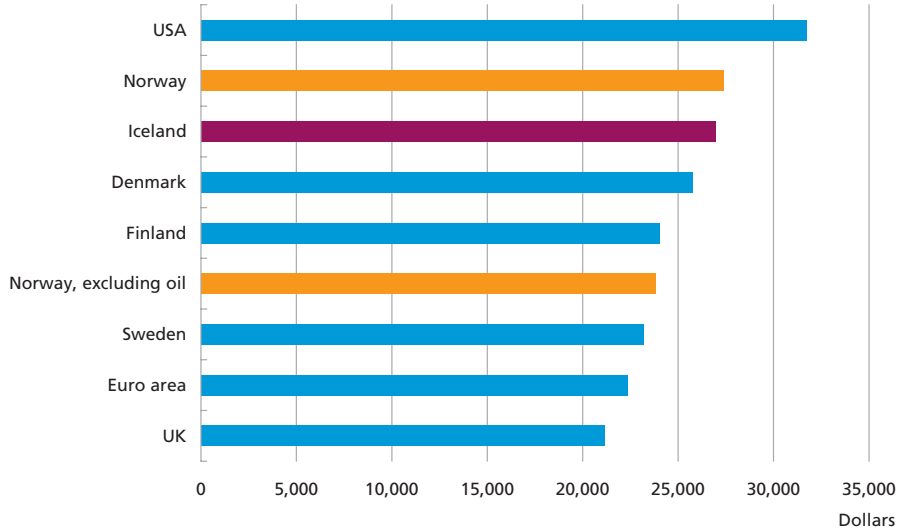
Two Years with Inflation Targeting in Norway and Iceland

Niels C. Beier, Ulrik Bie and Lone Christensen, Economics

INTRODUCTION

In March 2001, within an interval of a few days, the Norwegian central bank, Norges Bank, and the Icelandic central bank, Seðlabanki Íslands, both changed monetary-policy regime. Both central banks switched from a fixed-exchange-rate policy to a monetary policy based on inflation targeting with a floating exchange rate. In both countries, the background to the shift was growing problems relating to the fixed-exchange-rate policy and the resulting considerations of possible alternatives, cf. Christiansen and Qvigstad (1997) and Gudmundsson et al. (2000). This article describes the background to the new regime and experience so far.

OUTPUT PER CAPITA IN SELECTED COUNTRIES IN 2001 Chart 1



Note: GDP per capita. Adjusted for purchasing power parity. The unit is constant prices (1995 dollars). Norway, excluding oil is calculated as GDP excluding the net product of oil activities, but including the oil sector's wage costs and the current return on the oil assets.
Source: OECD, *Economic Outlook 72*, December 2002 and own calculations.

Norway and Iceland share other characteristics besides their monetary-policy framework. Both countries have ample natural resources (energy and fish). This has created great prosperity, cf. Chart 1, but also presents special challenges to the overall economic policy, including monetary policy. In the short term, fluctuations in e.g. oil prices or fish stocks can severely affect economic activity, thereby making demands of the stabilisation policy. Moreover, both economies are small and very open to external trade. As a result, exchange-rate fluctuations are of great significance to prices and economic activity. In Norway's case it must furthermore be decided how quickly the profits from oil are to be phased into the economy.

INFLATION TARGETS AND FIXED EXCHANGE RATES IN GENERAL[1]

Ensuring price stability is the overall objective of many central banks, including Norges Bank and Seðlabanki. However, the price-stability objective is not an actual operational element of monetary policy, which is therefore often conducted according to an intermediate target to ensure achievement of the overall objective. Norges Bank and Seðlabanki previously pursued a fixed-exchange-rate policy vis-à-vis a basket of currencies. The exchange rate was therefore the intermediate target. This was replaced by an inflation target in 2001.

Under a fixed-exchange-rate policy the exchange rate is fixed – typically vis-à-vis one or more trading-partner countries with low inflation – in order to stabilise domestic price development. In small countries, exchange-rate fluctuations have a direct impact on prices due to the large share of imported goods.[2] These direct impacts are absent in a fixed-exchange-rate regime. On the other hand, price development also depends on e.g. domestic wage development. With a fixed exchange rate, monetary policy is directed solely at maintaining the fixed exchange rate, and the central bank will only adjust interest rates when the currency weakens or strengthens.

With an inflation target the central bank via interest-rate adjustments seeks to achieve a future inflation target, often two years ahead. The central bank's forecast of future development in prices therefore plays a central role in monetary-policy planning. Monetary policy is tightened if the forecast shows a future inflation rate above the target, and vice versa.[3] The inflation target of both Norway and Iceland is a year-on-year

1 Described in further detail in Danmarks Nationalbank (2003).
2 In Iceland's consumer price index the weight of petrol and foreign goods is approximately 35 per cent (IMF, 2001), while the weight of foreign consumer goods in Norway's consumer price index (www.ssb.no) is approximately 26 per cent.
3 In practice, the central bank's inflation forecast is the intermediate target.

rate of consumer-price increases of 2.5 per cent. Inflation may deviate from the target in the short term, since monetary policy is pursued according to the *future* inflation rate. A transparent and credible monetary policy thus makes great demands of the central bank's communication strategy (Storgaard, 2002).

When monetary policy is conducted according to an inflation target the exchange rate floats, and in principle the central bank will only react to exchange-rate fluctuations if they impact on future inflation. Under both a fixed-exchange-rate policy and inflation targeting monetary policy can apply only one instrument to achieve only one goal.

An inflation target entails a different distribution of work between fiscal and monetary policies to that applying to a fixed-exchange-rate regime. An expansionary fiscal policy will tend to push up inflation, whereby the central bank – subject to an inflation target – must in principle tighten monetary policy in order to keep inflation down, and thereby contribute to stabilising the economy. Under a fixed-exchange-rate policy it is up to the remaining economic policy to keep inflation down, since monetary policy is directed solely at maintaining the fixed exchange rate. It is thus only possible to maintain a fixed-exchange-rate policy if fiscal policy contributes to a generally stability-oriented economic policy.

NORWAY

The discovery of oil and gas in Norwegian territory in the 1970s has had a profound impact on Norwegian society. Today, Norway is one of the richest countries in the world, and in 2001, Norway's GDP per capita was among the highest in the OECD countries. Oil and gas production accounted for almost 5 per cent of total global production in 2001, making Norway one of the world's largest oil exporters (Offshore Norway, 2001).

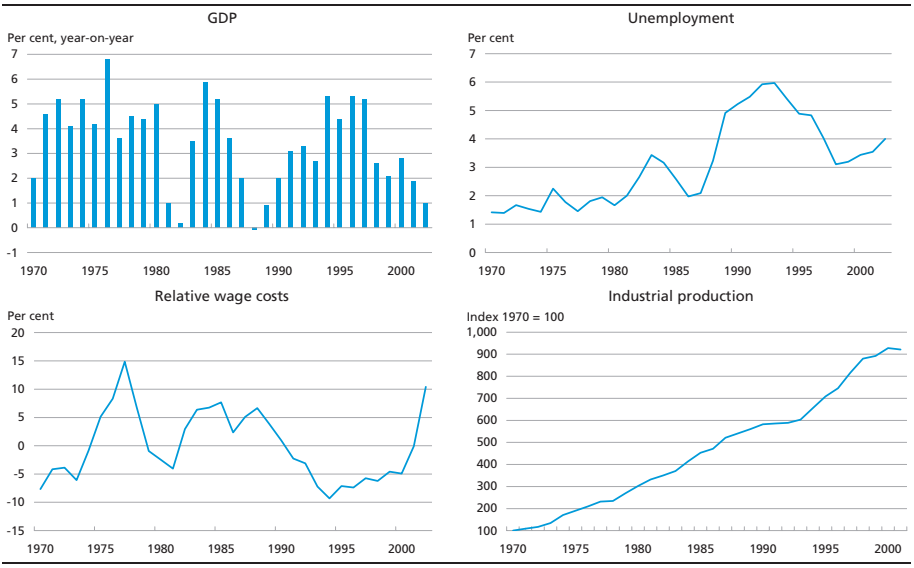
Norway's oil profits make its economic policy subject to special conditions. Since most of the profits fall to the central government, a strong expansionary fiscal policy has been facilitated.

In March 2001, a general re-orientation of economic policy took place. Norway introduced an inflation target in monetary policy. Concurrently, a new fiscal-policy rule was introduced whereby a proportion of the oil wealth is gradually and smoothly phased into the economy, so as to benefit both present and future generations.

Prior to the re-orientation

For many years, oil production has generated substantial ongoing revenue for the central government, providing for tax cuts and higher gov-

KEY ECONOMIC VARIABLES IN NORWAY, 1970-2003 Chart 2



Note: The relative wage costs are hourly labour costs in manufacturing industry in Norway and in its trading-partner countries converted to a common currency. The series shows the percentage deviations from the average during the period 1970-2002.

Source: Gjedrem (2003), OECD, *Economic Outlook 72*, December 2002 and OECD, *Economic Outlook 73*, April 2003.

ernment consumption and investments. Especially in recent years, the revenue has moreover resulted in large budget surpluses. In 2001, the surplus was 14 per cent of GDP (OECD, 2002). Government spending rose from approximately 40 per cent of mainland GDP[1] at the beginning of the 1970s to far above 50 per cent in 2002. Employment in the public sector has increased by 19 per cent since 1990, and now accounts for 32 per cent of total employment. This ratio is the highest among the OECD countries (OECD, 2002).

Since the oil revenue has made it possible to dampen the effect of international economic downturns, the Norwegian economy has been close to or above its capacity limit for prolonged periods. During these periods Norway experienced higher price and wage increases than its trading-partner countries, cf. Chart 2, so that the conditions for the sector exposed to foreign competition deteriorated. This sector had to yield to the more protected service sector.

Throughout the first half of the 1980s the Norwegian economy boomed and the central government spent the oil revenue as it was accrued. However, the drop in oil prices in 1986 placed the Norwegian economy in a difficult situation. Much of the central government's revenue lapsed, making it necessary to apply the brake. This highlighted the

[1] GDP excluding oil production and international shipping.

uncertainty associated with oil revenue, and also spurred discussion of the appropriate management of the oil revenue to ensure economic balance. Furthermore, it subsequently became clear that there was more oil than originally assumed, making a more long-term strategy for application of the profits appropriate. The outcome was to channel part of the profits to a savings fund, the Petroleum Fund. This created a basis for more flexible use of the oil wealth.

From the mid-1990s, the economy was back on an even keel, and the economic agents became less crises-oriented. Economic growth and falling unemployment augmented the pressure for higher wage increases. Since 1996, wage increases in Norway have exceeded those in its trading-partner countries – without corresponding productivity improvements. At the same time, oil revenue increased, leading to further expansion of the public sector.

The build-up to the re-orientation of economic policy in 2001 was the problems associated with the coordination of monetary and fiscal policies. From after World War II until 1999 Norway had generally pursued a fixed-exchange-rate policy to a varying degree.[1] From 1996 until 1998 the Norwegian economy experienced an upswing. The oil price was high, and the krone appreciated. Monetary policy became expansionary in order to maintain the fixed exchange rate, and to keep in step with low interest rates in Europe. In this situation, fiscal policy should have been tight, but it was neutral. The required stabilisation policy was thus not pursued, and as a result the economy overheated (Gjedrem, 1999).

The experience from this period caused Norges Bank to increasingly abandon the daily fine-tuning of the exchange rate. Instead, it was envisaged that in the long term the exchange rate could be held at a stable level vis-à-vis the European currencies, provided that inflation in Norway was in line with inflation in the European countries (Gjedrem, 1999). From the start of 1999 the Norwegian krone was in reality allowed to float, and monetary policy was oriented towards bringing inflation in Norway to the level of inflation in the euro area. In practice, the central bank pursued an inflation target within an unchanged legislative framework for monetary policy.

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[1] From 1947 to 1972 via the Bretton Woods system (fixed exchange rate vis-à-vis the dollar). In 1972 to 1978 as a member of the Snake. From 1978 to 1992 a fixed exchange rate vis-à-vis a trade-weighted basket of currencies (ECU from 1990) (Soikkeli, 2002). During the international foreign-exchange unrest in 1992 Norway on 10 December abandoned the fixed exchange rate and let the krone float (Åkerholm and Giovannini, 1994). As from May 1994, it was given by law that the operational target of monetary policy should be to maintain a stable exchange rate vis-à-vis European currencies. However, no explicit fluctuation margins were laid down, and Norges Bank did not use interest rates or intervention to stabilise the krone's value to the same degree as during previous fixed-exchange-rate regimes (BIS, 1997).

REGULATION ON MONETARY POLICY Box 1

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

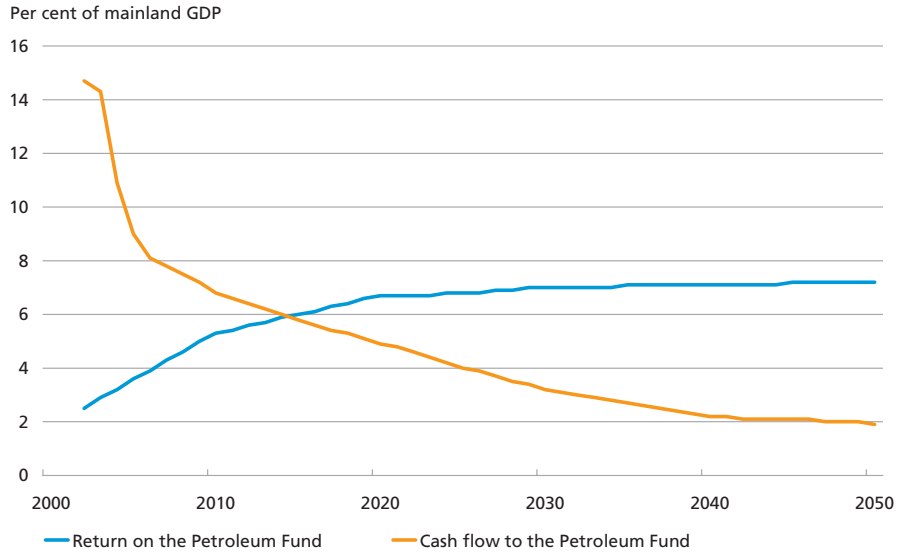
This regulation comes into force immediately. Regulation no. 0331 of 6 May 1994 on the exchange rate system for the Norwegian krone is repealed from the same date.

Re-orientation of economic policy in 2001

Norges Bank had in practice applied inflation targeting as from 1999, but the institutional framework for monetary policy was formally laid down in the *Regulation on Monetary Policy*[1] of 29 March 2001, cf. Box 1.

[1] Norges Bank's website: www.norges-bank.no.

EXPECTED RETURN ON AND CASH FLOW TO THE PETROLEUM FUND Chart 3



Source: Gjedrem (2003).

The framework should be interpreted to mean that the overall objective is to maintain the national and international value of the krone, while the intermediate target[1] is an inflation rate of 2.5 per cent over time.[2]

The new monetary-policy framework was accompanied by a fiscal rule, *Handlingsreglen* (Guideline), according to which the structural non-oil budget deficit must be equivalent to the expected real return on the Petroleum Fund. This means that the real value of the Petroleum Fund will not be eroded, provided that the expected real return is realised. The expected real return is estimated at 4 per cent per year. For as long as funds are transferred to the Petroleum Fund, the real value of the return will increase. In practice, this applies as long as the production of oil and gas generates profits.

In coming years, the return as a ratio of GDP is expected to be around 3 per cent. It is thereafter expected to rise to around 7 per cent of GDP up to 2050. The increase will be strongest in the first 20 years, cf. Chart 3. In practice, *Handlingsreglen* entails a constant expansionary fiscal policy subject to the strongest pressure in the years up to 2020.

1 Norges Bank terms this an operational objective.

2 In principle, Norges Bank does not take account of the direct effects on consumer prices due to interest-rate fluctuations or changes in direct and indirect taxes or temporary disturbances. In its assessment of underlying inflation Norges Bank therefore places special emphasis on the development in the consumer price index adjusted for indirect taxes and excluding energy products (KPI-JAE) (Norges Bank, 2003).

The consequences of the new economic policy

An important effect of *Handlingsreglen* is that the pressure on the sector exposed to foreign competition will continue. When a larger share of the oil revenue is applied to the economy, demand will rise for both traded and non-traded goods. Since demand for non-traded goods can solely be accommodated via production in Norway, the output of these goods must increase. In an economy operating close to its capacity limit, with a tight labour market, this means that labour has to be moved to the sector producing non-traded goods. This transfer is from the sector producing traded goods (the sector exposed to competition), so that demand for these goods must increasingly be met through imports. The required import volume must be financed from revenues in foreign currency. The capital of the Petroleum Fund is placed in foreign assets, but the return is not sufficiently high to be the sole future source of financing. There will still be a need for an export sector that can generate more foreign currency. Holden *et al.* (2003) estimate that employment in manufacturing will be reduced by 26,000 persons in the period 2001-10 as a result of a trend decline and increased oil-revenue spending.[1]

The sectoral shift will be initiated by a strengthening of the real exchange rate and thereby weakened competitiveness. The real exchange rate strengthens through nominal-exchange-rate appreciation and/or because the price increases in Norway are higher than in its trading-partner countries. In view of the higher inflation target than in Norway's most important trading-partner countries, cf. the ECB's objective of price increases below 2 per cent, the real appreciation can be expected to be attributable to higher inflation. Should the pressure from the economy push the price-increase rate above the target of 2.5 per cent, the monetary-policy framework envisages a monetary-policy tightening, which will tend to strengthen the nominal exchange rate for the Norwegian krone. This will again tend to weaken competitiveness via a real appreciation. It is difficult to determine whether the necessary real appreciation can be achieved solely from higher price increases than in trading-partner countries, or whether the Norwegian krone's nominal exchange rate must be strengthened at the same time. It is often observed that in the short term exchange-rate fluctuations are considerably greater than the economic conditions justify. This may therefore augment pressure on the export sector in the short term, resulting in a more drastic breakdown than is necessary in the longer term. It may subsequently be necessary to rebuild some elements of the production apparatus, which may be difficult.[2]

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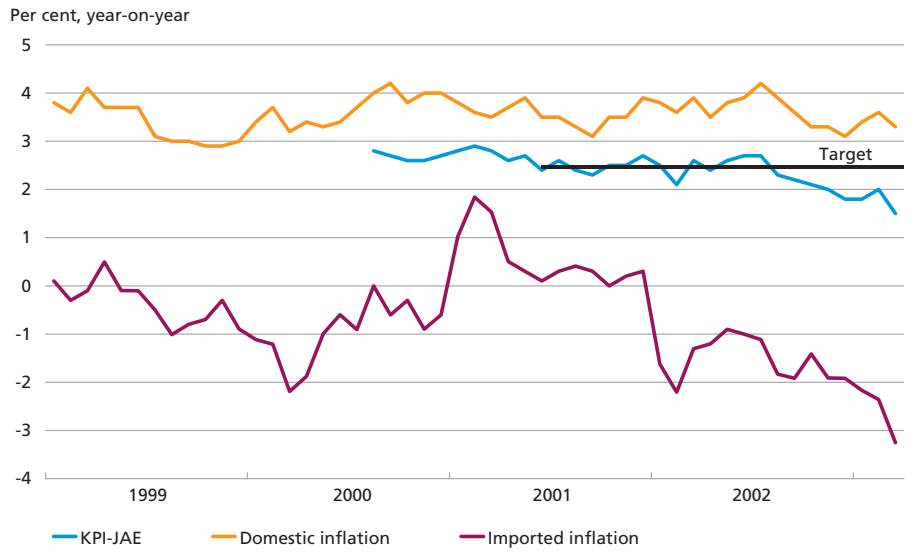
[1] According to calculations in Holden *et al.* (2003) the employment reduction in manufacturing since 2001 has been excessive, and will need to be redressed.

[2] This phenomenon is the so-called "Dutch disease".

INFLATION Chart 4



Note: KPI-JAE is the consumer price index, KPI, excluding indirect taxes and energy products, cf. footnote 2 on p. 79.
Source: Gjedrem (2003) and Norges Bank.

The overall conclusion is that, over a number of years, Norway's export-oriented sector must be expected to lose significance in relation to the sector that is not exposed to foreign competition.

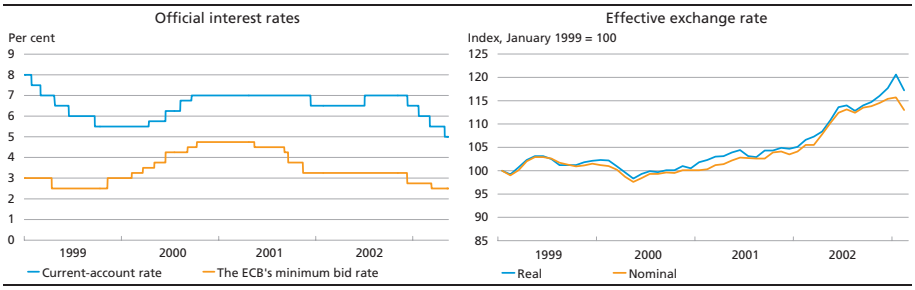
Experience with the new economic policy

Overall, inflation has developed in line with the target. However, Norway has been subject to high domestic inflationary pressure, cf. Chart 4, as a consequence of high wage increases. The development in prices for goods and services made in Norway to a high degree reflects the development in wages. For example, the prices for services requiring a significant work effort rose by 12 per cent from 2000 to 2002.[1]

As a result of the strong domestic inflationary pressure the interest rate was raised on several occasions throughout 2000 to 7 per cent, cf. Chart 5. During 2001 and 2002, the interest-rate differential to the rest of the world widened as a result of interest-rate reductions in most OECD countries. The Norwegian krone strengthened, cf. Chart 5, so that the domestic inflationary pressure was offset by low price increases for imported goods. Up to 2001, the erosion of competitiveness through higher wage increases in manufacturing industry was to a degree offset by a weak krone. When the krone began to appreciate, the full impact of the deterioration in competitiveness and continued high wage in-

[1] The website of Statistics Norway is www.ssb.no.

OFFICIAL INTEREST RATE AND EXCHANGE RATE Chart 5



Note: The current-account rate is the key official interest rate in Norway.
Source: Danmarks Nationalbank and EcoWin.

creases was felt. During 2003, however, this development has been partly reversed, but the effect on industrial production could already be observed, cf. Chart 2.

As a consequence of the high level of interest rates and the strong krone Norges Bank came under (also political) pressure to ease monetary policy. Since then, the monetary policy has been the subject of much debate.

The loss of competitiveness as a result of the strong krone has brought criticism of Norges Bank from several parties for insufficient focus on stabilisation of the krone's international value. However, with an inflation target the role of Norges Bank is clearly defined. In a situation like that faced by Norway, with a tight labour market and expansionary fiscal policy, monetary policy usually has to be contractive in order to avoid overheating of the economy. The inflation target automatically ensures that monetary policy is given this role. The expansionary fiscal policy will increase demand in society, and when the labour market is tight, domestic prices will be pushed up if wage increases become excessive. Under an inflation target monetary policy must react by raising interest rates to keep inflation within the target. Since prices for imported goods are also included in the price index on which the inflation target is based, the exchange rate plays an indirect role under an inflation target, but can never be a target in itself. It is not possible to use the interest-rate instrument to manage both inflation and the exchange rate at the same time.

This leads directly to another issue in the debate, i.e. the mandate of Norges Bank. Svensson *et al.* (2002) and the IMF (2003) among others have called for specification of the mandate in order to clarify that when the interest rate is the only instrument it is not possible to manage both inflation and the exchange rate. Section 1 in the *Regulation on Monetary Policy* distinguishes between the overall objective of the stability of the Nor-

wegian krone's national value and the intermediate target of ensuring the stability of the krone's international value, cf. Box 1. The strong debate and the dissatisfaction in connection with the Norwegian krone's nominal appreciation may be a result of this distinction. Although section 1 also specifies that inflation alone is the intermediate target, it has apparently not been clear whether Norges Bank must seek to stabilise the exchange rate in the short term. Svensson *et al.* (2002) together with the IMF (2003) recommend that references to the exchange rate be removed from the monetary-policy mandate. In accordance with the formal framework Svensson *et al.* (2002) have also pointed out that Norges Bank does not hold the operational independence to enable it to pursue the monetary-policy objective without political pressure. The issue here is especially that in principle the government may reject Norges Bank's interest-rate decision.[1] In an international comparison of central-bank legislation from 1992[2] Norges Bank was the least independent of the central banks of the developed countries (Svensson *et al.*, 2002).

Especially the prospect of continued high wage increases of around 5-6 per cent – which will tend to augment the domestic inflation rate – has caused interest rates to rise in recent years (see e.g. Gjedrem, 2002). In this connection, Norges Bank has stated on several occasions that wage increases of around 4.5 per cent are "... compatible with almost unchanged competitiveness in the business sector".[3] However, this statement has led to debate. Bjørnstad (2002) remarks that wage increases of 4.5 per cent do not take account of the fact that increased oil-revenue spending will reduce the export sector if the wage-increase rate is compatible with unchanged competitiveness. Bjørnstad on the other hand believes that wage increases of 5.5 per cent will for a period be compatible with the inflation target and *Handlings-reglen*, and would also force the necessary reduction of the export sector.

Another suggestion in the debate was to raise the inflation target in order to ease monetary policy and thereby weaken the krone and strengthen competitiveness.

Challenges for economic policy

Norway's natural resources are exhaustible, and the oil revenue will diminish over time. The Petroleum Fund and *Handlingsreglen* are to safeguard the accumulated oil revenue, for the benefit of present and fu-

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1 Svensson *et al.* (2002) also point out that the bank could be more open by e.g. publishing more background documents concerning the interest-rate decisions, and that the bank should to a higher degree be accountable for the policy pursued.

2 The Norges Bank Act has not been amended since, in contrast to central-bank legislation in several other countries. In general, central banks have achieved a higher degree of independence.

3 Gjedrem (2003).

ture generations. However, the decision to gradually phase the oil revenue into the economy will affect the sectoral composition of the economy. At the same time, Norway, like many other western countries, is facing demographical changes that will increase expenditure on public services. The economic-policy challenge from now on is to ensure the best possible balance in the economic development, with due consideration of these factors.

ICELAND

Iceland is a very small country in population terms with just under 290,000 inhabitants. Like other small countries, Iceland depends strongly on external trade. Thanks to Iceland's geographical location, the country has abundant resources such as fish, and hydroelectric and geothermal energy resources. Fishing is the largest primary sector, and has given rise to an extensive processing industry. In 2001, exports of fisheries-related products accounted for almost two thirds of goods exports.[1] Furthermore, the natural geothermal and hydroelectric resources have attracted power-intensive industries, particularly aluminium.

Fishing is a vital source of revenue, but also an important source of shocks to the economy, since from one year to the next the sector is affected by fluctuations in sales prices on the world market or in fish stocks, and thereby in fishing quotas.[2] Declining prices or fish volumes will affect the sector's earnings. In the short term, the decline in earnings can be offset by a weakening of the Icelandic krona[3] – via a devaluation determined by monetary policy, or via a weakening of a floating exchange rate determined by the market. This factor played a role under the fixed-exchange-rate policy and on the shift in 2001 to an inflation target with a floating exchange rate.

1974-2001: Varying degrees of fixed-exchange-rate policy

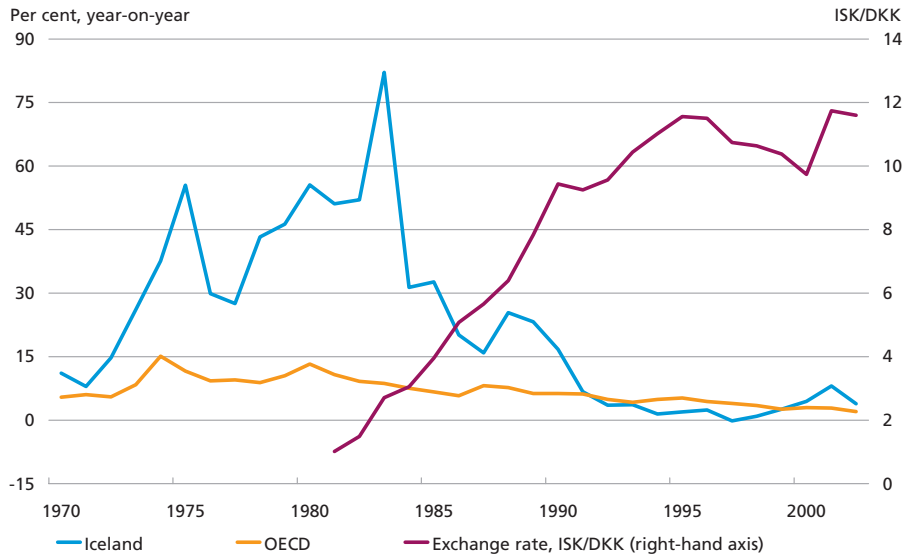
Iceland experienced very high inflation in the late 1970s and early 1980s, cf. Chart 6. In recognition of the negative effects of this development – despite extensive use of indexation – inflation was brought down in two stages. Inflation was first reduced to a moderate level during the second half of the 1980s, and then brought down further to the level of the rest

[1] Seðlabanki (2002). In the early 1960s the share exceeded 90 per cent. Fisheries-related products currently account for 40 per cent of *total* exports.

[2] Another example of a shock to the economy generated by the fisheries sector is the gradual extension of the nautical mile limit over the last 50 years. Viewed over a number of years, the shocks or fluctuations related to the fisheries sector have become relatively less significant to the Icelandic economy.

[3] The improvement in competitiveness will only be temporary. In the slightly longer term, a weakening of the currency will lead to higher domestic prices. Likewise, a weakening will not lead to more fish being landed.

INFLATION IN ICELAND AND THE OECD AREA, AND EXCHANGE RATE Chart 6



Note: Annual series. Inflation is measured as the annual rate of increase in the consumption deflator.
Source: OECD, *Economic Outlook 73*, April 2003 and Seðlabanki.

of the OECD countries in the 1990s.[1] A fixed-exchange-rate policy was pursued throughout the period.[2]

The period until 1990: frequent devaluation

Before 1990, monetary policy was characterised by a devaluation bias, as indicated in Chart 6 which shows the exchange rate between the Danish krone and the Icelandic krona. The Icelandic krona was devalued on 25 occasions in the period 1974-89. Moreover, in certain cases a more gradual weakening of the Icelandic krona was accepted.[3] According to Gylfason (2000) this devaluation bias can be attributed e.g. to the fact that to a high degree monetary policy accommodated the fishing industry. In years when prices or fish volumes decreased the Icelandic krona was devalued, but was not re-valued in the reverse situation. A more general motivation for the tendency to devalue was that economic policy was designed to ensure full employment.

The worldwide response to the high-inflation period in the 1970s was to delegate monetary policy to independent central banks with a mandate to pursue one objective, i.e. price stability. This strategy was only

1 See Andersen and Gudmundsson (1998) and Gudmundsson *et al.* (2000) for detailed descriptions of Iceland's transition from high-inflation to low-inflation country. The historical outline below is based on these two articles among other sources.

2 The fixed-exchange-rate policy was pursued primarily vis-à-vis baskets of currencies, but also vis-à-vis the dollar during certain periods in the 1970s. The baskets were often changed.

3 This is also reflected in the IMF's assessment of Iceland's monetary-policy regime as a *managed float regime*, see e.g. Gylfason (2000).

partly followed by Iceland. The focus was on reducing inflation, but Seðlabanki did not gain independence until 2001.

According to the central-bank act in force at that time Seðlabanki was to support the government's economic policy. This was interpreted to mean that interest rates could not be adjusted if the government objected (Seðlabanki, 2003a). Seðlabanki was also obliged to achieve several targets. First and foremost, the exchange rate was to be held firm, while also ensuring external balance (the balance of payments) and adequate competitiveness for the relevant export- and import-competing sectors. These objectives were not necessarily compatible.

The focus on reducing inflation meant that in practice the government intervened in wage formation and implemented other income-policy measures in 1983. As a result, inflation was lower, but the Icelandic krona continued to weaken despite a formal fixed-exchange-rate policy, cf. Chart 6.

The 1990s: the period up to inflation targeting

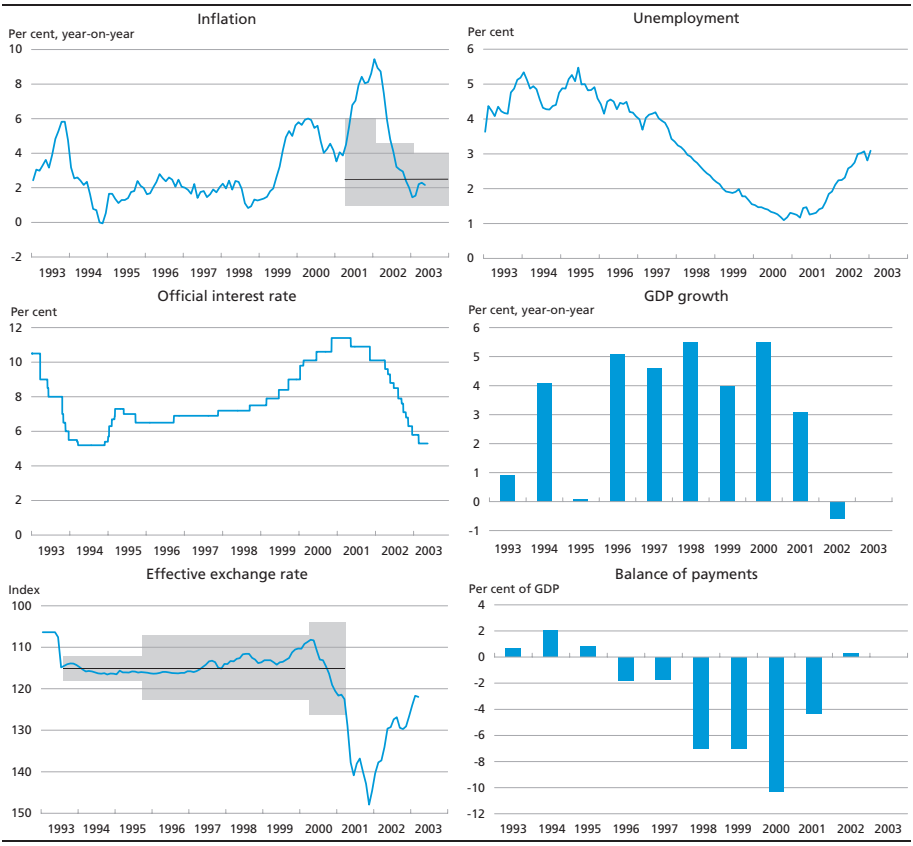
In the 1990s, inflation was reduced to the OECD average, and the exchange rate was used more and more as a fixed nominal anchor rather than an adjustment mechanism.

The period began with an agreement between the social partners that resulted in only minor wage increases, in the expectation of a credible transition to low inflation via a credible exchange-rate anchor. A fixed-exchange-rate regime was introduced vis-à-vis a basket of the most important trading-partner countries' currencies. A fluctuation band of $\pm$ 2.25 per cent around the central rate was defined.

However, the Icelandic krona was nonetheless devalued on two occasions shortly thereafter, in response to unrest in the European Monetary System in 1992, and reduced fishing quotas in 1993. From 1993, the exchange rate was relatively stable for a number of years, cf. Chart 7. In 1995, the fluctuation band was widened to $\pm$ 6 per cent in response to the liberalisation of capital flows, and in 2000 it was widened further to $\pm$ 9 per cent when the Icelandic krona strengthened considerably.

The situation up to 2000 illustrates the monetary-policy conflict when it is sought to achieve two goals using only one instrument. The conflict between maintaining a fixed exchange rate on the one hand and ensuring balance-of-payments equilibrium on the other escalated gradually throughout the 1990s. High growth rates over a period of time caused the economy to overheat, since fiscal policy was not tightened sufficiently, and the liberalisation of capital flows, among other factors, led to strong credit expansion. The overheating resulted in rising inflation and a large deficit on the balance of payments, which were countered

KEY ECONOMIC VARIABLES IN ICELAND, 1993-2003 Chart 7



Note: The shaded areas indicate the fluctuation margins for the exchange rate (up to March 2001) and inflation (from March 2001). The horizontal black lines indicate the central rate for the effective exchange rate (1993-2001) and the inflation target.

Source: EcoWin, OECD, *Economic Outlook 73*, April 2003, Seðlabanki and Statistics Iceland.

by tightening monetary policy, although the interest-rate increases tended to strengthen the exchange rate.

The monetary-policy conflict led to growing dissatisfaction with the fixed-exchange-rate policy (e.g. Seðlabanki, 1999; Petursson, 2000a) and deliberations concerning the right monetary policy (Buiter, 2000; Gudmundsson *et al.*, 2000; Gylfason, 2000; OECD, 1999; Petursson, 2000a; Stiglitz, 2001). In the short term, it was necessary, as described, to widen the fluctuation band around the central rate, but in 2000 the Icelandic krona weakened considerably due to such factors as declining fishing quotas.[1] In 2001, the fixed-exchange-rate regime was abandoned in favour of an inflation target.

[1] When the Icelandic krona began to weaken, Seðlabanki's tightenings tended to strengthen the exchange rate, all other things being equal, while also countering the overheating and thereby the inflationary pressure.

2001-03: Inflation targeting

Why choose an inflation target?

Abandoning the fixed-exchange-rate regime can be regarded as inevitable in view of the macroeconomic development and the conflict between the monetary-policy objectives. At the same time, Gudmundsson *et al.* (2000) and the OECD (1999, 2001) among others argued in their analyses that inflation targeting was the right monetary-policy regime for Iceland at that time. In the analyses it is emphasised that frequent impacts on the economy via fishing require a flexible exchange rate in order to cushion the shocks.[1,2] The analyses also show that the shocks affecting Iceland have a minor impact on other currency areas (e.g. the euro area), and that Iceland's cyclical pattern is virtually independent of those elsewhere. Finally, it is stated that a realistic alternative to a fixed-exchange-rate regime was previously non-existent since it was not until the 1990s that Iceland's financial markets became sufficiently advanced for monetary policy to be pursued e.g. according to an inflation target.[3]

The new monetary-policy framework

On 28 March 2001, the monetary-policy regime was changed and an inflation target introduced. This was announced the day before in a joint declaration from the government and the central bank (Seðlabanki, 2001) and became statutory in a new central-bank act in May 2001.[4] Together with the regime change Seðlabanki was made independent, i.e. free to adjust interest rates in order to achieve the inflation target.[5]

The overall objective is price stability. However, monetary policy may support the government's policy, for as long as this is not in conflict with the primary objective. The objective of price stability is brought into operation as an inflation target, i.e. a 12-month increase in the consumer price index of 2.5 per cent. Should inflation deviate by more than 1.5 per cent from the target, the central bank must submit a report to the government explaining the deviation. The report is published. On the introduction of the inflation target inflation was rising, so that the upper threshold was raised temporarily to 6 per cent in 2001 and 4.5 per cent in 2002, cf. Chart 7.

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1 Adjustment of the real exchange rate.

2 Besides a weakening of the exchange rate a drop in earnings in an export sector can also be restored if real wages in that sector adapt. Among the OECD countries Iceland has seen a historically high degree of flexibility in real wages, but in a period of high inflation. Nominal wages are often assumed to be downwardly rigid. This is can make it difficult to achieve declining real wages when inflation is low.

3 E.g. the absence of interbank money and foreign-exchange markets.

4 *Act on the Central Bank of Iceland*, to be found on Seðlabanki's website: www.sedlabanki.is.

5 Instrument independence (see Petursson, 2000b).

Experience so far

In the course of the first two years with an inflation target growth has declined, unemployment has increased and monetary policy has been relaxed considerably, cf. Chart 7. At the same time, the balance of payments was at equilibrium in 2002, after a deficit of 10 per cent of GDP in 2000.

The Icelandic krona weakened strongly immediately after the fixed-exchange-rate regime was abandoned. This had an impact on inflation which by June 2001 had already exceeded the upper limit of 6 per cent. Inflation peaked at more than 9 per cent at the beginning of 2002. By mid-2002, inflation had fallen to below 4.5 per cent. In November 2002, the rate of price increase for the first time fell below the target, and has since remained at that level. The strong drop in inflation took place simultaneously with the krona's appreciation. Nevertheless, the krona is still weak compared to its previous central rate, cf. Chart 7. During 2002-03 the interest rate was reduced on several occasions from just over 10 per cent to just above 5 per cent at the beginning of May 2003.

The strong fluctuations in the exchange rate and inflation reflect such factors as adjustment of the imbalances accumulated throughout the 1990s. The interaction also illustrates that inflation forecasting is a challenge to Seðlabanki due to the strong influence of exchange-rate fluctuations on price developments. Exchange rates may fluctuate strongly in both the short and medium term. Variations may be driven by underlying economic trends – e.g. in response to shocks to the economy. This was one of the arguments in favour of introducing a floating-exchange-rate regime in Iceland. However, exchange-rate variations may also be driven by factors not related to the economic fundamentals, such as sudden mood changes in the foreign-exchange markets.

In its pursuit of an inflation target the central bank must in principle respond only indirectly to exchange-rate fluctuations in so far as they affect inflation. With only one available instrument no other objectives can be achieved, so that in the current monetary-policy regime stronger short-term fluctuations in the exchange rate must be expected. The course of the exchange rate in recent years seems to have generated debate on the opportunities of influencing the exchange rate via monetary policy under the current regime (Gunnarsson, 2003).

The tendency to devalue in the 1970s and the 1980s affected the credibility of monetary policy. Maintaining a credible inflation target will therefore be a significant task for the newly-independent Seðlabanki.[1]

[1] IMF (2002) emphasises the importance of allowing the central bank to pursue monetary policy free of pressure from stakeholder groups. This means both formal and actual independence. It is also pointed out that Seðlabanki's monetary-policy meetings should follow a published calendar rather than the existing model of holding meetings at the bank's discretion. According to the OECD (2003) this will increase the transparency of the monetary-policy regime.

Economic-policy challenges in the future

The overall economic policy still faces a number of challenges due to Iceland's size and specialised exports. Shocks to individual sectors may have a key impact on the entire economy, and variations in earnings in a few sectors may significantly affect overall external trade.

The plans for the coming years include major investments in a new aluminium plant and in hydropower stations in eastern Iceland. In its latest *Monetary Bulletin* (Seðlabanki, 2003b) Seðlabanki states that the investments in the two plants alone amount to almost 187 billion Icelandic kronur in the period 2003-08, or more than 20 per cent of one year's GDP.[1] For comparison, the construction of the fixed link across the Great Belt in Denmark accounted for approximately 2.5 per cent of one year's GDP. The impact on activity will peak in 2005-06 when most of the construction work is scheduled.[2] This significant impact on economic activity from two projects makes great demands of the overall stabilisation policy, i.e. both monetary and fiscal policy. Seðlabanki assesses that inflation will reach 6-7 per cent by 2006, unless economic policy is tightened.

In view of the large sectors that are dependent on natural resources Iceland's business structure continues to face challenges. At a given capacity, increased economic activity in the primary sector will – *ceteris paribus* – diminish the economic activity in other sectors. This may affect the long-term economic growth rate (e.g. Gylfason, 2000; Herbertsson *et al.*, 2000).

CONCLUSION

Mounting problems associated with the fixed-exchange-rate policy pursued were the background to the regime changes to inflation targeting in Norway and Iceland. A significant factor was that the fiscal policy did not support the fixed-exchange-rate policy.

Since the introduction of the inflation target both countries have managed to bring or maintain inflation close to the target of 2.5 per cent. However, understanding the division of work within economic policy still poses a number of problems. When the economy is close to its capacity limit, expansionary fiscal policy will contribute to inflationary pressure. In this situation inflation targeting demands contractive monetary policy. This will tend to strengthen the exchange rate, to the detri-

[1] Constant 2002 prices.

[2] Once the project is completed, fisheries and fisheries-related products as a ratio of goods exports are expected to have fallen to less than 50 per cent, while the share of aluminium-related exports is expected to rise from 20 per cent in 2002 to 30 per cent in 2008.

ment of competitiveness and thereby the export sectors. This has led to criticism of the central banks of both Norway and Iceland. However, a central prerequisite to understanding the division of work within economic policy is to accept that the central bank can achieve only one objective using one instrument. That objective is price stability. The remainder of economic policy must therefore also be targeted at ensuring stable economic development.

LITERATURE

Andersen, P.S., Gudmundsson, M., 1998. Inflation and disinflation in Iceland. Bank of International Settlements, *Working Paper*, No. 52.

BIS, 1997. Monetary Policy in the Nordic Countries: Experiences since 1992. Bank of International Settlements, *Policy Papers*, No. 2.

Bjørnstad, R., 2002. Increased use of oil funds requires wage increases close to this year's level. (In Norwegian). Økonomisk Forum, December.

Buiter, W.H., 2000. Is Iceland an optimal currency area? Central Bank of Iceland, *Working Papers*, No. 10.

Christiansen, A.B., Qvigstad, J.F., 1997. *Choosing a Monetary Policy Target*. Scandinavian University Press.

Danmarks Nationalbank, 2003. *Monetary Policy in Denmark, 2nd Edition*. (To be published.)

Gjedrem, S., 1999. *Economic Perspectives.* Annual Address, 1999.

Gjedrem, S., 2002. *Monetary Policy in an Oil Economy*. Address, Oslo, 21 August.

Gjedrem, S., 2003. *Economic Perspectives.* Annual Address, 2003.

Gudmundsson, M., Petursson, T.G., Sighvatsson, A., 2000. Optimal exchange rate policy: the case of Iceland. Central Bank of Iceland, *Working Papers*, No. 8.

Gunnarsson, B.I., 2003. Address, Central Bank of Iceland, *Annual Meeting*, March 21, 2003.

Gylfason, T., 2000. Fix or flex? Alternative exchange rate regimes in an era of global capital mobility. University of Iceland, Institute of Economic Studies, *Working Paper Series*, 00:09.

Herbertsson, T.T., Skuladottir, M., Zoega, G., 2000. Three symptoms and a cure: a contribution to the economics of the Dutch disease. Centre for Economic Policy Research, *Discussion Paper*, No. 2364.

Holden, S., Reegård, S., Stølen, B.T., Steig, T., Haartveit, L.E., Torp, H., Skjæveland, Y., Søvik, Y., 2003. Competitiveness, Wage Formation and the Krone Rate. (In Norwegian). Ministry of Finance.

IMF, 2001. *IMF country report No. 01/82. Iceland: selected issues and statistical appendix*.

IMF, 2002. *IMF country report No. 02/130: Iceland*.

IMF, 2003. *Norway – staff report for the 2002 Article IV consultation*.

Norges Bank, 2002. *Inflation Report 3/2002.*

Norges Bank, 2003. *Inflation Report 1/2003.*

OECD, 1999. *OECD Economic Surveys: Iceland*.

OECD, 2001. *OECD Economic Surveys: Iceland*.

OECD, 2002. *OECD Economic Surveys: Norway*.

OECD, 2003. *OECD Economic Surveys: Iceland*.

Off-shore Norway, 2001. *Annual report*. The Norwegian Petroleum Directorate.

Petursson, T.G., 2000a. Exchange rate or inflation targeting in monetary policy. Central Bank of Iceland, *Monetary Bulletin* 2000/1, pp. 36-45.

Petursson, T.G., 2000b. New focuses in central banking: increased independence, transparency and accountability. Central Bank of Iceland, *Monetary Bulletin* 2000/4, pp. 49-62.

Seðlabanki Íslands, 1999. Introduction. *Monetary Bulletin* 1999/1, pp. 1-3.

Seðlabanki Íslands, 2001. Declaration on inflation target and a change in the exchange rate policy. *Monetary Bulletin* 2001/2, pp. 46-47.

Seðlabanki Íslands, 2002. *The Economy of Iceland*.

Seðlabanki Íslands, 2003a. *Central Bank of Iceland: History*.

Seðlabanki Íslands, 2003b. Appendix: Evaluation of the macroeconomic impact of the planned aluminium and power plant investments and possible economic policy responses to them. Central Bank of Iceland, *Monetary Bulletin* 2003/1, pp. 30-43.

Soikkeli, J., 2002. The Inflation Targeting Framework in Norway. IMF *Working Paper*, 02/184.

Stiglitz, J.E., 2001. Monetary and exchange rate policy in small open economies: the case of Iceland. Central Bank of Iceland, *Working Papers*, No. 15.

Storgaard, P.E., 2002. Exchange-Rate Regimes and Transparency. Danmarks Nationalbank, *Monetary Review*, 3rd Quarter, pp. 59-69.

Svensson, L.E.O., Houg, K., Solheim, H.O.Aa., Steigum, E., 2002. An Independent Review of Monetary Policy in Norway. Centre for Monetary Economics, *Norges Bank Watch*.

Åkerholm, J., Giovannini, A., 1994. *Exchange Rate Policies in the Nordic Countries*. Centre for Economic Policy Research.