

Flexible inflation targeting *

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With the introduction of a new mandate for monetary policy on 29 March 2001, Norges Bank was given responsibility for ensuring low and stable inflation. Monetary policy shall also contribute to stabilising output and employment. In the long term, there is no conflict between low and stable inflation and stability in the real economy. On the contrary, price stability will be a precondition for high and stable output and employment over time. However, in some periods, there may be disturbances that create a conflict in the short term. A trade-off must be made between the inflation target and stability in the real economy. This is the core of flexible inflation targeting. This article will discuss Norges Bank's conduct of a flexible inflation targeting regime.

Price stability, or low and stable inflation, is the primary objective of monetary policy in most countries. Historical experience from Norway and other countries has shown that the absence of price stability has resulted in low and unstable production and employment. High inflation or deflation is both a cause and a symptom of systematic imbalances in resource allocation.

We have had four periods of high inflation over the past 100 years: during the two World Wars, the Korean War and a 15-year period from the first half of the 1970s to the second half of the 1980s. In Norway, high inflation is a wartime phenomenon and a 1970s and 1980s phenomenon.

In 1973, the western economies experienced a recession which would prove to be the start of a very long period of sluggish growth. For Western Europe as a whole, GDP increased by only 2.7 per cent annually from 1973 to 1979 compared with about 5 per cent in the preceding ten years. This negative shift in productivity growth was due to several factors. Many of the productivity gains that followed in the wake of the transition from primary industries to manufacturing from the Second World War until the 1970s had faded. The transition to a service economy eroded the growth potential since service industries had lower productivity growth than manufacturing. In addition, we experienced a cost shock as a result of the oil crisis in 1973.

In Norway, the recession in the 1970s was dealt with by means of a strong counter-cyclical policy. Despite price regulation and rising unemployment, inflation rose sharply. This was an indication that structural shifts had taken place in the economy in the 1970s, shifts that were not apparent to politicians and economists at the time. An attempt was made to pursue the objective of full employment at the expense of price stability.¹

History shows that higher growth cannot ultimately be achieved in exchange for higher inflation. An economic policy that fuels inflation does not generate economic

growth. On the contrary, it paves the way for subsequent recession and unemployment. One of the first to express this idea clearly during the debate in Norway was Per Schreiner, Director General in the Ministry of Finance at the time. He wrote the following in 1982:²

“It has been a common belief in the Nordic countries for a long time that it was possible to make a political choice between price stability and full employment. There are strong indications that this option does not exist [...] Personally, I am no longer in doubt that controlling inflation is essential to achieving other social objectives.”

In the 1920s, John Maynard Keynes suggested that monetary policy should stabilise the price level.³ His thinking has a great deal in common with inflation targeting, but one difference is that a price level target means that inflation that is too high for a period must be countered by a negative rise in prices in the subsequent period. An inflation target, on the other hand, permits “base drift”, which means that prices do not have to return to a specific level.

Sweden had such an explicit target for price stability in the period 1931-1937.⁴ The price target was introduced as a crisis solution to avoid external deflationary pressures and can be said to have been successful. The economic downturn in Sweden was considerably less severe than in many other countries, and the recovery from 1933-1938 was unusually strong.

After the Second World War, there was a long period of trying to achieve price stability by means of various intermediate targets such as a fixed exchange rate and a target for growth in the money supply. The first explicit inflation target was introduced in New Zealand in 1990. Canada followed in 1991, the UK in 1992, and Sweden and Australia in 1993. Norway introduced inflation targeting on 29 March 2001.

* The article is based partly on a speech with the same title that was given at the Association of Norwegian Economists' seminar in Gausdal on 23 January 2004.

¹ See Bjerve (1981)

² See Schreiner (1982)

³ See Keynes (1923)

⁴ See Jonung and Berg (1998)

The conduct of monetary policy

Pursuant to the Regulation, Norges Bank's mandate reads as follows:

“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. [...]”

The first paragraph of the mandate sets forth its intentions. The last paragraph specifies what Norges Bank is required to do.

The first sentence in the mandate refers to the value of the krone. Stability in the internal value of the krone implies that inflation must be low and stable. Low and stable inflation fosters economic growth and stability in financial and property markets.

The regulation also states that monetary policy shall be aimed at stability in the Norwegian krone's external value, contributing to stable expectations concerning exchange rate developments.

With open trade with other countries and free capital movements, we do not have the instruments to fine-tune the krone exchange rate. The krone exchange rate fluctuates from day to day, from week to week, and from month to month. The krone has appreciated when economic activity has been high and there have been expectations of a wide interest rate differential. The krone has depreciated when activity has declined and the interest

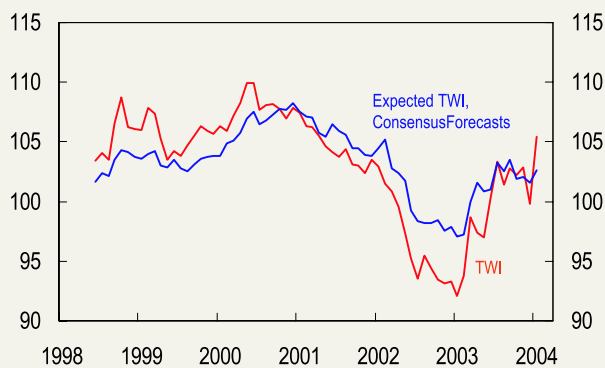
rate differential has narrowed. Such variations in the krone exchange rate reduce the need for substantial changes in the interest rate to stabilise the economy. There is also a strong tendency for the krone to revert to a level given by the price level in Norway relative to our trading partners.⁵

The knowledge that fluctuations in the value of the krone largely follow cyclical developments also seems to be reflected in market participants' expectations. Exchange rate expectations cannot be directly observed, but information from Consensus Forecasts, a survey conducted among macroeconomists in Norway and abroad, may serve as an indicator. Chart 1 shows the actual trade-weighted exchange rate (TWI) and expected TWI one year ahead as from 1998 (data from Consensus Forecasts are not available earlier). When the krone is weak, exchange rate expectations one year ahead tend to be stronger than the actual rate. Similarly, when the krone is strong, the expected exchange rate one year ahead tends to be weaker than the actual exchange rate. The exchange rate varied substantially in the period 2002-2003. Movements in exchange rate expectations, however, were less volatile. When the krone was at its strongest in the second half of 2002, the expected exchange rate one year ahead was 3-5 per cent weaker. This illustrates that exchange rate expectations seem to be more stable than actual exchange rate movements, and that after moving markedly beyond a long-term equilibrium level, the krone exchange rate is expected to revert to around this level. The equilibrium level for the nominal exchange rate is not, however, constant over time, but partly depends on price and cost developments in Norway relative to our trading partners.

Section 1 of the regulation states that in addition to sustaining the rate of inflation at approximately 2½ per cent over time, monetary policy shall contribute to stable developments in output and employment. The mandate therefore establishes flexible inflation targeting for monetary policy, where variations in output and employment are also given emphasis. Since inflation is a monetary phenomenon over time, the level of the inflation target may be chosen by the authorities. A target for output, however, cannot be chosen in the same way.

The economy grows over time. This is a result of positive productivity growth and population growth. The level of output that is consistent with stable inflation over time is referred to in economic theory as potential output. This may also be interpreted as the level of output as it would have been if prices and wages had been completely flexible. Potential output varies in part as a result of fluctuations in productivity and technological innovation, but it cannot be influenced by monetary policy. When the economy grows more rapidly than the level that is consistent with stable inflation, inflationary pressures will build up. When the inflation rate is very high, households and companies become more uncertain

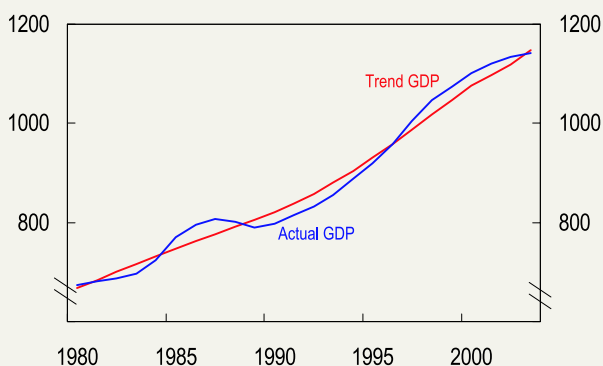
Chart 1 TWI and expected TWI one year ahead (Consensus Forecasts), from 1998



Sources: Norges Bank, ConsensusForecasts

⁵ See Akram (2003)

Chart 2 Actual GDP and trend GDP for mainland Norway. Constant 2000 prices. In billions of NOK



Sources: Statistics Norway and Norges Bank

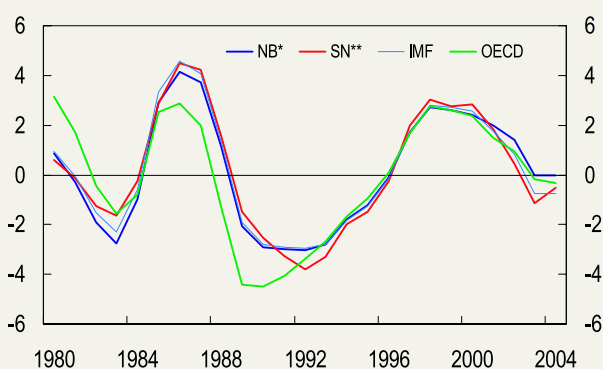
about future income and expenses. Overall demand in the economy may decline as a result. Experience shows that periods of high inflation are followed by periods of contraction. Over time, output and employment cannot be maintained above potential output.

Monetary policy's contribution to stabilising output will therefore be to curb fluctuations around the potential output level. The potential output level cannot, however, be observed. It is also difficult to capture changes in productivity and technology.

One approach to estimating the level of potential output may be to calculate trend output, which entails a smoothing of historical GDP figures. Chart 2 shows actual GDP and trend GDP for mainland Norway from 1980.

Norges Bank bases its calculations of trend growth on a HP filter (Hodrick Prescott filter), but also takes into

Chart 3 The output gap for the mainland economy. Per cent of trend GDP



* Estimate from IR 2/03. Scenario with forward rate and gradual exchange rate depreciation of 3 per cent

** Economic Survey 2/2003

Sources: Statistics Norway and Norges Bank, IMF WEO April 2003 and OECD EO No 73

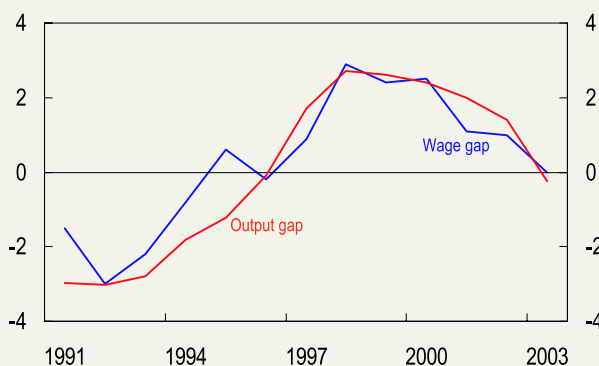
account other factors such as structural changes or changes in the number of vacation days. Our assessment of the volatility of trend growth is also a matter of judgement.⁶

The output gap measures the deviation in output from the level of potential output. There are various methods for estimating the output gap. Statistics Norway (SN), like Norges Bank, uses the HP filter, but bases its calculations on quarterly figures for GDP. Statistics Norway's calculations of the output gap are very similar to the calculations made by Norges Bank, with the exception perhaps of the last period, where Statistics Norway did not make adjustments for the increase in vacation days in 2001 and 2002. The OECD calculates the output gap by using the production function method, where trend levels for labour, capital and available technology are inserted into a specified production function. The potential level of output is then determined by trend growth in factor inputs. The IMF uses a number of methods, but has chosen to calculate the output gap for Norway in approximately the same way as Norges Bank. Chart 3 shows that the different methods of calculation give roughly the same outcome.

In order to make sound discretionary assessments of what is the correct level of potential output, and thus the output gap, we look at alternative indicators of the degree of pressure in the economy.

The wage gap measures the difference between actual wage growth and growth that over time is consistent with the inflation target, and is an indicator of labour market tightness. With an estimate of 2 per cent productivity growth, wage growth of 4.5 per cent over time will be consistent with an inflation target of 2.5 per cent. In Chart 4, the wage gap up to 2000, i.e. before the introduction of the inflation target, is defined as the difference between wage growth in Norway and in other countries. As we see from Chart 4, there appears to be a close relationship between this wage gap and the output gap as it is measured by Norges Bank. If we look at developments in employment in relation to trend growth

Chart 4 The output gap and the wage gap



Sources: Statistics Norway, TRCIS, IMF and Norges Bank

⁶ Norges Bank has chosen, in keeping with ordinary practice, to use a smoothing parameter, $\beta = 100$ in the annual data.

(measured as a percentage of the working-age population), we obtain a similar path.

We also consider credit growth to be an indicator of private demand. If we assume that credit growth rises in pace with nominal GDP over time, about 5 per cent, persistently higher or lower credit growth will indicate that the level of activity in the economy is higher or lower than normal. Moreover, we follow cyclical indicators such as wholesale and retail trade as well as monitor the business sector continuously via the regional network.⁷

There is uncertainty associated with the estimation of both trend growth and the output gap, and there are many different ways of measuring pressures in the real economy. With a flexible inflation targeting regime, however, we must decide whether there is pressure on economic resources or excess capacity. In this respect, the output gap provides a kind of overview of the overall inflationary pressures in the real economy.

If there are no substantial economic disturbances – or shocks – there will be no conflict between stabilising inflation and stabilising output and employment. A positive output gap will over time result in inflation that is above target, while a negative output gap will result in inflation that is too low.

Nor will demand shocks in a closed economy result in a conflict in the short term between price stability and stability in the real economy. A positive demand shock will result in higher inflation, and an appropriate monetary policy response would be to increase the interest rate to the extent that output returns rapidly to its potential level.

Trade-offs in monetary policy

In an open economy, however, a conflict of objectives could arise in the short term following a demand shock. Although a higher interest rate would contribute to stabilising both output and inflation, there might be a conflict with regard to the “dosage”. If the interest rate is increased to the extent that output is reduced to a level that is consistent with stable inflation over time, inflation may be too low as a result of an appreciation of the exchange rate in the short term. A trade-off must be made in the short term between the inflation target and stability in the real economy.

A cost shock, which fuels inflation and at the same time reduces output and employment, leads to a more marked conflict in the short term between the inflation target and stability in the real economy. The conflict between different objectives will, however, be less severe in an open economy, as the exchange rate will normally appreciate as a result of the monetary policy response, thereby contributing to reducing inflation.

Different types of disturbances will often occur at the same time, and the central bank then faces a trade-off between variations in output and employment on the one hand and variations in inflation around the target on the other. Given that inflation over time shall be close to the target, these trade-offs are at the core of flexible inflation targeting.

In the theoretical literature, making trade-offs between price stability and stability in the real economy is often described as minimising a loss function, which includes the deviation between output and potential output and between inflation and the inflation target.⁸ The central bank shall then choose the path for interest rates ahead that minimises the discounted “losses” in all future periods. The loss in one individual period will be:

$$L_t = (\pi_t - \pi^*)^2 + \lambda(y_t - y_t^*)^2$$

In the equation, π denotes inflation, π^* the inflation target and $(y - y^*)$ the output gap. The deviations enter the loss function quadratically. Large deviations from the targets are thereby deemed to be a considerably more serious disadvantage than small deviations. In the event of large deviations between inflation and the inflation target, or substantial imbalances in the real economy, the use of relatively strong measures may be appropriate. The trade-off between inflation stability around the inflation target and stable growth in output is expressed by parameter λ . The higher λ is, the greater the emphasis is on real economic stability in relation to stability in inflation. With a strict inflation target, i.e. emphasis is only placed on inflation, and λ is equal to zero. $\lambda > 0$ is the definition of flexible inflation targeting. Although the loss function has two add factors, both of which are given emphasis, a fundamental difference is that the monetary policy authorities can choose the inflation target but not the level of potential output.

In practice, no central bank uses a loss function of this kind directly. What inflation-targeting central banks do in practice does, however, contain elements of the thinking behind this theory.

The choice of horizon for monetary policy implicitly provides some information about the central bank’s loss function.⁹ A central bank that places considerable emphasis on inflation and little emphasis on the real economy will choose a short horizon. A central bank that places considerable emphasis on the real economy will choose a long horizon.

According to theories on optimal monetary policy, the horizon should vary and partly depend on the size and duration of disturbances to the economy. For some types of disturbances, such as demand shocks, the optimal choice may be to achieve the inflation target relatively rapidly. For other types of disturbances, such as cost

⁷ See box “Flexible inflation targeting and indicators of pressures in the real economy” in *Inflation Report* 3/03, p. 47, for a more detailed description of the different indicators.

⁸ See, for example, Svensson (2002)

⁹ See, for example, Smets (2000) and Svensson (1997)

shocks, a longer horizon may be the optimal choice, provided that confidence in monetary policy is not in jeopardy.

This is in line with the horizon used by Norges Bank. Norges Bank sets the interest rate with a view to stabilising inflation at the target within a reasonable time horizon, normally 1-3 years. The more precise horizon will depend on disturbances to which the economy is exposed, and the impact they have on inflation and the real economy in the period ahead.

Until 1 July 2004, Norges Bank communicated using a two-year horizon, but with the possibility of deviating from the two-year horizon if special conditions so warranted. The new formulations better express the framework for the conduct of monetary policy.

Because we want to be transparent concerning the trade-offs we make in monetary policy, we present our projections for both inflation and the output gap in the *Inflation Report*.

Transparency and communication

Confidence in monetary policy increases the possibility of stabilising output and employment. Transparency can contribute to strengthening confidence and making monetary policy more predictable. In an environment where market participants understand the central bank's response pattern, the reaction of market rates to new information about economic developments has a stabilising effect.

Norges Bank is open about its monetary policy work. An account of the methods we use for forecasting inflation and the output gap in the period ahead, our analyses of the functioning of the economy and the way we exercise discretion is provided in our annual report, inflation reports, speeches and other publications.

We also try to follow a systematic procedure for interest rate decisions. The dates of the monetary policy meetings are announced in advance. The interest rate decisions, together with a thorough explanation of the background for the decision, are published after each meeting. A press conference is held after each monetary policy meeting, whether the interest rate is changed or not, where either the central bank governor or deputy governor presents the background for the decision and answers questions. The main features of the analysis in the *Inflation Report* are presented to the Executive Board for discussion at a meeting about two weeks before the Report is published. On the basis of the analysis and discussion, the Executive Board assesses the consequences for the monetary policy strategy and interest rate setting in the period to the next *Inflation Report*. These assessments are published at the same time as and as part of the *Inflation Report*, and should serve to further clarify the trade-offs and the rationale

behind the decision. The *Inflation Report* contains our analyses of the economic situation and projections concerning developments in the next few years. These reports provide guidance for market participants and the general public concerning monetary policy in the period ahead.

Thus far, Norges Bank has generally used two alternative technical assumptions concerning the interest rate in the *Inflation Report*: that the interest rate follows market expectations, represented by implied forward rates, or that the interest rate remains unchanged. We have often used both assumptions, but in the last inflation reports, we only used forward rates.

There are also other possible interest rate assumptions, however. We could, for example present an "optimal" interest rate scenario, based on model-based calculations and an explicit loss function, or on more discretionary assessments. Another alternative is to base future interest rate developments on a simple rule, for example a variation on the Taylor rule. In the inflation reports of the Reserve Bank of New Zealand, the interest rate varies over the projection period according to a simple forecast-based interest rate rule.

Even though these endogenous interest rate paths are a theoretically more satisfactory way of presenting these forecasts, they are not straightforward. For example, an "optimal" interest rate path may lead to a misconception that the central bank is committed to setting future interest rates in line with this path, regardless of the shocks that occur. An interest rate path based on a simple rule may give the impression that the interest rate is actually set on the basis of this rule.

In terms of communication, there is no definitive answer as to what are the best interest rate assumptions. Sometimes, projections based on specific interest rate assumptions may indicate that the monetary policy objective will not be achieved within a reasonable horizon. This will be a signal that the interest rate will probably deviate from these assumptions in the period ahead. When the Executive Board's strategy for the setting of interest rates up to the next *Inflation Report* is published, this will also provide a further indication as to future interest rate developments.

Monetary policy under uncertainty

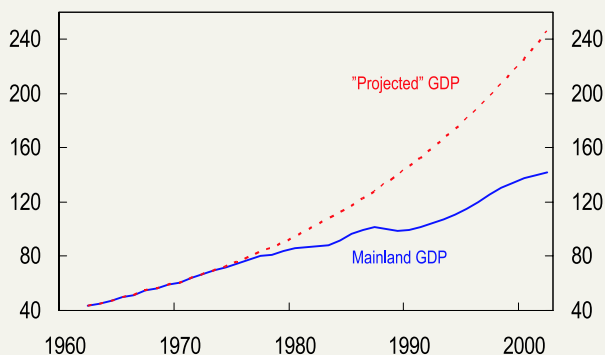
There is always uncertainty associated with economic projections, but there is also uncertainty concerning the actual state of the economy at the time of the decision. Moreover, the effects of our own interest rate setting are uncertain.¹⁰

Because most aspects of the future are uncertain, our projections are seldom 100 per cent accurate. Viewed in retrospect, it might at times appear that monetary policy could have been conducted better. However, interest rate

¹⁰ In the opening address at last year's Jackson Hole conference, Alan Greenspan expressed the following:

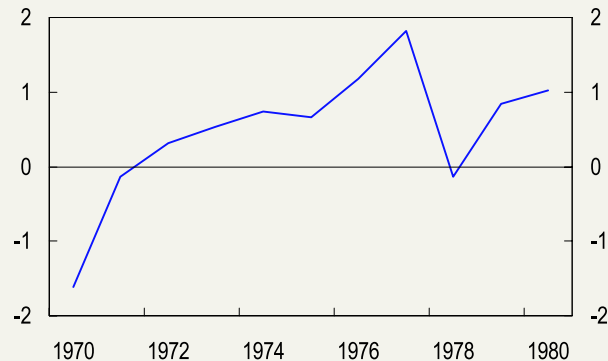
"Uncertainty is not just an important feature of the monetary policy landscape; it is the defining characteristic of that landscape. As a consequence, the conduct of monetary policy in the US at its core involves crucial elements of risk management."

Chart 5a Mainland GDP and "projected" GDP, 1960 - 2003



Sources: Statistics Norway and Norges Bank

Chart 5b Output gap, 1970 - 1982



Sources: Statistics Norway and Norges Bank

decisions have to be assessed *ex ante*, in the light of the information that was available at the time that the decisions were made.

One of the main problems associated with the conduct of monetary policy under uncertainty is access to real time data that provide satisfactory information about inflationary pressures in the economy. Petter Jacob Bjerve pointed this out in an unusually perspicacious article in 1981 on cyclical policies in Norway in the 1970s:

"It will otherwise always be a problem for cyclical policy that the statistics are prepared more or less after the events, and that it takes time after the statistics are published before we are aware of whether new trends have begun to emerge. [...] Moreover, the analyses were based on projections of productivity growth that proved to be too high."

As pointed out in the introduction, there was strong growth until 1973, and it took time before it became apparent that there had been a negative shift in potential output. The red dotted line in Chart 5a shows what GDP would have been if the growth rate had been the same after 1973 as in the previous 10 years. Because the negative shift in the level of potential output was not discovered in time, a counter-cyclical policy was employed in an attempt to sustain the output level. Whereas the output gap was believed to be negative, it subsequently proved to be positive, as illustrated by Chart 5b.

Similarly, in a survey of previous US monetary policy, Orphanides¹¹ finds that the Federal Reserve overestimated the level of output that was consistent with stable inflation in the 1970s because they were not aware of falling productivity growth in time. As a result, the output gap was underestimated and policy was too expansionary. Also in the 1990s, we saw an increase in productivity growth, and even though the mistake from the 1970s was not repeated, there was a vigorous debate concerning different measures of trend growth and the output gap.

¹¹ See Orphanides (2003)

¹² See Knight (1921)

In addition to the difficulty of capturing changes in potential output fast enough, there is also considerable uncertainty about the level of actual GDP. As an example, Norway's GDP figures were extensively revised in June 2002. Growth in mainland GDP was revised upwards by an average of 1 percentage point per year for the period 1995-1999. The largest revision was for 1999. As late as in May 2002, we believed that growth in 1999 had been 1.1 per cent. The revised figures now show that growth was in fact 2.7 per cent.

Norges Bank is currently systematising different sets of national accounts figures. We can then go back and evaluate monetary policy in "real time" to learn how we should respond to uncertain data.

Frank Knight (1921) differentiates between "risk" and "uncertainty".¹² With risk, we know the probability distribution for the potential outcomes, but with pure uncertainty we do not. Thus, there is risk, but not uncertainty, associated with the fall of a die, according to Knight. Thus, for a decision-maker, risk is far more manageable than pure uncertainty.

In practice, the distinction between risk and uncertainty is unclear. We never have complete knowledge of the probability distribution of the economic variables, although historical experience provides some indication. But some variables are characterised more by risk, in the sense that the range of outcomes is well specified, than others.

Let's look at some concrete examples. Projections for wage growth are important for the conduct of monetary policy. For a given wage formation system, the outcome of wage negotiations is characterised more by risk. We do not know with certainty in advance what the outcome will be, but historical experience provides us with information about the probability distribution. However, the probability distribution depends on no change having taken place in the wage formation system. Such changes may occur, but we have little basis for judging the probability of this. If a change has actually taken

place, however, we have little information about the probability distribution for the outcome of wage negotiations in the future. Whereas wage growth projections were previously characterised more by risk, they are now characterised more by Knight uncertainty.

Another factor is the rise in prices for imported goods. There have been major structural changes in world trade, with intensified competition and China's WTO membership. It is still too early to establish the effects of these factors on inflation abroad or how long the process of change in world trade will persist. Projections for imported price inflation may therefore be said to be characterised more by Knight uncertainty for a period ahead.

Monetary policy under uncertainty was one of the many topics discussed in the report *Norges Bank Watch 2003*, where our policy response pattern and communication were evaluated in the light of the theory of monetary policy under uncertainty. This was useful input and constructive criticism which we will keep in mind in our future work.

Norges Bank Watch 2003 points out, for example, that we should make a clearer distinction between additive uncertainty and multiplicative uncertainty. This distinction is most clearly reflected in our economic models. The uncertainty associated with the exogenous variables is called additive uncertainty. Examples of additive uncertainty are add factors in our economic models and other exogenous factors such as fiscal policy and the oil price. Uncertainty about the actual functioning of the economy may, however, lead to multiplicative uncertainty. Multiplicative uncertainty often involves uncertainty about the structural parameters in the model, such as the effect of the interest rate on demand and the exchange rate and the slope of the short-term Phillips curve.

How does the central bank relate to the fact that we do not know precisely how the world is or how it will be in the future?¹³ Alan Blinder, former Vice Chairman of the Board of Governors of the Federal Reserve and currently a professor at Princeton University, touches on this when he formulates the recipe for a successful monetary policy:¹⁴

“ Step 1: Estimate how much you need to tighten or loosen monetary policy to ‘get it right.’ Then do less.

Step 2: Watch developments.

Step 3a: If things work out about as expected, increase your tightening or loosening, toward where you thought it should be in the first place.

Step 3b: If the economy seems to be evolving differently from what you expected, adjust policy accordingly.”

There is no doubt that a number of central banks will sympathise with this recipe. Norges Bank normally takes a gradual approach to interest rate setting due to uncertainty concerning economic developments, including the effects of previous changes in the interest rate. This principle is also supported by economic theory. Brainard (1967) showed that central banks should respond more cautiously to economic disturbances when there is uncertainty as to how strongly the interest rate affects the economy, in other words when there is multiplicative uncertainty.¹⁵

On the other hand, according to theory, additive uncertainty, where uncertain factors are assumed to be independent of the interest rate, shall not be taken into account when setting interest rates. Certainty equivalence implies that we make an unbiased projection for the uncertain factor and take the projection into account in the same way as if we knew with certainty that it would occur.

Theory implies that the central bank should be more aggressive when setting interest rates when faced with certain types of multiplicative uncertainty, for example, uncertainty as to what extent the deviation from the inflation target for a period affects market participants' expectations concerning future inflation.¹⁶ This is in line with previous statements from Norges Bank:

The interest rate may be changed rapidly and markedly if there is a risk that inflation might deviate considerably from the target over a lengthy period so that inflation expectations might be influenced, or when heightened turbulence in financial markets or a rise in costs as a result of negotiated wage increases indicate that confidence in monetary policy is in jeopardy.

The fact that academic research is devoting more attention to monetary policy under uncertainty is useful for practitioners. But it is important to be aware that the results in this literature depend, of course, on the assumptions, which are often relatively simple and stylised. The relevance of the theoretical results to the practical conduct of monetary policy is therefore also uncertain. We look at theory with considerable interest, albeit with a certain degree of Brainardian caution.

Conclusion

The government has defined a mandate for monetary policy that involves flexible inflation targeting. In addition to ensuring that inflation is close to 2.5 per cent over time, monetary policy shall also contribute to stabilising developments in output and employment. Monetary policy cannot influence the potential output level, but can dampen fluctuations around this level. In this way, monetary policy can contribute to stabilising developments in output and employment.

Inflation cannot be controlled exactly, but it is relati-

¹³ See Frøyland and Lønning (2000)

¹⁴ See Blinder (1998)

¹⁵ See Brainard (1967)

¹⁶ See Söderström (2000)

vely simple to measure how far it is from the target. It is more demanding to measure the gap between actual output and potential output.

In the operational conduct of monetary policy, Norges Bank normally sets the interest rate with a view to stabilising inflation at the target within a reasonable time horizon, normally 1-3 years. The more precise horizon will depend on the disturbances to which the economy is exposed, and how they will affect the path for inflation and the real economy ahead. Due to uncertainty, the Bank usually proceeds gradually. In Norges Bank's opinion, this response pattern will normally result in a reasonable trade-off between stabilising inflation around the target and stabilising output and employment.

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