5 Inflation expectations.....	50
5 Communication.....	51
5.1 Communication requirements.....	52
5.1.1 Precision.....	54
5.1.2 Timeliness.....	55
5.1.3 Consistency.....	55
5.1.4 Market neutrality.....	57
5.2 Market response.....	58

Appendix I: Implementation of <i>Norges Bank Watch 2002</i> proposals	60
Appendix II: Regulation on Monetary Policy.....	63
References.....	64

Preface

The Centre for Monetary Economics (CME) at the BI Norwegian School of Management has for the fourth time invited a committee of economists to participate on *Norges Bank Watch*, with the objective of evaluating the monetary policy regime in Norway and Norges Bank's conduct of monetary policy. This time the committee has focused on the conduct of policy rather than addressing institutional issues. The committee refers to *Norges Bank Watch 2002* for a detailed assessment of these issues. The new committee for *Norges Bank Watch 2003* consists of Chief Economist Thomas Ekeli, Pareto Securities, Senior Economist Anne Kari Haug, ECON, Nordic Head of Economics Kjetil Houg, Alfred Berg ABN AMRO and Professor Erling Steigum, BI Norwegian School of Management. Steigum joined the group in late August. Houg has acted as coordinator of the group and has organised its work.

The committee wishes to thank a number of people for valuable support and comments during the process of production. The Norwegian Ministry of Finance has decided to provide financial support to *Norges Bank Watch* for a period of two years, a valuable contribution that will support continuity, distribution and quality of this and future reports. We also want to thank senior ministry officials for valuable comments and discussions. Moreover we are very thankful for the professional attention given to our questions from a number of people in Norges Bank, including the senior management. Finally we want to thank the Statistics Norway Research Department for valuable discussions.

The committee is solely responsible for the report and the views presented within. The report does not necessarily represent the views of the CME or its members.

Oslo, 30 September 2003

Executive summary

The Centre for Monetary Economics (CME) at the BI Norwegian School of Management has for the fourth time invited a committee of economists to participate on *Norges Bank Watch*, with the objective of evaluating the monetary policy regime in Norway and Norges Bank's conduct of monetary policy. This time the committee has focused on the conduct of policy rather than addressing institutional issues. The committee refers to *Norges Bank Watch 2002* for a detailed assessment of the monetary policy regime itself. The new committee for *Norges Bank Watch 2003* consists of Chief Economist Thomas Ekeli, Pareto Securities, Senior Economist Anne Kari Haug, ECON, Nordic Head of Economics Kjetil Houg, Alfred Berg ABN AMRO and Professor Erling Steigum, BI Norwegian School of Management. Steigum joined the group in late August. Houg has acted as coordinator of the group and has organized its work.

Flexible inflation targeting

Almost two and a half years ago – in late March 2001 – a new institutional framework for monetary policy was adopted in Norway. This framework is called flexible inflation targeting in the literature. There are misunderstandings regarding what an inflation targeting central bank is supposed to do. The most common misunderstanding is the belief that inflation is the only concern of Norges Bank and that the primary occupation of the bank is to keep the annual inflation rate as close as possible to 2.5 per cent. This is not, however, what Norges Bank is supposed to do, nor what the central bank is trying to do. This is also why a too-low or too-high rate of inflation is not proof in itself of misconduct of monetary policy. In addition to its responsibility to prevent high inflation or deflation, Norges Bank also uses monetary policy to stabilize aggregate output movements around potential output.

Most of the time, Norges Bank has a strong incentive to set its deposit interest rate such that the expected output gap is stabilised around zero. Such monetary policy action will also prevent subsequent inflationary or deflationary pressures from building up. Still, situations can arise in which Norges Bank faces a dilemma. If, for example, the rate of inflation has become significantly lower than the target, and aggregate output equals its potential, the inflation target requires the bank to ease monetary policy in order to bring inflation back on target in the medium run, generating a temporary positive output gap. If inflation is brought back to its target too quickly, instability in output may arise. This is the main reason why Norges Bank and other inflation-targeting central banks have a longer horizon (usually about two years) when they attempt to bring inflation back on target.

How to evaluate monetary policy decisions

In this report, our main task is to evaluate Norges Bank's monetary policy decisions after the new regime of flexible inflation targeting was introduced in 2001. This report is the first to have access to data for the entire two-year horizon after March 2001. Still, a number of challenges remain. With only two and a half years of experience with the new regime, the decisions made by Norges Bank have not yet had their full impact on output and inflation. Moreover, monetary policy is conducted under considerable – sometimes close to overwhelming – uncertainty, given difficulties in interpreting incoming information, assessing the state of the economy and uncertainty about the lags and effects of monetary-policy actions on the future development of the economy. In general, with the benefit of hindsight, monetary policy could in most cases have been better. The real issue, however, is whether there were any serious mistakes made, given the information available at the time. Thus, the main purpose of this year's *Norges Bank Watch* is to evaluate to what extent Norges Bank made the right decisions from an *ex ante* point of view, particularly in 2002.

In this review, we have chosen to focus on a limited number of issues we believe have been – or should have been – key in shaping monetary policy the past couple of years. The committee would like to emphasize that Norges Bank's general conduct of monetary policy holds a very high standard. Its staff is competent, its research is of good quality, the board's decisions are well founded and the communication of policy is well executed.

Factors behind the deceleration in output and inflation

Towards the end of 2002, the Norwegian economy stagnated and plunged into a recession. By the summer of 2003, the rate of core inflation was 0.7 per cent, far below the inflation target of 2.5 per cent. A strong real and nominal appreciation of the krone was an important factor behind these developments.

In *Norges Bank Watch 2002*, it was suggested that fiscal policy was responsible for the real appreciation from February 2002 to August 2002. Although many believed that the new fiscal policy rule established in 2001 would by necessity trigger such fiscal expansion, this belief was not supported by the facts. Another explanation points to the large wage increases that were the result of collective wage bargaining during the spring of 2002, adding to an already high level of nominal wage growth. Although economic theory does not suggest that a positive nominal wage shock will trigger a real appreciation, an inflation targeting central bank is expected to react to a positive nominal cost shock by increasing the nominal interest rate sufficiently.

Also, the krone exchange rate and the interest rate differential against Norway's trading partners increased in parallel from about February 2002 and during the rest of the year. Economic research strongly suggests that tightening monetary policy will trigger a real appreciation that overshoots the medium term equilibrium level of the real exchange rate. Uncertainty and expectation lags could also explain why the krone did not adjust fully at once. We therefore think that the increased difference between the monetary policy

stances in Norway and Norway's trading partners was an important factor (but not the only one) explaining the strong real appreciation of the krone from February 2002 to January 2003. This again spurred a deceleration in output and inflation in 2002 and 2003.

Norges Bank's monetary policy decisions

With the benefit of hindsight, one may easily draw the conclusion that monetary policy during 2002 ought to have been less restrictive. The slump in inflation far below its 2.5 per cent target and the subsequent stalling of economic activity will provide important lessons for future policy. But this development does not in itself represent proof that Norges Bank did a poor job. An assessment of the conduct of monetary policy needs to be based on the information available to the central bank at the time, i.e. from this perspective the situation should be viewed *ex-ante* rather than *ex-post*.

We have identified the following questions regarding Norges Bank's setting of interest rates:

- Was the move to ease policy at the end of 2001 timely and appropriate?
- Was the policy tightening in the summer of 2002 premature, and should the easing cycle have commenced earlier than in December 2002?
- Has the pace and extent of policy easing since December 2002 been appropriate?

The increased uncertainty surrounding the world economic outlook after the terrorist actions in September 2001 prompted most central banks to ease policy quickly, while Norges Bank waited until December. While we respect Norges Bank's view that the impact of the 11 September attacks on the Norwegian economy was uncertain, we believe Norges Bank's credibility would have benefited if an "easing bias" had been established at the meeting 19 September. This would have enabled the bank to more closely assess the need for rate cuts ahead of the meeting on 31 October.

Norges Bank should have foreseen the deterioration in the global economic outlook in the summer of 2002, and also ought to have paid more attention to the appreciation of the krone. However, the excessive wage settlements raised serious questions about the wage formation process, questions that did not have obvious answers at the time. Thus, it would not seem appropriate to put forward strong criticism of the decision to raise interest rates in July 2002.

However, Norges Bank's decision to retain a "neutral bias" as late as 30 October stands out as being at odds with the view of other central banks as well as market participants and other forecasters. At the time there were clear signs of setbacks in several sectors of the economy, the outlook for the world economy was deteriorating and stock markets were severely depressed. It would seem that Norges Bank had sufficient evidence to reverse course before December 2002.

The committee did not have sufficient time to give a proper assessment of Norges Bank's monetary policy decisions in 2003. A preliminary comment would include credit to the central bank for acting with speed and determination to make policy expansionary.

Should uncertainty make central banks more careful about changing interest rates?

It is appropriate that Norges Bank should be concerned about uncertainty when setting the interest rate. It is, however, also important to distinguish between the different sources of uncertainty. In some cases, such as when increased uncertainty is predominantly additive, certainty equivalence suggests that monetary policy should not be more cautious. In other cases, model uncertainty may have changed; making more or less aggressiveness warranted depending on its source.

On several occasions Norges Bank has referred to high levels of uncertainty. In October 2001, the bank said, "uncertainty surrounding global developments is unusually high", and in March 2003 it said, "the situation is highly uncertain, and we cannot rule out that the world economy is headed for a fairly long period of stagnation.... There is uncertainty associated with developments in many of the factors that will influence inflation ahead, among others the exchange rate. This implies a gradual approach in the conduct of monetary policy."

It is likely that the type of uncertainty that the Norwegian economy faced in March 2003 was basically additive, which is underlined by the bank's reference to uncertainty over the global outlook. Thus, the conclusion that "this implies a gradual approach in the conduct of monetary policy" is questionable. Moreover, risk assessments made during the fall of 2001 were probably also dominated by additive risk, implying that Norges Bank's wait-and-see attitude was not justified as a reflection of increased uncertainty.

Evaluation of Norges Bank's forecasts

In its inflation forecasts during 2002 and 2003 Norges Bank consistently underestimated deflationary impulses. While inflation in 2002 developed largely as expected, inflation came in significantly below forecasts in 2003. The underlying inflation rate was a mere 0.7 per cent in July 2003, compared with a forecast of 2.1 per cent made in July 2002. Part of this discrepancy is due to revisions in the wage growth estimate, and part to the exchange rate channel and other external factors that were difficult to detect in advance.

Wage growth assumptions

Although Norges Bank's wage assumption for 2002 was above most other forecasters, the outcome ended up even higher than expected. However, this changed in 2003. Norges Bank's wage growth forecasts for 2003 and 2004 were consistently higher than other forecasters during 2002. These forecasts are probably the single most important factor explaining why monetary policy ended up too tight. Norges Bank seemingly rejected the

possibility of improved internalisation in 2002, a view that was also controversial at the time. Apparently, the forecasting tools employed by the bank tend to underestimate transmission effects of the global slowdown, the increased margin pressure on different Norwegian sectors, and its corresponding pass-through on wages.

On the other hand, the social partners have gradually approved Norges Bank's constant focus on the relationship between wage growth, inflation and interest rates. This improved internalisation will be beneficial for the workings of future monetary policy.

Exchange rate assumptions and dynamics

A common factor that explains both the sharp decline in the output gap and the inflation rate was a tightening of monetary conditions, mainly through a rise in the nominal exchange rate. It is indeed a challenging task to incorporate the exchange rate channel correctly in macroeconomic modelling, and it is impossible to evaluate the bank's assessment without detailed knowledge of the bank's analytical tools. Furthermore, assumptions about the exchange rate contribute significantly to inflation forecasts. *Norges Bank Watch* recommends that the bank put more emphasis on the longer term effects on exchange rate movements on company profitability and wage settlements.

Fiscal policy assumptions

While not fully reflected in the forecasts, Norges Bank communicated a high level of concern after the introduction of the operating guidelines that fiscal policy would be too expansionary. However, the actual outcome was that the budget for 2003 gave a rather neutral effect. The guideline does not suggest that policy will be significantly expansionary in the near future either. In retrospect, Norges Bank's negative judgment of the effects of the fiscal policy rule and the corresponding need for a real appreciation may have been somewhat exaggerated in early 2002.

As in the case of wage determination, it appears that the internalisation of monetary policy has advanced, and that this causality is well understood by politicians and social partners. In this respect, one could say that Norges Bank's strong focus on the interaction between fiscal policy decisions and the conduct of monetary policy has served a useful purpose.

Norges Bank has largely based its fiscal policy assumptions on the budget documents. While it is difficult to see any alternative to this approach, *Norges Bank Watch* welcomes efforts to establish better forecasting tools for fiscal policy in the future.

International assumptions

Keeping close to the consensus, Norges Bank takes a rather defensive view of trends in the international economy. History suggests, however, that consensus rarely captures turning points, and that there are other sources that may provide more timely and precise information. *Norges Bank Watch* welcomes efforts to incorporate alternative indicators of the economic cycle, in particular to obtain a better feel for financial market information in order to further advance the timing of monetary policy.

The two-year horizon

Norges Bank Watch reiterates its proposal to use a more flexible time period for the inflation forecast and to continue to use the concept of the output gap in the inflation report. This can be done regardless of interest rate assumptions. It is important to acknowledge that monetary policy impacts inflation with a lag, and that the different transmission channels kick in at different times. *Norges Bank Watch* is hesitant to criticise the bank's actual balancing between output and inflation stabilisation, as the bank clearly emphasises that it will deviate from the two-year horizon if this is associated with unnecessary real economic costs.

Communication

An important condition for democratic control of Norges Bank as well as for efficient delegation of monetary policy is that Norges Bank is held accountable to the political bodies for its monetary policy decisions. Accountability requires *transparency*, both in the form of a clear goal for monetary policy and a transparent reporting system for the central bank's policy actions and the analysis that motivates these actions, so that external observers can evaluate the bank's performance. An evaluation of Norges Bank's transparency is therefore important in order to assess how well its communication strategy works.

Norges Bank communicates through a variety of channels, and *Norges Bank Watch* wishes to acknowledge the extensive list of regular publications that Norges Bank contributes to, as well as the efforts that the bank has made to strengthen transparency.

Recently, Norges Bank initiated two studies in order to improve the bank's inflation reports and strategy documents. Norges Bank has already addressed most of the suggested improvements made in these reports. Moreover, the bank has given high priority to following up proposals made by the *Norges Bank Watch 2002* report. Although Norges Bank is still a "young" inflation targeting central bank, we find much comfort in the fact that the bank already operates with a high level of transparency, and that the bank is continuously engaged in making improvements.

We identify four criteria for a successful communication policy: precision, timeliness, consistency and market neutrality

Precision is generally at a very high level, but *Norges Bank Watch* finds that it can be further improved by replacing today's "bias-sentence", which refers to the two-year horizon of the inflation forecast, with the one used previously, which refers to the probable direction of the next change of the deposit rate. Using the previous formulation

will both contribute to better communication on future interest rate changes, and reflect more explicitly that Norges Bank has a *flexible* inflation target.

Timeliness can be difficult when the bank's assessments of the outlooks for inflation and output are changed between Executive Board meetings. To reduce the need for guidance between meetings, and also to facilitate more gradual interest rate changes, the bank might consider a higher frequency of Executive Board meetings – for example every fourth week. If situations arise where the bank needs to send policy signals between meetings, such signals should be as clear as possible, as they were in June 2003.

In order to enhance *consistency* still further, *Norges Bank Watch* recommends that Norges Bank implement a time varying instrument rate path in its inflation projections. This would be consistent with the bank's best forecast, while the current technical assumption of an unchanged interest rate is not.

Norges Bank's communication strategy is commendably *market neutral*. Most relevant information is presented simultaneously in both English and Norwegian on Norges Bank's Internet site. Norges Bank also emphasises simultaneity in its strategy of communication.

1 Introduction

Almost two and a half years ago – in late March 2001 – a new institutional framework for monetary policy was adopted in Norway. This framework is called flexible inflation targeting in the literature.¹ There are misunderstandings regarding what an inflation targeting central bank is supposed to do. The most common misunderstanding is the belief that inflation is the only concern of Norges Bank and that the primary occupation of the bank is to keep the annual inflation rate as close as possible to 2.5 per cent. This is not, however, what Norges Bank is supposed to do, nor what the central bank is trying to do. In addition to its responsibility to prevent high inflation or deflation, and thereby provide the economy with a nominal anchor, Norges Bank also uses monetary policy to stabilise aggregate output movements around potential output. This is often referred to as the stabilisation of the output gap, i.e. the deviation of output from potential output. This attempt to stabilise short-run aggregate business cycle movements is the reason why the word “flexible” has been added to inflation targeting.

How can Norges Bank achieve two goals with only one policy instrument, its instrument rate (deposit rate) of interest? The answer is that most of the time, Norges Bank has a strong incentive to set its deposit interest rate such that the expected output gap is stabilised around zero. Such monetary policy actions will also prevent subsequent inflationary or deflationary pressures from being built up. Still, situations can arise in which Norges Bank faces a dilemma and must make a good trade-off between the two goals. If, for example, the rate of inflation has become significantly higher than the target, and the output gap is close to zero, the inflation target requires the bank to tighten monetary policy in order to bring inflation back on target in the medium run. Normally, tightening monetary policy slows the growth in aggregate demand and generates a temporary negative output gap. In such a situation, the bank knows that the speed by which it attempts to bring back inflation to target has strong implications for short-term output fluctuations. If Norges Bank attempts to bring inflation back quickly (within a year, say); it must increase the interest rate aggressively, triggering a sharp appreciation of the krone. Such a policy response will act as a strong, negative demand shock, which could send the economy into a recession. It would probably also be necessary to switch to an expansionary monetary policy a year or two later in order to prevent the rate of inflation from becoming too low when looking two or three years ahead. Too strong an emphasis on the inflation target is therefore likely to bring about short-run output instability. This scenario is the main reason why Norges Bank and other inflation-targeting central banks have a longer time horizon (usually about two years) when they attempt to bring inflation back on target. If current inflation deviates from the target, a two-year horizon permits a more gentle monetary policy response that will prevent excessive output and employment effects in the short run and still ensure that the rate of inflation gradually returns to the target in two years or so.

¹ See for example Svensson (1997, 1999).

In this report, our main task is to evaluate Norges Bank's monetary policy decisions after the new regime of flexible inflation targeting was introduced in 2001. Previous *Norges Bank Watch* reports have also evaluated some of these decisions. Our advantage over previous reports is that we have more information. This report is the first to have access to data that spans the entire two-year horizon of the first monetary policy decisions made after March 2001. Last year's *Norges Bank Watch* report made a preliminary evaluation of monetary policy decisions from the spring of 2001 and up to the summer of last year.² The 2002-report acknowledges the information shortage and argues that they faced two problems when attempting to evaluate the effects of monetary policy in 2001 and 2002 *ex post*:

The first, temporary, problem is that the new guidelines for monetary policy only started to apply in March 2001. Above we have emphasised the lags between the instrument adjustment and effect on output and inflation, perhaps a year for output and up to another year for inflation. Thus, the decisions Norges Bank have made in the first year after the introduction of the new guidelines have not yet had their full impact on output, much less on inflation.

The Norges Watch 2002 report also refers to the more fundamental problem of uncertainty and lags in an *ex post* evaluation of monetary policy:

The second, more fundamental, problem is that monetary policy is conducted under considerable – sometimes close to overwhelming – uncertainty, given difficulties in interpreting incoming information, assessing the state of the economy and uncertainty about the lags and effects of monetary-policy actions on the future development of the economy. Also, during the lags between instrument adjustment and impact on output and inflation, unanticipated shocks and disturbances intervene, so the observations of actual output and inflation are contaminated by these shocks. Furthermore, potential output, the reference point for output used to construct the output gap, is notoriously difficult to estimate. Thus, *ex post* evaluation of monetary is not as easy to do as one might first think, even if several years of data is available, and unless adjustment for unanticipated shocks are done, it may be quite misleading. In general, with the benefit of hindsight, monetary policy in most cases have been better. This is not surprising. The real issue, however, is whether there were any serious mistakes, *given available information at the time of decision*.

The fact that that inflation was relatively low in the summer of 2003, see section 2 below, serves to illustrate these difficulties. However, low inflation is not sufficient to conclude that Norges Bank made seriously wrong decisions in 2001 or 2002. In order to evaluate this situation we must also look at the output gap and try to weigh the relative importance of shocks to inflation and the output gap (including changes in fiscal policy) that may have influenced the Norwegian economy in addition to monetary policy. Finally, we must evaluate Norges Bank's monetary policy decisions in light of information available at the time of each decision. Given the available information about the state of the economy and the transmission mechanism of monetary policy at the time of decision, did Norges Bank make the right decisions? The main purpose of this year's *Norges Bank Watch* is to

² See Svensson et al. (2002).

evaluate to what extent Norges Bank made the right decisions from an *ex ante* point of view.

The rest of this report is organised as follows. In the next section we take a closer look at surprising macroeconomic developments that unfolded during the last year. We also try to explain why they happened, given the information that is currently available. Section 3 offers an evaluation of the real effects of monetary policy in 2001 and 2002, as well as the most important monetary policy decisions of Norges Bank from an *ex ante* point of view. In section 4, we raise a number of analytical issues related to the bank's forecasts of wage growth, exchange rates, and other determinants of future inflation and output gaps. In section 5 we evaluate how well Norges Bank has communicated with the market and the general public. And finally, appendix I gives an overview of the recommendations of *Norges Bank Watch 2002* that have been implemented during the last year and appendix II contains the Regulation on monetary policy of 29 March 2001.

2 What happened?

In 2002 the Norwegian economy stagnated after the first quarter, and even plunged into a small recession in the fourth quarter of 2002. Surprisingly, by the summer of 2003, the rate of core inflation was only 0.7, far below the inflation target of 2.5 per cent. The period since the last *Norges Bank Watch* was published has been difficult and challenging for Norges Bank. Let us take a closer look at what happened and also offer an explanation as to *why* it happened.

2.1 Economic stagnation and inflation target undershooting

Both 2002 and the first half of 2003 have been disappointing for the OECD countries. The stock market crash in the spring of 2002 as well as other signals were early warnings that pessimism and stagnant aggregate demand were about to slow down output growth among Norway's trading partners, particularly in the Euro area, see figure 2.1. This slow-down also led to substantial downward revisions of output growth and interest rate forecasts for 2003 and 2004 in the United States and Europe.

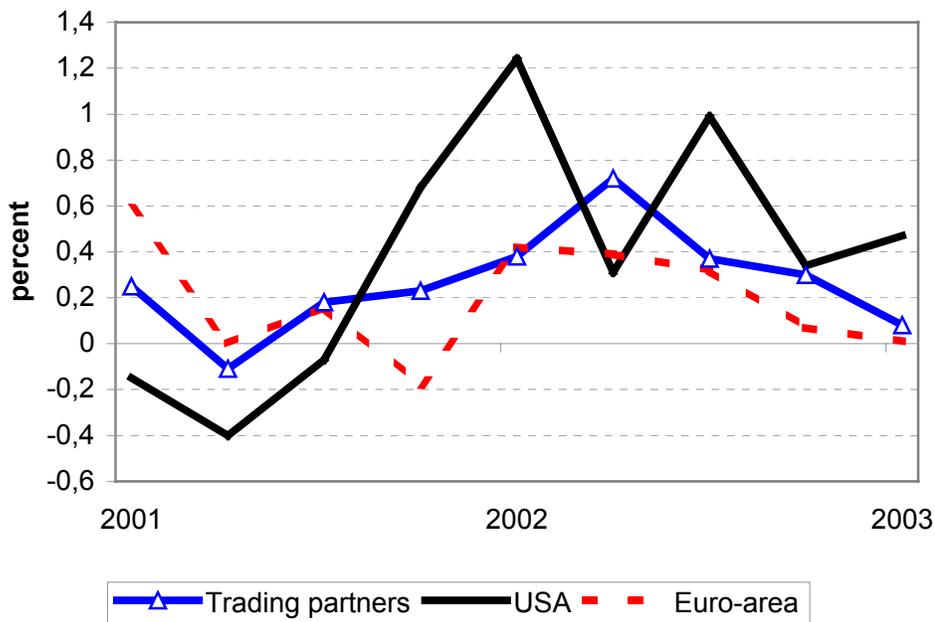


Figure 2.1 GDP-growth in the US, Euro area and between Norway's trading partners, 2001-2003. Seasonally adjusted volume growth from previous quarter (per cent).
Source: Inflation Report 2/2003.

Looking at output growth in Norway (figure 2.2), mainland GDP peaked in the first quarter, and declined in 2002:4 as well as in 2003:1, representing the first recession in Norway since 1988-1989. Fortunately, the recent recession has been much less severe than the previous one. Thus far in 2003, recovery has been weak. Average unemployment is expected to increase from 2003 to 2004. Although the international slow-down of economic growth played a part in the dismal performance of the Norwegian mainland economy, particularly in the second half of 2002 and the first half of 2003, external causes are unlikely to provide a full explanation.

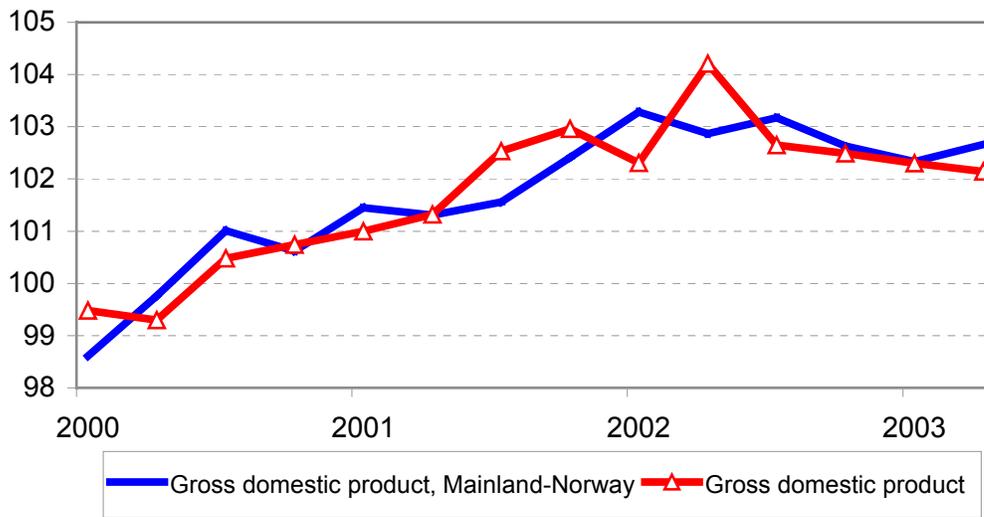


Figure 2.2 Gross domestic product and mainland gross domestic product from 2000 (1st quarter) to 2003 (2nd quarter). Seasonally adjusted quantity indices. (2000=100).
Source: Statistics Norway.

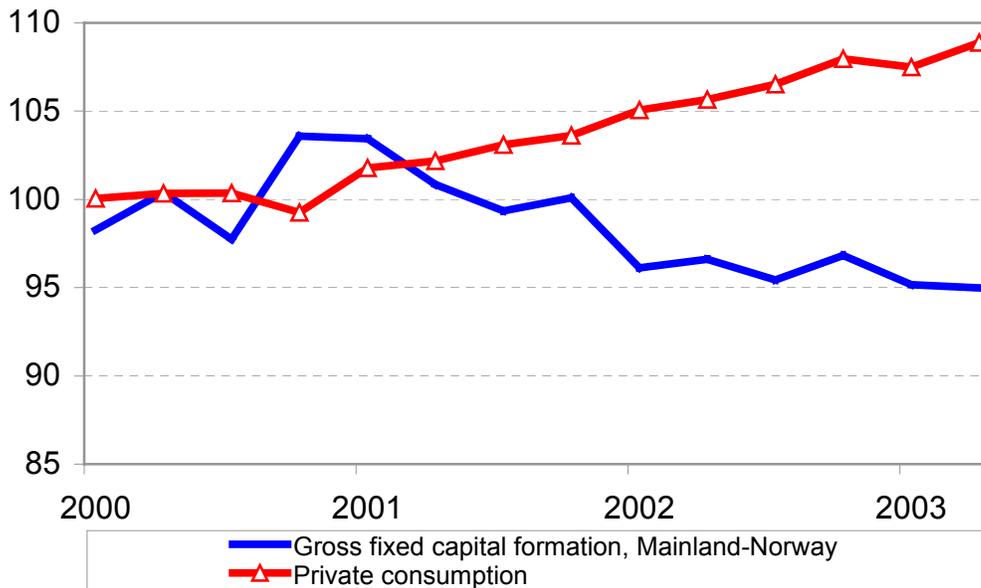


Figure 2.3 Gross investment in fixed capital and private consumption, from 2000 (1st quarter) to 2003 (2nd quarter). Seasonally adjusted quantity indices. (2000=100).
Source: Statistics Norway.

From figure 2.3 we see that real private consumption has been increasing vigorously while real gross investment had been consistently falling after its peak in 2001:1. It is likely that the weak performance of the mainland economy in 2002 – even before the

downturn in Europe – is largely due to the slump in aggregate investment. Before discussing further the question of why mainland output stagnated after 2002:1, let us look at what happened to inflation, see figure 2.4.

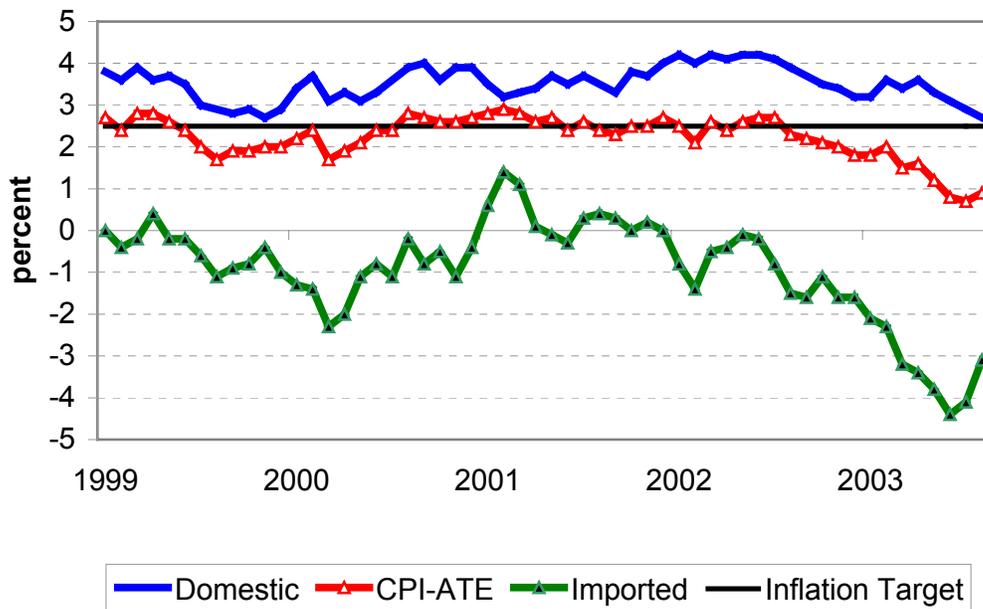


Figure 2.4 12-month growth rates of consumer prices adjusted for taxes and excluding energy goods (CPI-ATE). Total and disaggregated into domestic and imported inflation. January 1999-August 2003.

Source: Statistics Norway and Norges Bank.

In the summer of 2001, the interest rate target of Norges Bank aimed at 2.5 per cent inflation two years ahead, but as we can see from figure 2.4, inflation (the CPI-ATE, measured after adjustment for taxes and excluding energy goods) has increasingly been lower than the target since August last year. During the last nine months, inflation has been less than 2 per cent.

2.2 The real appreciation

Could there be a common factor explaining why mainland Norway plunged into a recession and why the rate of inflation has been much lower than the target in the last couple of quarters? We think that one such common factor is the strong real appreciation of the krone. This real appreciation was mainly triggered by a nominal appreciation, particularly from February 2002 until January this year, see figure 2.5.

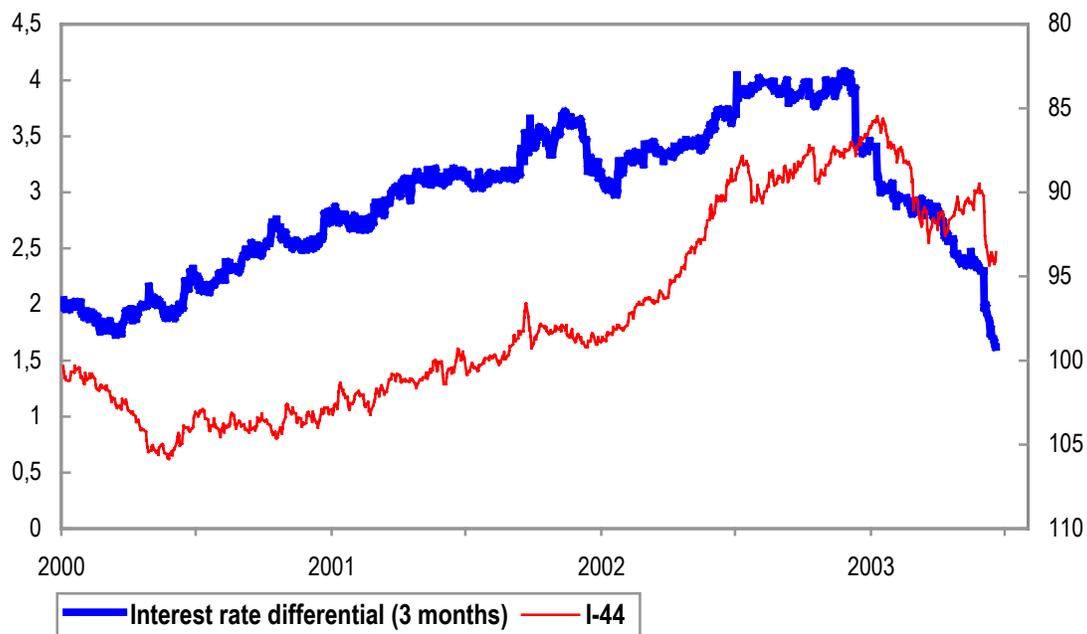


Figure 2.5 Import-weighted exchange rate (I-44) and the interest rate differential towards Norway's trading partners. Daily observations from January 2000 to 18 June 2003.
Source: Norges Bank

It is well known from economic research that a strong real appreciation increases the real wage of those employed, but squeezes the profitability of the sectors of the economy that are exposed to competition from firms and companies in other countries. We find it likely that the strong real appreciation is an important cause of the stagnation and subsequent recession in mainland Norway in 2002. The high nominal wage increases in the spring wage settlement added significantly to consumer real wage growth as well as to the cost burden of the sectors exposed to international competition. The functional distribution of income in Norwegian manufacturing industry shifted strongly in favour of labour, and profit margins were increasingly squeezed during 2002. This also helps to explain the decline in aggregate fixed investment that was shown in figure 2.3 above. On top of this, Norwegian industry was hit by significant negative shocks from the international economy in the third and fourth quarter of 2002.

The sharp appreciation of the krone also helps to explain the deflation in imported goods prices, see figure 2.4 above. It takes perhaps from six to about twelve months for a sustained change in the exchange rate to affect the prices of imported consumer goods, which have a considerable weight in the Norwegian CPI. This is usually referred to as the *exchange rate channel* of monetary policy. The drop in imported consumer price inflation from about zero in May 2002 to about -4 per cent in August 2003 is therefore to a large extent explained by the nominal appreciation during the period February 2002 to January 2003. A factor that also added to this development was the unexpected fall in imported consumer prices measured in foreign currencies.

It remains to explain why the strong and sustained real appreciation happened in the first place. There are three main hypotheses: fiscal policy, large nominal wage increases, and monetary policy. Let us look at these hypotheses in turn.

2.3 What caused the strong krone?

In *Norges Bank Watch 2002*, it was suggested that fiscal policy could be responsible for the real appreciation from February 2002 to August 2002. It is well known that a shift to more expansionary fiscal policy can trigger a real appreciation in the medium and perhaps longer term, and that the short run response is likely to be larger than the medium term effect. The logic behind this dynamic response in the real exchange rate is that the increased demand for non-traded goods and services increases supply with a lag due to costs of sectoral adjustment.³ A problem with this hypothesis is that fiscal policy was in fact not becoming significantly more expansionary in 2002. Although many believed that the new fiscal policy rule established in 2001 would by necessity trigger such a fiscal expansion, this is not supported by the facts. We therefore do not think that fiscal policy is the most important factor explaining the real appreciation during 2002.

Another explanation points to the large wage increases that were the result of collective wage bargaining in Norway during the spring of 2002. Going back to economic theory, there is no general and robust rule that claims that a positive nominal wage shock will trigger a real appreciation. It may, but then again, it may not. This question depends on finer details in the structure of the economy. However, an inflation targeting central bank is expected to react to a positive nominal cost shock by increasing the nominal interest rate sufficiently to increase the short run real rate of interest. This is often referred to as the Taylor principle.⁴ It is therefore possible that widespread expectations of large nominal wage increases explain a major share of the nominal and real appreciation that occurred even before the final wage settlement. We therefore cannot exclude that expectations of a tighter monetary policy after the wage settlement explain some of the observed nominal and real appreciation of the krone from February 2002 and onwards towards the increase in the instrument rate in July from 6.5 to 7 per cent.

Still, we think that tight monetary policy in general – and not only the *expected* monetary policy reaction to the large wage increases – is the major cause of the appreciation of the krone. Going back to figure 2.5, we see that both the nominal krone exchange rate and the nominal interest rate differential against Norway's trading partners increased in parallel from February 2002 and during the rest of the year. In the beginning of the year, the interest rate differential started to increase due to interest cuts in other countries. At that point Norges Bank's deposit rate was 6.5 per cent.

From the hypothesis of uncovered interest rate parity we know that the short run equilibrium exchange rate depends on the future sum of expected interest rate differentials. If the market starts to believe that the interest rate differential will increase and be positive for a long time, the demand for Norwegian kroner is bound to increase fairly quickly and send the value of the krone upwards. Our view is that during the spring of 2002, the market did in fact receive signals that the future interest rate differential

³ See Steigum and Thøgersen (2003).

⁴ See Taylor (1999) and Woodford (2001).

would increase, and in retrospect, the market was right. We will return to this issue in sections 3 and 4. Our account of what happened does not exclude that there were also *other* factors contributing to the real appreciation, for example the increase in uncertainty due to the upcoming war in Iraq and other external factors. This increase in uncertainty may have made the Norwegian oil-dependent krone more attractive for foreign investors as a safe haven.

Economic research strongly suggests that a tightening of monetary policy would trigger a real appreciation that overshoots the medium term equilibrium level of the exchange rate. Such an overshooting will be greater, the longer the interest rate difference is expected to last. Uncertainty and expectation lags could explain why the krone does not adjust fully at once, as would be the case in a stylised model with perfect foresight. We therefore find it probable that the increased difference between the monetary policy stances in Norway and Norway's trading partners is an important factor, although not the only one, explaining the strong real appreciation of the krone from February 2002 to January 2003. Additional evidence supporting this hypothesis is the fact that the krone started a sustained decline after it became clear that Norges Bank had shifted to a more expansionary monetary policy stance in 2003, starting with the interest cut and bias change in December 2002. Again, downward revisions of wage increase expectations – and the corresponding revision of expectations of further rounds of deposit rate cuts – may also have played a significant role in the depreciation of the krone in the spring of 2003.

2.4 The powers of monetary policy

Adopting for a moment the *ex post* viewpoint, an interesting question is to what extent a less restrictive monetary policy during 2002 could have affected mainland output and employment in the second half of 2002 and the first half of 2003. Counterfactual analysis and prediction is extremely difficult and uncertain in economic science. Such analysis must necessarily be based on theoretical assumptions about what we know in general about the real effects of monetary policy. Most economists agree that tight monetary policy may have powerful and negative real effects in the short run. The sharp economic downturns in Norway, Finland and Sweden 12-14 years ago are dramatic demonstrations of the powers of monetary policy.⁵ Similar evidence from other industrial countries suggests that a more expansionary monetary policy in the first three quarters of 2002 could have mattered significantly for mainland Norway. It is not far fledged to suggest that the recession starting in the fourth quarter could have been prevented if monetary policy had been significantly less restrictive at an earlier stage. On the other hand, we do not think that a significant slowdown of mainland output could have been prevented given the substantial negative shocks from the international markets for Norwegian traditional exports as well as the unfortunate nominal wage shock in the spring of 2002.

⁵ See for example Steigum (2003).

However, as the citation from the *Norges Bank Watch* report of 2002 points out above, in most cases we find *ex post* that monetary policy could have been better if central banks had had access to future information. Even if we believe that monetary policy played an important role in triggering the recession, it is quite another question to ask if Norges Bank had *sufficient information* to change monetary policy in time to avoid the recession and the subsequent undershooting of the inflation target in 2003.

3 Norges Bank's monetary policy decisions

With the benefit of hindsight, one may easily draw the conclusion that monetary policy during 2002 ought to have been less restrictive. The slump in inflation far below its 2.5%-target and the resultant stalling of economic activity will provide important lessons for future policy. But this development does not in itself represent proof that Norges Bank did a poor job. An assessment of the conduct of monetary policy needs to be based on the information available to the central bank at the time, i.e. a review from this perspective should be viewed *ex-ante* rather than *ex-post*.

3.1 Three interest rate cycles

After the deposit rate was raised to 7% in September 2000, it remained unchanged for over a year until December 2001. It was then lowered to 6.5% in response to a weaker outlook for the global economy in the wake of the terrorist actions of 11 September. The interest rate cycle turned again in July 2002, when Norges Bank raised the deposit rate back up to 7%, see figure 3.1. The tightening was explained against the backdrop of a slightly firmer economic outlook, but the most important consideration was an unexpected jump in wage inflation.

Renewed uncertainty about the international economic outlook and a continued appreciation of the krone halted any plans of additional monetary policy tightening. This also prompted the bank to reassess its policy stance and eventually led the central bank in December 2002 to embark on an aggressive series of interest rate cuts. The deposit rate was reduced by 50bp at each of the Executive Board meetings the following half-year, in December, January, March and April. The pace was quickened to 100bp in June and August, and returned to 50bp in August, leaving the key rate at 2.5% at the time this publication went to print.

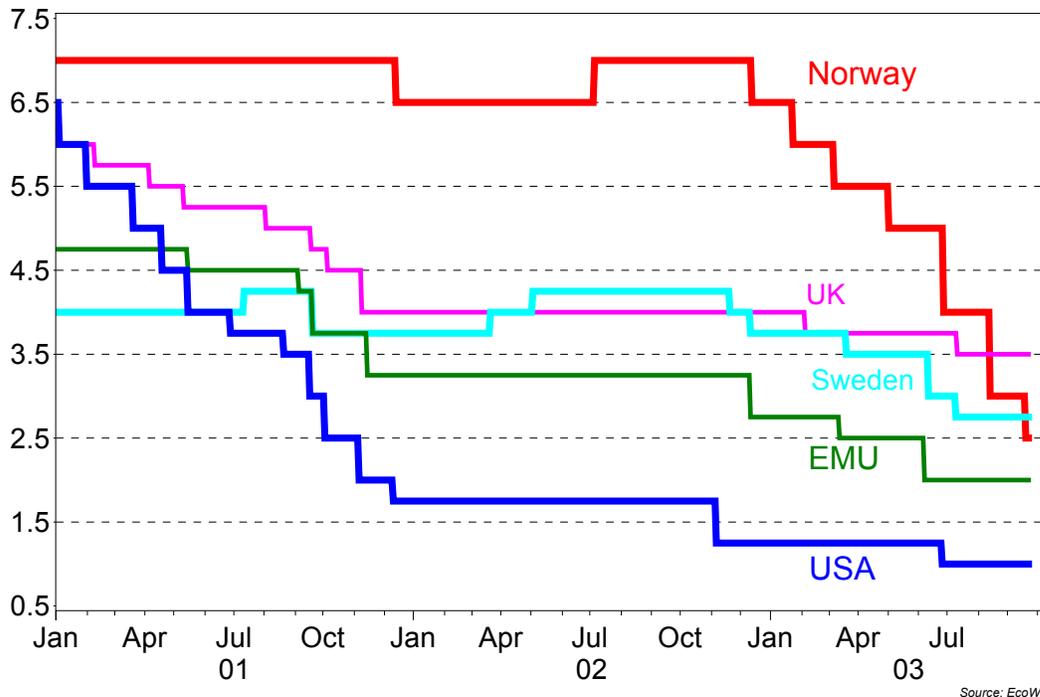


Figure 3.1 Central bank interest rates
Source: Ecwin.

Considering these developments, one may pose the following questions regarding Norges Bank’s setting of interest rates:

- Was the move to ease policy at the end of 2001 timely and appropriate?
- Was the policy tightening in the summer of 2002 premature, and should the easing cycle have commenced earlier than in December 2002?
- Have the pace and extent of policy easing since December 2002 been appropriate?

3.1.1 The move to ease policy at the end of 2001

Some have pointed to the expensive wage settlements in the spring of 2002 as proof that Norges Bank ought not to have eased policy in December 2001. Based on the information available to the bank at the time, however, the relevant question is rather whether the central bank was too slow in signalling an easing of monetary policy.

At the Executive Board meeting in August 2001 Norges Bank held the key rate steady at 7% and confirmed a neutral interest rate outlook (“neutral bias”). At the following meeting on 19 September, the bank acknowledged that the tragic events of the 11 September terrorist attacks would further weaken the global economy, but that it was too early to assess the longer-term consequences. The bank thus kept interest rates unchanged and maintained a “neutral bias”. However, at the next Executive Board meeting on 31 October, Norges Bank signalled an “easing bias”, and then lowered the deposit rate by 50bp to 6.5% on 12 December 2001.

Between the August meeting and the September meeting, there was only one important development – the terrorist actions of 11 September 2001. While the economic consequences of those actions were as yet unclear, the impact was clearly negative. Economic theory does not suggest a strategy of sitting still and waiting for the fog to lift in the wake of such an event. Instead, decisive action would seem advisable (see section 3.2 for a discussion of monetary policy under uncertainty). There are no strong arguments for the central bank of a small open economy to deviate significantly from other central banks’ reactions to common negative external shocks. The best way to proceed is estimate the expected (or mean) impact of the shock and act on the basis of this information. The extent to which there is uncertainty about the mean is not relevant for the interest rate decision due to the well-known *certainty equivalence result*.⁶

Moreover, a strategy of “wait and see” involves a reputation risk. A central bank that is seen to be “out of touch” and slow to react runs the risk of seeing its credibility and thereby the effectiveness of its monetary policy eroded. The fact that virtually all central banks in Europe and North America took extraordinary steps and lowered their signal rates in the days after 11 September (and before Norges Bank met on 19 September) is a vivid illustration of a united assessment of the need to boost confidence to counter the increase in downside risks to the global economic outlook. The fact that Norges Bank was slow to respond to those risks, may have contributed to a growing perception in the summer and autumn of 2002 that the bank was asymmetric, taking too high inflation more seriously than too low.

☞ Conclusion

While we respect Norges Bank’s view that the impact on the Norwegian economy from the terrorist actions of 11 September 2001 was uncertain, we believe that it would have been beneficial for Norges Bank’s credibility if an “easing bias” had been established at the meeting 19 September. This would have enabled the bank to more closely assess the need for rate cuts ahead of the meeting on 31 October.

3.1.2 Tight policy in the summer and autumn of 2002

After the rate cut to 6.5% in December 2001, Norges Bank maintained an “easing bias” in January 2002. The bank then reverted to a neutral interest rate outlook in February 2002 on account of a slightly brighter economic outlook both in Norway and abroad, a stance that was maintained at the April Executive Board meeting. In May, the central bank acknowledged a significant appreciation of the krone, but a more optimistic view on the global growth outlook and increasingly clear signs that wage inflation was heading up, prompted Norges Bank to establish a “tightening bias”. This was followed by a 50bp rate hike to 7% at the 3 July Executive Board meeting, as well as continued signals of more rate hikes to come. The “tightening bias” was maintained at the subsequent Executive Board meeting in August, which was then replaced by a neutral interest rate

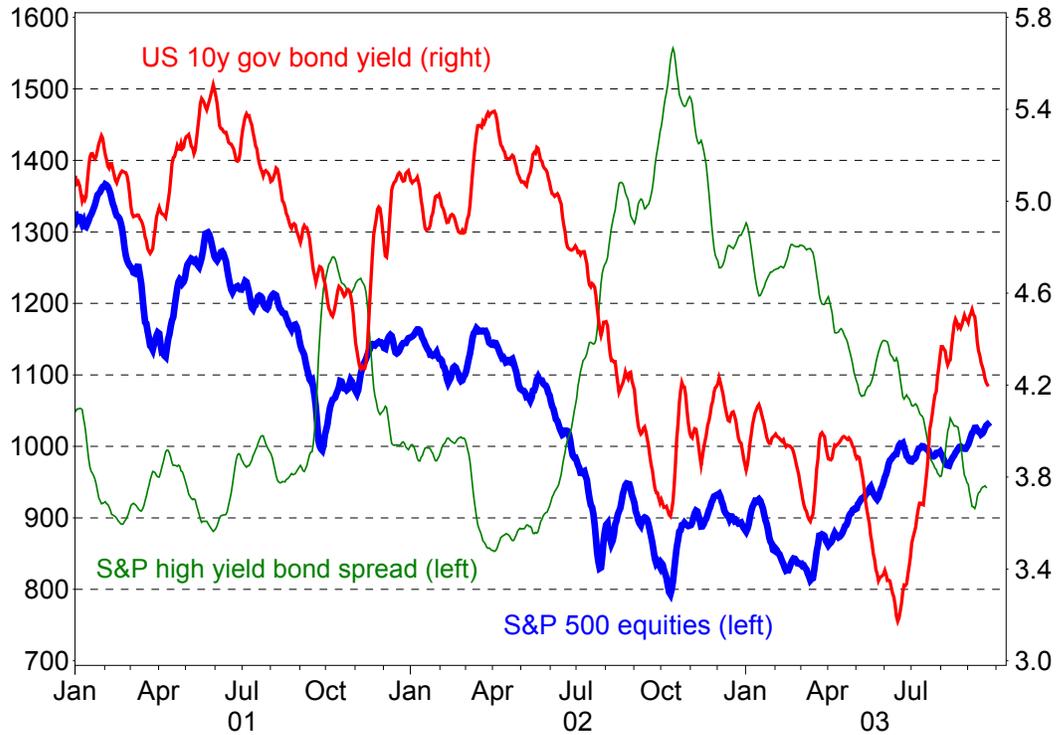
⁶ Svensson and Woodford (2002) discuss the certainty equivalence theorem when there are forward-looking variables and partial information about the state of the economy.

outlook in September and October. It was not until the next Executive Board meeting in December that Norges Bank decided to lower the deposit rate by 50bp to 6.5% and establish an “easing bias”.

The outcome of the 2002 wage bargaining was the main reason behind the tightening of policy that summer. For a long time, Norges Bank’s 5% forecast for wage inflation in 2002 stood out as being well above other forecasters. But even this proved too low, and the central bank revised its forecast to 5¾% - not only for 2002, but also for 2003 and 2004. This new wage forecast was the crucial argument for a tightening of policy in the summer of 2002, and thus deserves closer scrutiny. In section 4.3.1 there is a more detailed discussion on Norges Bank’s wage growth assumptions, where we conclude that while we have sympathy for the bank’s upward revisions for 2002 wage growth, the lifting of the 2003 and 2004 forecast was by no means uncontroversial – even in light of the excessive wage talks in the spring of 2002.

Although the expensive wage settlements in 2002 would appear to warrant a tightening of monetary policy, there were two other key issues where Norges Bank’s assessment demands a closer look: the strength of the international economy and the importance of the krone appreciation. The former is again discussed in section 4.3.4., where we conclude that Norges Bank’s assessment of the global economy was broadly in line with the consensus view. Thus, it is hard to argue that the bank made any major misjudgements in this respect. However, Norges Bank had the opportunity to sense the deterioration in the economic outlook from developments in financial markets from April to July, as equity prices, interest rates and the US dollar tumbled and spreads on corporate bonds widened, see figure 3.2. Making better use of financial market information and getting a better feel for the possibility of changing trends when conducting monetary policy are lessons for the future.⁷ Moreover, the decision by the US Federal Reserve to move to an “easing bias” on 13 August was a clear indication of the increased risk to the global economy, which eventually was followed by a new round of central bank interest rate cuts from early November.

⁷ See for example Estrella and Mishkin (1998).



Source: EcoWin

Figure 3.2 Financial market developments

Source: Ecwin.

In fact, financial markets in Norway also questioned whether Norges Bank’s monetary policy in the second half of 2002 was appropriate. Interest rate expectations fell immediately following the rate hike in July and interest rate reductions were priced in since August. Figure 3.3 illustrates how interest rate expectations changed tack in advance of the actual movements.

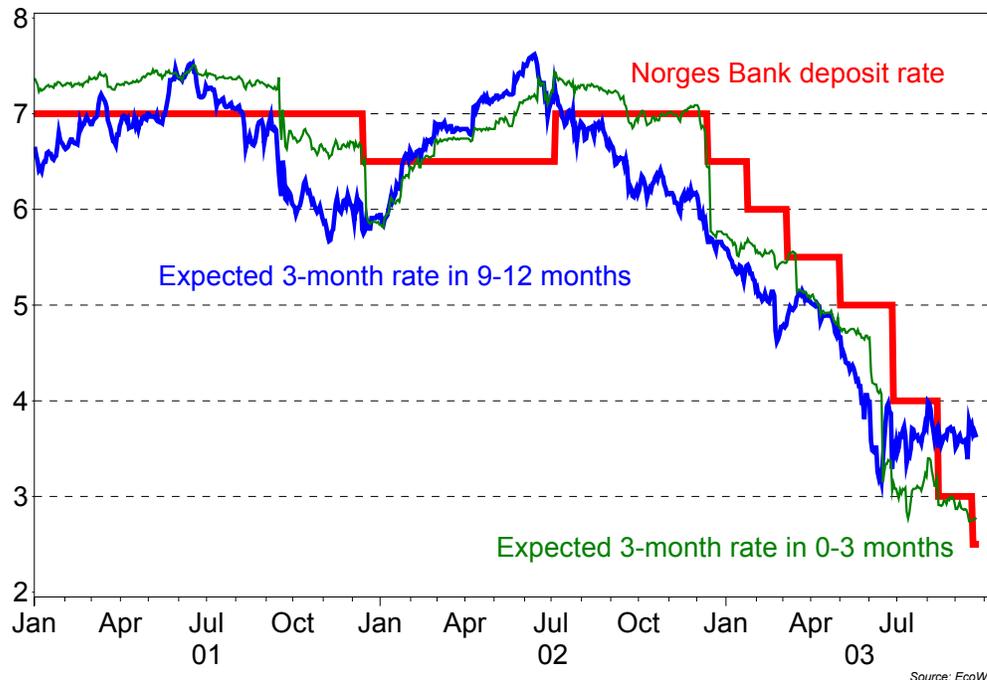


Figure 3.3 Interest rate expectations
Source: Ecwin.

Given the magnitude of the krone move and its importance to the growth and inflation outlook, the way Norges Bank took it into account in its rate setting deliberations demands scrutiny. The difficulty in forecasting exchange rates is well appreciated and Norges Bank's preference to assume an unchanged krone in its forecasts seems sensible. The heavy swings in the exchange rate and the tight relationship between the instrument and the currency fluctuations in 2002 is illustrated in figure 3.4.

While the krone assumption seems technical, the decision to base it on the average the past month or the past three months can have significant consequences on inflation forecasts when there are large currency moves. While Norges Bank used a one-month average in the February 2002 *Inflation Report*, it decided to change to a three-month average in the July and October reports, before returning to a one-month average as the currency assumption.

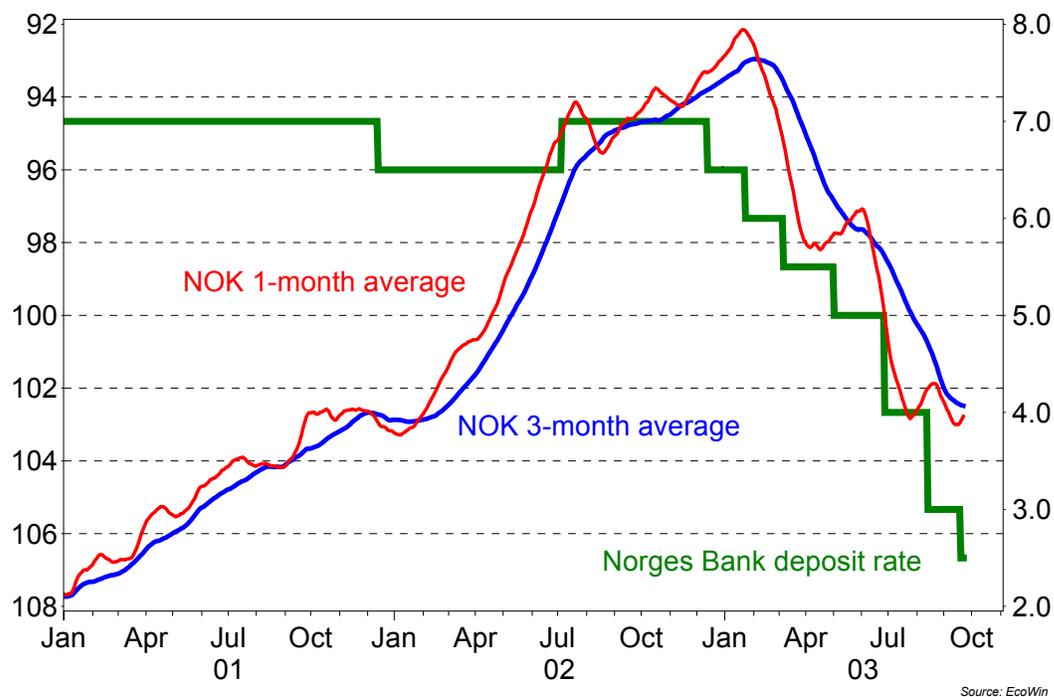


Figure 3.4 The Norwegian krone (“Konkurranskursindeksen”) and the Norges Bank deposit rate
 Source: Ecwin.

Had Norges Bank not switched from a one-month to three-month average in the summer of 2002, which then implied a 2% weaker krone assumption, the inflation forecast would not have offered a strong justification for a monetary policy tightening. As the krone continued to strengthen, Norges Bank’s inflation forecast in October 2002 would have suggested an easing of policy had the bank not used a three-month average. To the extent that Norges Bank’s policy decisions were based on the inflation forecast, the “technical” decisions on the currency assumption can be seen to represent an important factor behind Norges Bank’s tight policy last summer and autumn.

If Norges Bank’s decision on the krone assumption implicitly reflected a view on the likely development of the currency, i.e., that the appreciation was likely to be short-lived and thus should not have been allowed to seriously influence policy, the experience in the summer and autumn of 2002 is a useful reminder of how important the krone is and how difficult it is to determine its direction (at least in the short to medium term). A lesson for the future may be to stick firmly to using a one-month average as the currency assumption in the base case scenario, and incorporate other currency alternatives in a broader risk assessment.

High interest rates contributed to the appreciation of the krone and provided a significant brake on the economy, a development that materialised over the course of the year. Norges Bank seemed a bit slow to change tack, which appears to be related both to its assessment of economic mechanisms (views on wage formation and pass-through mechanisms of the exchange rate) as well as its evaluation of the economic cycle.

Together these considerations call into question Norges Bank's tight policy in the second half of the year.

It would seem that Norges Bank had ample opportunity to sense the deterioration in the global economic outlook in the summer of 2002, and moreover, should have paid more attention to the appreciation of the krone. However, concurrent excessive wage settlements raised serious questions about the wage formation process, questions where the answers were not obvious at the time. As we argue in section 4.3.1, one may also argue that the rate hike in July 2002 helped clarify the link between wages and interest rates to the social partners.

☞ Conclusion

It does not seem appropriate to put forward strong criticism of the decision to raise interest rates in the summer of 2002. However, in a situation where monetary policy is already fairly tight, and there is uncertainty surrounding the need for additional tightening, it might be more prudent to raise interest rates in smaller increments, such as 25bp.

Norges Bank's decision to retain a "neutral bias" as late as 30 October stands out as being at odds with the view of other central banks as well as market participants. In fact, financial markets had questioned for quite some time whether Norges Bank's monetary policy in the second half of 2002 was sustainable. Summing up, it would seem that Norges Bank had sufficient evidence to reverse course before December 2002.

The experience in the summer and autumn of 2002 is a useful reminder of how important the krone is and how difficult it is to determine its direction. A lesson for the future may be to stick firmly to using a one-month average as the currency assumption in the base case scenario, and incorporate other currency alternatives in a broader risk assessment.

3.1.3 The policy easing since December 2002

The committee did not have sufficient time to make an ex-ante evaluation of Norges Bank's monetary policy in 2003, but a few preliminary comments can be made.

The swiftness with which Norges Bank has switched from restrictive to accommodative monetary policy has significantly reduced the downside risks to the Norwegian economy. A reduced interest rate differential has contributed to weakening the krone, stimulating the economy and providing the foundation for core inflation to approach its target of 2.5%, see figure 3.5.

Norges Bank's decisions to increase the size of the rate changes from 50bp to 100bp in both June and August stand out. Not only are they significantly larger than what is common practice in modern central banking, but – together with the 50bp rate cut in September – they also took place against a backdrop of a tentative economic pick-up.

Economic indicators have increasingly pointed to an economic recovery both globally and in Norway, a view that financial markets have also subscribed to.

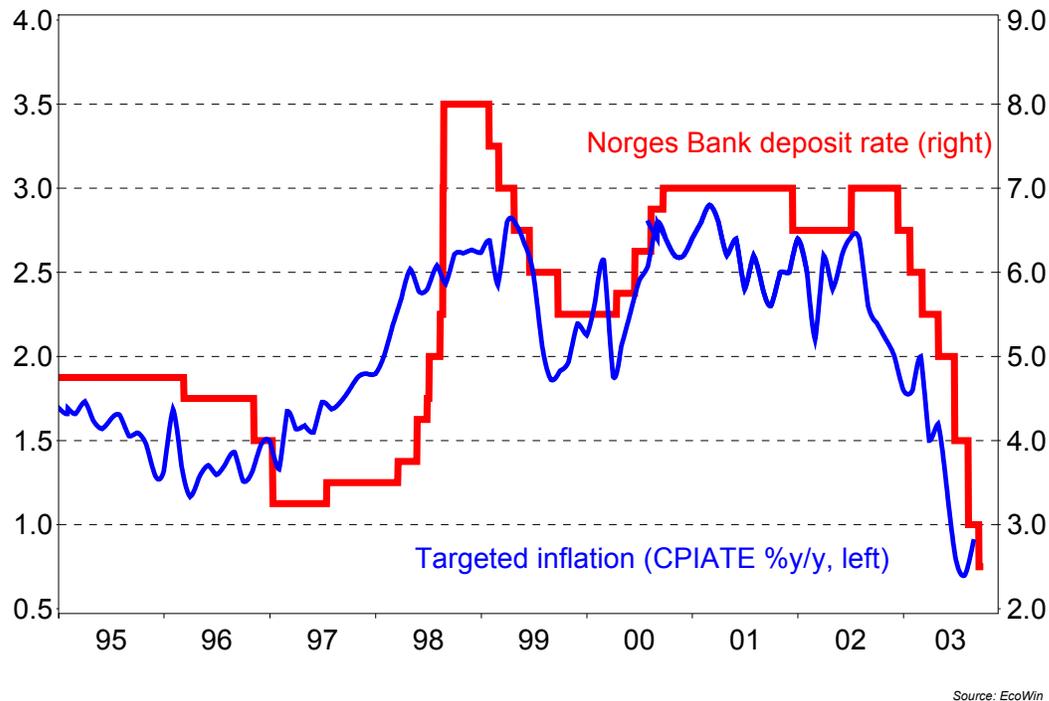


Figure 3.5 Targeted inflation and Norges Bank deposit rate
Source: Ecwin.

☞ Conclusion

A preliminary comment on Norges Bank’s monetary policy decisions up until August 2003 would include credit to the central bank for acting with speed and determination in making policy expansionary, and slight concern that some of the easing after the summer may appear to be on the generous side.

3.2 Key theme: Should uncertainty make central banks more careful about changing interest rates?

A flexible inflation targeting approach to monetary policy implies that Norges Bank must deal with uncertainty both related to how the Norwegian economy works, how its monetary policy affects the economy, the serial correlation properties of various shocks, as well as uncertainty due to the poor quality of preliminary, real-time data. An example is the uncertainty surrounding the wage determination process during spring 2002 and the outlook for future wage settlements. In practice, the uncertainty facing central banks is pervasive.

On several occasions Norges Bank has made reference to uncertainty in its assessments. The following quotes are taken from the introductions to press conferences following Executive Board meetings:

- October 2001: Uncertainty surrounding global developments is unusually high.
- January 2002: There is considerable uncertainty surrounding both the timing and the scale of a recovery.
- August 2002: There is uncertainty as to developments in many of the factors that will influence inflation in the period ahead. This also applies to the krone exchange rate.
- March 2003: The situation is highly uncertain, and we cannot rule out that the world economy is headed for a fairly long period of stagnation [...] There is uncertainty associated with developments in many of the factors that will influence inflation ahead, among others the exchange rate. This implies a gradual approach in the conduct of monetary policy.

As evident in the March release, the bank signalled a gradual approach in response to the “highly uncertain” situation. This was also the main conclusion after the terrorist attacks in September 2001, when the bank balanced out the risk in its global outlook.

A natural way to think about the size of the uncertainty about the value of a future variable or the effects of a policy action is to consider the *variance*. If the variance is large, the true value or the true effect may deviate considerably from the mean. We mentioned above that according to the certainty equivalence result, what usually matters for optimal monetary policy under uncertainty is the means of the relevant variables, not their variances. This result applies to so-called additive uncertainty about factors that affects the economy, for example the variance of future external shocks hitting the Norwegian economy.

There is, however, uncertainty that is not additive, for example uncertainty about how the economy works, and how much and how soon monetary policy affects the economy, i.e. lags in the effects of monetary policy. This type of uncertainty is usually referred to as *model uncertainty*. One influential contribution to the theory of stabilisation policy under uncertainty is Brainard (1967). Brainard showed that uncertainty about parameters of the policy-maker’s model of the economy leads to cautious policy. For example, if the central bank becomes more uncertain about the effects of monetary policy on the output gap, Brainard’s results implicate that instrument rates should be adjusted in smaller steps than otherwise.

Several recent contributions to this line of research have confirmed Brainard’s results. For example, Onatski and Williams’ (2003) simulation study finds that robust Bayesian optimal monetary policy rules are less aggressive when attention is restricted to uncertainty at business cycle frequencies. This study also suggests that uncertainty about

parameters and the lag structure of the model is the most important channel, but that real-time data uncertainty can also be important for optimal policy.

There are, however, research contributions that suggest that in some cases, more uncertainty about certain aspects of the model calls for *more*, not less, aggressive monetary policy. Typically, increased uncertainty about parameters that would increase the risk of dynamic instability or very poor economic performance, such as uncertainty about the persistence of inflation, will typically make the optimal policy rule more aggressive.⁸ Onatski and Williams (2003) refer to this as low frequency uncertainty. The intuition is that if the increase in model uncertainty makes bad outcomes more likely, for example persistent deflation, the central bank should change interest rates more aggressively to reduce this risk.

☞ Conclusion

It is appropriate for Norges Bank to be concerned about uncertainty when setting the interest rate. It is, however, also important to distinguish between the different sources of uncertainty. In some cases, such as when increased or reduced uncertainty is predominantly additive, certainty equivalence suggests that monetary policy should not be more or less cautious. In other cases, model uncertainty may have changed; making more or less aggressiveness warranted depending on its source.

It is likely that the type of uncertainty in March 2003 was basically additive, something that is underlined by the reference to uncertainty about the global outlook. Thus, the conclusion that “this implies a gradual approach in the conduct of monetary policy” is questionable. Moreover, the risk assessment during the autumn of 2001 was probably also dominated by additive risk, implying that Norges Bank’s wait-and-see attitude cannot be justified as a reflection of increased uncertainty.

⁸ See Söderström (2002).

4 Evaluation of Norges Bank's forecasts

As is evident in the previous section, monetary policy is, on the one hand, a balancing act between the risk of doing too much or too little, but on the other hand, it involves the risk of making a wrong assessment of the economy and the outlook for inflation. In this section we will evaluate Norges Bank assessment of the economy and detect critical factors behind monetary policy decisions.

First, let us recall briefly what Norges Bank has emphasised:

Throughout 2001, the outlook for the world economy deteriorated significantly and uncertainty with regard to economic performance accelerated further after the terrorist attacks of 11 September. Already in June 2001, the bank emphasised that the level of uncertainty was exceptionally high, but the bank balanced that risk against the backdrop of strong momentum in the Norwegian economy and tight labour market conditions. Later in October, the bank downgraded its outlook for the global economy and lowered rates in December, referring to the risk of a synchronised downturn in the world economy, falling global interest rates and signs of weakness in parts of the export industry.

Early in 2002, the bank reiterated its assessment of tight conditions in Norway, emphasising capacity barriers in the economy. Moreover, the bank saw lower risk of a global setback. Obviously, the bank was now concerned about the combination of the higher wage pressure that emerged during spring 2002 and accelerating spending of petroleum revenues. In October, the global situation deteriorated again and Norges Bank emphasised falling stock prices and weak growth momentum in the US and Europe. This time, high oil prices and strong credit growth⁹ balanced out the assessment. In December, development in Norway was weaker than expected, electricity prices hiked sharply, and there was weak and uneven recovery in the international economy, all of which spurred monetary easing.

In 2003, Norges Bank closed the interest gap between Norway and Europe in order to counteract a clear deterioration in the economic outlook. In March, it highlighted a weaker than expected situation in the world economy, and accelerating cost reductions in the private sector. In June, the bank emphasised that growth had come to a halt and that the economic response from monetary easing was weaker than expected. Later, in August, it underlined the risk that inflation expectations would take hold at a level that was too low. This argument relates to the fact that inflation from March and onwards came in consistently below the expectations of economic analysts and Norges Bank, and that the gap between actual inflation and the target became increasingly high.

⁹ Credit growth appears to be a backward looking indicator, reflecting adjustments to previous changes in asset values. According to Norges Bank own calculations it will take almost 10 years for a house price increase to be fully reflected in credit data. Making this a central case for monetary policy decisions would not appear to be warranted.

4.1 Factors behind the sharp drop in inflation in 2003

Table 4.1 illustrates what drove changes in inflation from July 2002 to July 2003. Basically, half of these changes may be explained by import prices, and the remaining may be attributed to housing rent, exposed consumer goods produced in Norway and service prices other than services with wages as a dominant price factor.

In particular, the decline in prices for imported consumer goods pushed down overall price inflation, something that must be seen in connection with the appreciation of the krone through 2002 and weak external inflationary impulses. In July 2003, prices for imported consumer goods were 4.1 per cent lower than one year earlier. Prices for clothing and footwear and audio-visual equipment in particular contributed to the deceleration. Falling price pressure from domestic consumer goods indirectly relates to the stronger exchange rate and global price pressure through enhanced competition from competing foreign producers.

The housing rent component is of interest as it appears that there is some correlation between the interest rate level and the housing price index. Typically, rent should cover all relevant expenses including: financing costs, repair and maintenance, taxes and insurance costs. Even though the rent index is based on market rents, there could be an indirect relationship between monetary policy and the consumer price index. Another explanation for the correlation could also be that housing prices and rents are correlated and that housing prices again impact monetary policy.

Summing up, the bulk of the decline in CPI-ATE from July 2002 to July 2003 relates to import prices. According to Norges Bank, the pass-through from the exchange rate to inflation reaches a maximum after 1 year and then starts to abate. Thus, the sharp drop in import prices in 2003 must be seen in context with the krone appreciation in 2002 (and correspondingly, the krone depreciation in 2003 will reverse some of the drop in import prices). In addition to this, international price impulses have generally been weak, adding to the decline in import prices. As a second round effect, import price competition has generated indirect effects through falling production costs in Norway, as well as through increased price pressure on Norwegian producers evidenced by the negative contribution from domestic goods producers.

Contribution to changes in CPI-ATE				
Per cent change	yoy per cent growth			Contribution to yoy change
	Jul-02	Jul-03	Weight	
CPI-ATE	2.7	0.7		-2.0
Import prices	-0.8	-4.1	28	-1.0
Domestic goods and service prices	4.1	2.8	72	-1.0
of which				
Agricultural products	3.6	3.4	7	0.0
Non-exposed consumer goods produced in Norway	4.2	3.9	7	0.0
Exposed consumer goods produced in Norway	2.3	0.2	12	-0.3
Rent	5.8	3.6	19	-0.4
Other services with wages as dominating price fact	5.3	5.0	7	0.0
Other services	3.1	2.3	20	-0.2

Table 4.1 Contribution to changes in inflation from July 2002 to July 2003

Source: Statistic Norway and Norges Bank.

The same analysis applied to headline CPI data reveals that deflationary impulses were offset by the surge in electricity prices during 2002, see figure 4.1. This factor is beyond the control of monetary policy, and is excluded in the CPI-ATE. It has however contributed to suppress real private consumption during the winter 2002-2003 adding to the weak performance of the economy. Another thing to note is that service prices related to transport and insurance contribute to boost the inflation rate, while culture, leisure and telecom service prices serve to dampen the index. Thus, there are no clear-cut trends in service prices in this period.

Contribution to change in the Headline CPI growth - major subgroups

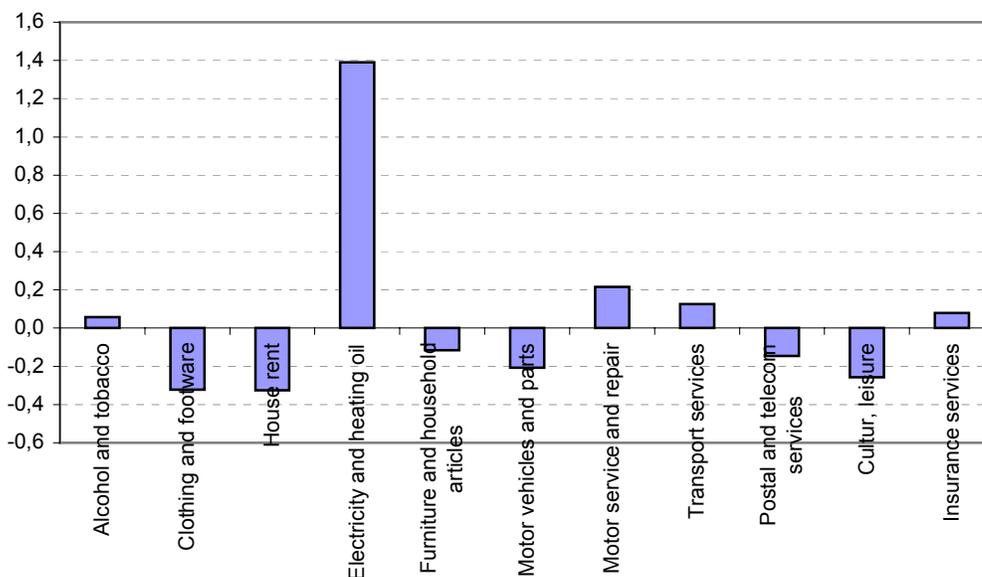


Figure 4.1 Contribution to change in Headline CPI growth- Change in annual growth contribution from July 2002 to July 2003

Source: Statistic Norway, *Norges Bank Watch*.

Another factor that kicked in August 2003 was a decrease in nursery school fees of 6% as a result of increased subsidies from the government to nursery schools. (This is not reflected in figure 4.1 and table 4.1, which cover developments to July.)

☞ Conclusion

The bulk of the decline in inflation from 2002 to the summer of 2003 relates to a strong krone exchange rate in 2002 and weak global price inflation. This is to some extent offset by price pressure in selected service sectors, and in the headline CPI by the surge in electricity prices.

4.2 Evaluation of inflation projections

While inflation projections for 2002 were largely accurate and close to target, the sharp decline in underlying inflation in 2003 was not fully reflected in Norges Bank projections. The following chart (figure 4.2) illustrates the evolution of Norges Bank inflation projections relative to actual inflation. Using the estimate from July 2002 as an example, inflation was expected to reach 2.1% in June, while actual inflation turned out to be a mere 0.7%. As illustrated in the previous section, the sharp decline in inflation in 2003 mainly relates to the strong exchange rate and global price declines. However, the bulk of these elements were already reflected in Norges Bank projections at the time, and from July 2002, the exchange rate actually remained rather flat until it started to depreciate in 2003. Thus, the exchange rate swings do not fully explain why the bank got its inflation projections wrong. Applying *ex-post* exchange rate assumptions on the projections made in July 2002 yields a negative impact on inflation of some 0.36 percentage points in July 2003.

Inflation estimates. CPI-ATE quarterly at annual rates

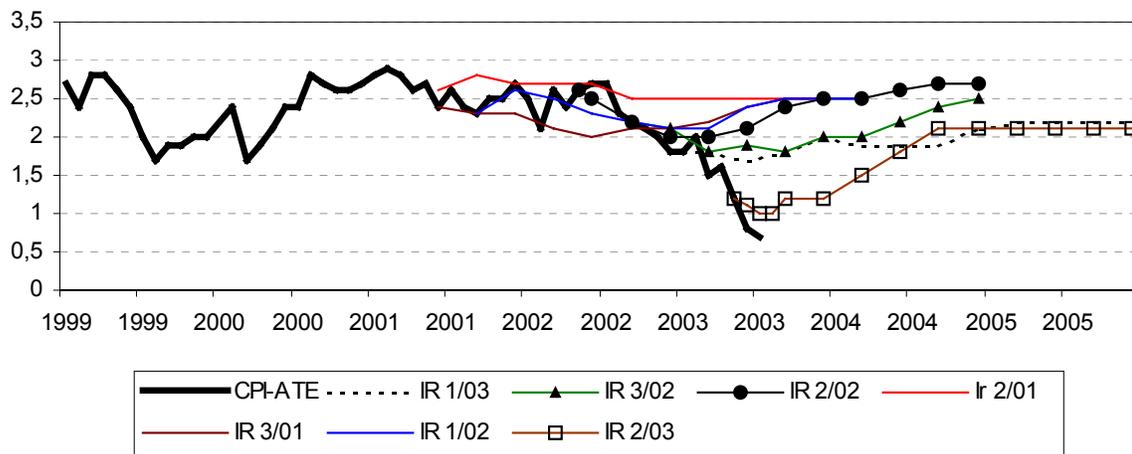


Figure 4.2 Estimated and actual CPI-ATE at different point in times
Source: Norges Bank.

Another critical factor was the wage growth forecast. Again, applying *ex-post* wage growth assumptions on the projections from June 2002 yields a negative impact on inflation of 0.46 per cent. Figure 4.3 illustrates how the updated wage assumption made in June 2003 would have lowered the inflation forecast made in July 2002. Thus, these two factors alone explain most of the forecast error made in 2002.

More important, as the horizon for monetary policy is two years ahead, it is of interest to evaluate what the 2-year inflation projections would have looked like for 2002 when applying updated information. While the forecast in July 2002 for inflation in July 2004 was 2.75 per cent, the corresponding forecast in June 2003 was only 2.1 per cent. In fact, it appears that this revision is largely explained by the wage growth assumption alone. Applying the June 2003 wage assumptions would yield a downward revision of the inflation forecast of 0.78 percentage points in July 2002. Thus, the bank's models for determining wage growth stands out as a critical factor in explaining the forecast revisions made. In the two-year horizon, the impact from changes in the exchange rate assumption in fact yields a positive contribution on inflation due to the currency depreciation in 2003.

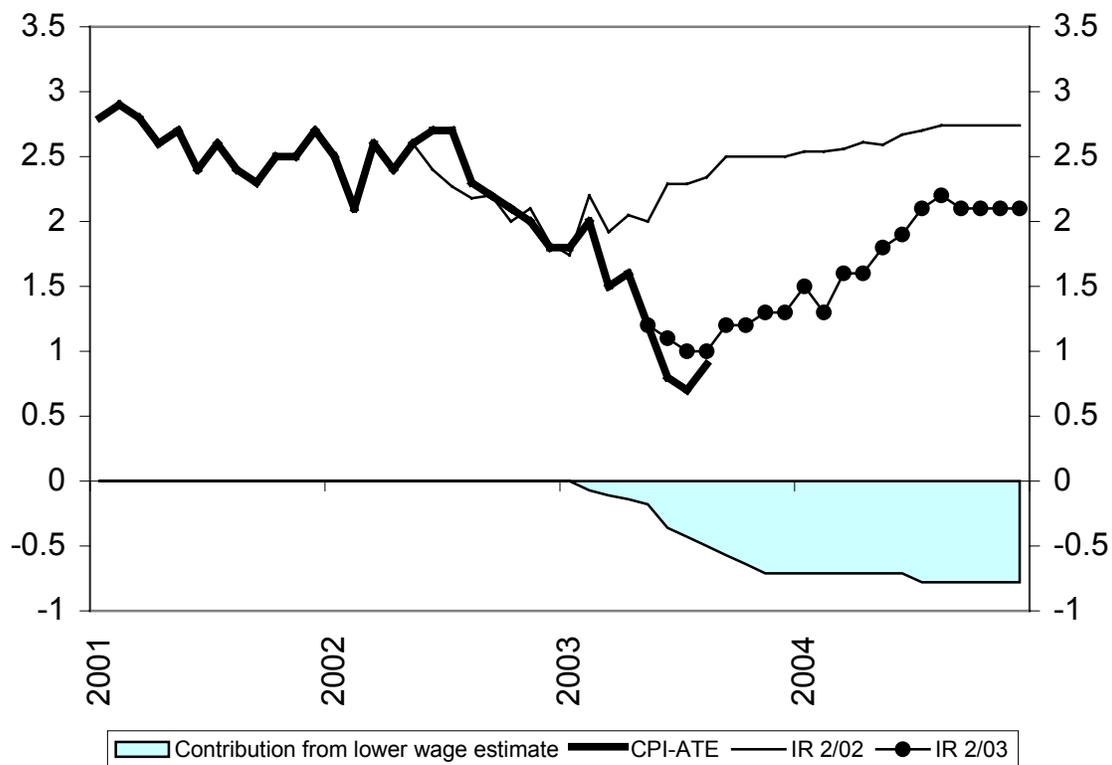


Figure 4.3 Estimated and actual CPI-ATE. Shaded area illustrates the effect on the inflation estimate of applying the wage growth assumptions made in the *Inflation Report 2/2003* on the *2/2002* inflation forecast.

Source: Norges Bank.

☞ Conclusion

The main impression from the inflation forecast is that Norges Bank consistently underestimated deflationary impulses during 2002 and 2003. Some relate to revisions of the wage growth estimate, others to timing of the exchange rate channel and to external factors that were difficult to detect in advance because the major surprise was the setback in the world economy in the second half of 2002.

4.3 Controversies

Following our discussion above, some key themes stand out as the main controversies of the bank's analysis and assessments. First, the analysis in 2001 and most of 2002 is a balancing act between the global slowdown and uncertainty related to international assumptions on one hand, and domestic inflationary pressures on the other. Modelling the inflation outlook for Norway, this basically translated into balancing deflationary impulses from a stronger exchange rate and weak export market growth, and inflationary pressure from high domestic wage growth. The exchange rate effect was expected to dominate inflation in the short run, while persistent wage growth would offset this effect over the two-year horizon. The gap between short run and long run effects on inflation widened over the course of 2002, and in IR 3/02, underlying inflation was expected to swing down to around $1\frac{3}{4}\%$ in the baseline scenario before recovering towards the target. As noted above, the outlook for wage growth in 2003 and 2004 was a critical factor for the overall judgment at this point. A second critical factor was the exchange rate assumption and its dynamic effect on inflation. A third critical factor was the assumption of a strong demand impulse from fiscal policy, and finally, a fourth factor was the assumption of a two-year horizon for the inflation target.

Following the same approach for 2003 leaves us with completely different questions. First, an important consideration behind the August rate cut was the risk of actual inflation having a negative effect on future inflation through inflation expectations, and second, the impact of monetary policy on the economy was questioned by the bank in March 2003. Thus, the workings of transmission mechanisms appeared to catch the bank by surprise at this stage.

4.3.1 Wage growth assumptions

Through the spring of 2002 it became increasingly clear that wage growth would exceed previous forecasts. Norges Bank made significant upward revisions to its estimate in response to the wage settlement process, and so did most other forecasters. The charts below (figure 4.4, 4.5 and 4.6) compare the wage growth forecast between Norges Bank, Statistics Norway (SSB) and Consensus (Consensus Economics). As evident in the outlook for 2002, all forecasters had to make significant upward revisions. In fact, Norges Bank had the most accurate estimate, which was also the highest at the time.

Wage forecast development 2002

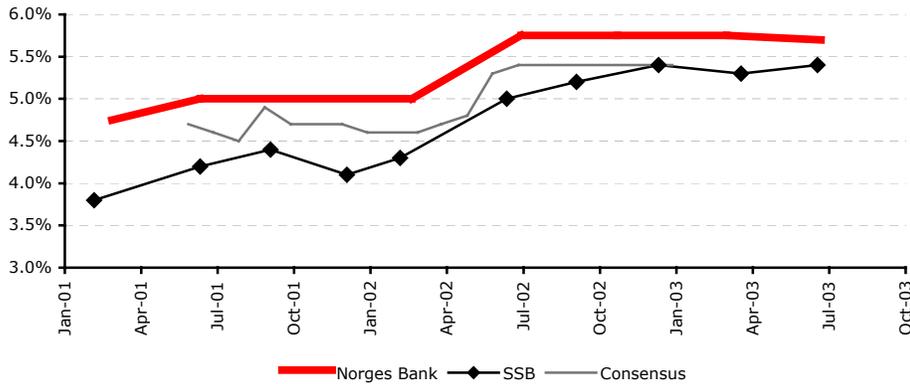


Figure 4.4 Forecasts for 2002 wage growth at different points in time
 Source: Statistic Norway, Norges Bank, Consensus economics.

In regard to the 2003 and 2004 forecasts however, Norges Bank has been off the mark relative to the rest. Norges Bank has consistently had the highest forecast, and through large parts of last year, Norges Bank’s estimates for 2003 and 2004 were even above the consensus range. As is evident in the charts, Norges Bank had to make significant downward adjustments to its forecast during the second half of 2002 relative to other forecasters. So, why did the bank get it wrong?

Wage forecast development 2003

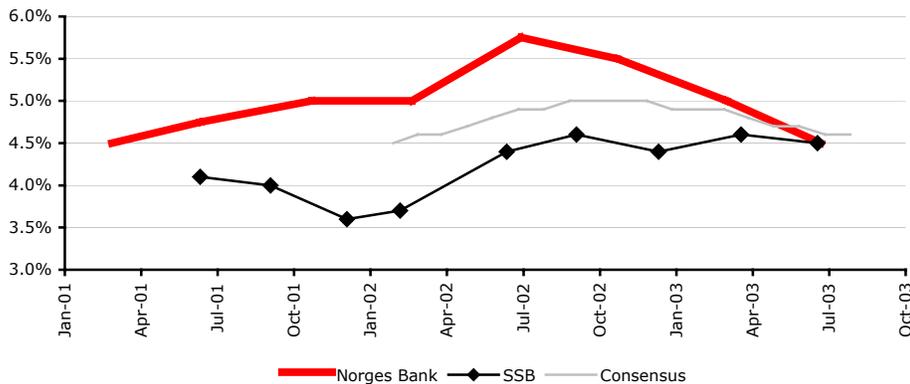


Figure 4.5 Forecasts for 2003 wage growth at different points in time
 Source: Statistic Norway, Norges Bank, Consensus economics

Wage forecast development 2004

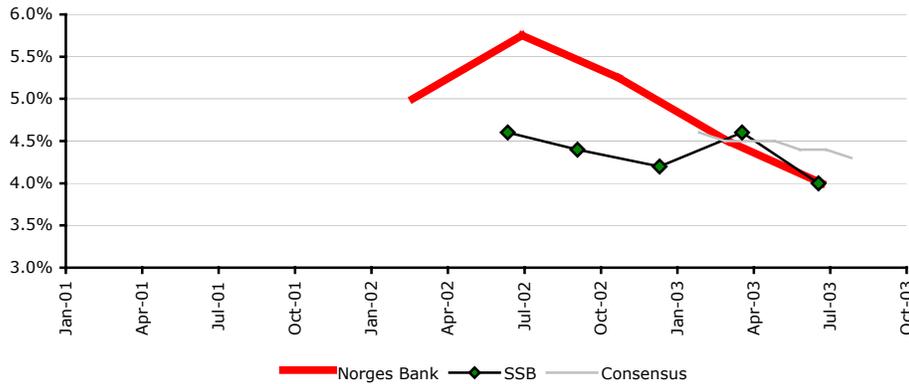


Figure 4.6 Forecasts for 2004 wage growth at different points in time
 Source: Statistic Norway, Norges Bank, Consensus economics.

Revisions to the wage estimates raise the issue of whether Norges Bank’s understanding of the functioning of the economy has been correct. Norges Bank underestimated wage growth for both 2001 and 2002. Apparently, the bank put too much emphasis on the effects of weak profitability in manufacturing, which has traditionally been the wage leader in Norway, and too little emphasis on the effects of the tight labour market. In his annual address in 2002, the Governor reflected upon these issues:

Groups that were not included in the coordination, such as liberal professions and salaried employees, were able to exploit companies’ capacity to pay. The system of coordination came under pressure. It now appears that wages will increasingly be determined at the local level on the basis of each company’s profitability, its need for labour and the supply of various types of labour.

In a box in the *Inflation Report 1/2002*, a model for wage growth, which places less emphasis on profitability in manufacturing and more emphasis on conditions in the labour market, was presented. This alternative wage model would have been considerably more accurate in forecasting wage growth than the RIMINI model projections from 2000. *Norges Bank Watch* has learned that this or similar ad hoc models replaced the corresponding RIMINI equations, reflecting that the bank considered that the functioning of the labour market and wage determination had changed. However, this might also be the reason why the bank got it wrong when wage growth started to decelerate.

In retrospect, the bank’s view on wage determination excluded too easily the possibility that some of the wage drift in 2002 was related to extraordinary factors. The Government had for example concluded a wage and productivity deal with several main trade unions in the public sector that included strong nominal wage gains in 2002 in return for more flexibility and longer hours. Also, the outlook for wage drift at the local level was limited by cost problems in many of the exposed sectors.

Another factor that became evident through 2002 was that monetary policy responses were increasingly internalised in the wage formation process, or, to put it simply, the social partners increasingly incorporated the view that high wage growth would lead to a tightening of policy. For example, the NOU 2003:13 report on Competitiveness, Wage Formation and Exchange Rate released in April 2003 concludes:

Changes in the conduct of monetary policy have changed the framework for wage formation. [...] An inflation target implies that wage growth in excess of what is required to reach stable inflation can initiate interest rate hikes, something that normally will spur an appreciation of the exchange rate. [...] The Committee underlines the importance of having wage growth on track, and on a level that is consistent with maintained competitiveness and that does not trigger a tightening of monetary policy.

(Norges Bank Watch translation)

This behaviour was less apparent during the spring of 2002. Obviously, Norges Bank's constant focus on the relationship between wage growth, inflation and interest rates has gradually been incorporated, a factor that over time is likely to increase wage discipline in Norway. Nevertheless, Norges Bank rejected the possibility of improved internalisation in 2002, a view that was disputed by others. As late as in September 2002 the Governor stated:

The outcome of this year's wage settlement indicates that the social partners have not internalised the monetary policy response pattern. Perhaps one of the stumbling blocks has been the choice of wage settlements at industry level and the large wage increases for employees outside the two largest employer/employee organisations (NHO and LO).

More recent statements from the social partners and others engaged in the wage settlement process indicate that this phrase will not be repeated this year.

☞ Conclusion

During 2002, Norges Bank's wage growth forecasts for 2003 and 2004 were constantly higher than other forecasters. These wage forecasts are probably the single most important factor why monetary policy became too tight. Norges Bank seemingly rejected the possibility of improved internalisation in 2002, a view that was also controversial at the time. Apparently, the forecasting tools employed by the bank tend to underestimate the transmission effects of the global slowdown, the increased margin pressure on different Norwegian sectors, and the corresponding pass-through on wages.

On the other hand, Norges Bank's constant focus on the relationship between wage growth, inflation and interest rates has gradually been accepted by the social partners, and this improved internalisation will be beneficial for the workings of future monetary policy.

4.3.2 Exchange rate assumptions and dynamics

Another important factor contributing to the economic slowdown in Norway as well as the slump in targeted inflation was the appreciation of the krone. Measured against the

Trade Weighted Index (“*Konkurranskursindeksen*”), the krone strengthened from a soft 110 in the spring of 2000, to 107.5 in early 2001, 102.5 in early 2002 and a record strong 91.5 in early 2003.

This currency appreciation represented a significant tightening of monetary conditions. It also dealt a strong blow to the cost position of Norwegian companies exposed to international competition, which was already under strain from many years of high and rising wage costs. Labour market organisations and politicians concerned about the longer-term impact on Norwegian industry disputed the economic foundation for such a strong krone level.

Norges Bank also fuelled the domestic debate by raising the possibility of future sharp declines in manufacturing employment in order to accommodate domestic spending of more petroleum revenues. The need for a strong real appreciation was highlighted in the annual address held by the Governor in February 2002:

The planned use of petroleum revenues will increase demand for public and private services. The guidelines imply an increase in the use of petroleum revenues over the central Government budget of around 3½ per cent of mainland GDP by 2010. This may entail an additional 60 000 person-years in the service sector. As long as there are labour shortages in Norway, a comparable decline in manufacturing employment is likely to occur.

This and similar statements made by the bank convinced many observers that the bank regarded a stronger krone as inevitable, given the need to accommodate oil revenues. The strikingly precise nature of the estimated loss of 60,000 people in the manufacturing sector gave support to this view, even though this estimate has not been backed by macroeconomic modelling analysis or by other researchers. It was made clear that the bank would not react to exchange rate movements as such, but only to their indirect impact on consumer prices, something which is uncontroversial. What can be questioned, however, is the estimated pass-through on inflation from changes in the exchange rate. Figure 4.7 illustrates how relative wage costs for Norwegian manufacturers increased through a combination of currency swings and excessive wage growth in 2002.

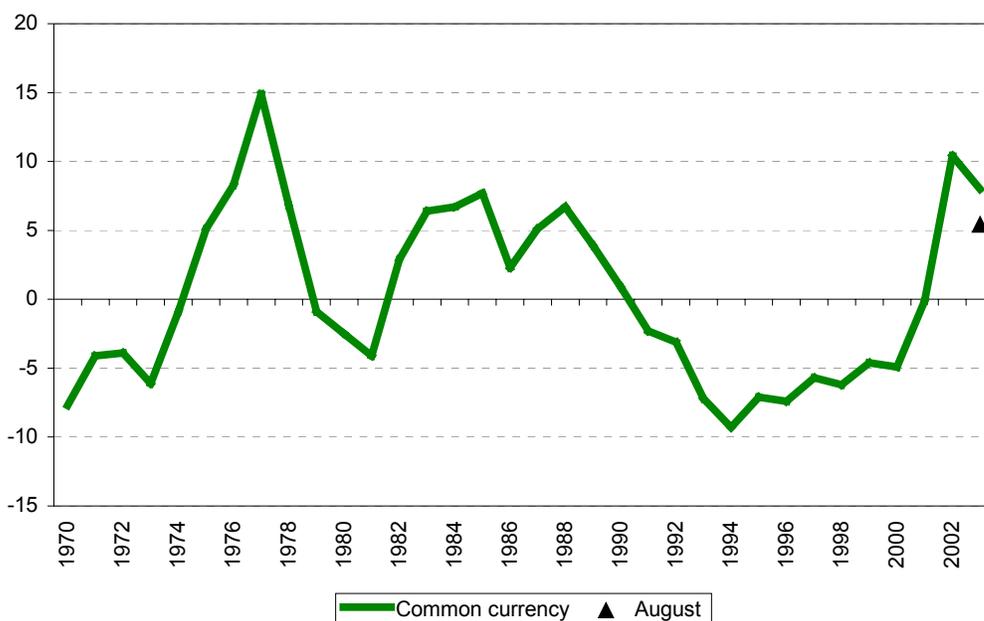


Figure 4.7 Relative wage cost between Norway and trade partners in common currency. Deviation from historical average (per cent)
Source: Norges Bank.

Basically, exchange rate effects impact consumer prices through a variety of channels. First (effect I), there is a direct effect on prices for imported consumer goods in the CPI. Second (effect II), there is an indirect effect on the prices of imported intermediate goods, which in turn influences prices for domestically produced goods and services in the CPI. Third (effect III), appreciation gives rise to a profitability effect as changes in the exchange rate influence the profitability of internationally exposed industries and thereby wage growth. Changes in wage growth will in turn influence the CPI. Fourth (effect IV), appreciation triggers a price-wage spiral as a result of the effects I, II and III, rising inflation is met by demands for wage compensation in order to maintain a given growth in real wages.

A box in the *Inflation Report 2/2002* reveals how Norges Bank views these issues:

Any effects on wages, and thereby on prices, of changes in the krone exchange rate (effect III and IV) will probably depend on how wage formation functions and the inflation expectations applied by the social partners in the wage settlements. With a credible inflation target, the social partners are likely to apply an inflation rate equal to the inflation target, and not actual or projected inflation, as a basis for wage negotiations. In this case, it is less likely that a stronger krone exchange rate will trigger a downward price-wage spiral.

If the manufacturing industry's role as wage leader diminishes, profitability developments in internationally exposed manufacturing will have less influence on wage growth in more sheltered sectors than was the case earlier. In this case, changes in the exchange rate will also have less impact than earlier on total wage growth. Intensified

international competition in markets that were previously more or less sheltered may have the opposite effect, however.

On the basis of developments in recent years, we have quantified the most direct effects of a change in the krone exchange rate on prices using various models (effect I and II). Possible effects on profitability and price-wage spirals have been excluded (effect III and IV).

Thus, it appears that Norges Bank on this occasion put little emphasis on structural effects of changes in the exchange rate on wage formation and on the exposed sectors' ability to meet international competition.

☞ Conclusion

As discussed in the introduction, a common factor that explains both the sharp decline in the output gap and the inflation rate was a tightening of monetary conditions, mainly through a rise in the nominal exchange rate. It is indeed a challenging task to incorporate the exchange rate channel correctly in macroeconomic modelling, and it is impossible to evaluate the bank's assessment without detailed knowledge of the bank's analytical tools. Furthermore, assumptions about the exchange rate make a significant contribution to the inflation forecast. As discussed in section 3.1.2, *Norges Bank Watch* recommends that naive forecasting be applied to the short run, and that the bank put more emphasis on the effects of longer-term exchange rate movements on company profitability and wage settlements in the future.

4.3.3 Fiscal policy assumptions

The fiscal position of the Norwegian state invokes the need for careful consideration regarding the conduct of monetary policy, and more so relative to other countries, as the Petroleum Fund offers huge potential to lift public spending or lower taxes. Thus, the assessment of the likely spending of oil revenues will play a major role in the overall consideration of demand impetus in the economy. Clearly, the bank was worried about the political pressure that was building during 2001 and 2002 for increased spending, something that was also directly reflected in the banks communication.

On several occasions during 2002, the Governor warned that public sector spending would fuel wage inflation. In a speech on June 11 he stated:

Growth in public spending from last year to this year is estimated at seven per cent. This is considerably stronger than the growth in value-added in the private sector of the mainland economy, which is estimated at around four per cent. The guideline for fiscal policy has been followed closely. most of the strong growth in central Government allocations translates into a sharp rise in household consumption, while growth in public service production remains moderate. This is only to be expected when there is a steep increase in public sector allocations in an economy where there are no available resources.

The Governor here clearly relates nominal pressures in the public sector to lack of fiscal discipline and to new fiscal policy guidelines. In the annual address 2002 he stated that: “This guideline implies that fiscal policy will contribute to stimulating aggregate demand in the Norwegian economy every year for many years ahead. The guideline also implies that the use of petroleum revenues will increase as long as the Petroleum Fund is expanding.” Again, the undertone is that the bank is expecting a strong and continued demand stimulus for the foreseeable future related to the guidelines and corresponding crowding out of the exposed sectors.

Developments over the course of 2002 revealed, however, that the medium term fiscal stimulus would be substantially weaker than previously expected (see figure 4.8). This was partly due to financial losses in the Petroleum Fund related to a drop in global share prices and the strong krone exchange rate, and partly due to a higher than expected budget deficit in 2001 and 2002 (leaving less room for fiscal expansion within the fiscal policy rule). While the stimulus for 2003 was estimated to be some 0.6% of mainland GDP during autumn 2001, this estimate was gradually revised down to 0% in the spring of 2003. As illustrated in the chart, estimated accumulated stimulus in the medium term declined sharply as well.

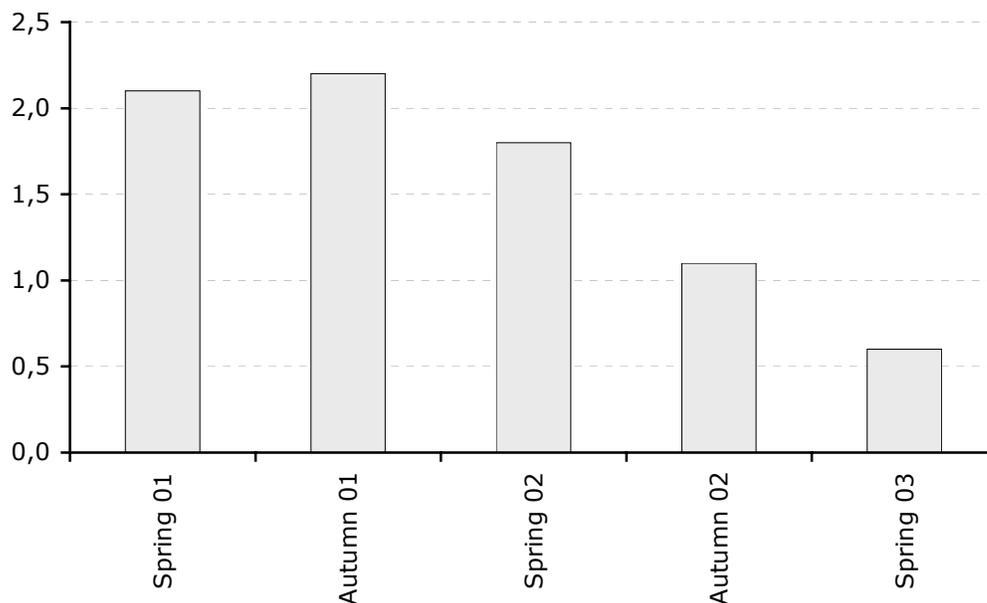


Figure 4.8 Government forecasts for accumulated fiscal policy impulse 2001-2005 (change in non-oil structural budget balance in % of trend-GDP for mainland Norway)

Source: Ministry of Finance.

☞ Conclusion

While not fully reflected in the forecasts, Norges Bank communicated a high level of concern, after the introduction of the operating guidelines, that fiscal policy would be too expansionary. However, the actual outcome was that the budget for 2003 gave a rather

neutral effect. The guideline does not suggest that policy will be significantly expansionary in the near future either. Norges Bank's negative judgement of the fiscal policy rule and the corresponding need for a real appreciation may have appeared somewhat overdone in early 2002.

As in the case of wage determination, it appears that the internalisation of monetary policy has advanced, and that causality is well understood by politicians and social partners. In this respect, one could say that Norges Bank's strong focus on the interaction between fiscal policy decisions and the conduct of monetary policy has served a useful purpose.

Norges Bank has basically implemented assumptions on fiscal policy from the budget documents. While it is hard to see any alternatives to this approach, *Norges Bank Watch* welcomes efforts to establish better forecasting tools for fiscal policy in the future.

4.3.4 International assumptions

Norges Bank's assessment of the international economy has been fairly in line with the consensus. Nevertheless, one might ask whether it would have been possible to spot the deceleration in world growth in the summer of 2002 at an earlier stage. Following the dismal performance in 2001, the international economic outlook improved during the spring of 2002, particularly in the US, see figure 4.9, leading Norges Bank to revise upward its growth and inflation forecasts for the world economy.

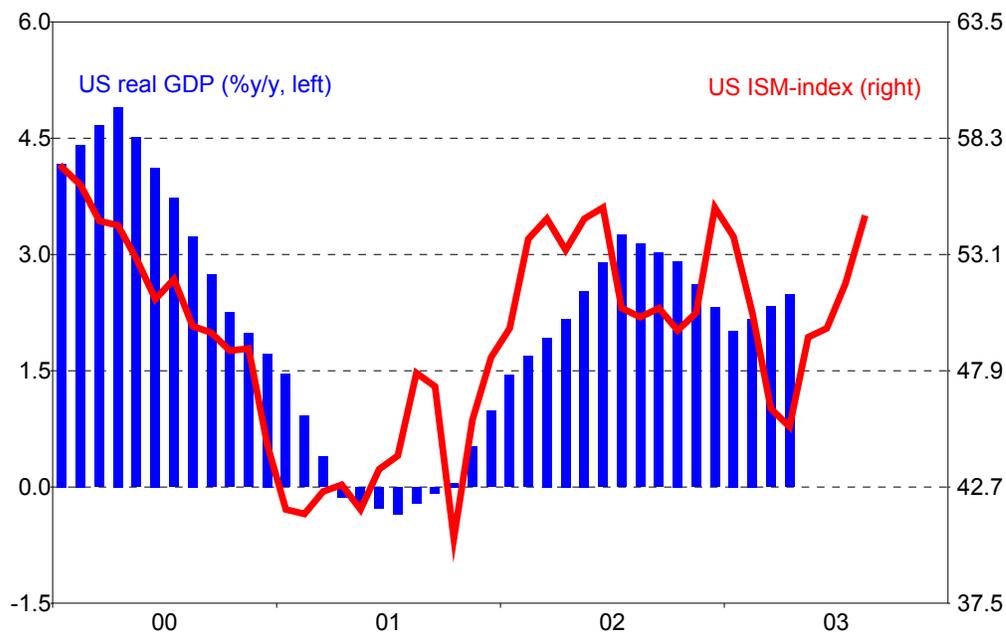


Figure 4.9 US economic upturn in early 2002 met with headwinds
Source: Ecwin.

However, the 30% drop in share prices from April to July represented a serious shock to a fragile world economy (see figure 4.10). Alongside a drop in share prices, the corporate governance scandals also led to an increase in risk aversion that contributed to dampen prospects for an upturn in business investment spending.

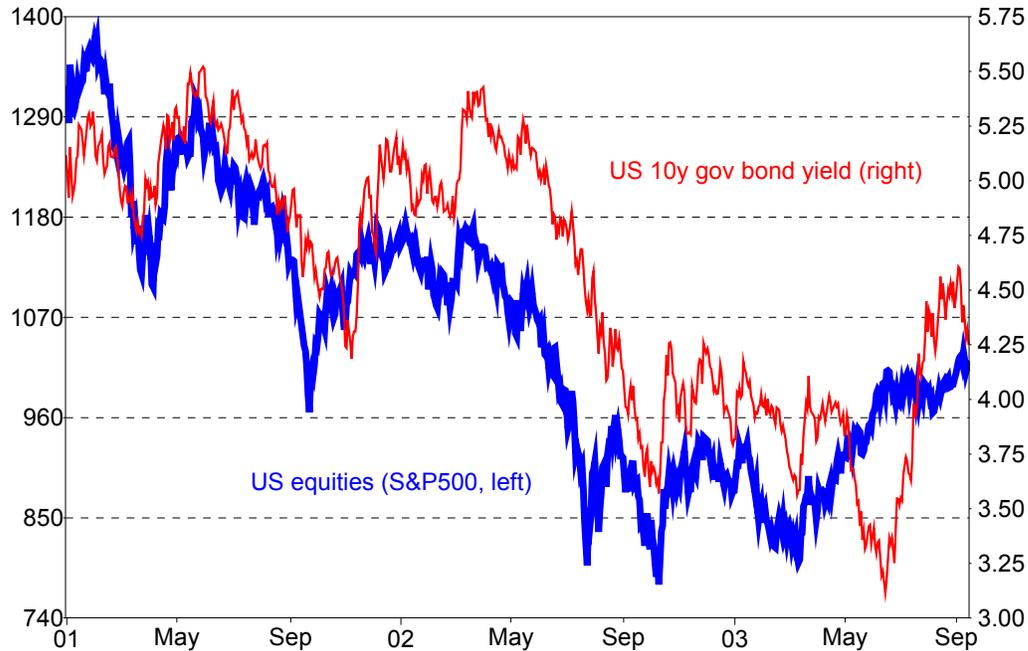


Figure 4.10 Financial markets turned negative in spring 2002
Source: Ecwin.

The international economy was dealt another blow as the prospects of war on Iraq drew closer in the autumn of 2002. As economic agents reacted to the increase in uncertainty, economic activity slowed and the outlook deteriorated, see figure 4.11.

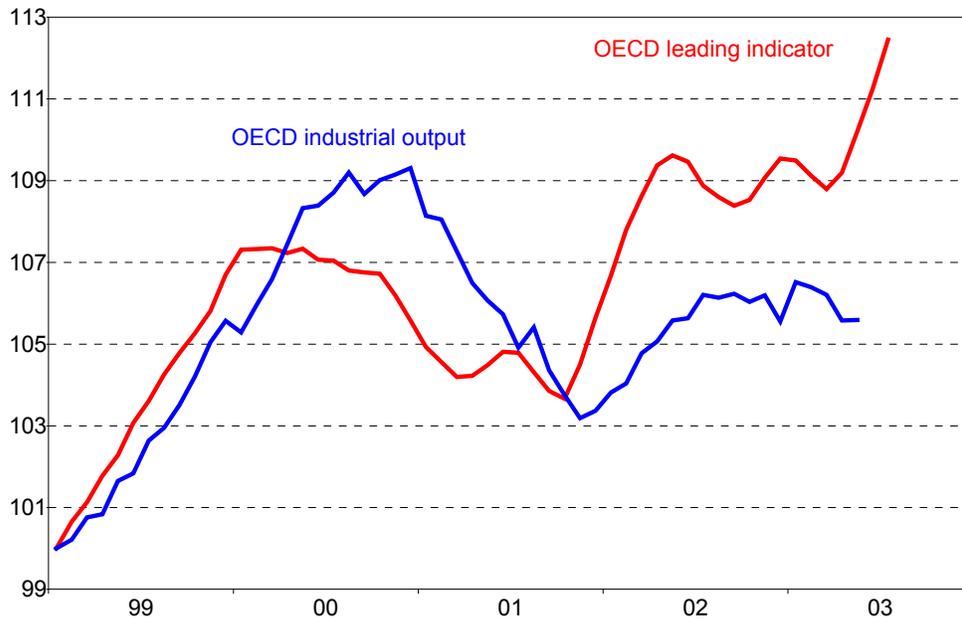


Figure 4.11 The international economy
Source: Ecwin.

While in retrospect it was unfortunate that Norges Bank revised up its international forecasts at the same time as the economic outlook was worsening, the bank's view of the world economy in the summer of 2002 was more or less in line with that of other forecasters. Similarly, the fact that the 2003 GDP forecasts for Norway's trading partners were halved, from 2¾% in the summer of 2002 to 1¼% a year later, is broadly in line with the consensus.

Although it was not until August 2003 that economic indicators started confirming darker clouds looming on the horizon, it should be noted that the bank had the opportunity to sense the deterioration in the economic outlook from developments in financial markets, as equity prices, interest rates and the US dollar tumbled from April to July. As discussed in section 3.1.2 above, financial market developments often provide valuable, early clues about possible changes in the economic outlook. The central bank would benefit from paying due attention to such developments.

On that note, it is also interesting to find that financial markets had questioned for quite some time whether Norges Bank's monetary policy in the second half of 2002 was, in fact, appropriate. Interest rate expectations turned lower immediately after the rate hike in July and interest rate reductions were priced in since August.

☞ Conclusion

In line with the consensus, Norges Bank takes a rather defensive view of trends in the international economy. History suggests however that consensus rarely captures turning points, and that there are other sources that can provide more timely and precise information. *Norges Bank Watch* welcomes efforts to incorporate alternative indicators of

the economic cycle, in order to obtain a better feel for financial market information in particular, to further advance the timing of monetary policy.

4.4 The two-year horizon

By using a two-year horizon, Norges Bank gives considerable weight to the real economy. In general this approach limits the conflict between inflation and output stabilisation. However, *Norges Bank Watch 2002* recommended that Norges Bank reduce its emphasis on the precise two-year horizon of inflation projections on target. Instead, it suggested that the bank should find the projections of inflation, the output gap and the corresponding instrument-rate path that the bank thinks would achieve the best compromise between inflation stability and output-gap stability. Rødseth and Longworth (2003) suggest that inflation forecasts should be presented for a somewhat longer period, e.g., three years, and that the need for looking further ahead is highest when inflation deviates strongly from the target or will do so in the first part of the forecast period. They also underline that another reason for looking further ahead is the two-year cycle of wage bargaining.

On several occasions the Governor of Norges Bank has underlined that “the inflation target is a vehicle for allowing monetary policy to stabilise developments in output and employment”¹⁰. However, conflicts may arise when bringing inflation back to the target within two years implies a risk of destabilising aggregate output. In these situations, a longer time-perspective will be applied. The Governor has stated, “In some situations where unexpected events lead to an inflation rate that is too high, it may be appropriate to apply a longer time horizon than two years. For example, reducing inflation to 2½ per cent within this time horizon may be associated with unnecessary real economic costs”¹¹. Similar statements were also made as late as in September 2002.

Generally, monetary policy will influence inflation and output through a variety of channels that will kick in at different times. Thus, putting too much emphasis on the two-year horizon increases the risk of ignoring important short or long-term effects.

☞ Conclusion

Norges Bank Watch reiterates its proposal to employ a more flexible time period for the inflation forecast, and to continue to use the concepts of the output gap in the *Inflation Report*. This can be implemented regardless of interest rate assumptions. It is important to acknowledge that monetary policy impacts inflation with a lag, and that the different transmission channels kick in at different times. By using a fixed two-year horizon, the bank runs the risk of ignoring important longer-term factors, and it may put too little weight on forecast variability, which typically increases with time. *Norges Bank Watch* will not put forward any criticism of the banks actual balancing between output and inflation stabilization as the bank clearly emphasizes that it will deviate from the two-year horizon if this is considered to be necessary to prevent output instability.

¹⁰ Svein Gjedrem at Hamar, 21May 2003

¹¹ Aftenposten 29 May 2001.

Norges Bank Watch acknowledges the uncertainties associated with reliable estimates of the output gap using real-time data, and the difficulties involved in making an explicit trade-off between inflation variability and output-gap variability when setting the deposit interest rate.¹²

4.5 Inflation expectations

Many empirical studies of the inflation process suggest that inflation is sluggish and persistent. This sluggishness of inflation appears in various guises. In studies of the Phillips curve, inflation is found to exhibit substantial inertia; that is, inflation is strongly correlated with its own lagged values. A key mechanism here will be how past inflation is translated onto inflation expectations.

Countries with an inflation history that diverges from the official target will typically try to guide expectations towards the target by communicating a strong commitment and a high degree of transparency. In the case of Norway, inflation has been around 2.5 per cent on average over the past few years; thus, expected inflation is likely to hover close to the target. However, headline inflation has been rather volatile, fluctuating between 0.4% and 5.0% over the past 2 years. Moreover, the CPI-ATE rate started to detach from its target level during fall 2002, and is currently running at only 0.9%. According to the *Inflation Report 2/2003*, this rate was expected to recover only gradually to a level significantly below the target with a 4% interest rate assumption. However, in an alternative forecast assuming a 3 per cent interest rate, the bank reached the 2.5 per cent target. At its August Executive Board meeting the bank lowered the deposit rate to 3 per cent and concluded “In a situation where there is a risk that inflation expectations take hold at a level that is too low, it will be appropriate to take larger steps in interest rate adjustments than that which is customary.”

Lower inflation expectations will bring the real interest rate higher, and thus imply a tightening of monetary conditions. Obviously, as if this tightening is unwelcome to the central bank, it requires a [linear] monetary policy response. Thus, the statement in August appears suitable if the assessment of the risk of falling inflation expectations was correct.

In the June *Inflation Report*, Norges Bank noted that inflation expectations had come down somewhat for the near to medium term (the average forecaster expected inflation at 2.2% in two years), but that inflation expectations further out in time remained stable at the inflation target. The bank’s concern about inflation expectations ending up too low arose when core inflation slipped under 1% during the summer.

¹² See Qvigstad (2003).

☞ Conclusion

Norges Bank Watch supports Norges Bank's view that the risk of falling inflation expectations should be taken seriously and that decisive policy action should be considered. This is fully in line with the discussion in section 3.2 about uncertainty.

5 Communication

According to the Government's guidelines for monetary policy of 29 March 2001 (§ 2), Norges Bank shall regularly publish the assessments that form the basis for the implementation of monetary policy. An amendment to the Norges Bank Act on 20 June 2003 further formalised the bank's obligation to inform the public about the basis for its decisions. In this section we take a closer look at Norges Bank's communication strategy.

An important condition for democratic control of Norges Bank as well as for efficient delegation of monetary policy is that Norges Bank is held accountable to the political bodies for its monetary policy decisions. According to last year's *Norges Bank Watch* report, accountability "...also creates incentives for the central bank to pursue the goals it has been assigned. Accountability requires *transparency*, both in the form of a clear goal for monetary policy and a transparent reporting system for the central bank's policy actions and the analysis that motivates these actions, so that the bank's performance can be evaluated by external observers." An evaluation of Norges Bank's transparency is therefore important in order to assess how well its communication strategy works.

Norges Bank communicates through a variety of channels. The extensive *Annual Report* released in April provides details of the assessment in 2002. The *Inflation Report* is published three times annually. Moreover, The Executive Board discusses monetary policy at a meeting held three weeks prior to the publication of the *Inflation Report*. The document that forms the basis for this discussion (the *Strategy Document*) is published on Norges Bank's website at the end of the strategy period. The *Strategy Document* was first published on 5 March 2003. Furthermore, the bank provides information about its assessments in the introduction to the press conference following Executive Board meetings. Finally, the senior management (usually the Governor or Deputy Governor) gives a series of lectures and speeches to various groups in Norway and abroad, most of which are published on the bank's well organised website. *Norges Bank Watch* wishes to acknowledge this extensive list of regular publications, and also the efforts that the bank has made to strengthen transparency.

Recently, Norges Bank commissioned two studies in order to improve the inflation reports and the strategy documents, see Fracasso et al. (2003) and Rødseth and Longworth (2003). The former study concludes that central banks that present reliable inflation reports receive consistently higher ratings than those with less convincing reports. The Norwegian *Inflation Report* was considered slightly above average in a sample of 20 inflation-targeting countries. Commendably, Norges Bank has already made considerable effort to address the suggestions for improvement put forward in these studies. Rødseth and Longworth (2003) make recommendations for improving strategy

documents, macroeconomic modelling and the bank's analysis of transmission mechanisms of monetary policy.

Finally, the bank has given high priority to following up the proposals presented in *Norges Bank Watch 2002* report. See Appendix I for a list of these proposals and the extent to which they have been implemented. Although Norges Bank is still a "young" inflation targeting central bank, we find much comfort in the fact that the bank already operates with a high level of transparency and is continuously engaged in improvements.

Still, there is always room for improvement. *Norges Bank Watch 2003* continues to support the recommendation made in last year's report that non-attributed minutes and attributed voting records from the Executive Board should be published in order to strengthen accountability and further promote transparency. Following the publication of *Norges Bank Watch 2002* the Government changed the criteria for recruiting Executive Board members. In our opinion, this strengthens the argument for publishing voting records. The Norwegian Parliament recently approved a government proposal to increase transparency. The Executive Board is now required to inform the public about relevant considerations, but no explicit decisions have been made with regard to publishing Executive Board meeting votes or minutes.

5.1 Communication requirements

In this section we discuss the quality of Norges Bank's communication. In our view, a successful communication policy satisfies the following criteria:

- *Precision*; i.e. messages are correctly understood by the recipients.
- *Timeliness*; i.e. messages are given at the right time.
- *Consistency*; i.e. a requirement that messages are not in conflict with each other, and that policy actions follow logically from the messages
- *Market neutrality (simultaneity)*; i.e. any information is accessible to everybody at the same time.

In the discussion below we divide the recipients of Norges Bank's messages into five groups:

Market participants and analysts

Monetary policy affects the economy through the interest- and foreign exchange markets. If the monetary instruments are to be as effective as possible, it is vital that the participants in the market know the central bank's mode of operation. The sooner the participants understand the central bank's intentions, the sooner the instruments will have the intended effects.

The Government

For constitutional reasons, Norges Bank should communicate well with the Government, as the Government is accountable to the Parliament for the policy decisions of Norges Bank. Furthermore, fiscal and monetary policy mutually influence each other, and will work most efficiently when the two policy makers communicate well with each other. As most of the communication between Norges Bank and the Government (Ministry of Finance) is confidential, an evaluation of this communication is beyond the scope of the present report.

The Parliament (“Stortinget”)

In the last few years, Norway has been ruled by minority governments. As a consequence, the Parliament has become more important with regard to fiscal policy. Appropriate communication with the Parliament is thus crucial to obtain a good mix of monetary and fiscal policy.

The social partners

The new guidelines for monetary policy of March 2001 imply that monetary policy plays a more crucial role in short run stabilisation policy. One consequence of the change from exchange rate stabilisation to inflation targeting is that companies exposed to international competition are likely to be hit twofold by excessive wage settlements. First, they are hit by the direct effects of increased labour costs, and secondly, by an appreciation of the krone, as excessive wage increases normally trigger a tightening of monetary policy. In other words, the impact on unemployment from the wage settlements could be even stronger under today's regime than earlier, and there is a stronger relation between wage settlements and monetary policy. In order to internalise monetary policy in the wage formation process, communication with the social partners is therefore very important.

The public

The principle of high transparency applies as much to the bank's communication with the public (consumers and firms) as it does to financial market participants. However, as the public is usually unable to absorb all the written information available from Norges Bank, an important task for the bank is to communicate information that is accessible to laymen.

Norges Bank holds regular meetings with representatives for the social partners. This seems to be a useful channel for the mutual exchange of information. Furthermore, this autumn executives from Norges Bank have been invited to attend a public hearing on monetary policy in the Parliament.

In the following we will evaluate Norges Bank's communication with financial market participants and the public in more detail.

5.1.1 Precision

By precision in communication we mean both that the language used is understandable for the recipients and that the messages are unambiguous. Our general impression is that Norges Bank's communication is successful in this respect. However, being both precise and easy to understand represents a difficult trade-off for the bank: Using a language that is understood by all is almost impossible when communicating complex economic relations and technical issues related to monetary policy and exchange rates. Being unambiguous is difficult too, as ambiguity typically reflects genuine uncertainty that the bank is facing. Yet, we believe that there is still potential for some improvement in this respect.

One challenge is that the bank needs to communicate with different categories of recipients. While market participants and other professionals are familiar with economic relationships and are used to interpreting "central bank-language", non-professionals need more detailed explanations and more concrete language to be able to understand the main message. One example of this challenge is apparent in the bank's way of expressing a "neutral" bias, typically formulated in the following manner: *the probability that inflation two years ahead will be higher than 2½ per cent is the same as the probability that it will be higher.*

For professionals this is a precise message from the bank – saying that the interest rate will be left unchanged. On the other hand, most non-professionals would probably need help from an expert to understand the meaning of this message. Another aspect to consider is that the sentence implicitly reflects a rigid interpretation of the two-year inflation-targeting horizon. See discussion in chapter 4.4.

Previously the bank used another formulation to express a "neutral" bias: *the probability that the next change in interest rates will be a reduction is the same as the probability of an increase.*

This was probably easier to understand and may be more in accordance with flexible inflation targeting. Norges Bank should thus consider returning to the "bias-sentence" that was used previously.

We would like to emphasise that there are several positive aspects related to communication with the public that need to be mentioned. The Governor and Deputy Governor have, for instance, participated in web chats on the Internet, where people can ask questions and get answers directly. The bank's top management have also held a number of speeches at various locations in order to inform the general public about monetary policy.

☞ Conclusion

Norges Bank should consider replacing today's "bias-sentence", referring to a two-year inflation horizon, with the one used previously, which refers to the probable direction of the next change of the deposit rate. Such a change would both contribute to better communication on coming interest rate changes, and also reflect more explicitly that Norges Bank has a *flexible* inflation target.

5.1.2 Timeliness

Norges Bank usually offers guidance to the market in connection with the Executive Board meetings held every sixth week. However, the frequency of these meetings is not sufficiently high to exclude the need for market guidance between meetings. In two instances Norges Bank saw such a need for guidance between meetings. The first time was in December 2002 when the preceding Executive Board meeting had concluded with a neutral bias. The Governor used an address in the beginning of the month to prepare the market for a forthcoming easing of monetary policy. The second instance was in June 2003, when the bank signalled that it would consider taking larger steps in its interest rate settings. In the former case, the signal was wrongly interpreted as preparing for a change in bias only and the market was caught by surprise by the rate cut. In the latter case financial markets correctly interpreted the signal.

The risk of misunderstanding increases when the bank deviates from normal procedure for guiding the market. There may be uncertainty about whether the bank is actually trying to give new guidance, or what the new message is about. The bank should thus consider holding more frequent Executive Board meetings to reduce the need for sending signals between meetings. More frequent meetings might also facilitate more gradual interest rate changes.

☞ Conclusion

To reduce the risk of misunderstandings, new signals from the bank should normally be given in connection with the Executive Board meetings. This seems to be the strategy chosen by Norges Bank. To reduce the need for guidance between meetings, and also facilitate more gradual interest rate changes, the bank should consider a higher frequency of Executive Board meetings, for example every fourth week. If situations arise where the bank needs to send policy signals between meetings, such signals should be as clear as possible, such as in June 2003.

5.1.3 Consistency

Efficient communication is both consistent over time and useful for predicting central bank actions under different circumstances. The efficient communication of Norges Bank's assessments and its basis for interest setting therefore increases the effectiveness of monetary policy. Norges Bank should, however, also be consistently *right*. Being right is better than being consistent and wrong. In a dynamic and stochastic world in

which new information arrives continuously, it is a great challenge for Norges Bank to be consistently right over time, not least because Norges Bank is a young inflation-targeting central bank facing an upward-sloping learning curve. Still we think that Norges Bank has been successful in dealing with these difficult challenges.

In what follows we discuss some examples of the difficulties involved in communicating precisely and consistently over time. As both *Norges Bank Watch 2002* and others have argued, the two-year horizon for the inflation forecast is not intended to be followed too rigidly. Norges Bank seems to agree, and has begun to show greater flexibility compared to its stance one and two years ago. We welcome this change in Norges Bank's rhetoric and behaviour, although it means that some consistency has by necessity been sacrificed.

Another difficult communication issue relates to uncertainty surrounding the future exchange rate. As the baseline set of forecasts presented in the inflation reports are based on a technical assumption of unchanged interest and exchange rates, the forecasts are not necessarily the bank's best estimates on actual outcomes. *Norges Bank Watch 2002* also emphasised these weaknesses in Norges Bank's communications concerning future interest and exchange rates. First, a constant exchange rate is not usually consistent with a constant interest rate and theoretical relations like uncovered interest-rate parity. Nor is a constant exchange rate normally consistent with market expectations of future exchange rates. Second, a constant interest rate is usually not consistent with the best future monetary policy, the likely future policy, or market expectations. This means that the assumption of constant instrument rates builds in a number of inconsistencies in the resulting projections, which adds a certain degree of arbitrariness to these projections¹³.

One argument in defence of constant-interest-rate projections is that they show what would happen if the instrument rate is held constant. Therefore they often provide good motivation for why the instrument rate should be moved in a particular direction. On the other hand, these projections do not indicate how much the instrument rate should be moved, or how soon.

Another argument is that the Executive Board would have difficulties agreeing on a time-varying path for the instrument rate. Still, the board reaches agreement on a number of other time-varying paths, like the inflation and output projections, for instance.

A third argument is that, if a time-varying instrument path was announced in the *Inflation Report*, market participants and other agents might be confused and perhaps interpret it as a firm commitment to future instrument-rate settings. Notably, however, the Reserve Bank of New Zealand has for a number of years published both a time-varying instrument-rate path and inflation and output-gap projections conditional on a time-varying instrument path, without any apparent misunderstanding by market participants and other agents.

¹³ Leitemo (2000, 2003) discusses some of the problems with constant-interest-rate forecasts.

Another aspect of consistency is whether forecasts and signals sent to the market are entirely consistent with the bank's own economic outlook. During the sharp currency appreciation in 2002, Norges Bank refrained from commenting on the currency level. Rather than pointing to the possibility of overshooting, the Governor emphasised the effects on inflation. It was not until December 2002 that the bank more specifically signalled that it was uneasy about the level of the krone.

☞ Conclusion

Norges Bank faces difficult challenges in regard to communicating efficiently and consistently over time. Our main impression is that the bank has been successful in dealing with these challenges.

At present, forecasts presented in the inflation reports are based on technical assumptions of unchanged interest rates and exchange rates, and do not necessarily represent the bank's best estimates on actual outcome. *Norges Bank Watch* welcomes implementation of a time-varying instrument rate path in the inflation projections.

5.1.4 Market neutrality

All publications from Norges Bank – reports as well as speeches, press releases etc – are published at Norges Bank's home page at the moment they are released. Furthermore, all press conferences are transmitted through a web-camera. Yet there are some minor exceptions to this "rule of simultaneity".

One exception is *interviews* given by the Governor and Deputy Governor to individual media. Such interviews are for instance given to radio- and TV-stations immediately after press conferences. For a long time, the bank refused such interviews and reporters were forced to do interviews during press conferences. This practice proved to be far too time-consuming, and was abandoned. As long as the bank does not give any new signals in these interviews, today's practice seems to be a good choice. In cases where new signals are given, for instance interviews in connection with the annual address, the bank has been careful to give the information with an embargo.

The Governor and Deputy Governor contribute two to three articles to newspapers a year. Previously such articles might have contained new signals to the market, however, this has not been the case in the period covered by this report. We find this is positive, since the criterion of simultaneity may be more difficult to fulfil in the case of newspaper articles.

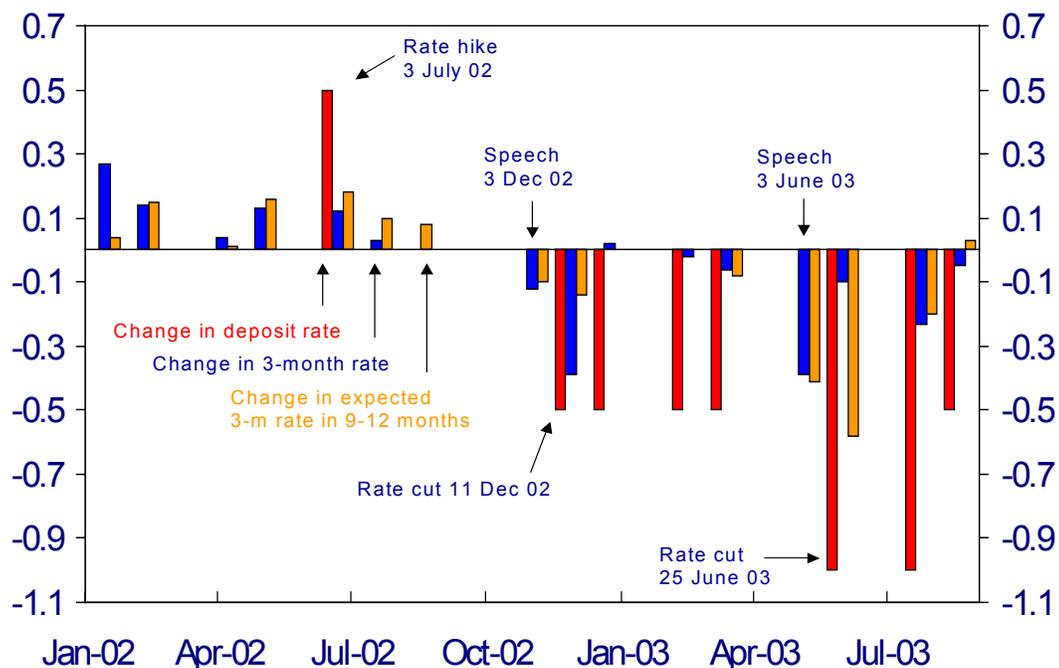
☞ Conclusion

Norges Bank seems to emphasise simultaneity in its strategy of communication.

5.2 Market response

Today it is generally accepted that monetary policy ought to be predictable to financial market participants. A predictable central bank reduces uncertainty and is likely to contribute to more efficient monetary policy. The extent to which financial markets anticipate central bank events can also be seen as an indicator of whether the bank's communication has been successful.

Figure 5.1 shows market reactions to Norges Bank's monetary policy meetings since early 2002, as well as two key speeches that were held (in December 2002 and June 2003) to signal an imminent change in policy. If a change in the deposit rate results in only small changes in the 3-month rate, one may say that the decision was predictable. We have also included in the chart the associated change in the expected 3-month rate in 9-12 months, illustrating whether the monetary policy decision affects expectations of future interest rates.



Source: Norges Bank and NBW

Figure 5.1 Market reactions to Norges Bank announcements

Source: Norges Bank.

The overall impression is that until December 2002 Norges Bank's monetary policy was tighter than financial markets had pencilled in. Markets were surprised when the rate cut and "easing bias" from December 2001 were not followed up by additional interest rate reductions in early 2002. Norges Bank's 50bp rate hike in July 2002, combined with signals of a further tightening of policy, was also at the high end of expectations.

Conversely, the easing of monetary policy since December 2002 has been more aggressive than markets had been expecting, particularly in the summer of 2003. The speech on 3 June 2003 was successful in signalling that a large 100bp rate cut was in the coming, while expectations of future interest rates fell sharply at the time of the meeting when the bank's *Inflation Report* hinted that the deposit rate could be heading below 3%. The second 100bp cut to 4% in August also prompted interest rates to fall.

☞ Conclusion

Judging by market reactions, it is fair to say that Norges Bank's policy announcements have not all been predictable, particularly in the summer of 2003. While monetary policy decisions ideally should be predictable, this should not prevent Norges Bank from doing what is right. It is better to be slightly unpredictable and right, than predictable and wrong. We have not reached a conclusion as to which characterisation best fits Norges Bank's actions in recent months, but the next *Norges Bank Watch* will perhaps have a clearer view on this.

Appendix I: Implementation of *Norges Bank Watch 2002* proposals

Proposal in <i>Norges Bank Watch 2002</i>	Implementation
A full-fledged institutional reform should be undertaken. The reform should specify a mandate for price stability, operational independence, and accountability for Norges Bank.	The ministry launched a white paper on the Central Bank Act in January 2003 and later launched an amendment to the Parliament, but it did not discuss a full-fledged reform. However, steps have been made in the right direction. ¹⁴
In order to resolve the inherent inconsistency between exchange-rate stability and low and stable inflation for Norway, the references to exchange-rate stability in the monetary-policy guidelines should be deleted.	No progress has been made.
The appointments to the Executive Board should be experts on monetary policy and related areas, for instance, macroeconomics and financial markets, so that the members can independently contribute to the achievement of the announced objectives for monetary policy.	The Parliament has now approved that the Government will be in charge of appointing members. Members shall fulfil knowledge requirements related to the functioning of the economy as well as knowledge of general political conditions in Norway. Political appointments will cease as of 1 January 2004
Non-attributed minutes and attributed voting records from the Executive Board should be published, in order to strengthen accountability and further improve transparency.	The Parliament in <i>Innst.O.nr. 101 (2002-2003)</i> approved a Government proposal to increase transparency. The Norges Bank Board is now supposed to inform about relevant considerations, but no explicit decisions were made to make votes or minutes public.
The essential material on monetary policy submitted to or formulated by the Executive Board, for instance, the Notes on Strategy (<i>Strateginotat</i>) outlining policy for the next four months, should be published, in order to strengthen accountability and further improve transparency.	The <i>Strategy Report</i> is now published at the end of the report period, and elements of board discussion are revealed in the introduction
Several additional improvements to strengthen the accountability of Norges Bank should be undertaken: (1) An evaluation by the Ministry of Finance of how Norges	The Parliament will implement annual hearings with Norges Bank starting in 2003 related to the Credit Report (<i>Kredittmelding</i>), which will include a more detailed

¹⁴ Ot.prp.nr.81 (2002-2003) and Innst.O.nr. 101 (2002-2003)

<p>Bank has conducted monetary policy and achieved the stated objectives for monetary policy should be included in the Credit Reports (<i>Kredittmelding</i>). (2) Regular hearings on monetary policy should be held in the Storting with the Governor and other officials of Norges Bank, with the assistance of experts appointed by the Storting. (3) An annual or biannual conference on monetary policy in Norway should be held, financed by Norges Bank but organised independently, for instance, by an academic institution, and open to the general public and media. At such a conference, papers evaluating monetary policy by the Bank could be presented by national and international experts followed by comments by Bank officials and public discussion.</p>	<p>evaluation of monetary policy.</p> <p>Norges Bank is planning to host a conference on monetary policy in March 2004.</p>
<p>Inflation projections should generally be made conditional on the Bank's preferred instrument-rate path; that is, conditional on its best forecast of its future interest-rate settings. This would normally be a time-varying instrument-rate path.</p>	<p>Norges Bank still prefers the use of a constant interest rate forecast, but normally also includes one alternative scenario projection</p>
<p>The central projections should be the <i>mean</i> projections (the probability-weighted average outcome) rather than mode projections (the most likely outcome). This is in line with established economic theory, which says that it is the mean forecast rather than the mode forecast that is relevant for decisions.</p>	<p>The balance of risk in all inflation forecasts after IR 3/01 have been symmetric around the mode</p>
<p>The Bank should construct and publish projections of potential output, actual output and hence the output gap, conditional on time-variable instrument-rate paths. In this way the Bank can better reach the most desirable compromise between inflation variability and output-gap variability and the resulting compromise will be more open to external scrutiny.</p>	<p>Some progress has been made. Both the output gap and inflation are now presented in the same chart in the <i>Inflation Reports</i>.</p>
<p>The Bank's analysis and explanations might benefit from further use of the concepts of potential output, output gap and neutral real interest rate.</p>	<p>Some progress has been made.</p>
<p>The emphasis on the precise two-year horizon of inflation</p>	<p>The Governor has stated that the 2-year horizon of</p>

<p>projections on target should be reduced. Instead, the Bank should find the projections of inflation, the output gap and the corresponding instrument-rate path that the Bank thinks will achieve the best compromise between inflation stability and output-gap stability. These projections should be published in the <i>Inflation Report</i> and the Bank should set its instrument rate accordingly. These projections will then be the Bank's best unconditional forecast of future inflation, output gap and instrument rate.</p> <p>The Bank could be more explicit about the weight it puts on output-gap stability relative to inflation stability.</p>	<p>interest be abandoned when there is a conflict between inflation and output gap stabilisation. The bank however still holds on to the 2-year target.</p>
<p>The Bank should more clearly explain the limits of monetary policy in relation to the real adjustment of the Norwegian economy that is likely to take place due to the new guidelines of fiscal policy and, in particular, explain that monetary policy cannot be expected to prevent the associated real appreciation of the krone.</p>	<p>Several appearances by The Governor and other Norges Bank representatives have focused on the subject, and working papers have been released on the subject.</p>
<p>Less emphasis on the Bank's large reduced-form model RIMINI and more emphasis on the development of alternative structural models.</p>	<p>A new research unit has been established.</p>
<p>An even stronger commitment to research at an academic level on issues related to monetary policy in general and inflation targeting in particular.</p>	<p>No evaluation has been made by <i>Norges Bank Watch 2003</i>.</p>
<p>A high proportion of the working papers should be of such quality that they are accepted for publication in international scientific journals.</p>	<p>No evaluation has been made by <i>Norges Bank Watch 2003</i>.</p>

Appendix II: Regulation on Monetary Policy

Established by Royal Decree of 29 March 2001 pursuant to Section 2, third paragraph, and Section 4, second paragraph, of the Act of 24 May 1985 no. 28 on Norges Bank and the Monetary System

I

§ 1.

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.

§ 2.

Norges Bank shall regularly publish the assessments that form the basis for the implementation of monetary policy.

§ 3.

The international value of the Norwegian krone is determined by the exchange rates in the foreign exchange market.

§ 4.

On behalf of the State, Norges Bank communicates the information concerning the exchange rate system ensuing from its participation in the International Monetary Fund, cf. Section 25, first paragraph, of the Act on Norges Bank and the Monetary System.

II

This regulation comes into force immediately. Regulation no. 0331 of 6 May 1994 on the exchange rate system for the Norwegian krone is repealed from the same date.

References

Brainard, (1967), "Uncertainty and the Effectiveness of Policy," *American Economic Review* 57, 411-425.

Estrella, A. and F.S. Mishkin (1998), "Predicting U.S. Recessions: Financial Variables as Leading Indicators," *Review of Economics and Statistics*, 45-61.

Fracasso, A, H. Genberg and C. Wyplosz (2003), "How do Central Banks Write? An Evaluation of Inflation Reports by Inflation Targeting Central Banks," Norges Bank.

Leitemo, Kai (2000), "Open-economy inflation-rate forecasts," *Norges Bank Working Paper* 2/2000.

Leitemo, Kai (2003), "Targeting inflation by constant interest-rate forecasts," *Journal of Money, Credit and Banking* 35, 609-626.

Onatski, A. and N. Williams (2003), "Modeling Model Uncertainty," *NBER Working Paper* 9566, March.

Qvigstad, Jan F. (2003), "Some comments to Orphanides and Svensson," delivered at the workshop "The Role of Monetary Policy Rules in Inflation Targeting Regimes – Theory meets Practice," Norges Bank, 5-6 May 2003, www.norges-bank.no/pengepolitikk/konferanser/2003/qvigstad.html.

Rødseth, Asbjørn and David Longworth (2003), "Report to the Executive Board of Norges Bank on the Decision Making Process and the Strategy Document," Norges Bank.

Steigum, Erling (2003), "Financial Deregulation with a Fixed Exchange Rate: Lessons from Norway's Boom-Bust Cycle and Banking Crisis," *Working Paper* 4/03, Centre for Monetary Economics, BI Norwegian School of Management.

Steigum, Erling and Øystein Thøgersen (2003), "Borrow and Adjust: Fiscal Policy and Sectoral Adjustment in an Open Economy," *International Economic Review* 44, 699-724.

Svensson, Lars E.O. (1997), "Inflation Forecast Targeting: Implementing and Monitoring Inflation Targets," *European Economic Review* 41, 1111-1146.

Svensson, Lars E.O. (1999), "Inflation Targeting as a Monetary Policy Rule," *Journal of Monetary Economics* 43, 607-654.

Svensson, Lars E.O., Kjetil Houg, Haakon O.Aa. Solheim and Erling Steigum (2002), "An Independent Review of Monetary Policy and Institutions in Norway," *Norges Bank*

Watch 2002, Centre for Monetary Economics, BI Norwegian School of Management, Oslo.

Svensson, Lars E.O. and Michael Woodford (2002), "Indicator Variables for Optimal Policy," *Journal of Monetary Economics*, forthcoming.

Söderström, Ulf (2002), "Monetary Policy with Uncertain Parameters," *Scandinavian Journal of Economics* 104, 125-145.

Taylor, John B. (1999), "A Historical Analysis of Monetary Policy Rules," in *Monetary Policy Rules*. John B. Taylor, ed. Chicago: Chicago University Press.

Woodford, Michael (2001), "The Taylor Rule and Optimal Monetary Policy," *American Economic Review: Papers and Proceedings* 91, 232-237.

We gratefully acknowledge financial support from CME member firms:

Alfred Berg ASA

Awilco ASA

Bolig og Næringsbanken

Carnegie Asset Management

DnB ASA

Eksporfinans

Esso Norge

Finansnæringens Hovedorganisasjon

Firmament

First Securities ASA

Folketrygdfondet

Gjensidige Nor

Handelsbanken

Kredittilsynet

Nordea Bank

Norsk Hydro ASA

Pareto Securities

Skandinaviska Enskilda Banken

Sparebank 1-gruppen

Sparebankens Servicekontor

Statoil Kapitalforvaltning

Storebrand ASA

Sundal Collier ASA

Telenor ASA

Sandvika, September 2003

Centre for Monetary Economics

Erling Steigum