

## **Jarle Bergo: Inflation targeting and the phasing in of petroleum revenues - a dilemma for monetary policy?**

Address by Mr Jarle Bergo, Deputy Governor of Norges Bank, at the seminar on foreign exchange policy issues arranged by the Association of Economists, Gausdal, 25 January 2002.

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### **Introduction**

Since last year's seminar, new guidelines for economic policy have been introduced. As the title of my speech suggests, these guidelines will serve as the starting point for my talk. In his presentation last year, Norges Bank's Governor said "Monetary policy cannot function effectively without a good interplay with fiscal policy". I will start by taking a closer look at the implementation of monetary policy before I discuss the guidelines for phasing in the petroleum revenues and the interplay between fiscal and monetary policy. Finally, I will take a look at the implications that the phasing in of petroleum revenues will have for our industry structure. These implications may pose a challenge to many, but not necessarily to monetary policy.

On 29 March 2001, the Stoltenberg Government issued new guidelines for monetary policy and presented guidelines for fiscal policy. Monetary policy was to be oriented towards low and stable inflation. The inflation target was set at 2½ per cent.

The guidelines for fiscal policy imply that over time, the central government budget deficit shall be equivalent to the expected real return on the Government Petroleum Fund. The change in the guidelines for economic policy met widespread support in the Storting. The budget for 2002 adhered to these guidelines.

### **The implementation of monetary policy**

The inflation target is set at 2½ per cent. In the implementation of monetary policy, we aim at achieving this objective.

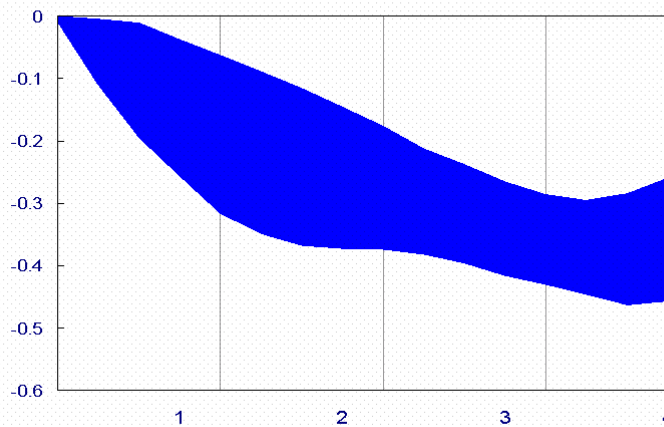
The interest rate affects inflation through a number of channels. An increase in the interest rate will normally contribute to reducing inflation by curbing demand for goods and services and by strengthening the krone exchange rate against other currencies. A lower interest rate has the opposite effect.

Generally, the effects of an interest rate change depend on the situation prevailing at the time and on how the market perceives the interest rate change in each case. The effects may also vary over time.

Monetary policy influences the economy with considerable lags. Analyses performed by Norges Bank indicate that a substantial share of the effects on inflation occurs within two years. Two years is thus a reasonable time horizon for achieving the inflation target of 2½ per cent. The regulation says that in general, the direct effects on consumer prices of changes in taxes, excise duties and extraordinary temporary disturbances shall not be taken into account. However, knowledge of such disturbances two years ahead will be the exception rather than the rule. Normally, there will be a correlation between the projections of overall inflation two years ahead and such adjusted projections. However, an adjusted price index reflects where we are today in relation to the target in two years. And it will be most relevant to look at such an adjusted index when we wish to evaluate the success of monetary policy.

The guidelines for monetary policy may be formulated as follows: If it appears that inflation will be higher than 2½ per cent with unchanged interest rates, the interest rate will be increased. If it appears that inflation will be lower than 2½ per cent with unchanged interest rates, the interest rate will be reduced. There is symmetry here, so for us, it is just as important to avoid an inflation rate that is lower than 2½ per cent as it is to avoid an inflation rate that is higher than 2½ per cent.

Effects of a 1 percentage point increase in the interest rate over two years. Percentage change in consumer price inflation.



Source: Norges Bank's *Inflation Report 4/00*

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A number of factors influence the interest rate's effect on demand and inflation. These include debt and assets in the private sector, capacity utilisation rate in the economy, the situation in the foreign exchange market, the expected duration of a change in interest rates and the formation of expectations.

We have analysed the effect of a change in the interest rate in the light of different scenarios.<sup>1</sup> The chart summarises these analyses and shows the range of outcomes for the effects of an interest rate increase on inflation. An interest rate increase of one percentage point over two years is estimated to curb inflation by 0.20-0.35 percentage point after two years, and by 0.30-0.40 percentage point after three years. GDP growth will be reduced by 0.25 percentage point the first two years. After the interest rate increase has been reversed, GDP growth will pick up again. After a period, GDP will approach the level that would have been achieved with an unchanged interest rate throughout the period. The results of analyses in the Bank of England<sup>2</sup> are similar, but the uncertainty, of course, is considerable.

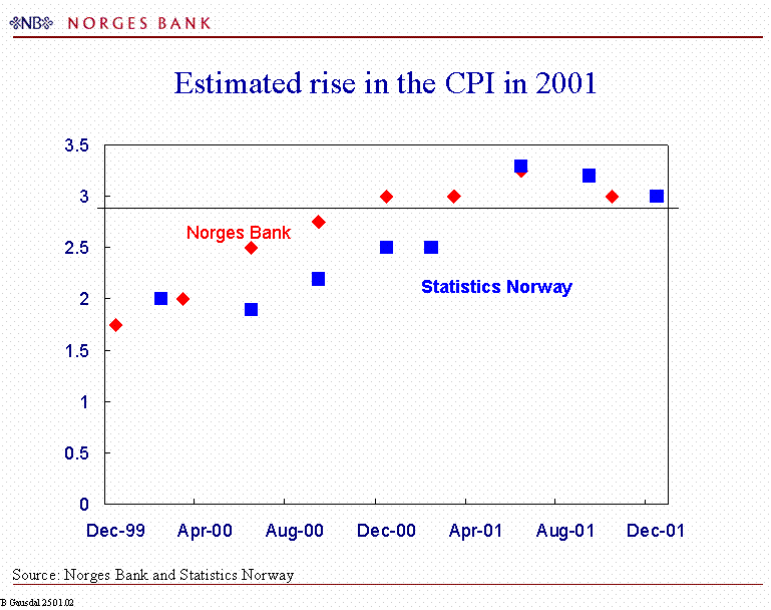
The key interest rate is set on the basis of an overall assessment of the inflation outlook two years ahead. Our inflation projections and our views on the balance of risks associated with these projections provide a summary of these assessments. Due to a number of factors, there is considerable uncertainty surrounding the inflation projections. Our knowledge of the functioning of the economy is far from perfect. We base our projections on simulations using the macroeconomic model RIMIMI. As the model is not an exact replica of reality, a forecast error arises. In addition, the different economic mechanisms change. Normally, this occurs gradually, but in some cases the changes may occur quickly.

Moreover, it may be difficult to assess the current situation in the light of the information available at any one time. The information is often deficient, both because statistics are published with a lag and data contain measurement errors. We must also make assumptions about a number of factors when working on the projections. The economy will occasionally be exposed to events that cannot be anticipated. The terrorist attacks in the US on 11 September represent such an extreme event. We can expect other events to occur with a greater or lesser degree of probability.

Historically, the deviation between actual underlying price inflation and our projections has been within an interval of +/-1 percentage point. When we later report on the implementation of monetary policy, we will place special emphasis on analysing the causes when deviations from the target are more than +/- 1 percentage point.

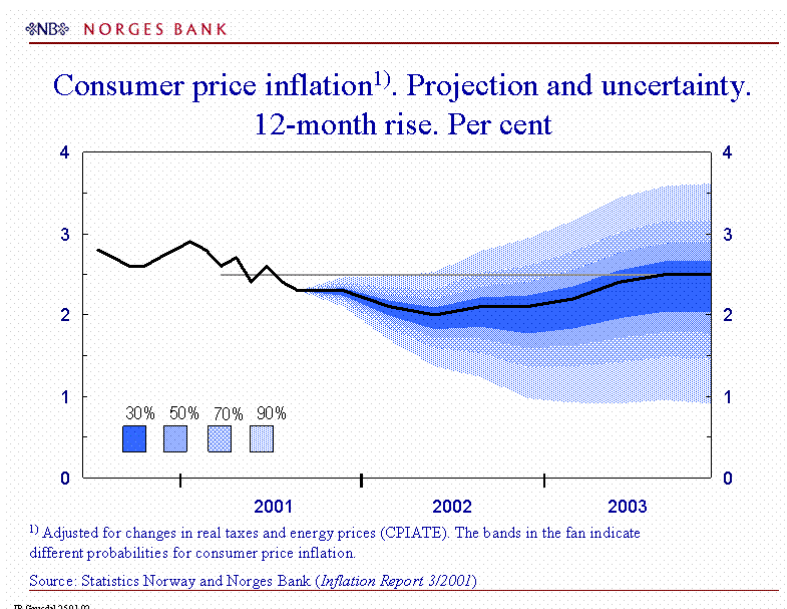
<sup>1</sup> "Box: Effects of a change in interest rates" in *Inflation Report 4/2000*, Norges Bank.

<sup>2</sup> Economic models of the Bank of England, Bank of England (1999).



Normally, we make projections with a time horizon of about two years. During this period, a number of events will necessitate a revision of the projections. A number of uncertainties will be clarified along the way. New information about how the economy functions may be revealed. As we approach the period for which the projections apply, the uncertainty surrounding the projections will diminish.

The chart shows how the projections for the rise in the CPI from 2000 to 2001 have changed from December 1999 to the end of 2001. Through 2000, the estimate was revised upwards by more than 1 percentage point. The most important factor influencing this adjustment was an upward revision of the projections for oil and electricity prices in 2001. We see that from the end of 2000, the deviation of estimated price inflation from actual price inflation, which was 3 per cent, was modest.

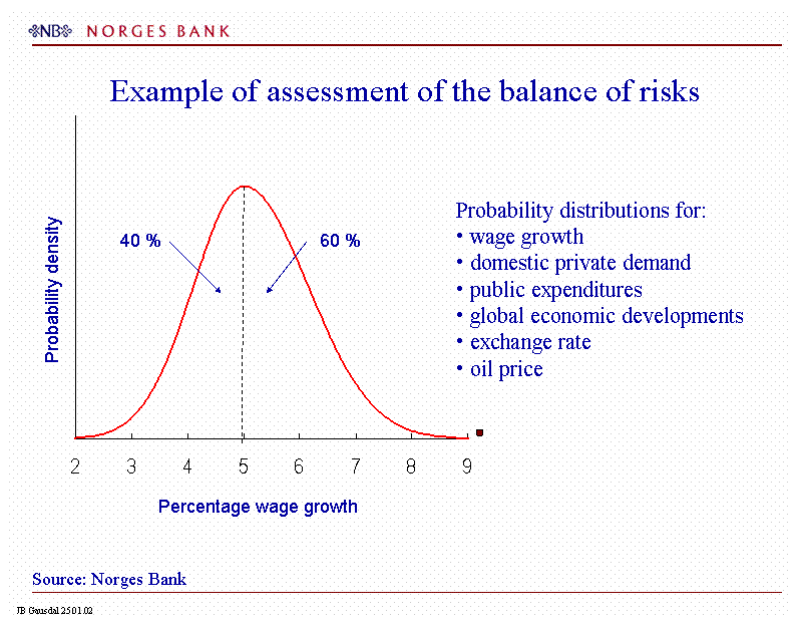


Norges Bank's inflation projection is our judgement of the most probable outcome for the rise in the CPI two years ahead. The macroeconomic model RIMINI is a tool that is used in making these projections.<sup>3</sup> Judgement and assessments of current statistics and results from other models are also

<sup>3</sup> A further discussion of the use of RIMINI in the work on the inflation projections is provided in: Kjetil Olsen and Fredrik Wulfsberg: "The role of assessments and judgement in the macroeconomic model RIMINI", Economic Bulletin 2/2001, Norges Bank.

important. In setting the interest rate, however, we also place emphasis on the probability distribution – or the balance of risk – surrounding the projection. Therefore, we also publish our assessment of the risk associated with our own projections.

The chart shows our assessment of risk as it was presented in the last Inflation Report, published on 31 October 2001. The black line represents what we consider the most probable development in the CPI. The bulk of the distribution was below the line. This is reflected in the formulation “the probability that inflation two years ahead will be lower than 2½ per cent is greater than the probability that it will be higher.” In order to reduce the possibility of substantial deviations from the inflation target, Norges Bank takes the balance of risks into account when assessing the interest rate.



The assessment of the balance of risks largely expresses the Bank’s own judgement. We have systematised our judgement so that it is possible for others to determine whether the bank’s assessments seem reasonable. The assessment of risk is linked to six factors that are important for price inflation.<sup>4</sup>

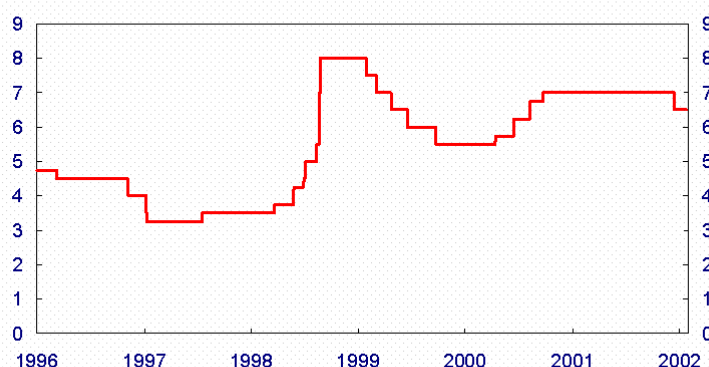
Our assessment of risk associated with each of these factors is formulated as a probability distribution around the projection for the variable in question. The assessment of risk associated with the actual inflation projection emerges as a weighted average of these six distributions. The weighting of each factor reflects its significance to developments in price inflation as this emerges in our model. Weighting is heaviest and approximately the same for domestic private demand, wage growth, growth in public expenditure and developments in the global economy. The weighting for exchange rate and oil price is somewhat lower.

The chart shows our assessment of the balance of risks associated with estimated wage growth as it was presented in the Inflation Report 3/2001. We estimated 5 per cent wage growth in 2003. At the same time, we said that the probability that wage growth would be higher than projected was greater than the probability that it would be lower. We could present similar charts for the other five factors. The “fan” for the inflation projection is a topographical map of the overall assessment of the balance of risk.

<sup>4</sup> The risk model is discussed further in “Box: Assessment of risk to the inflation projection”, Inflation Report 2/2001, Norges Bank.

## Changes in the sight deposit rate

Per cent



Source: Norges Bank

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The uncertainty associated with the analyses is one of the reasons that we normally proceed gradually in adjusting the interest rate to the inflation target.<sup>5</sup> In this way, we have the possibility of utilising new information that becomes available along the way. Most central banks have chosen such a model in their use of instruments. In exceptional cases, situations may arise that demand strong and immediate reactions. An example of this is the situation in Norway in the autumn of 1998, when there was unrest in the financial markets and a rupture of confidence in the Norwegian krone. Another is the Federal Reserve's interest rate cuts in 2001. Even in these cases, however, the entire interest rate adjustment was not made immediately.

In an uncertain world, central banks cannot guarantee that a process of increasing or decreasing the interest rate will necessarily continue. New information may require an adjustment of the projections. Nor can "gradual" be construed to mean that an adjustment to a new interest rate level will be achieved by changing the interest rate at every monetary policy meeting. "Gradual" may also imply that we want some time to evaluate new information or are awaiting further information before making a move.

Transparency about intentions, strategies and implementation of monetary policy makes it easier for economic agents to assess monetary policy. A monetary policy that is understood and predictable may contribute to improving the efficiency and impact of monetary policy.

Last year, Svein Gjedrem quoted Willem F. Duisenberg:<sup>6</sup>

"Transparency in monetary policymaking should be understood as the extent to which the external presentation of the decisions corresponds to the internal decision-making process."

The following quote from a report written in 2001 by five internationally known economists (A. Blinder, C. Goodhart, P. Hildebrand, D. Lipton and C. Wyplosz) may provide a good supplement to Duisenberg's words:

"...transparency should allow the public to understand, and possibly anticipate, the central bank's decisions, to see each of them as the logical conclusion of a chain of past and future decisions aimed at a clear set of targets,...."<sup>7</sup>

We in Norges Bank wish to be credible so that in retrospect our actions are understood and appear to be logical in relation to the inflation target.

<sup>5</sup> Frøyland, Espen and Ingunn Lønning (2000): "The significance of uncertainty in monetary policy", Economic Bulletin 4/2000, Norges Bank.

<sup>6</sup> Duisenberg, Willem F. (2000): "Making monetary policy in a broad monetary union", BIS Review 8/2000.

<sup>7</sup> Blinder, A., C. Goodhart, P. Hildebrand, D. Lipton, C. Wyplosz (2001): "How do central banks talk?" Geneva Report on the World Economy no. 3, May 2001.

The Executive Board assesses economic developments and the outlook for the economy to the best of their judgement. However, our assessments may deviate from the assessments of others. Many factors are evaluated before an interest rate decision is made. If Norges Bank makes a decision that differs from market expectations, differences in assessments may be the cause.

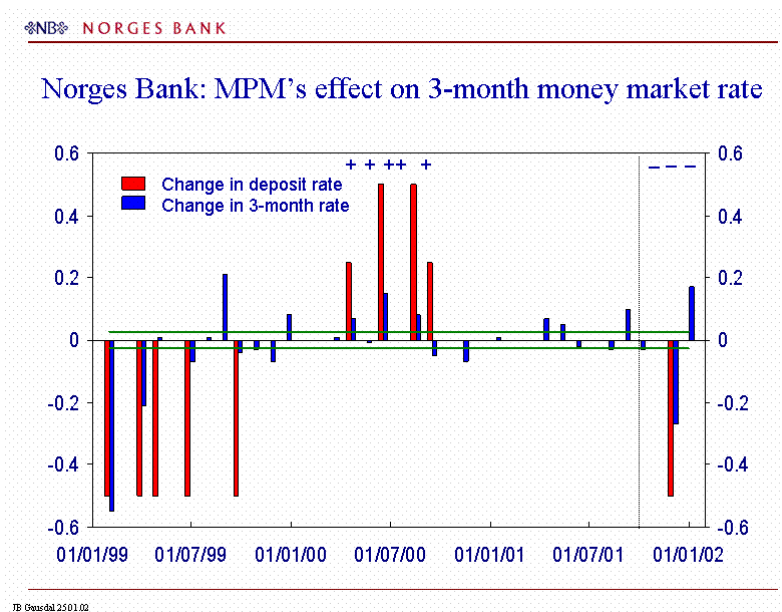
The Executive Board evaluates economic developments at every monetary policy meeting. This evaluation is reflected in the Executive Board's interest rate decisions and in Norges Bank's view of the outlook for inflation, which is published immediately after each monetary policy meeting. It is an advantage if the market anticipates and adapts to the interest rate decisions in advance, but meeting market expectations cannot rule the decision. The decision must be based on our mandate, which is to set the interest rate in such a way that inflation remains at around 2½ per cent. The fundamental consideration here is the assessment of the outlook for inflation. If the inflation outlook has changed significantly, Norges Bank will take the consequences of this development when it sets interest rates.

We wish to be transparent with regard to our response patterns, our analyses of economic developments and our assessment of the effects of monetary policy. Our inflation projections and assessments are available to the public. Norges Bank's views on the inflation outlook is presented three times a year in the Inflation Report. We place emphasis on providing a satisfactory presentation of the basis for the interest rate decisions, by, for example, presenting our projection for the inflation outlook ahead and our assessment of the balance of risks associated with this projection.

The Executive Board's updated assessments are presented in connection with the monetary policy meetings every six weeks. Immediately after the meeting, the Bank issues a press release and holds a press conference. The press conference is transmitted live on the Internet. The introduction to the press conference is also published on the Internet.

Newspaper articles and speeches are published in both Norwegian and English on our web site.

Once a year, Norges Bank evaluates the projections made in the Inflation Report. The results are published in an article in Economic Bulletin. The Annual Report contains an assessment of the monetary policy that has been conducted. If actual price inflation deviates significantly from the target, the Bank will account for this in the Annual Report.



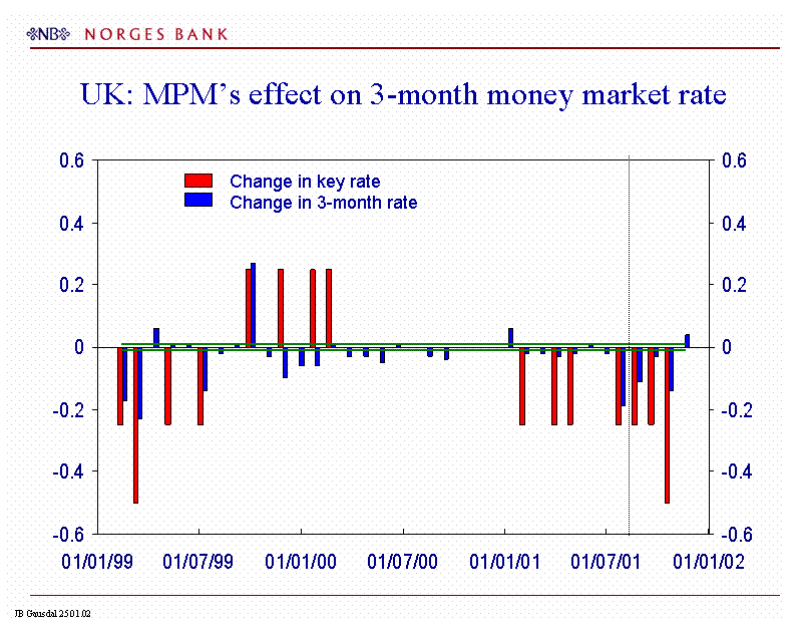
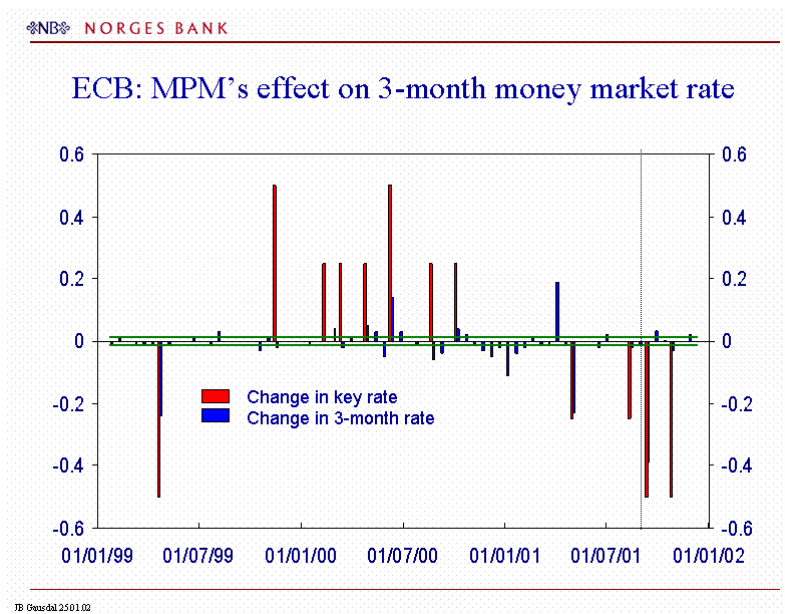
Norges Bank's interest rate decisions are a consequence of the response pattern that has been communicated, our analyses and our assessments of the effects of monetary policy.

If we have succeeded in communicating our response pattern and thus laid the foundation for a credible monetary policy, the market should not in general be surprised by the Executive Board's interest rate decisions. A measure of market surprise may be the change in money market rates from the day before to the day after a monetary policy meeting. A small change will indicate that the decision was in line with market expectations. On the other hand, a large change indicates that the market had expected another decision.

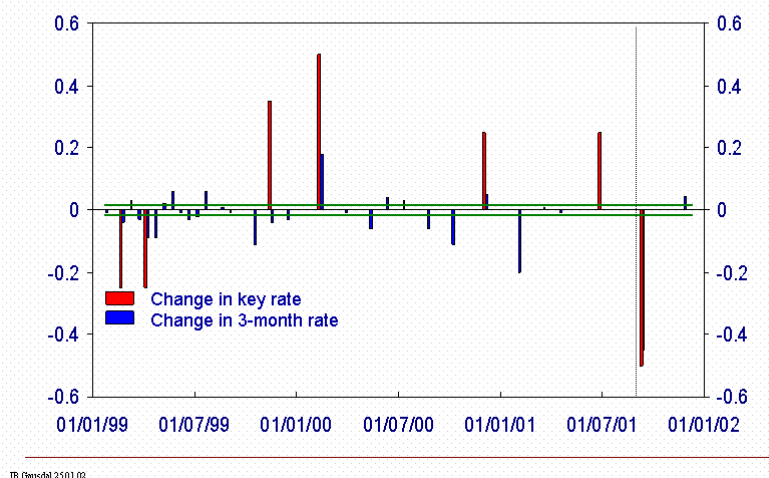
This chart shows the change in deposit rates (red bar) and in three-month money market rates (blue bar) in connection with monetary policy meetings since 1999. The plus and minus signs show the extent to which Norges Bank has signalled upside or downside risks. As a reference for the extent of the effect, the lines around the time axis show the average daily absolute change in the three-month money market rate. As from the monetary policy meeting on 21 July 1999, the date of the meetings have been made public in advance.

We see that changes in the money market rate are modest in connection with most monetary policy meetings. The money market rate changed by more than 0.20 percentage point in connection with only four of the nearly 30 meetings included in the chart.

We have also made similar estimates for a number of other countries in order to have a basis for comparison. The next charts show changes in connection with monetary policy meetings in the European Central Bank, the Bank of England and Sweden's Riksbank.



### Sweden: MPM's effect on 3-month money market rate



The effect is not systematically different from the effects in other countries. If interest rate decisions are largely anticipated, adjustment costs will decline. This is an advantage. What we must be measured against primarily is whether we are setting the interest rate correctly in relation to the inflation target.

### Guidelines for fiscal policy

The fiscal policy stance is a key factor for developments in domestic demand. Towards the end of the 1990s politicians were facing new challenges in the formulation of economic policy. A high level of activity and a tight labour market could imply a tighter economic policy. At the same time, there were increasing demands to use a larger portion of the substantial and rising petroleum revenues that were manifested through the Government Petroleum Fund.

The guidelines for fiscal policy had so far been that the budget should have an approximately neutral effect on the economy in a normal cyclical situation. A shift towards an increased use of petroleum revenues would then inevitably involve a fiscal policy that no longer had a neutral impact, but which would generally have an expansionary effect on the economy.

In such a situation, it will be highly desirable to establish mechanisms that prevent serious imbalances in the economy. The phasing in of revenues must take place in a controlled manner and not through abrupt changes, but a counterbalance to the generally expansionary fiscal policy must also be established in order to avoid galloping inflation, unstable exchange rates and boom periods. The necessary structural changes in the Norwegian economy which an increased use of petroleum revenues implies must take place within a framework of nominal stability.

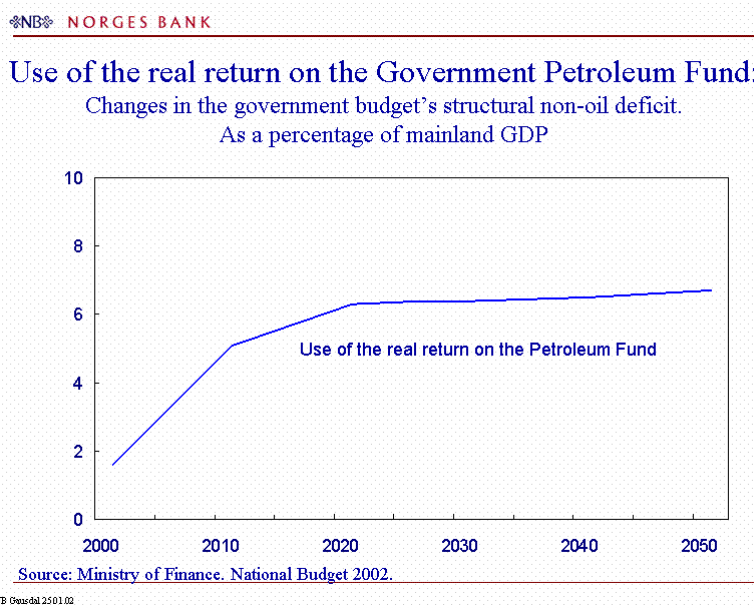
The guidelines, as set out in Report no. 29 to the Storting (2000-2001), provide the response to the first challenge:

“Considerable emphasis must be placed on stabilising fluctuations in the economy with a view to ensuring appropriate capacity utilisation and low unemployment. Petroleum revenues are gradually phased into the economy, approximately in pace with the expected real return on the Government Petroleum Fund.”

The first sentence can be seen as a justification for a gradual phasing in of petroleum revenues. A phasing in of revenues based on using the expected real return on the Petroleum Fund must be said to be reasonably controlled and gradual. Another aspect is that the plans do not call for using the actual wealth. However, the expansionary impetus to the economy in any one year will depend on the time profile for the accumulation of capital in the Petroleum Fund.

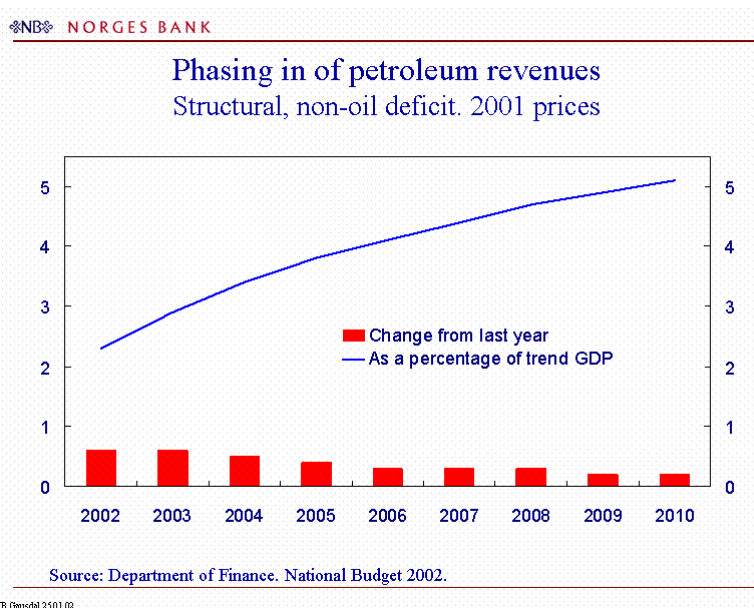


There was broad support in the Storting for the guidelines. Both the previous and current Government have placed considerable emphasis on adhering to these guidelines in the government budget for 2002.



The use of petroleum revenues is calculated on the basis of the structural, non-oil deficit. This means that, in general, changes in activity levels in the economy do not influence the use of petroleum revenues. This also implies that fiscal policy will contribute to curbing fluctuations through automatic stabilisers. In years with a high level of activity, the actual budget deficit will be smaller than the structural deficit. In years with a low level of activity, the actual deficit will be higher. It is the level, and not changes in economic activity, that influences the structural deficit.

The chart shows the planned use of the real return on the Petroleum Fund, measured by the government budget's structural, non-oil deficit as a percentage of mainland GDP. We see that the plans call for a gradual increase in the use of petroleum revenues over the government budget. This can contribute to avoiding abrupt shifts in demand.



The chart shows that the expansionary impetus varies substantially and is greatest in the first few years.

The value of the Petroleum Fund will vary over time as a result of variations in the transfer of capital due to fluctuations in the oil price, petroleum production and the return achieved by the Fund.

How the guidelines are to be applied has been discussed thoroughly in various political documents. The expected real return shall be used as a basis for the phasing in of petroleum revenues. Hence, the use of these revenues does not fluctuate in step with the actual real return. Moreover, the calculations shall normally be based on an estimate of the Fund's size at the time the budget documents are completed. This means that fluctuations in revenues affect the budget with a considerable lag. The budget for 2002, for example, is based on the size of the Fund at the beginning of 2001. Estimates for petroleum revenues and the return through 2001 are then added. These estimates are provided in the National Budget presented in autumn 2001. The actual return on the Fund in 2001 will not be included in the calculations until the budget for 2003.

Moreover, attempts shall be made to curb the impetus from particularly large fluctuations in the phasing-in rate implied by the main rule: "In the event of extraordinary, substantial changes in the Fund's capital or in the structural, non-oil deficit from one year to the next, the change in the use of petroleum revenues must be distributed over several years based on an estimate of the size of the real return on the Fund a few years ahead" (Report no. 29 to the Storting 2000-2001, p. 7).

This means that fiscal policy can still be used to stabilise economic developments. This is a sound Norwegian tradition, but may be demanding.

At last year's seminar, the Central Bank Governor stated: "In Norway it is important that the annual budgets are anchored in a long-term strategy which takes into account that oil revenues may fluctuate from one year to the next". The guidelines satisfy the requirements of this long-term strategy.

Consensus concerning the guidelines and adherence to them will create confidence in the long-term formulation of fiscal policy. This also provides a stable framework for monetary policy. Under such conditions, the effect of monetary policy instruments will be more predictable.

The uncertainty facing economic agents is reduced through the establishment of credible fiscal policy guidelines. A stable operating environment is an important precondition when decisions that have long-term consequences shall be taken. This will also contribute to stability in financial markets.

The guidelines that were introduced last year stated: "Fiscal policy has the main responsibility for stabilising developments in the Norwegian economy". If fiscal policy is to continue to contribute to smoothing fluctuations in the economy at the same time that the guidelines for the phasing in of petroleum revenues are to appear credible, the guidelines should be applied in such a way that they place a strict limit on the average use of petroleum revenues over time. This means that if we use more than the expected return in one period, we must use less than the expected return in other periods.

The guidelines allow the use of petroleum revenues to be adapted to some extent to the cyclical situation. Fiscal policy will then ease the burden on monetary policy in the sense that the inflation target, and hence nominal stability, can be achieved with fewer changes in monetary policy.

However, permitting a discretionary use of fiscal policy also involves temptations. It will probably always be easier to increase spending over government budgets during a downturn than it will be to reduce spending when the cyclical situation again improves. In that case, fiscal policy may prove to be more expansionary over time than implied by the guidelines. This will have to be countered by a tighter monetary policy, and there is also a risk that doubt arises as to whether the guidelines actually apply. The need for credibility may therefore in itself indicate that cyclical considerations should only very seldom lead to discretionary deviations from the main rule. Automatic stabilisers will still have an effect.

I believe that our politicians are aware of this risk. In the National Budget for 2002, the budget balance was cyclically adjusted by NOK 5.1 billion, which shows that we are experiencing a period of strong expansion. The plans nevertheless called for the use of petroleum revenues in 2002 that was identical to the expected real return on the Petroleum Fund at the beginning of the fiscal year. Hence, it is only via automatic stabilisers that fiscal policy will be adapted to the cyclical situation this year. I interpret this to mean that the threshold for departing from the main rule is high.

## **Structural effects on the Norwegian economy**

As may be inferred from the presentation so far, it is monetary policy that shall address the second challenge: preventing the increased use of petroleum revenues from resulting in nominal instability. Despite many uncertainties, I do not believe that there are grounds for serious concern with regard to monetary policy's ability to deliver nominal stability over time, at least as long as fiscal policy is stable and predictable. However, the interest rate level will naturally have to be adapted.

A situation whereby we shift from fiscal policy guidelines that aim at neutrality to a long-term, gradual phasing in of petroleum revenues, while maintaining nominal stability, will entail some adjustment mechanisms that will be controversial. This applies not least to the effects on Norway's industry structure. Increased spending over government budgets and/or reductions in direct and indirect taxes will result in an increase in total domestic demand. A substantial portion of this increase in demand will be focused on private and public services. The sheltered sector will have to lay claim to a higher share of available labour. In an economy with full capacity utilisation, this can in practice only take place if resources are transferred from the exposed to the sheltered sector.

Independent of the phasing in of petroleum revenues, employment in the sheltered sector is expected to rise in the period ahead. It is not difficult to imagine that the phasing in of petroleum revenues will amplify this trend.

The expected reduction in manufacturing employment will be amplified with an increased use of petroleum revenues. Adjustments may come about through deteriorating competitiveness and profitability in internationally exposed industries. Monetary policy cannot influence these adjustments in the long term. In the short and medium term, however, a monetary policy reaction may still have temporary effects on developments in the real economy. The phasing in of petroleum revenues may swiftly translate into pressures on economic resources, which in turn may generate pressures that lead to higher domestic wage and price inflation. Monetary policy must then be adapted in order to counter inflationary pressures. A higher interest rate compared with other countries may result in a nominal appreciation. This leads to deteriorating competitiveness and contributes to reducing employment in the exposed sector. How quickly this takes place will depend on the monetary policy tightness required to counter price and wage pressures.

## **Conclusion**

We live in an uncertain world. The economy will constantly be exposed to shocks of different types. We must be prepared for changes in the functioning of the economy over time. No one knows precisely how different shocks will affect the economy or what effects fiscal and monetary policy instruments will have. A stable operating environment in the form of a predictable monetary and fiscal policy contributes to reducing some of this uncertainty. This is a benefit for economic agents. Monetary policy decisions are also made under uncertainty. This is the most important challenge we face in the formulation of monetary policy.

Given the phasing in of petroleum revenues now being planned, fiscal policy will be expansionary for many years ahead. This will contribute to stimulating domestic demand and thus influence monetary policy's scope for manoeuvre in the medium term. Monetary policy must be tighter than it otherwise would have been. The consequences of using a growing portion of petroleum revenues will be a challenge to many, including the labour market, the business sector and political, decision-making bodies.

A gradual phasing in of petroleum revenues is clearly preferable to large and, to some extent, unpredictable changes in fiscal policy from one year to the next. Without clear limits for the use of petroleum revenues, considerable uncertainty concerning the formulation of economic policy ahead could arise. For monetary policy, the guidelines are not a challenge but a benefit.

When the implications of the guidelines for Norway's industry structure become apparent, it is not given that everyone will be equally enthusiastic. If, at the same time, we have a strong exchange rate, some may want monetary policy to counter a strong krone exchange rate even if we are on track in relation to the inflation target. Monetary policy cannot and shall not do this. The objective of monetary policy is to contribute to low and stable inflation. Reducing interest rates in order to weaken the krone, thereby jeopardising the inflation target, would mean that we are not doing our job. Nor would this change the necessary structural adjustments that the increased use of petroleum revenues implies, but only increase their costs. Thank you for your attention.