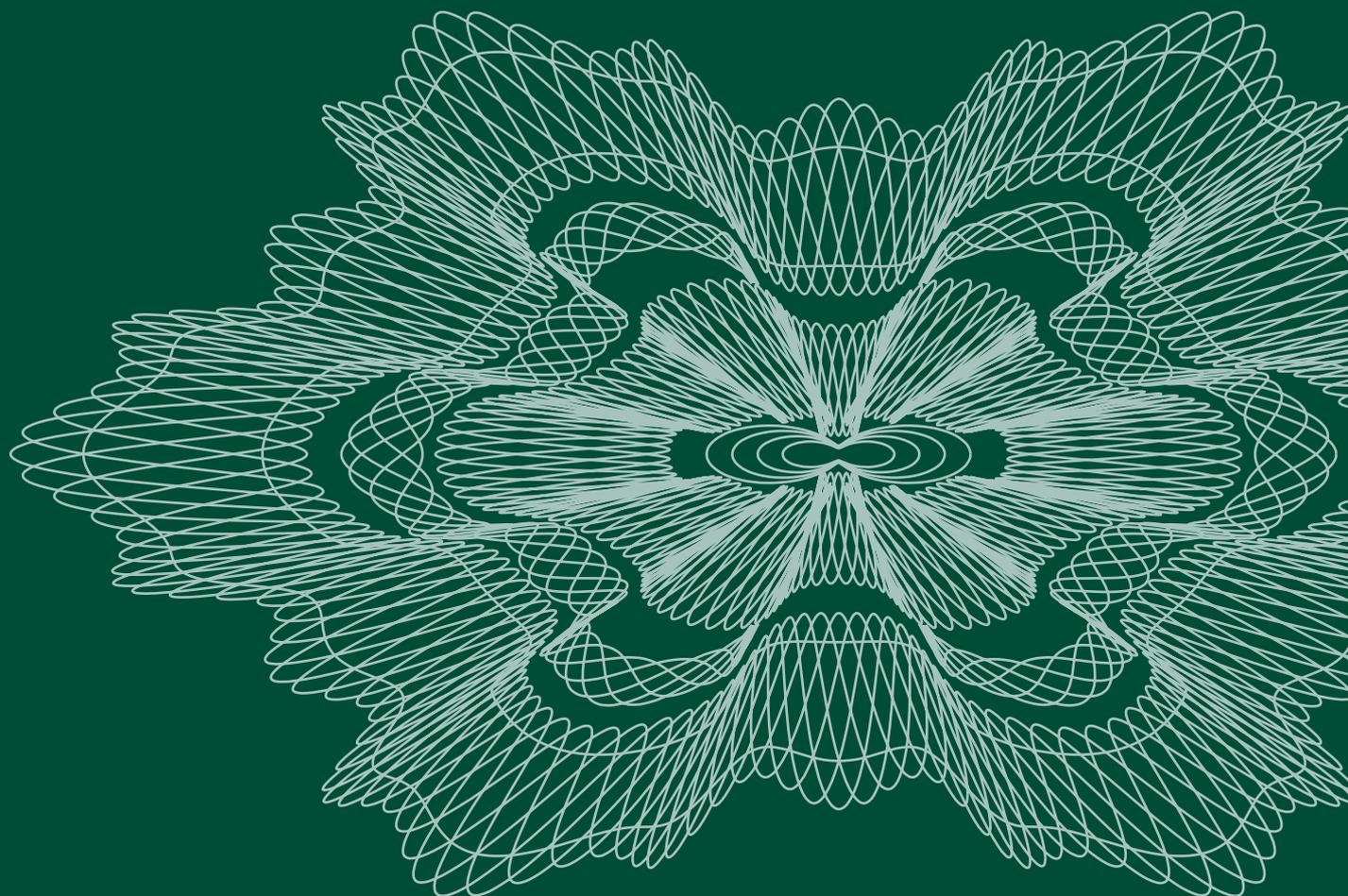




Economic Bulletin

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The central bank's liquidity policy in an oil economy

Asbjørn Fidjestøl, director in Norges Bank Monetary Policy¹

Norges Bank's instrument for achieving the objective of low and stable inflation is the key policy rate – the rate of interest on banks' deposits in Norges Bank. But how do Norges Bank's interest rate decisions affect market interest rates? They work through liquidity policy. The aim of liquidity policy is to ensure that banks always have sufficient deposits in Norges Bank so that short-term money market rates remain just above the interest rate on banks' deposits in Norges Bank. Norges Bank uses auctions of F-loans – fixed-rate loans with varying maturities issued against collateral – as its liquidity policy instrument. The system for channelling government petroleum revenues into the Government Pension Fund – Global plays a major role in the implementation of liquidity policy. Liquidity policy also has a part to play in the event of turbulence in financial markets.

Introduction

The Norwegian public's interest in monetary policy centres largely on Norges Bank's interest rate decisions and the effect of these decisions on banks' lending and deposit rates. Norges Bank sets the key policy rate, which is the rate of interest on banks' deposits in Norges Bank.

The theme of this article is how Norges Bank uses liquidity policy to ensure that the banking system as a whole has net deposits in Norges Bank so that short-term money market rates, including rates of interest on interbank loans, remain just above the key rate. In this way, Norges Bank ensures that changes in the key rate actually have an impact on banks' funding costs. In response to such changes in banks' funding costs, banks usually adjust their lending and deposit rates.

Norges Bank is both the government's bank and the banks' bank. Government revenues and expenditures result in daily transfers of deposits between banks' accounts and the government's account. This leads to major fluctuations in banks' deposits in Norges Bank during the year. The systems for the payment of petroleum tax and for channelling the government's petroleum revenues are particularly important for the implementation of liquidity policy and are therefore dealt with separately in the last part of this article. Liquidity policy helps to neutralise the effect of fluctuations in banks' deposits in Norges Bank. In this way, liquidity policy also helps to neutralise the effect of these fluctuations on short-term money market rates.²

Monetary policy objectives and instruments

The operational target of monetary policy in Norway is low and stable inflation, defined as annual consumer price inflation of approximately 2.5 per cent over time. Norges Bank operates a flexible inflation targeting regime so that both variations in inflation and varia-

tions in output and employment are taken into account. Interest rates should be set with a view to stabilising inflation close to the target in the medium term. The exact horizon will depend on the disturbances to which the economy is exposed, and on how they affect the path for inflation and the real economy going forward.

Norges Bank publishes a monetary policy report (previously known as the inflation report) three times a year. Since *Inflation Report 3/05*, the analyses have been based on the Bank's own forecast for the key policy rate. The interest rate forecast strikes a balance between the different considerations that should be taken into account. Every four months, the Executive Board adopts a monetary policy strategy for the coming four months based on the analysis in the *Monetary Policy Report*. This strategy is published at the beginning of the period to which it applies, and is conditional on economic developments being broadly in line with projections. The individual interest rate decisions are anchored in this rate-setting strategy. Norges Bank's Executive Board discusses and reaches decisions on the key rate at monetary policy meetings, which are normally held every six weeks.

The objectives of monetary policy and the process leading to Norges Bank's interest rate decisions are outlined above.³ Besides publishing interest rate decisions and assessments of future developments, Norges Bank must ensure that changes in the key rate actually influence short-term money market rates. This is achieved through liquidity policy.

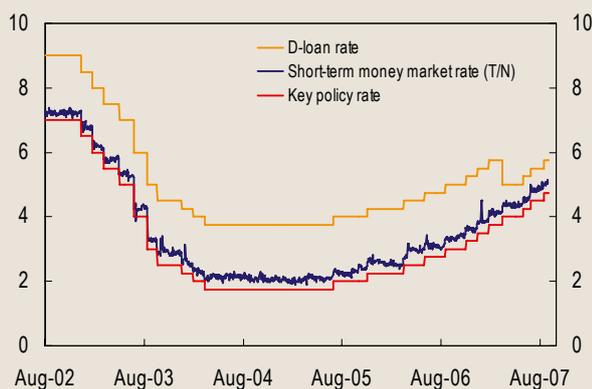
All banks established in Norway can have a sight deposit account with Norges Bank. It is the rate of interest on overnight deposits in such accounts which is Norges Bank's key rate, and that Norges Bank uses to achieve a broad impact on short-term money market rates. The key rate forms a *floor* for short-term money market rates, including the interest rate on short-term interbank loans. The reason for this is that if banks with

¹ I would like to thank Jan F. Qvigstad, Bent Vale, Ole-Cristian Hillestad, Arild Lund, Jannecke Ebbesen, Erna Hoff, Steinar Hem and Robert Hansen for useful comments and contributions.

² Kran and Øvre (2001) also look at Norges Bank's liquidity policy, as well as liquidity policy in the euro area, the US, Denmark, Sweden and Switzerland. The liquidity policy management system has changed little since 2001. However, fluctuations due to government payments and receipts, in particular those relating to government petroleum revenues, are now considerably greater.

³ For a more detailed discussion of the objectives of monetary policy and the transmission mechanism, see Norges Bank (2004 b), chapter 7.

Chart 1 Key policy rate and short-term money market rate 2002–2007



Sources: Reuters and Norges Bank

surplus liquidity are able to deposit money with Norges Bank at this rate of interest, there is little incentive to invest this money in the market at a lower interest rate. The sum of banks' overnight deposits in accounts with Norges Bank is known as the banking system's liquidity. The role of liquidity policy is to ensure that there is sufficient liquidity, with the result that the banking system as a whole has a net deposit position with Norges Bank overnight, and short-term money market rates remain just above the sight deposit rate (see Chart 1).

Market interest rates for longer maturities are affected by the current level of the key rate and by market key rate expectations. Market key rate expectations depend both on participants' understanding of the central bank's response pattern and on their view of the economic outlook. Norges Bank can influence these views through its communication. This includes press releases and press conferences in connection with interest rate decisions, monetary policy reports, and speeches by the Bank's management.

Norges Bank also has an automatic lending facility for banks: overnight loans (D-loans). The overnight lending rate serves as a ceiling for short-term money market rates. Overnight D-loans are used to only a very limited extent as liquidity policy brings banks into a net deposit position at the end of the day. The overnight lending rate therefore has no monetary policy significance under the current monetary policy regime.⁴ Intraday D-loans are used by the banks to obtain liquidity when settling payment transactions (see Box 1).

The implementation of liquidity policy⁵

In order to ensure that banks have sufficient deposits in Norges Bank, estimates must be made of banks' net deposits in Norges Bank through the year in the absence of liquidity provision through monetary policy operations. This is known as structural liquidity. Norges Bank prepares forecasts of banks' structural liquidity in two

BOX 1: Intraday and overnight D-loans and F-loans¹

Norges Bank's lending facilities have two purposes. First, they are to ensure that the Bank's interest rate decisions actually influence short-term money market rates. Second, they are to ensure that Norges Bank can fulfil its role as a settlement bank for banks established in Norway. Both D-loans and F-loans require the provision of approved collateral in the form of securities. While F-loans and overnight D-loans attract interest, intraday D-loans do not.

The collateral provided determines the limit for a bank's overall access to borrowing from Norges Bank. The Bank uses loans with a fixed maturity and fixed interest rate – F-loans – to provide liquidity, in other words to ensure that the banking system as a whole has sufficient sight deposits at the end of the day. The interest rate on F-loans and the size of F-loans allotted are determined by auction (see Box 2). Normally, the interest rate on F-loans will be just above the key policy rate. A bank can use part of its overall borrowing access for F-loans and the remainder for D-loans. D-loans function as an overdraft facility, and banks can vary the size of their drawings on D-loans through the day. Since the interest rate on overnight D-loans is higher than short-term money market rates, a bank will not normally draw on overnight D-loans.

Through the day, D-loans are used to settle payments. A bank's disposable funds in Norges Bank comprise the sum of a bank's sight deposits and unused D-loan access. Banks use these funds to settle interbank payments and make payments to the government's accounts with Norges Bank. There may be major variations in a bank's sight deposits and D-loan drawings through the day. Before the end of the day, banks normally ensure that their D-loans are repaid. To avoid being in a D-loan position overnight, a bank can, where necessary, borrow from other banks in the interbank market. Since Norges Bank ensures that the banking system as a whole is in a deposit position, some banks will normally have deposits in Norges Bank which can be lent to other banks at a certain margin.

¹ More detailed rules on D-loans and F-loans are issued in circulars published on Norges Bank's website: www.norges-bank.no. See also Box 2 later in this article.

⁴ Since 16 March 2007, the overnight lending rate has been 1 percentage point higher than the sight deposit rate. Between 3 August 1993 and 15 March 2007, the overnight lending rate was 2 percentage points higher than the sight deposit rate. Until the summer of 1993, the overnight lending rate was Norges Bank's key policy rate.

⁵ A more detailed presentation can be found in Flatner and Tornes (2002).

stages. In the first, the total net supply of liquidity to banks during the year is calculated. In the second, the total is distributed between the year's working days. The first forecast for a particular year is prepared at the end of the previous year on the basis of the government budget. This forecast is then revised regularly on the basis of actual developments and new information.

Let us look first at the forecast of the total supply of liquidity during the year. The following factors contribute to an increase (+) or decrease (–) in the banking system's liquidity:

- Surplus on the government budget⁶ –
- Net growth in lending by state banks etc. +
- Increase in government debt –
- Norges Bank's foreign exchange purchases +
- Banks' purchases of notes and coins from Norges Bank –

In recent years, high revenues from petroleum activities have led to government budget surpluses that have resulted in major withdrawals of liquidity from banks during the year. As discussed later in this article, the surplus is transferred to the Government Pension Fund – Global (previously the Government Petroleum Fund), which invests the capital in foreign currency. Norges Bank's foreign currency purchases provide some of this foreign currency.

The government budget is the principal source when preparing the liquidity forecast. The government holds virtually all of its liquid funds in an interest-bearing account with Norges Bank. The government has accounts with private banks for ingoing and outgoing payments, and payments of taxes and duties are made to the government's accounts with private banks. However, these funds are transferred to the government's account with Norges Bank the same day so that they are not left in these accounts overnight. Payments of benefits and other public expenditures are made from accounts with private banks, but these funds are not transferred to these banks until the day payment is to be made.

When government benefits, wages for government employees, transfers to municipalities etc. and other government expenditures are paid, funds are transferred from the government's account with Norges Bank to banks' accounts with Norges Bank, so that banks' deposits with Norges Bank increase. When taxes and duties, dividends, etc., are paid to the government, funds are transferred from banks' accounts with Norges Bank to the government's account with Norges Bank so that banks' deposits in Norges Bank decrease. These government payments and receipts lead to wide variations in banks' deposits with Norges Bank and equivalent variations in the government's deposits with Norges Bank.

As mentioned, government budget surpluses normally lead to a decrease in banks' deposits in Norges Bank. However, some government revenue items which are included in the surplus do not actually affect banks' deposits with Norges Bank. The largest item is the transfer from the State's Direct Financial Interest (SDFI) in petroleum activities, which is a transfer of *foreign exchange* from the banking system to Norges Bank, and does not therefore affect the banking system's NOK *deposits* in Norges Bank. Nor does the government's interest income from Norges Bank or the transfer of profit from Norges Bank to the government affect banks' deposits in Norges Bank. These items must therefore be deducted when calculating the change in banks' deposits in Norges Bank as a result of the government budget surplus.

When Norges Bank purchases foreign exchange from banks, they receive settlement in the form of increased deposits with Norges Bank. In this way, Norges Bank's foreign exchange purchases increase liquidity in the banking system. When calculating Norges Bank's foreign exchange purchases in a particular year, the starting point is the transfer to the Pension Fund, which is the same as the surplus on the government budget. Norges Bank's foreign exchange purchases are equivalent, in principle, to the difference between the transfer to the Pension Fund and the transfer of foreign currency from the SDFI. The impact on liquidity from the government budget and Norges Bank's foreign currency purchases will be largely offsetting, with the result that the overall net supply from these items will be the same as the sum of interest and transfers of profit from Norges Bank.⁷

Growth in lending by state banks and government net equity purchases will increase banks' liquidity in the same way as government expenditures, while an increase in government debt will decrease banks' liquidity in the same way as tax revenues. The liquidity effect of government debt policy is estimated on the basis of the maturity of government debt during the year and the auction calendar for the year. The auction calendar is a schedule showing on which dates existing government loans are to be extended or new government loans raised.

When banks purchase notes and coins from Norges Bank, they draw on their deposits in Norges Bank, entailing a reduction in their liquidity.

The various components included in the calculation of liquidity supply are not mutually independent. For example, an increase in the government budget surplus as a result of higher tax revenues will result in an equivalent increase in the transfer to the Pension Fund and, thereby, an increase in Norges Bank's foreign exchange purchases. This applies whether the increase in tax revenues is due to higher petroleum tax or increases in other taxes. Over the year as a whole, therefore, the increase

⁶ For the purposes of this article, "surplus on the government budget" denotes the difference between total government revenues and expenditures before loan transactions. This differs from the concept of "fiscal budget surplus before loan transactions" used in the budget documents.

⁷ When calculating the liquidity effect of fiscal policy, both the transfer of foreign exchange from the SDFI and interest and profit from Norges Bank are deducted from the government budget surplus. When calculating Norges Bank's foreign currency purchases, only the transfer of currency from the SDFI is deducted from the government budget surplus.

in the surplus will, in principle, have no impact on the supply of liquidity to the banking system.

Projected and actual developments in the banking system's structural liquidity in 2006 and 2007 are illustrated in Chart 2. From the beginning to the end of 2006, there was a decrease in the banking system's structural liquidity both according to projected and actual developments. In 2007, however, a slight increase in the banking system's structural liquidity seems likely. In both years, interest income from Norges Bank led to a small increase in banks' liquidity. Government debt policy, on the other hand, decreased the banking system's liquidity in 2006, but is expected to contribute to an increase in 2007. This is related to an increase in government bond debt in 2006 as a result of new issues, as no government bonds matured. In 2007, however, a government bond matured in January, and this was larger than expected new issues. Normally, a government bond matures every other year so that government debt policy alternates between supplying liquidity one year and withdrawing liquidity the next.

In the forecast, the total net supply of liquidity during the year is distributed between the year's working days. The greatest challenge when preparing the forecast is the allocation of government payments and receipts to working days during the year. There are no forecasts from the Ministry of Finance which break down payments and receipts between days, months or quarters during the year. The distribution of payments and receipts between working days is therefore based on the previous year's pattern. This is supplemented with more detailed information on some of the larger items.

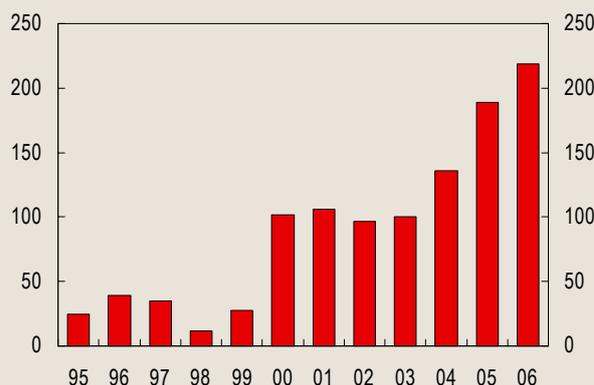
There are major variations in structural liquidity during the year. This is due primarily to government ingoing and outgoing payments. The general pattern is that liquidity falls markedly on days when taxes and duties fall due, and then builds up again as a result of government expenditures and Norges Bank's foreign exchange purchases. Liquidity shows a particularly pronounced decline when petroleum tax falls due on 1 April and 1

October. In recent years, there has been a substantial increase in petroleum tax as a result of higher oil prices (see Chart 3). This increase has led to considerably wider variations in structural liquidity during the year than before (see Chart 4).

As shown in Chart 2, there can be substantial discrepancies between projected movements in the banking system's structural liquidity during the year based on the national budget, and actual developments. This reflects the fact that there is uncertainty associated with the estimates underlying the forecast, not least the projections of revenues from the petroleum sector, due to uncertainty about oil prices and oil production, and the projections of tax revenues, due in part to uncertainty about economic developments. The discrepancies may also reflect transactions that were not known when the government budget was presented, such as government equity transactions.

There is therefore a need for frequent revisions of the forecast. In some cases, movements in oil prices and the outlook for oil prices have deviated so far from the assumptions in the government budget that the transfer to the Pension Fund and, thereby, foreign currency pur-

Chart 3 Petroleum tax 1995–2006. Billions of 2006-NOK



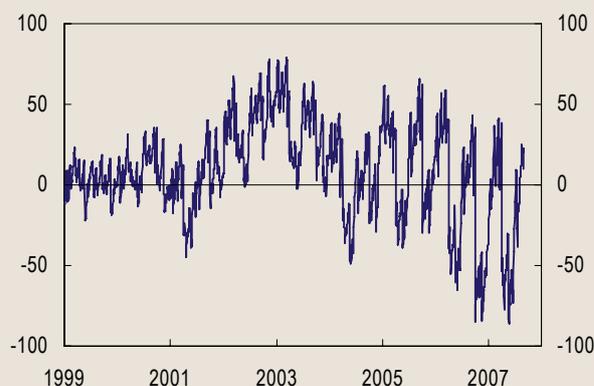
Sources: Statistics Norway and Norges Bank

Chart 2 The banks' structural liquidity 2006–2007. Billions of NOK



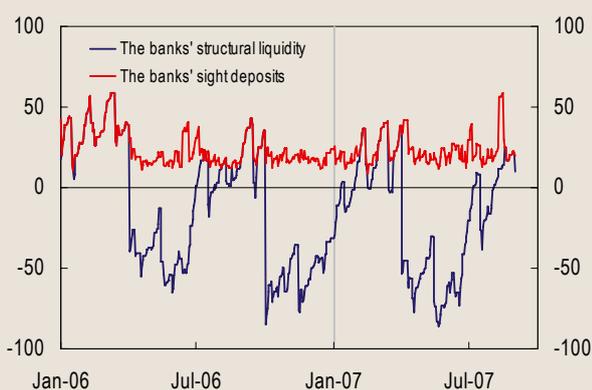
Sources: Ministry of Finance and Norges Bank

Chart 4 The banks' structural liquidity 1999–2007. Billions of NOK



Source: Norges Bank

Chart 5 The banks' sight deposits after Norges Bank's liquidity provision operations 2006–2007. Billions of NOK



Source: Norges Bank

chases have had to be adjusted. Furthermore, the forecast must always take account of actual developments during the year. An updated forecast of the banking system's liquidity is published on Norges Bank's website.

To ensure that interest rate decisions actually have an impact on short-term money market rates, Norges Bank must supply liquidity in periods when structural liquidity is not sufficient. As mentioned earlier, the banking system as a whole must be in a net deposit position with Norges Bank. It has also proved necessary for banks to have a certain buffer – in other words, banks' aggregate sight deposits must be of a certain size after Norges Bank has supplied liquidity through monetary policy operations. Chart 5 shows banks' sight deposits after Norges Bank has performed its liquidity provision operations. The chart shows that the supply of liquidity through monetary policy operations is particularly pronounced in the wake of incoming payments of petroleum tax.

Liquidity is supplied with the help of F-loan auctions. The rate of interest on F-loans is fixed for the life of the loans, and the loans allotted are credited to the relevant banks' sight deposit accounts with Norges Bank. The maturity of an F-loan and the total amount awarded are normally set so that the banking system's surplus liquidity during the term of the loan will be at least NOK 15 billion.⁸

Norges Bank can also provide liquidity through currency swap agreements. When the aim of such an agreement is to add liquidity, Norges Bank sells NOK to banks for a period, such as a week, with settlement in foreign currency. At the same time, it is agreed that the transaction will be reversed at the end of the period at a given exchange rate. Currency swaps have not been used since 2001.

In addition, Norges Bank can withdraw liquidity using F-deposits. These are awarded by auction in the same way as F-loans. In this case, a bank makes a deposit at a fixed rate for a given period, and the balance on its sight deposit account is reduced by a corresponding amount

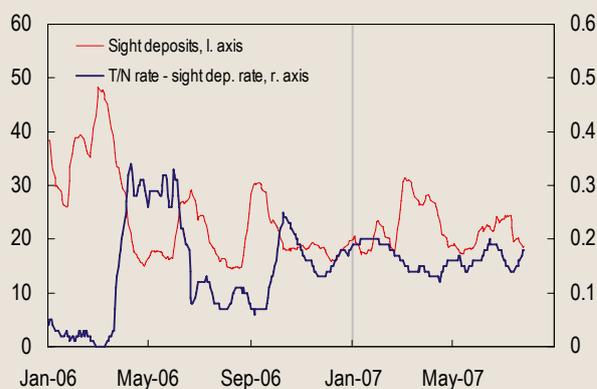
BOX 2: F-loans

- Attract a fixed rate of interest for the life of the loan
- Require collateral in the form of securities
- Maturity varies in line with variations in the need for liquidity but will not pass the date of a monetary policy meeting
- Awarded through multi-price auctions:
 - Successful bidders must pay the interest they bid
 - Each bank may make multiple bids
 - Amounts awarded are determined by Norges Bank
- Auctions are normally announced at 9 a.m. with a 4 p.m. bidding deadline
- Allotted from the following morning, but there may also be auctions where liquidity is allotted the same day
- Up to 15 banks normally take part in auctions, sometimes making multiple bids

during that period. F-deposits have not been used since April 2003. Because the sight deposit rate acts as a floor for short-term money market rates, it will make little difference to these rates whether the banking system's liquidity surplus beyond a certain buffer is held as sight deposits or F-deposits.

Due to the supply of liquidity through F-loans, the banking system maintains considerable surplus liquidity even after petroleum tax falls due. Despite this, short-term money market rates rise relatively sharply at these times. This is illustrated in Chart 6, which shows the relationship between the banking system's surplus liquidity and the difference between short-term money market rates and the sight deposit rate. Relatively low

Chart 6 The banks' sight deposits (billions of NOK) and the difference between the tomorrow/next rate and the sight deposit rate 2006–2007. 15 day moving average



Source: Norges Bank

⁸ The results of the latest F-loan auctions are published on Norges Bank's website: www.norges-bank.no.

BOX 3: Liquidity policy in times of market turmoil

In this article, the emphasis is on describing liquidity policy in a normal situation. In some situations, however, it may be necessary to supply more liquidity than normal. In connection with the turmoil in global financial markets in August and September 2007, several central banks injected more liquidity than normal into the banking system.

The turmoil was triggered by uncertainty about developments in the US subprime mortgage market. Banks pooled these loans into securities backed by the cash flow from the mortgages, and sold the securities on to investors both inside and outside the US. In many cases, investors were structured investment vehicles (SIVs) set up specifically to hold securities of this kind. Often, these SIVs were financed through the issue of short-term securities. To ensure financing, many SIVs established lines of credit from banks which they could draw on where necessary.

The uncertainty about subprime mortgages meant that the option of financing SIVs through the issue of short-term securities largely dried up. The SIVs then drew on the aforementioned credit lines from banks, thereby exposing banks to the uncertainty in the US mortgage market. There was also considerable uncertainty about which banks had exposure of this type. In addition, the higher drawings on credit lines increased banks' funding needs. As markets for short-term financing of SIVs seized up, banks had to plan for the inclusion of mortgage-backed securities in their balance sheets rather than transferring them to SIVs. The individual bank attempted to safeguard its own position by being as liquid as possible, limiting its lending to other banks, and holding larger deposits in the central bank than normal. The interbank markets, whose role is to redistribute liquidity between banks, therefore functioned poorly, and money market rates rose.

Like other central banks, Norges Bank announced that it would supply sufficient liquidity to the banking system, and the allotment in the F-loan auction on Thursday 9 August was larger than it would have been in a more normal situation. In this way, Norges Bank used ordinary liquidity policy instruments to counter the effect of the turmoil in financial markets on money market rates.

If an individual institution experiences liquidity problems, Norges Bank can provide loans on special terms: S-loans. No such loans have been granted since the banking crisis of the early 1990s. In March 2004, Norges Bank's Executive Board adopted principles and guidelines for the provision of S-loans.¹

¹ See *Financial Stability* 2/04, pp. 36-37.

surplus liquidity does not appear to be the main reason for relatively high money market rates in the month after petroleum tax falls due.⁹ Surplus liquidity can be just as low at other times of the year without short-term money market rates rising to the same extent. The increase in short-term rates when petroleum tax falls due may reflect a very steep drop in structural liquidity – from a situation of surplus liquidity to a situation where there is a considerable need to supply liquidity. There will then be a substantial need to redistribute liquidity between banks. As can be seen from Chart 5, there is a substantial need to supply liquidity for a couple of months after petroleum tax falls due. This situation may contribute to slightly greater uncertainty than normal, particularly among foreign participants in the krone market. Since only banks with a head office or branch in Norway are allowed to take part in F-loan auctions, foreign operators have to cover their need for NOK through loans from banks which are established in

Norway. In October 2006 and April 2007, Norges Bank attempted to reduce this uncertainty by announcing F-loans earlier than usual, by supplying a substantial proportion of the liquidity in the form of F-loans with a maturity of around a month, and by stepping up its monitoring of the liquidity situation. These measures seem to have helped to reduce the fluctuations in interest rates.

When assessing how much surplus liquidity Norges Bank should aim for, two considerations need to be weighed up against one another. One is the need to limit and stabilise the gap between short-term money market rates and the key policy rate. The other is the need for an efficient interbank market. The interbank market is a market for short-term loans between banks. Norges Bank is responsible for the overall liquidity situation in the banking system, while the individual bank is responsible for obtaining sufficient liquidity to fulfil its obligations.

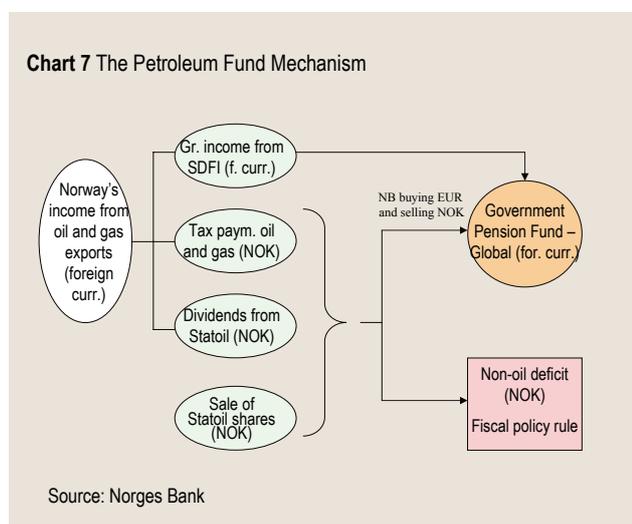
⁹ In spring 2006, this period lasted somewhat longer due to uncertainty resulting from the possibility of a labour conflict in the Norwegian banking sector.

The interbank market ensures that liquidity is evened out between the various banks. If there is excessive surplus liquidity in the banking system, banks' incentive to redistribute liquidity through the interbank market is reduced. The movements in the banking system's structural liquidity during the year, with large and uncertain fluctuations as a result of government payments and receipts, make it a demanding task to take into account both the need to ensure that interest rate decisions influence short-term money market rates in such a way as to keep short-term interest rates just above the sight deposit rate, and the need for a smoothly functioning interbank market.

The petroleum fund mechanism and Norges Bank's foreign exchange purchases

The development of the petroleum sector has given Norway substantial surpluses on both the current account and the government budget. The aim of the petroleum fund mechanism is to insulate the Norwegian economy against the effects of fluctuations in petroleum revenues and to save some of these revenues for future generations. Over time, large and persistent surpluses on the current account will normally lead to the appreciation of a country's currency. The petroleum fund mechanism aims to counteract this through an outflow of government capital abroad. One prerequisite for the petroleum fund mechanism to function as intended is a stable development of fiscal policy. Fiscal policy is therefore guided by a "fiscal policy rule", which stipulates that the structural non-oil deficit on the government budget should match the long-term real return on the Government Pension Fund – Global (previously the Government Petroleum Fund). This real return has been set at 4 per cent.¹⁰

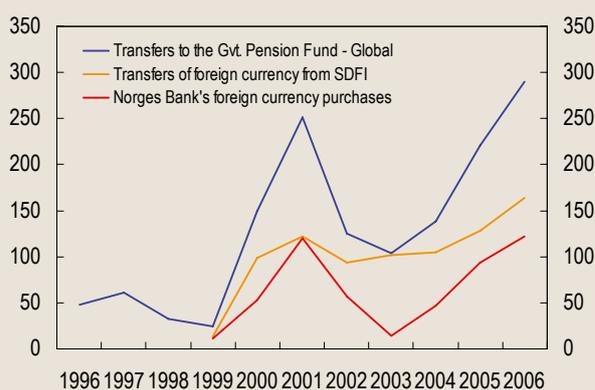
The petroleum fund mechanism is illustrated in Chart 7. Government revenues from petroleum activities are denominated partly in foreign currency and partly in



¹⁰ For a more detailed discussion of the relationship between the government budget and the Government Pension Fund – Global, see Report No. 24 (2006-2007) to the Storting: *On the Management of the Government Pension Fund in 2006*, p. 7.

¹¹ From 21 May 2003 to 30 June 2004, Norges Bank's foreign exchange purchases were suspended, as the SDFI's foreign currency revenues were more than sufficient to cover transfers to the Pension Fund.

Chart 8 Transfers to the Government Pension Fund – Global 1996–2006. Billions of NOK



Sources: Ministry of Finance and Norges Bank

NOK. The government owns about a third of Norway's petroleum reserves directly through Petoro. This is what is known as the State's Direct Financial Interest (SDFI). Normally, more than 90 per cent of the SDFI's revenues are in foreign currency, primarily USD, as oil prices are quoted in USD, but there are also revenues in EUR and GBP through gas exports. The SDFI's gross foreign currency revenues are transferred to Norges Bank.

Like other taxes, oil companies' taxes are paid in NOK. The tax for the year is paid in two instalments, which are, in principle, of equal size. The first payment falls due on 1 October and the second on 1 April the following year. Dividends from Statoil and the proceeds from sales of shares in Statoil and SDFI interests are also paid in NOK.

Slightly simplified, it could be said that some of the tax revenues and other revenues in NOK are used to cover the oil-adjusted deficit on the government budget and to cover Petoro's expenses. The rest is converted into foreign currency through Norges Bank's day-to-day purchases of foreign exchange (EUR) in the market from Norwegian and foreign banks.¹¹

Foreign currency from the SDFI and from Norges Bank's currency purchases is transferred temporarily to a buffer portfolio which forms part of Norges Bank's foreign exchange reserves. At the end of the month, the amount needed to cover the monthly transfer to the Pension Fund is transferred from the buffer portfolio to the Pension Fund.

As mentioned above, the foreign currency transferred to the Pension Fund comes partly from the SDFI directly and partly from Norges Bank's foreign exchange purchases. Developments since 1996 are illustrated in Chart 8. It can be seen that transfers to the Pension Fund have grown strongly in recent years. Transfers from the SDFI, which depend on the value of petroleum production from the fields covered by the SDFI, are the most stable. Transfers from Norges Bank's foreign

BOX 4: Government petroleum revenues, the Government Pension Fund – Global, and Norges Bank’s balance sheet

Norges Bank’s balance sheet as at 31 December 2006 (simplified). Billions of NOK

Assets		Liabilities and capital	
Net foreign currency reserves and other foreign assets	253	Notes and coins in circulation	55
- of which, buffer portfolio	24	Treasury deposits	160
Domestic assets		Deposits from banks etc.	24
- Lending to banks etc.	56	Other liabilities	0
- Other domestic assets	4	Capital	74
Total excluding Government Pension Fund – Global	313	Total excluding Government Pension Fund – Global	313
Investments for Government Pension Fund – Global	1782	Deposits in NOK account Government Pension Fund – Global	1782
Total	2095	Total	2095

Norges Bank’s balance sheet at the end of 2006 is presented above. It has been simplified slightly, in that foreign assets other than investments for the Pension Fund are shown net, and some small items have been combined. Investments for the Pension Fund are matched by a NOK account which is adjusted in line with changes in the value of these investments. Formally, it is this NOK account which is the Government Pension Fund – Global.

The capital to be transferred to the Pension Fund comes partly in foreign currency from the SDFI and partly in NOK from taxes on oil companies. Capital from the SDFI is first transferred to Norges Bank’s buffer portfolio, which is part of Norges Bank’s foreign exchange reserves. The government’s ordinary account is credited at the same time, with the result that Treasury deposits in the balance sheet show a comparable rise.

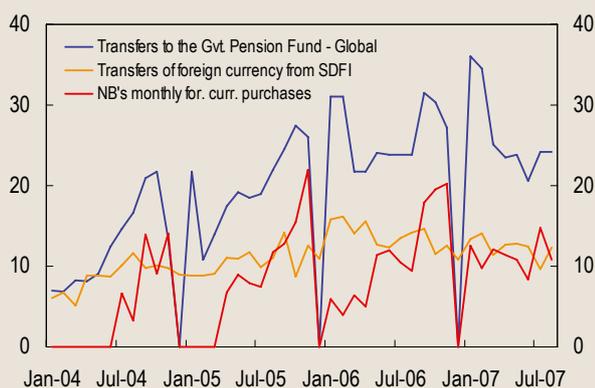
When petroleum tax is paid in, Treasury deposits rise, and the banks’ deposits fall. The petroleum tax revenues is used during the year partly to cover the non-oil deficit on the government budget, and partly to cover the SDFI’s expenses, with the result that funds are transferred from Treasury deposits to bank deposits during the year. Somewhat simplified, it could be said that Norges Bank uses the remaining petroleum tax revenues to purchase foreign currency during the year. This foreign currency, which is purchased from banks, is transferred to the buffer portfolio. This increases Norges Bank’s foreign exchange reserves. At the same time, banks’ deposits with Norges Bank show a comparable rise.

In this way, Norges Bank’s foreign exchange reserves are built up during the month. This is matched partly by an increase in Treasury deposits (counter-entry to the transfer of currency from the SDFI) and partly by an increase in bank deposits (counter-entry to Norges Bank’s foreign currency purchases).

At the end of the month, the transfer to the Pension Fund is made. An amount in foreign currency corresponding to the transfer is moved from the foreign exchange reserves to investments for the Government Pension Fund – Global. An equivalent amount in NOK is transferred from Treasury deposits to the NOK account for the Government Pension Fund – Global.

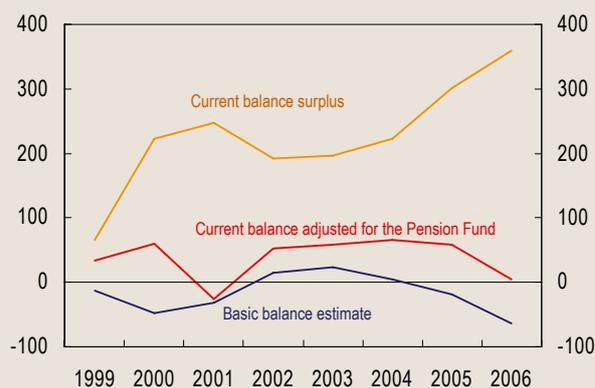
No transfer is normally made to the Pension Fund in December. Global equity and bond markets are less liquid around New Year, and so it would be inappropriate to transfer capital to the Pension Fund for investment at this time. As a result, foreign currency is not normally purchased for the Pension Fund in December. However, foreign currency is transferred from the SDFI, which means that the buffer portfolio is larger at the end of December than in other months of the year. At the end of December 2006, the buffer portfolio amounted to NOK 24 billion. During the first quarter, the buffer portfolio is scaled back down to its normal level, which is NOK 3.5 billion at the end of the month once the transfer to the Pension Fund has been made.

Chart 9 Monthly transfers to the Government Pension Fund – Global 2004–2007. Billions of NOK



Sources: Ministry of Finance and Norges Bank

Chart 11 The current account and the basic balance 1999–2006. Billions of NOK



Sources: Statistics Norway and Norges Bank

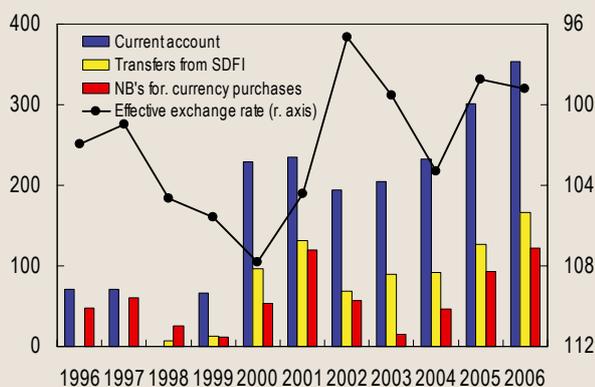
exchange purchases, which reflect variations in taxes on oil companies' earnings, in the oil-adjusted deficit on the government budget, and in the SDFI's expenses, show wider fluctuations. Norges Bank's foreign currency purchases also fluctuate more widely from month to month (see Chart 9).

Chart 10 shows the relationship between the surplus on the current account, transfers of foreign currency from the SDFI, Norges Bank's foreign currency purchases, and the trade-weighted NOK exchange rate (TWI). During this period, variations in the current account and government revenues from petroleum activities have primarily been a result of changes in oil prices. Based on this chart, there does not seem to have been any close relationship between surpluses on the current account and movements in the NOK exchange rate. This may suggest that the petroleum fund mechanism has largely succeeded in preventing variations in oil prices from leading to major variations in the NOK exchange rate.

The bulk of the current account surplus is matched by an outflow of capital from the government to build up the Pension Fund. In Chart 11, the red line shows the current account adjusted for the government capital outflow to build up the Pension Fund. Oil companies will normally be left with a cash surplus once taxes and operating and investment expenses in NOK have been paid. It seems reasonable to assume that oil companies will not convert these revenues into NOK but keep them in foreign currency, which means that this cash surplus can be viewed as a capital outflow from oil companies. Using simplified assumptions, we have also allowed for this capital outflow. In Chart 11, we use the term "basic balance" for the current account balance adjusted for the estimated outflow of capital from the government and oil companies. This basic balance gives a rough indication of the overall impact on the Norwegian foreign exchange market of the current account adjusted for petroleum-related capital outflows.

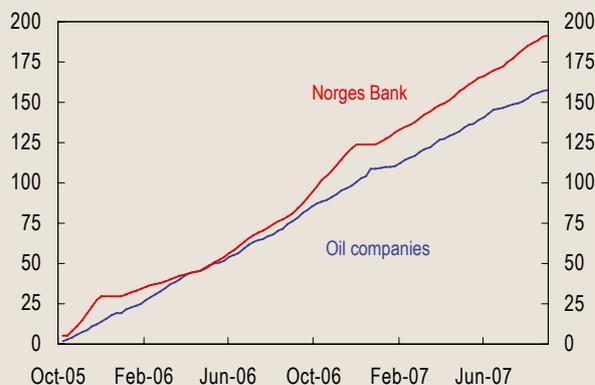
Foreign exchange statistics gathered since October

Chart 10 Effective exchange rate (r. axis), current account, transfers from SDFI and Norges Banks purchases of foreign currency 1996–2006. Billions of NOK



Sources: Statistics Norway and Norges Bank

Chart 12 Accumulated NOK and foreign exchange purchases by oil companies and Norges Bank 2005–2007. Billions of NOK



Sources: Ministry of Finance and Norges Bank

2005 also indicate that the petroleum fund mechanism has contributed to balance in the Norwegian foreign exchange market. As illustrated in Chart 12, oil companies build up their NOK holdings relatively steadily during the year. Although there is slightly greater variation in Norges Bank's foreign currency purchases, these currency purchases largely offset oil companies' purchases of NOK to cover petroleum tax and other expenses in NOK. Analyses of foreign exchange statistics also indicate that, in the first instance, it is not the foreign exchange transactions of oil companies or Norges Bank but those of foreign financial institutions which initiate changes in the krone exchange rate.

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Clearing and settlement at Norges Bank – a historical review

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The Norwegian payment system processes more than three million payment transactions every day. On some days the number of transactions can be far higher. The transactions are cleared and settled in the Norwegian payment system. In the clearing process, a number of transactions are offset against each other. In the settlement process, the results of the clearing are entered in banks' accounts in a settlement bank. Norges Bank is the settlement bank for all the large Norwegian banks. The total value of the transactions is approximately NOK 300 billion on an average day. This means that in less than one week an amount equivalent to mainland GDP passes through the Norwegian payment system.

A clearing and settlement system that resembles the present system did not exist in Norway until 82 years after the establishment of Norges Bank. Norges Bank was assigned a key role as settlement bank and this role is firmly established today¹. However, the current system is very different from Norges Bank's activities in this field just after it was established in 1816. Norges Bank's responsibility then was to provide a means of payment in Norway, i.e. notes and coins, in which the public had confidence. At an early stage, however, the Bank offered to transfer cash between the Bank's branches.

This article primarily describes some important events in the Norwegian clearing and settlement system in the period from 1816 up to World War II.

Norges Bank is established

In the early 19th century, transactions were normally settled directly between parties. They could take the form of barter, but precious metals and notes and coins were also used as means of settlement. When large amounts were involved, a "bankier"² might act as intermediary, particularly in connection with exports and imports. Clearing and settlement as we define it today was not relevant, partly because it was practical to settle accounts directly and partly because there was no banking system in Norway for clearing and settling reciprocal receivables and claims. To the extent that banks were involved, these were located abroad, usually in Copenhagen, Hamburg and London.

In the 1700s, a number of attempts were made to establish a joint Danish-Norwegian bank of issue³. One important reason why no lasting success was achieved was that banks of issue tended to be used to finance the Treasury. If the issue of notes and coins was not commensurate with the underlying values, confidence in the bank and its money diminished. Hence the value of the money was reduced and the bank had to terminate its operations.

After the dissolution of the union with Denmark in 1814, there were soon calls for a separate Norwegian banking system. This was partly based on real needs on the part of the business sector, but a separate banking system also had a symbolic value in nation-building. The first step towards a Norwegian banking system was the establishment of Norges Bank in 1816.⁴ The bank was established as a private joint-stock bank. Capital was procured through mandatory deposits⁵, the so-called *silver tax*. The collection of mandatory deposits was difficult and met considerable resistance. In the *History of Norges Bank*, Part I Nicolai Rygg⁶ writes:

"Opposition was greatest in inland Eastern Norway. In September 1818 a group of farmers, many of whom had come from Hallingdal and Valdres, marched on Kristiania. The authorities grew nervous, and the march was stopped at Bærums Verk, just north of Oslo, although the aim had been to submit a complaint to the Government and the Storting in the capital. Although a number were arrested and some put in prison, the sentences were reduced by King Karl Johan. This was the last open protest against the compulsory deposits."

¹ The article "Payment systems – a potential source of risk. The need for oversight and supervision" in *Economic Bulletin* 3/07 provides a more detailed description of the Norwegian clearing and settlement system for payments.

² "bankier": A person who deals in foreign exchange and securities, discounts bills of exchange, redeems coupons, lottery tickets etc. (Translated from Aschehoug and Gyldendal's *Store Norske Leksikon*).

³ Assignations- Vexel- og Laanebanken (also known as Courantbanken, in 1736), Den Danske og Norske Speciebank (1791), Deposito-Cassen (1799) and Rigsbanken (1813).

⁴ The full title of the Act that authorised the establishment of Norges Bank was as follows: "Authorisation for Norges Bank, in so far as the Bank's Funding is brought about through voluntary subscription, and in this connection deed of Foundation, instead of authorisation, shall apply to the Bank, if its Funding is procured through mandatory deposits".

⁵ At the time, this supply of capital was called "deposits", but in reality it was quite different from what we understand by the word "deposit" today, in that it was more like a tax, even though share certificates were issued for the amounts deposited.

⁶ Nicolai Rygg was head of Norges Bank from 1920-1946, and was assigned by the Board of Directors of Norges Bank to write the history of the Bank. Part I (up to 1850) was published in 1918, and Part II (up to 1920) in 1954. A volume about the interwar years was published in 1950.

The head office was not initially located in Kristiania (then the name of Norway's capital city; the name of Oslo was not restored until 1925), as stipulated by the Act in the event that the capital was procured through voluntary subscription, but in Trondheim instead. One of the arguments put forward was that with mandatory deposits the Bank would not have the same authority to maintain independent status and a long-term approach as it would if it was established through voluntary deposits. It was therefore concluded that a distance to the Storting and the Government would be advantageous for a "mandatory bank". Moreover, there were already branch offices in the major towns of Bergen, Kristiania and Kristiansand in 1816.

The Bank had three main responsibilities: It was to have the sole right to issue notes; it was to carry out banking services for the government, and it was to provide general banking services and operate credit and deposit facilities.

Instruments that were used in the first 75 years⁷

Lending and discounting of bills of exchange

The Bank commenced its lending activities in 1818. On 28 September that year, Norges Bank's Board of Directors announced that the silver fund was large enough to allow the Bank to offer loans and to discount bills of exchange and negotiable debt instruments.

Norges Bank's lending policy was initially somewhat unusual for a bank of issue. Its responsibility was to be to provide short-term loans, preferably to the business sector. Instead, the Bank largely provided long-term loans secured on real property. Although these mortgage loans had a maturity of 6 months, which was the stipulated maximum maturity, in practice they were constantly renewed. As late as 1830, loans secured on real property accounted for 90 per cent of total lending.

At the time of its founding, Norges Bank was the only bank in Norway, but in the 1820s some savings banks were established. They were small, and primarily covered local needs for operating capital and funding for agriculture and craft enterprises. When manufacturing became an industry in Norway, they were not capable of financing increased trade with other countries and increased production. Short-term credit was therefore in very short supply.

In order to meet some of this need, Norges Bank established *Den anekterte laaneindrætning* in 1818. With this loan facility it was possible to deposit a sum of silver and to receive twice the amount in banknotes. At the most, 735 000 speciedaler was on loan at any one time under this arrangement, which terminated in 1835. It had already been partly replaced in 1828 by a borrowing and discount facility, whereby 100 000 speciedaler in silver coins and 150 000 speciedaler in banknotes the

Bills of exchange

Bills of exchange are used to a very limited degree today. A bill of exchange is a security. The Bill of Exchange Act of 1932 (which is still in force) stipulates special requirements regarding the form of a bill of exchange. If these requirements are fulfilled, the bill of exchange has defined legal effects. By issuing a bill of exchange, a buyer (the debtor, in this context known as the drawee) can pay the seller (payee). The latter can discount the bill of exchange, i.e. have the amount for which the bill of exchange is made out paid in cash at a discount by a bank. (In principle, this is regarded as credit secured on the bill of exchange). The buyer must settle the debt on the bill of exchange with the bank subsequently before the bill of exchange matures. The bill of exchange thus has both a settlement and a funding function. The latter applies in particular if the bill of exchange is to be repaid in a number of instalments.

As the private banking system was developed, it became less common to discount bills of exchange directly in Norges Bank. However, banks could go in their turn to Norges Bank and rediscount the bills of exchange but with a reduction equivalent to Norges Bank's discount rate.

debtor, in this context were made available for discounting bills of exchange.

Transfers

In 1825 it was already possible to transfer money between towns where Norges Bank had regional branches through a simple money order arrangement.⁸ These transfers proved to be a flexible payment system. At the time, commercial banks had not yet been established in Norway, and Norges Bank was the only bank that could undertake such transfers. A party needing to send banknotes between towns in which Norges Bank was represented could have the settlement effected by paying the amount to the branch from which the money was to be sent. The sender had to pay a small charge for this, and the beneficiary received a money order (claim) payable at the branch in the town to which the money was to be sent. This reduced both the costs and the risk associated with money transport. The arrangement was practical, and was developed further as Norges Bank's branch network expanded. Initially, Norges Bank's role in payment transfers was primarily confined to settlements between its various regional branches.

By current standards, bank services were not readily accessible in the first few decades, as evidenced by the following announcement:⁹

⁷ A number of the instruments described below were also in use after the new Norges Bank Act of 1892 came into effect.

⁸ Postal giros were not introduced until 1943, and bank giros in 1946.

⁹ Rygg (1918)

“In the bank, which one reaches by way of the stair on the right-hand side, the following take place:

From 9 to 10 on weekdays in the Morning Banknotes are exchanged; and during the same Period every Tuesday and Friday also Dividends on Share Certificates; from 11 until 1 the Bank is open for those who have Applications to submit, Loans to raise, Interest to pay, or in some other Respect any Business to discharge with the Bank.

Outside of these Hours, other Bank Businesses do not allow Access to any Persons other than Employees.

Any persons living out of town who have any business with the Bank must arrange to have this carried out by a Commissioner present here, as one cannot correspond with Everyone and Anyone on his personal Affairs.

The Banking Administration in Christiania, the 31st of August, 1825”.

Local Norges Bank offices are established

Pursuant to the Act of 15 September 1851, the Bank's governing bodies were permitted to establish new “bank offices”. However, these did not have the same status as “regional branches”. The background to the Act was urgent requests by a number of Norwegian towns for a branch of Norges Bank. The first request came from Drammen in 1821, and the request was reiterated in 1827. A branch was not established there until 1837. The reason that the Board of Norges Bank was cautious about establishing branches was that too many branches would make it difficult for the Board to maintain an overview of activities, and would increase the Bank's costs.

The following offices were established: Tromsø (1852), Stavanger (1852), Fredrikshald (Halden) (1854), Lillehammer (1860), Bodø (1874), Kristiansund (1880) and Hamar (1881). The bank offices largely engaged in the same activities as the branches, and the Act of 1892 formally gave them equal status, with effect from 1893. Regional branches were subsequently established in Vardø (1902), Ålesund (1902), Larvik (1902), Gjøvik (1902), Fredrikstad (1909), Haugesund (1910), Hammerfest (1910) and Arendal (1914).

Prior to this, and apart from the branch offices in the four major towns (Trondheim, Kristiania, Kristiansand and Bergen), branch offices had been established in Skien (1835) and Drammen (1837).

Money transfer activities developed from the mid-1800s and up to after World War II. Norges Bank played an important role in the transfer of money to all parts of Norway, avoiding the need to send cash. This permitted a reduction in the circulation of physical banknotes. Banks in towns where Norges Bank was not represented could use the nearest branch or office to execute similar transactions. This was an important service and made payments and transfers easier and more secure.

Until the mid-1880s, giro transfers from one account to another only applied to government and Hypotekbanken's accounts. Private individuals had to buy money orders and pay a small fee. In 1886, the Board of Directors took the initiative to extend the right to make transfers to all account-holders, and presented proposals for a reform of the entire transfer system. In the new Act relating to Norges Bank of 1892, the Bank's operations were extended permitting the Bank to act as intermediary for private customers. Section 75 of the regulation to the Act stipulates that all those with an account in the Bank could transfer funds (giro transfer) free of charge to other customer accounts in Norges Bank at all the Bank's branches. This naturally led to a steady decline in discounting of bills of exchange from other towns.

To make it simpler for banks to transfer large amounts to other towns where Norges Bank had regional branches, a special type of draft¹⁰, 8-day collects, was introduced. On the basis of a letter of credit with an unconditional guarantee from the bank in question, Norges Bank issued drafts with a maturity of up to 8 days (10 days in Vardø).¹¹ The precondition was that the draft represented a receivable. It may be mentioned in this connection that in the inter-war years this arrangement was misused to raise cash during the difficult liquidity situation.¹² This took place through what was known as “kite-flying”. In his book about Norges Bank in the interwar years, Rygg writes on page 61:

“A glaring example was revealed during the insolvency proceedings for Finnmarkens Handelsbank. It had kept floating a large and steady flow of paper (cheques and letters of credit) drawn on other banks, and another flow came from other towns to Vardø. In 1919, the flow in each direction amounted to exactly NOK 15 million, i.e. NOK 30 million in all. Because of the slow postal service, the bank had a substantial sum of money at its disposal all year round. It could thus be said, as stated in the receiver's report, that in a large number of these transactions, the bank had been guilty of breach of trust, to put it mildly, in relation to Norges Bank itself.

But this practice was not limited to a single case. One had an unpleasant suspicion that banks with a close mutual relationship procured funds by drawing upon one another, although it was not possible to prove this.”

¹⁰ A draft is a bill of exchange where the issuer (*drawer*) requires another (*the drawee*) to repay the sum on the bill by the due date. A draft only becomes valid when the drawee has written “accepted” and put his name to the bill of exchange.

¹¹ The arrangement is described in Rules and Regulations for Norges Bank, 4th edition (1903). Private banks' drafts on other financial institutions are also mentioned in the 3rd edition (1901).

¹² Rygg (1954)

Emergence of other banks

A few years after the foundation of Norges Bank, other banks emerged. The first Norwegian savings bank was Christiania Sparebank, which was established in 1822. It provided loans against collateral, in addition to discounting bills of exchange. In 1824, the Storting adopted an Act relating to savings banks. This was necessary after banks of this kind had been established in Bergen, Drammen, Skien and Trondheim. In 1860 there was a substantial number of savings banks, but only 4 joint-stock banks.

Christiania Bank og Creditcassee, established in 1848, was the first of these. It was followed by Bergen Privatbank in about 1855, and Den norske Creditbank in 1857. In 1885 there were 36 joint-stock banks in Norway (Petersen, 1986).

Statens Hypotekbank was the first government bank. It was established in 1851, with the principal task of providing mortgage loans to agriculture. This led to a decline in demand for such loans from Norges Bank.

Technological developments also influenced banking operations. An important factor was the emergence and use of the telegraph. One example shows that Norges Bank was not a driving force here.¹³ In September 1863, the sum of 80 000 speciedaler was paid into Norges Bank's regional branch in Bergen, to be credited to Christiania Bank og Creditkasse, with a request for telegraphic transfer to Kristiania. The order was effected in Bergen, but when the telegram arrived at Norges Bank's regional branch in Kristiania, the latter refused to disburse the money before the branch had received written confirmation. This took almost a week. The telegraph had then been in operation between these towns for 5 years. Creditkassen therefore raised the issue of the use of telegraphic transfers with Norges Bank. From correspondence in the years 1863-64, it is evident that Norges Bank could not agree to the transfer of money by telegraph.

Advertisements for Creditkassen in 1865, on the other hand, showed that the bank used telegraphic transfers to both send and receive payments in Trondheim, Bergen, Stavanger, Drammen, Hamar, Stockholm, Gothenburg, Copenhagen, Hamburg, Amsterdam, Paris, Berlin and London. Only in 1888, more than 20 years after the request from Creditkassen, did Norges Bank allow telegraphic transfers to other banks. From 1891 it also became possible to use telegraphic transfers to other parties. This was a concession to demands from the business sector, particularly the fishing industry. Against a somewhat higher charge, the Bank now arranged for the

transfer of sums of money to all domestic post offices. Rules for this procedure were laid down in 1898.

Large sums were also sent by post, as insured mail. In 1857, NOK 61.7 million was sent as insured mail. At the end of the century, this had increased to no less than NOK 397.5 million. A large amount of money was probably also sent by ordinary mail. However, nothing in our sources indicates that there was extensive contact between Norges Bank and the postal service with respect to payment transactions.¹⁴

Clearing and settlement between the Scandinavian countries

In 1875, Norway, Sweden and Denmark agreed to establish the Scandinavian Monetary Union. There were several reasons for this. One important reason was that coins from the other Scandinavian countries were circulating in all three countries. It became necessary to introduce a system. The same took place elsewhere in Europe, where a Latin Monetary Union was established in 1865 (with a common currency based on the franc germinal). Germany carried out a monetary reform after unification in 1871.

Work on a monetary union had long been under way. As early as 1863, at the first Nordic economic meeting in Gothenburg, the introduction of a common currency for Scandinavia was recommended. The franc was proposed. The recommendation was repeated at the next meeting, in Stockholm, in 1866. A common Nordic currency was again the theme of the meeting in Copenhagen in 1872, and the appointment of a joint commission to consider the currency issue was recommended.

One important goal of the Scandinavian monetary union was to simplify trade between the Scandinavian countries. However, the monetary union did not draw up rules for payment transactions between central banks. Before instructions could be issued for payment to one central bank, there had to be receivables in the sight deposit account of the other two central banks in order to draw on these accounts. If there were insufficient funds in the account, debts had to be paid by sending banknotes, foreign currency or gold to the other central bank. This had to be transported physically from one central bank to the other, and this was in many ways an awkward solution. By the 1880s, a simpler system for financial transactions was called for.

In October 1885, the three central banks agreed to simplify settlement of trade surpluses and deficits in order to reduce shipments of gold and banknotes. Each central bank could now issue instructions to pay banks in their home countries from their sight deposit accounts in the other central banks. The amounts had to be above NOK 10 000. There was no requirement that there should be any receivables in the account, nor was

¹³ Engebretsen (1949)

¹⁴ Johannessen and Thue (1997)

any interest to be charged on amounts in the account or on amounts due. In the text of the agreement, no maximum was set for the amount that one bank could owe another. However, the condition was that none of the banks should for a lengthy period have more receivables than were likely to be used within a reasonable period of time.

However, it was possible to require repayment of amounts that one central bank owed another. This could take place directly, but receivables in the third bank could also be used. Debts could also be paid using 10-krone and 20-krone pieces (gold coins).

In principle, this type of transaction could only take place at the head offices of the three central banks. In Norway, it was also possible to use the Kristiania and Bergen regional offices in addition to the head office in Trondheim. This type of payment did not incur bank charges.¹⁵

The system did not function entirely smoothly. As early as in 1889, the head of Sveriges Riksbank claimed that the bank was not obligated to issue money orders to everyone. Through the 1890s, there were complaints that Sveriges Riksbank was reluctant to issue money orders. The Swedish central bank had been redeeming Danish and Norwegian notes at par since 1880. Norges Bank did not follow the same practice: some exchange rate loss was factored in. This prompted a sharp comment in a Swedish newspaper: this was an “insult” that must be due to Norwegians’ “poor upbringing”.

The Board of Directors had decided that Norges Bank would not redeem notes other than its own at par because a large volume of Swedish notes were circulating in Europe. The reason they were not redeemed at par was not due to ill-will, but because both Norwegian and Swedish business benefited from this circulation. The explanation for Norges Bank’s approach was that the redemption would lead to fairly substantial shipments of gold from Sveriges Riksbank.

After a period (1894), Norges Bank agreed to receive Sveriges Riksbank’s banknotes without any deductions. The background for the Board of Directors’ decision was that Norges Bank in the 1890s was in debt to Sveriges Riksbank. The same arrangement was practised with respect to Danish banknotes. It was not until 1901 that Danmark’s Nationalbank agreed to redeem Swedish and Norwegian notes at par.

Norges Bank’s outstanding accounts with the other two central banks differed from each other after the turn of the century. Norges Bank normally had money owing from Sveriges Riksbank, while it owed money to Danmark’s Nationalbank. Norges Bank covered its debt to Nationalbanken by using its receivables in Riksbanken. The Bank’s transactions with neighbouring banks accounted for the bulk of Norges Bank’s gold transactions.¹⁶

The origins of the clearing system

The clearing house system arose in London in around 1775 with the inception of The Banker’s Clearing House (TBCH), which had daily bilateral clearing. TBCH introduced multilateral settlements in 1841. There are several accounts of the origin of clearing. In essence, clearing among the individual banking firms took place by sending ‘walk clerks’ around to other banks with cheques and money orders to be settled in cash. One day, one of these walk clerks decided that it would be more rational to meet on a street corner and exchange the documents, and settle any differences in cash. Later on, the meetings took place in a pub.

Kristiania Clearing Office – clearing comes to Norwegian banking

The Norges Bank Act of 1892 defined a clearer central banking role for Norges Bank. One important reason was the expansion of the banking system since the establishment of Norges Bank. There was no longer any need for Norges Bank to carry out all the practical banking tasks for which it had previously been responsible. Moreover, the banks did not want Norges Bank as a competitor in the regions in which they were represented.

On the other hand, new needs arose. As interaction between banks became more extensive, there were increasing numbers of outstanding claims among them. Towards the end of the 1800s the need therefore arose for a simpler means of settling receivables between banks, particularly cheques, but also money orders.

On 25 January 1897, the managing director of Creditkassen, Mr Castberg, gave a speech at Statsøkonomisk forening, an association of Norwegian economists, entitled “*Should a Clearing House be established in Kristiania, and how could this be achieved?*” It was generally agreed that a clearing house was needed, but doubts were nevertheless raised as to whether it would have enough to do.¹⁷ Nothing came of it. In 1897 an act relating to cheques was introduced in Norway, and payment by means of cheques became increasingly common in the business sector. Clearing in Kristiania Bank Clearing House started in 1898, modelled on the clearing that took place in Manchester (the scope of activities there was more in line with what was anticipated in Oslo, as opposed to clearing in London), and initially only extended to those banks and banking firms in Oslo that were listed on the Oslo Stock Exchange. This also applied to Norges Bank. The

¹⁵ Today’s Scandinavian Cash Pool resembles this arrangement in certain respects. Once the Nordic currencies became settlement currencies in CLS (Continued Linked Settlement), situations could conceivably arise where there was a shortage of national liquidity for the daily settlement. In the light of this possibility, the central banks of Sweden, Denmark and Norway developed a solution for the efficient transfer of intraday liquidity between the three currencies: the Scandinavian Cash Pool. Through this system, private banks can use liquidity in one of the central banks as collateral for loans in one of the other central banks.

¹⁶ Rygg (1954)

¹⁷ K. Petersen (1986)

Clearing for banks outside Kristiania, and for savings banks

Due to rapid growth in the financial industry in Kristiania, private banks outside Kristiania established an association to protect their interests in 1897: “The Central Association for Norway’s private Banks outside Christiania”. This association established the “Central bank for Norway”¹, with an office in Kristiania. The purpose of this bank was to have a clearing office and an intermediary in Kristiania. In fact, the bank went bankrupt during the banking crisis of the 1920s.

In 1915, the “Central Association for Norway’s private banks outside Christiania” merged with “Christiania Banking Association” (founded in 1900) to become “The Norwegian Bankers’ Association” (today the Norwegian Financial Services Association). The then Director of Norges Bank, Karl G. Bomhoff, led “The Christiania Banking Association” in the period 1904–1906.

The “Central Association for Norwegian Savings Banks” was established in autumn 1914. One of the most important results initially was the establishment of Fellesbanken A/S, which was used to deal with common tasks, such as representing the savings banks in Kristiania Clearing Office.

¹ There was considerable debate about using the term “central bank” for a private commercial bank.

Director of Norges Bank, Karl G. Bomhoff, headed the office. Norges Bank accordingly assumed responsibility for establishing satisfactory procedures for payment settlement, and further developed its role as settlement bank.

It was not long before Norges Bank withdrew from the clearing house. The reason was that the firm Arntzen, Schmidt & Co. was denied the right to join, and it was felt that the clearing house was acting like a private association. A couple of years later, Norges Bank was urged to join again. The grounds for withdrawal no longer existed. Director Bomhoff therefore continued as head of the clearing house.

Kristiania Bank Clearing House was a clearing house for banks, stockbrokers and trading companies for reciprocal claims and receivables. Representatives of the participating banks met at the clearing house¹⁸ with ready-sorted cheques and claims in packages for each participating bank that had been drawn on, and then exchanged the packages for a statement of the respective sums. These sums were transferred to an account in Norges Bank, and each bank was then given the final result of the day’s clearing. Net receivables were credited to the respective bank’s account with Norges Bank, while debts were debited. Clearing took place at

the daily meetings according to special procedures that were laid down in the clearing house’s statutes (see box overleaf for simplified description of the procedures).

An inspector from Norges Bank ensured that the procedures were followed, and directed the clearing. In 1923, the annual turnover in the clearing house was no less than NOK 5 billion, at a time when banknote circulation was just over NOK 500 million.

The clearing house was in operation throughout most of the last century (it was closed down in 1989). Some of the forms that Director Castberg developed were still being used 50 years later. The meetings originally took place on the premises of the Oslo Stock Exchange, and the banks later met in Norges Bank.

Monitoring goods and capital flows – clearing¹⁹ in relation to other countries

For a period in the 1930s and 1940s, Norges Bank had a particular clearing responsibility:

During this period, a number of countries had introduced foreign exchange controls because of economic turbulence and a recession. Even countries that had unrestricted currency had difficulty in obtaining payment for exports to the countries that had introduced exchange controls. A system of clearing agreements was therefore established, so that exporters received settlement in their own country’s currency for the amounts paid by importers. The importers in each country paid their debt through their bank to their own country’s central bank. The two central banks kept each other informed of incoming payments and conducted mutual clearing.

Norges Bank occupied a central position under this regime. An approximate balance was to be maintained between the value of exports and the value of imports (both goods and services were included) between Norway and the countries with which Norway had clearing agreements. Only the excess amount one way or the other was settled in currency. The use of the clearing system gathered pace after various countries suspended the gold standard in 1931. It was generally believed that this use of clearing would only be a provisional arrangement in the absence of a convertible currency and common measures of value for the external value of the means of payment of various countries, and that it would be abandoned when the special circumstances that created the system no longer existed. Four years later, it proved necessary to formalise the system after all. Through the Payment Equalisation Act of 31 May 1935, the Ministry of Finance was authorised to issue regulations to ensure that Norwegian receivables in countries that had restricted or prevented payment transfers to Norway were covered by the relevant country’s receivables in Norway.

¹⁸ The initial members were: Den norske Kreditbank, Kristiania Handelsbank, Den norske Industri- og Vexelbank, Christiania Bank og Kreditkasse, Norges Bank and banking firms Sev. Chr. Andresen & Co and Tho. Joh. Heftye & Søn.

¹⁹ The English word ‘clearing’ was actually used by Norges Bank before a Norwegian equivalent was found.

Clearing and settlement procedures at Kristiania Clearing House

1. Before meetings, all member banks had to sort all the cheques, money orders etc. they had for clearing against the other members, one package for each of the other members. They were also to make lists of “outgoing” cheques etc., one for each of the other members. A list of totals also had to be made.
2. The clearing house opened at 12.15 p.m. precisely. Representatives of the member banks were to take their places immediately, and submit the sorted cheques and money orders etc. and the lists they had prepared. The lists were compared with the contents of the packages. Papers that were manifestly incorrect were removed, and the lists totalled again. When everything agreed, each bank entered the amounts on the lists received on the lists for received “incoming” cheques etc. under the name of the banking business in question. The incoming cheques were then totalled.
3. The clearing house was temporarily closed at 12.45 p.m. The representatives of the member banks then returned to their banks with the list of incoming cheques. The list was reviewed in the bank to see if anything should be rejected or returned. These items were marked “NB”.
4. The clearing house re-opened at 13.15 p.m. The incoming and outgoing columns for each bank were totalled and handed to the inspector for verification. He entered the amounts on the settlement list. Debit and credit sums ought now to balance. If not, there was an error in the clearing. Errors were to be rectified immediately.
5. If the clearing amounts balanced, settlement took place through the transfer of amounts to or from the members’ accounts in Norges Bank or to the clearing house’s account in Norges Bank. The transfers were initiated by the officers of the member banks. If a bank found itself in a debit position, special procedures had to be followed. The clearing was normally supposed to be completed by 1.30 p.m.
6. The balance of the clearing was only partially accepted in the case of papers to which there were objections. Papers which had not been approved were to be returned to the member bank that had presented them by 2.00 p.m.

In terms of the work involved, these clearing agreements presented Norges Bank with a considerable challenge.²⁰ It became necessary to establish a clearing house. The clearing house opened in 1936 with 43 employees, and the number was subsequently increased. In October 1934, the Ministry of Finance appointed an advisory body for the ministry and Norges Bank for foreign exchange clearing. The advisory body had first eight, then nine representatives from the ministries concerned, the business sector and banks. The Director of the Central Bureau of Statistics (now Statistics Norway), Gunnar Jahn, was chairman. The Foreign Exchange Office in Norges Bank’s Foreign Exchange Department did all the paperwork in connection with the Norwegian clearing agreements with other countries. The clearing house also followed up to ensure that the guidelines in the clearing agreements were observed.²¹

During World War II, there was mandatory centralisation of foreign exchange transactions. In 1940, pursuant to the Payment Equalisation Act, the administration installed during the German occupation in lieu of a government laid down provisions concerning the exchange of goods etc. between the occupied areas of Norway and other countries. All payments were to be made through Norges Bank’s head office in Oslo. In summer 1940 provisions were laid down that gave Norges Bank further control of foreign exchange transactions. A foreign exchange licence from Norges Bank was now necessary for importing, and an export licence was necessary for exporting. Importing goods of German origin, or goods that had undergone substantial processing in areas under German control, did not require a licence. In practice, these regulations meant that Norway had to refer to Germany for both imports and exports. However, there were efforts to achieve trade agreements with Sweden, the US (which at this time was neutral) and countries overseas. These were unsuccessful.²²

Before the outbreak of war in Norway, Norway had payment agreements with Germany, Italy, Spain, Greece and Turkey. After 9 April, new agreements were made; by the end of 1940 there were agreements with 13 countries, and two more were concluded in 1941. There were direct clearing agreements with some countries (Denmark, Sweden and the Soviet Union), while centralised clearing through Deutsche Verrechnungskasse in Berlin was used for other countries.

Due to the increase in the number of clearing agreements, the Ministry of Trade decided in autumn 1940 that clearing would no longer be carried out at Norges Bank and established the Norwegian Clearing Institute²³, which was directed by a Clearing Committee. Norges Bank’s rights and obligations with respect to clearing agreements and agreements with banks regarding clearing were transferred to the Clearing Institute. The institute continued its operations until 1946, when Norges Bank again assumed these responsibilities.

²⁰ 1933: clearing agreement with Greece; 1934: clearing agreement with Germany, and a quota and compensation agreement with Turkey; 1935: clearing and payment agreement with Italy; 1936: clearing agreements with Romania and Spain; 1940: payment agreement with the UK.

²¹ Rygg (1950)

²² Jahn, Eriksen and Munthe (1966)

²³ Established on 15 November 1940.

Developments after World War II

In the early years after World War II, clearing between banks proceeded in roughly the same way as described earlier, through what in due course was renamed Oslo Clearing House.

In the late 1950s and particularly in the 1960s, after the use of cheques had become common, it was necessary to find some manner of automating the registration of all incoming cheques. At that time, it was the responsibility of Oslo Clearing House to collect in cheques from the office's member banks. Daily clearing and settlement was carried out in Norges Bank through transfers to or from the individual banks' accounts in Norges Bank. A large share of these, in terms of value, were interbank settlements, and they constituted an important part of day-to-day liquidity management in the banking system.

In the mid-1970s, cheque clearing for commercial banks was transferred to the IDA data-processing centre and savings banks' cheque clearing was transferred to Fellesbanken. Clearing was based on cheques with magnetic ink character recognition encoding. IDA also had a local clearing house in Bergen, and after a period a local clearing house was established in the Trøndelag region. These local clearing houses processed transactions from both commercial and savings banks. Most of the cheques received by Norges Bank were sent to IDA for clearing, as were cheques from 10 of the Bank's regional offices. The actual settlement took place in Norges Bank.

The turnover of the Oslo Clearing House (i.e. cheques cleared in Norges Bank) totalled NOK 78 billion in 1975.

From the mid-1970s and up to the 1990s, Norway's clearing and settlement systems underwent extensive development. In November 1997, Norges Bank acquired a new system for final settlement of payment transactions. In March 1999, the system became a fully fledged real-time gross settlement system – RTGS – for large transactions. There were also major improvements in systems for other payments.

Payment instruments have also developed at a rapid pace. After the war, cash and manual giros were almost the sole payment instruments. After a period cheques came into use, automatic cash dispensers (ATMs) were tried out as early as in 1970, and internet banking was introduced in 1996. All these innovations led to a very sharp increase in the number of transactions in the Norwegian payment system – with a transition from paper-based to electronic solutions.

In the years ahead, the work to establish a common payment market in Europe will influence solutions in Norway. Legislation and payment systems in Europe will be standardised, and purely national systems will become less important or vanish. This will probably apply to payment methods both for the general public

and in the securities settlement process. Mergers will probably also take place, and cooperative agreements be established between suppliers of clearing and settlement systems. In the years ahead, adapting the current Norwegian systems to these trends and at the same time maintaining an efficient payment system will present a major challenge.

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Monetary policy frameworks – Norges Bank in the light of the literature and international practice

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The past 20 years have brought major changes in monetary policy, in Norway and abroad. Most central banks now have instrument independence, and price stability is the common objective of monetary policy. The organisation of the monetary policy decision within central banks has also changed. This decision is now typically taken by a committee. There have also been major changes in terms of transparency and communication.

These developments are the product of both economic theory and historical developments. Despite similar developments across countries, there are still differences, particularly in the composition, size and working methods of monetary policy committees, but also in how central banks communicate. Differences across countries are probably a reflection of different economies and different traditions. Theoretical and empirical research provide guidance as to the optimal framework, but do not give a clear answer.

1 Introduction

In the late 1960s, Phelps (1967) and Friedman (1968) showed how economic agents' expectations can limit the authorities' options. The experience of the 1970s and 1980s, both in Norway and abroad, revealed that there is no long-term trade-off between unemployment and inflation. This acknowledgment has played a significant part in the shift in most OECD countries to price stability as a primary objective of monetary policy. Lucas (1972) showed that the relationships between economic variables are not stable but are affected by the design of economic policy. Only by studying individual agents' economic behaviour can one arrive at stable relationships for how economic policy works. Kydland and Prescott (1977) noted that authorities can achieve long-term policy goals only by making a credible commitment to them. They presented arguments for making central banks independent of political authorities and having binding monetary policy objectives.

Over the past 20–30 years, economic theory and historical experience have provided guidance on how monetary policy should be organised and implemented. There have been major changes in how central banks operate. Their implementation of monetary policy has many similarities, but there are also differences between countries. In this article, we look more closely at whether these differences are significant. We also present an overview of international practice and the recommendations from the monetary policy literature.

2 Recommendations from the literature

The economic literature provides some guidance on how countries today should organise and implement monetary policy.

The central bank should be independent

Economic theory suggests that responsibility for the day-to-day implementation of monetary policy should be delegated to an independent central bank. The work of Kydland and Prescott on rules of conduct for economic policy in the late 1970s was crucial to this conclusion. In their work, economic agents (enterprises and households) do not systematically misjudge what the authorities intend to do in the future. Economic agents look forward when they make their decisions so that expectations of economic developments influence actual economic developments. If wage-earners expect high inflation, they will demand higher wages than if they had expected low inflation. If enterprises expect high inflation, they will raise prices more than if they had expected low inflation. Thus, expectations of high inflation will in themselves contribute to high inflation. This means that there is no long-term trade-off between inflation and unemployment. It is important, therefore, for inflation expectations to be stable and low. This suggests that monetary policy should have price stability as a primary goal, as this will help to anchor inflation expectations at a low level. When there is confidence that inflation will remain low and stable over time, there is also scope for monetary policy to stabilise short-term fluctuations in the real economy. However, politically elected authorities might be tempted to pursue a too expansionary monetary policy in the short run, for example to secure re-election. Politicians' promises of conducting a monetary policy with the objective of price stability may, therefore, be seen as having little credibility, and economic agents may have reason to expect high inflation. One solution to this problem is to transfer responsibility for monetary policy to a body which is not exposed to this temptation, such as an independent central bank. (See, for example, Walsh (2003)

¹ The views expressed in this article are those of the authors and are not necessarily the view of Norges Bank. We would like to thank our colleagues at Norges Bank for their comments.

and Dornbusch, Fischer and Startz (2004) for further details.)

Decisions should be transparent

From a democratic point of view, delegating the implementation of monetary policy – an important part of economic policy as a whole – from elected representatives to an independent body may be considered problematic. It is therefore important for the central bank to have a clear mandate and to be transparent, so that elected representatives, the press and the public can always verify that the central bank is managing monetary policy in line with its mandate (see, for example, Blinder (1998)).

Interest rate decisions should be taken by a monetary policy committee

Democratic arguments may also suggest that decisions by an independent central bank should be taken by a committee. If the mandate for monetary policy is formulated in general terms, this leaves room for interpretation. It may, therefore, be an advantage for monetary policy not to be shaped by just one person's interpretation.

Recent research indicates that decisions by a committee also have other benefits. A committee's decisions will be based on a broader range of information and assessments than those of an individual. Committees can also act as insurance against serious misjudgements. However, the literature does not give clear answers

What is it possible to communicate externally?

Blinder (2007) argues that the appropriate volume and style of central bank communication depend sensitively on the type of decision-maker. He differentiates between three types of decision-makers:

- *Individual decision-maker*: The governor of the central bank is solely responsible for decisions.
- *Collegial committee*: Members of a collegial committee agree in advance that their individual differences of opinion must be subordinated to the common good, lest the authority of the group be undermined. Such a committee arrives at a group decision that somehow springs from the collective wisdom of the group as a whole and is embraced by all of its members. There may or may not be a formal vote at each MPC meeting. But if there's one, it is expected to be – and normally is – unanimous or nearly so. A collegial committee can reach agreement in a variety of ways. Blinder considers two cases: In a *genuinely-collegial committee*, the members may argue strenuously for their own points of view behind closed doors, but they ultimately compromise on a group decision, and then each member takes ownership of that decision. There may or may not be a formal vote; but regardless, there are no (or negligible) public disagreements. In what he calls an *autocratically-collegial committee* the chairman more or less dictates the group "consensus."
- *Individualistic committee*: Members of an individualistic committee not only express their own opinions verbally, but probably also act on them by voting. The group's decision is made by literal majority vote. At MPC meetings, positions are offered, the pros and cons are debated, committee members weigh the equities of the case, and then they vote. Unanimity is not necessarily expected; it may not even be sought.

Blinder argues that genuinely-collegial and individualistic committees may find it difficult to produce an immediate statement after the interest rate decision. "An autocratically-collegial committee, however, should find it much easier to prepare a detailed statement to be issued at the end of the meeting. Indeed, the chairman may walk into the meeting room with a draft of the statement in his pocket." Furthermore, Blinder argues that "the vote on monetary policy is an essential piece of forward-looking information when decisions are made by an individualistic committee. Therefore, such a committee should always announce its vote promptly, probably naming names. (...) The case for announcing votes and names is more equivocal on collegial committees. Obviously, if there are any dissenting votes, announcing them will impair the committee's ability to project the aura of consensus that it desires."

Blinder believes "that revealing (conditional) forecasts of its own behaviour is quite possible for a central bank with an individual decision-maker, rather more difficult – but perhaps still possible – for an autocratically-collegial MPC, and probably out of the question for the other two types." He suggests that a genuinely-collegial MPC "may have to content itself with a statement of its 'bias' or 'balance of risks', while a truly individualistic MPC may have trouble doing even that." This is a view which appears to be shared by the Bank of England (see Lomax (2007)).

about the ideal size, composition and working methods of committees taking monetary policy decisions. Nor is it clear what might be the correct division of duties between the central bank's staff and the monetary policy committee. Maier (2007) provides an overview of the literature on monetary policy committees.²

The central bank should influence interest rate expectations through communication

In the monetary policy literature, the terms “transparency” and “communication” tend to be used interchangeably. However, it may be useful to reserve the term “communication” for central banks' active use of transparency as a means of influencing agents' expectations.

One important feature of modern monetary policy theory is that economic agents make their decisions on the basis of expectations of the future. The impact of monetary policy will, therefore, depend at least as much on agents' expectations of future movements in interest rates as on their current levels. Thus, for monetary policy to be as effective as possible, it is necessary for agents to understand the central bank's intentions in its rate-setting. In addition, it is important that the central bank makes its response pattern known, so that agents' reaction to new information has a stabilising effect. Thus, modern monetary policy theory suggests that the central bank should be open about (communicate) its response pattern and its expectations of movements in interest rates and the economy.³ (See, for example, Woodford (2005) and Svensson (2007).)

Monetary policy theory implicitly assumes that decisions are made by a single person. The central bank can then easily communicate an explicit expected interest rate path by being completely open about the reasoning behind its interest rate decisions. If the decisions are made by more than one person (a committee), however, there may be some conflict between the need for transparency and the need to influence agents' interest rate expectations effectively. The central bank runs the risk of speaking with too many voices, with the result that its signals about monetary policy ahead become unclear.^{4, 5}

Empirical research suggests that the minutes of a monetary policy committee's discussions can provide indications of the orientation of monetary policy ahead (see, for example, Gerlach-Kristen (2004)). Some central banks communicate the orientation of monetary policy ahead directly by publishing an interest rate path.

² Other overview articles include Berger (2006), Blinder (2007), Sibert (2006), Vandenbussche (2006), Fujiki (2005) and Gerling et al. (2005).

³ This argument assumes that the central bank does not normally make significantly poorer forecasts than other economic agents (see Amato, Morris and Shin (2002) and Svensson (2006)). See Mishkin (2004) and Goodhart (2001) for other counterarguments.

⁴ This problem is discussed by Stefan Ingves, Governor of Sveriges Riksbank in Sweden: “If different members were to send out different signals as to what should happen at the next meeting, it may also cause uncertainty as to which of them one should believe the most.” (Ingves 2007)

⁵ In theory, it is impossible for a committee which votes on each interest rate decision to have interest rate expectations based on a single consistent story, partly because the expected median member – and so the story on which the expectations are based – could change from meeting to meeting in the future.

⁶ The account presented here is based on information from the various central banks' websites.

⁷ Political authorities will always be able to instruct the central bank by changing the law. However, this would be a major undertaking, and the threshold for embarking on such a process would normally be high.

⁸ In the UK, for example, the Act states that there must be “extreme economic circumstances” before the Bank of England can be given directions.

3 Is there consistency between theory and practice?⁶

It is customary to compare Norway with the traditional industrialised countries in the OECD area. In this section, we look more closely at the frameworks in these countries (see overview in Table 1). We will look at the Norwegian system in more detail in Section 4.

Independent central banks

In all of these countries, it is the political authorities which define the overriding objective of monetary policy, often through legislation. The level of detail in which the authorities specify this objective varies somewhat, but the common denominator is that responsibility for the implementation of monetary policy is delegated to a central bank which is independent in its use of policy instruments to achieve the objective.

In most of the countries, price stability is the objective of monetary policy. This can either take the form of inflation targeting or be indirect through a fixed exchange rate, such as in Denmark, where the exchange rate is pegged to the euro. In some countries, such as the UK and Norway, the goal of price stability has been quantified by the political authorities. In Sweden and the euro area, the central banks themselves (Sveriges Riksbank and the ECB) have quantified the goal of price stability, although the general objective of price stability is laid down in law.

Today's monetary policy can be viewed as the result of a long learning curve to which both economic research and the authorities have contributed. The lesson learned from economic theory and economic policy in the 1960s, 1970s and 1980s was that unemployment cannot be reduced in the medium to long term by accepting slightly higher inflation. The goal of monetary policy needs to reflect what the central bank can realistically achieve. Over time, monetary policy can determine inflation, but output is determined by the supply of labour, capital, technology and adaptability. Low inflation is monetary policy's contribution to stable and strong economic growth over time.

In some countries, including Norway, central bank legislation contains provisions which allow the political authorities to issue instructions to the central bank.⁷ These provisions ensure that any instructions are issued through a predefined framework and with full transparency. Such provisions can be found in the central bank acts in the UK, New Zealand, Canada and Australia, among others, but the formulations concerning the application of these provisions vary somewhat.⁸

Table 1: Institutional framework for monetary policy in various countries

Country:	Monetary policy objective	Who makes the monetary policy decisions ¹	Decision-making rule in practice	Endogenous interest rate path	Press release	Publication of minutes	Evaluation by external organisations
Australia	Explicit inflation target	Committee (9) Other Internal/external (full-time/part-time)	Consensus	No	Yes, when there is a change in the interest rate	No	No
Canada	Explicit inflation target	Committee (6) Experts Internal (full-time)	Consensus	No	Yes	No	No
Euro area	Price stability	Committee (19) Experts Internal (full-time)	Consensus	No	Yes, with a press conference	Published 30 years later	Yes
Japan	Price stability	Committee (9) Experts Internal/external (full-time)	Majority	No	Yes, the voting results are published in a press release	Published minutes. Views are presented in an anonymous form, but the voting results are published. Complete information is published 10 years later.	No
New Zealand	Explicit inflation target	Governor Internal (full-time)	Only one decision-maker	Yes	Only one decision-maker	No committee	No
Norway	Explicit inflation target	Committee (7) Other Internal/external (full-time/part-time)	Consensus	Yes	Yes, with a press conference	No	Yes
UK	Explicit inflation target	Committee (9) Experts Internal/external (full-time)	Majority	No	Yes, when there is a change in the interest rate	Minutes are published two weeks after the meeting. Views are presented in an anonymous form, but the voting results are published.	No
Switzerland	Price stability	Committee (3) Experts Internal (full-time)	Consensus	No	Yes	No	No
Sweden	Explicit inflation target	Committee (6) Experts Internal (full-time)	Majority	Yes	Yes, with a press conference	Minutes are published two weeks after the meeting. Views are disclosed, and the voting results are published.	No
US	Price stability Employment Moderate long-term interest rates	Committee (12) Experts Internal (full-time)	Majority	No	Yes, the voting results are published in a press release	Minutes are published three weeks after the meeting. Views are presented in an anonymous form, but the voting results are published. Complete information is published 5 years later.	Yes

¹ The number of committee members is in brackets. Required qualifications for members are divided into experts and other. *Experts* refer to members with particular qualifications in macroeconomics, monetary policy or financial markets. *External* refers to members who do not take part in the daily operations of the central bank. In the UK, the four external members work at the central bank full-time but they have a separate secretariat and are not directly involved in the bank's daily operations. All members of Sveriges Riksbank's Executive Board work full-time, but they also have responsibilities other than making monetary policy decisions.

Sweden is an example of a country where the political authorities have not established a statutory right to instruct the central bank on interest rate decisions. The Swedish Central Bank Act states: “No public authority may determine how the Riksbank shall decide in matters of monetary policy.”

The different countries have organised monetary policy in slightly different ways, but, in all cases, monetary policy is implemented by an independent central bank with price stability as its sole or primary objective.

Transparency

Central banks attach importance to transparency, and publish accounts of the background for monetary policy decisions.

Central banks present their view of the economic situation and outlook in inflation and monetary policy reports. Some disclose the reasoning behind their interest rate decisions in statements and press conferences immediately following the decision. These include the ECB and the central banks of New Zealand, Australia and Norway. Other countries issue brief statements and provide further information about their reasoning at a later date in the form of detailed minutes of meetings of the monetary policy committee. These include the UK, Japan, the US and Sweden.⁹ These central banks also disclose how the individual committee members voted. Common to the central banks that publish minutes and voting results is that monetary policy decisions are taken by committees whose members work in the central bank or on monetary policy matters on a full-time basis. Actual practice seems, therefore, to be in line with Blinder’s view (see box “What is it possible to communicate externally?”).

Several countries also address the issue of democracy by having their central banks report to the political authorities in various ways. In Norway, this includes Norges Bank’s annual report being submitted to the Ministry of Finance and subsequently communicated to the Storting (Norwegian parliament), and its governor appearing at a hearing before the Storting. In Sweden, Sveriges Riksbank must submit a report to the Parliamentary Finance Committee at least twice a year,¹⁰ and its governor attends a hearing in the Riksdag (Swedish parliament) in connection with these reports. In the UK, the governor of the Bank of England and members of the monetary policy committee attend Parliament for regular hearings on the bank’s inflation reports. The Bank of England must also write an open letter to the Chancellor if inflation deviates from the target by more than a percentage point, explaining how

and when the bank will get inflation back on target.¹¹ The Governor of the Bank of England has said the following about this arrangement (King 2005): “When the time comes for me to write an open letter to the Chancellor... I will welcome the opportunity to explain how we expect to bring inflation back to target and over what horizon. Such letters are an integral part of the policy framework, not an indication of its failure.” In the US, the chairman of the Federal Reserve must testify before Congress every six months to give an account of the economic situation and the implementation of monetary policy. A written report is submitted to Congress at the same time.

There is considerable public interest in monetary policy. It is the subject of regular discussion in the media and financial markets. Many financial institutions continuously assess developments in the economy and the possible implications for monetary policy. In several countries, monetary policy is also evaluated by an independent group of experts. In the US, a group of independent economists known as the Shadow Open Market Committee have been evaluating monetary policy since as far back as 1973.¹² Another example is the ECB, where independent economists and market participants discuss monetary policy in the euro area through a series of conferences entitled The ECB and Its Watchers.¹³ In Norway, monetary policy is evaluated each year by Norges Bank Watch.

As the literature recommends, international practice is for central banks to be transparent, and this transparency has increased in recent years. However, the countries achieve transparency in different ways.

Monetary policy committees

In most of the countries, monetary policy decisions are made by committee (see Table 1). One exception is New Zealand, where interest rate decisions are formally made by the governor alone.¹⁴ In practice, though, the governor of the Reserve Bank of New Zealand reaches his decision after seeking the advice of an internal committee. In Canada, decisions on monetary policy are, in practice, delegated to an internal board, even though by law¹⁵ it is the governor alone who bears the responsibility.

The number of committee members ranges from three in Switzerland to 19 in the ECB. With the ECB, the Federal Reserve, the Bank of England, Sveriges Riksbank and the Swiss National Bank, all committee members are full-time employees of the central bank. In Australia and Norway, the committee also has members who work outside the bank. Whether monetary policy decisions are taken by a committee responsible solely

⁹ Sveriges Riksbank in Sweden decided in May 2007 to hold a press conference after every rate-setting meeting rather than only when changing interest rates. It also decided that members of its Executive Board should have their contributions to the discussion attributed to them by name.

¹⁰ Sveriges Riksbank has chosen to use two of the year’s three monetary policy reports for this purpose.

¹¹ This happened for the first time on 16 April 2007, when inflation was 1.1 percentage points above the target of 2 per cent.

¹² See www.somc.rochester.edu.

¹³ See www.ifk-cfs.de/index.php?id=1164.

¹⁴ In order to “clarify” the central bank’s responsibility for monetary policy, the governor is explicitly given responsibility for setting interest rates in a written contract (the Policy Target Agreement) between the governor and the finance minister.

¹⁵ Bank of Canada Act 8 (1).

for monetary policy, such as the Federal Open Market Committee (FOMC) in the US, or by a body with overall responsibility for all of the central bank's operations, as is the case with Sveriges Riksbank, varies.

In several countries, the legislation contains explicit requirements for the qualifications of committee members, but they are normally quite general, as is the case in Norway (see more detailed discussion in Section 4). In the UK, the requirement is that "the person has knowledge or experience which is likely to be relevant to the Committee's functions". Members of the ECB's Governing Council must have "professional experience in monetary or banking matters". In other countries, such as the US and Sweden, there is, in practice, a requirement that committee members have certain qualifications in macroeconomics, monetary policy or financial markets, although this is not laid down explicitly in law. In Australia, several committee members have their "day jobs" at companies and universities.

Several central banks allow representatives of the authorities to be present at meetings of the monetary policy committee. As a rule, they do not have the right to vote. This includes the Bank of England, where a representative of the Treasury sits in on meetings and can participate in the discussion, and the ECB, where the chairman of Ecofin¹⁶ and a member of the European Commission may attend meetings of the Governing Council. In Sweden, the chairman and vice-chairman of the Riksbank's General Council¹⁷, which is appointed by the Riksdag, are entitled to attend and speak at meetings of the monetary policy committee, but not to table proposals or vote. In Japan, both the finance ministry and the prime minister's office are represented. It is usual for these representatives to speak, and they have the right to table proposals, but not the right to vote.¹⁸ In Australia, the secretary to the Treasury is a permanent member of the monetary policy committee and has the right to vote.

Members of the monetary policy committee are normally appointed by the country's government or parliament, but in some cases the central bank itself also plays a role in their appointment. One example is the US, where the regional Federal Reserve Bank presidents are appointed by their respective regional boards.¹⁹ These boards consist of representatives of banks and different industries, and are intended to reflect a broad cross-section of both the providers and users of banking services in each district. The other seven members of the FOMC are nominated by the US president and approved by the Senate. In Sweden, the six members of the Executive Board are appointed by the Riksbank's General Council. In the UK, the external members of the Monetary Policy Committee are appointed by the Treasury, while two of the internal members are appointed by the bank itself after consulting the Treasury.

¹⁶ The Economic and Financial Affairs Council, which comprises the EU's finance ministers.

¹⁷ The Riksdag appoints the 11 members of the Riksbank's General Council, which reflects the political make-up of the Riksdag.

¹⁸ They can also request that a vote on monetary policy be postponed to the next meeting. If such a request is made, the Policy Board is to decide by a vote whether it will accede to this request.

¹⁹ Five of the 12 regional presidents are voting members of the FOMC. The other seven attend meetings and have the right to speak, but cannot vote. With the exception of the Federal Reserve Bank of New York, voting membership of the FOMC rotates between the regional Reserve Banks.

²⁰ Sveriges Riksbank published its first interest rate forecast in its monetary policy report of 15 February 2007.

Communication of interest rate expectations

The Reserve Bank of New Zealand and Sveriges Riksbank in Sweden communicate their explicit expectations of economic developments and interest rates in separate monetary policy reports in the same way as Norges Bank.²⁰ The Central Bank of Iceland also presents analyses with its own interest rate forecast. Other central banks indicate the future interest rate path in statements following rate-setting meetings (such as the ECB), or else the future path can be elicited from the minutes of the monetary policy committee's discussions. The Bank of England attaches importance to economic agents forming their own expectations of interest rates based on their understanding of the bank's reaction patterns. For example, the Bank's Governor, Mervyn King, said (King 2006): "We don't say where interest rates will go next for the simple reason that we don't know... Knowledge of our objective and our analysis is all that markets need from us to form judgments about the future path of interest rates."

The central banks are increasingly communicating their expectations of future interest rates. The way in which they do so varies from country to country. Theory does not give a clear answer about what is the best way of communicating expectations, but indicates that this may depend on how decisions are taken by the central bank.

4 Does Norway differ from other countries?

Independence

Norges Bank is responsible for the implementation of monetary policy in Norway. This is in line with the recommendations from the literature and international practice.

Monetary policy in Norway is oriented towards low and stable inflation. The operational target for monetary policy is annual consumer price inflation of approximately 2.5 per cent over time (see separate box presenting the monetary policy mandate). Norges Bank operates a flexible inflation targeting regime, so that both variations in inflation and variations in output and employment are taken into account.

In several countries, the political authorities reserve the right to instruct the central bank on monetary policy matters. In Norway, the right of instruction is general, but is unlikely to be exercised differently to other countries, where this right is restricted to critical situations. Section 2 of the Norges Bank Act (the "instruction clause", see separate box) states: "The King in Council may adopt resolutions regarding the operations of the Bank." It also contains special rules of procedure that

Mandate for monetary policy

Monetary policy in Norway is conducted by Norges Bank. The bank's activities are governed by the Act relating to Norges Bank and the Monetary System etc (the Norges Bank Act) passed by the Storting on 24 May 1985. Section 2 of the Act covers the bank's relationship to the government authorities, while section 4 deals with decisions on changes in the exchange rate regime. Sections 19 and 20 authorise Norges Bank to decide the terms and interest rates for banks' deposits with and loans from the central bank.

Pursuant to section 2, paragraph 3 and section 4, paragraph 2 of the Norges Bank Act, the Government issued a new Regulation on Monetary Policy on 29 March 2001. This sets out Norges Bank's mandate for the implementation of monetary policy. Section 1 of the regulation 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.

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

Norges Bank commented on this mandate in a letter to the Ministry of Finance on 27 March 2001. Among other things, the letter stated:

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

The "instruction clause"

Section 2 of the Act relating to Norges Bank and the Monetary System etc (the Norges Bank Act):

Section 2. Relationship to the government authorities

The Bank shall conduct its operations in accordance with the economic policy guidelines drawn up by the government authorities and with the country's international commitments.

Before the Bank makes any decision of special importance, the matter shall be submitted to the ministry.

The King in Council may adopt resolutions regarding the operations of the Bank. Such resolutions may take the form of general rules or instructions in individual cases. The Bank shall be given the opportunity to state its opinion before such resolutions are passed. The Storting shall be notified of resolutions as soon as possible.

The Bank is a separate legal entity and is owned by the state. The Office of the Auditor General monitors the way the minister exercises his authority in accordance with the Act relating to the Office of the Auditor General of 7 May 2004 and the instructions laid down by the Storting.

apply if the government authorities wish to make such a resolution regarding the operations of Norges Bank. The resolution must be adopted by the King in Council, and may not be delegated to others. The Storting must also be notified as soon as possible, and Norges Bank must be given an opportunity to state its opinion before the resolution is passed. Section 2 also states that before Norges Bank makes any decision of special importance, the matter must be submitted to the ministry.

Since 1986, Norges Bank has followed up this notification duty in practice by holding separate meetings to inform the Ministry of Finance of the reasoning behind its interest rate decisions. This gives the ministry an opportunity to express its views. In the Credit Report 2003, the Ministry of Finance stated the following about the notification duty: "The aim of notification is not to place restrictions on the Executive Board, which is to be free to make decisions on interest rates within the monetary policy guidelines drawn up."

Transparency

Norges Bank is open about the basis for its monetary policy decisions. The Bank's understanding of its mandate and the framework for the implementation of monetary policy has been documented and made public. The bank has also reported on its working methods, including its use of economic models. The basis for

Table 2: Documents for monetary policy meetings and their publication

Document	Publication
A monetary policy report presenting the Executive Board's monetary policy assessments and strategy, as well as Norges Bank's interest rate projections, is published three times a year and serves as a point of reference for the decisions made about the key interest rate over the next four months	2 pm on the day of the monetary policy meeting
A press release containing the interest rate decision, and a document outlining the background and general assessment underlying the interest rate decision	2 pm on the day of the monetary policy meeting
The governor or deputy governor's presentation of charts from the monetary policy meeting ¹	2 pm on the day of the monetary policy meeting
The governor or deputy governor's press conference, where he reports in more detail on the Executive Board's interest rate decision and the background to it. Audio and video from the press conference are broadcast live on the Internet and are subsequently available for download. Besides streaming video, Norges Bank also offers mobile TV and podcast options	2.45 pm on the day of the monetary policy meeting
A report from Norges Bank's regional network ²	2 pm on the day of the monetary policy meeting

¹ Charts which contain confidential information (such as unpublished forecasts from the OECD and IMF, estimates of wage growth for particular groups which are based on confidential information from employee or employer organisations, data from specific companies, and new, provisional internal analyses) are not made public.

² The report is not published in its entirety, as it contains confidential information about specific companies.

interest rate decisions is made public in an extensive press release and press conference on the day the interest rate decision is announced. In its monetary policy report, released three times a year, the bank publishes forecasts for key macroeconomic variables for the next three years, including the bank's own forecasts of its key policy rate. Table 2 provides an overview of publications related to the Executive Board's interest rate decisions. These materials are published simultaneously in Norwegian and English on the Internet.

The minutes of the Executive Board's monetary policy meetings are not published, but the first section of the monetary policy report presents the Executive Board's views and monetary policy strategy. The press release following each monetary policy meeting sets out both the main developments in the economy which have had a bearing on the interest rate decision, and the Executive Board's reasoning.

Norges Bank reports on the implementation of monetary policy in its annual report. When commenting on the monetary policy mandate in its letter to the Ministry of Finance of 27 March 2001, the Bank wrote as follows: "If there are significant deviations between actual price inflation and the target, the Bank will provide a thorough assessment in its annual report. Particular emphasis will be placed on any deviations outside the interval +/- 1 percentage point." The annual report is sent to the Ministry of Finance for submission to the King and communication to the Storting. The government's assessment of monetary policy is presented in an annual credit report²¹, which includes Norges Bank's

operations. The governor of Norges Bank also attends an open hearing of the Storting's finance committee as part of the committee's consideration of the credit report.

Norges Bank Watch is a series of yearly reports on monetary policy in Norway. The reports are prepared by an independent group of experts appointed by the Centre for Monetary Economics at the BI Norwegian School of Management. Norges Bank Watch is funded in part by the Ministry of Finance. Norges Bank Watch's findings are also presented in the government's credit report. Monetary policy is also discussed in the regular reports on the Norwegian economy from the IMF and the OECD.

The level of transparency in Norges Bank's operations is in line with Section 3 of the Norges Bank Act²², the recommendations from the literature and international practice.

The Executive Board – Norges Bank's monetary policy committee

Norges Bank's monetary policy decisions are taken by its Executive Board, which has seven members: the governor, the deputy governor, and five external members. With the exception of Australia, Norway differs from the other countries in that the majority of members are not full-time employees of the central bank.

The members of the Executive Board are appointed by the government. According to Proposition to the Odelsting No. 81 (2002–2003)²³, when appointing

²¹ See, for example, Report to the Storting No. 23 (2006–2007) The Credit Report 2006.

²² Section 3. Statements by the Bank

The Bank shall state its opinion on matters that are put before it by the King or the ministry.

The Bank shall inform the ministry when, in the opinion of the Bank, there is a need for measures to be taken by others than the Bank in the field of monetary, credit or foreign exchange policy.

The Bank shall inform the public about the monetary, credit and foreign exchange situation.

The Bank shall inform the public of the assessments on which monetary policy decisions are based.

²³ Proposition to the Odelsting No. 81 (2002–2003) Bill amending the Norges Bank Act and the Financial Institutions Act and repealing the Currency Control Act and the Money and Credit Control Act.

members, importance is to be given to ensuring that the Executive Board reflects a breadth of background and expertise, with particular emphasis on economics and finance and a good grasp of socio-economic issues. The bill states that the Executive Board should be composed of people with different backgrounds in order to ensure that it is capable of critically reviewing its assessments.

As discussed in Section 3 above, some central banks have representatives of the country's government on their monetary policy committees. The political authorities are not represented in any way on the Executive Board of Norges Bank.

The Executive Board is responsible for all of the Bank's operations, including monetary policy. The Executive Board acts as a monetary policy committee when dealing with matters of monetary policy. At the Executive Board's monetary policy meetings, the governor of Norges Bank presents his proposed decision for consideration by the Board's members. The Executive Board has delegated the external communication of its decisions to the governor.²⁴ It may be appropriate to classify the Executive Board as a collegial committee.

Communication

Norges Bank is one of few central banks in the OECD area to communicate its expectations of movements in interest rates by publishing its own interest rate forecast. In so doing, the bank reveals its position on which interest rate path strikes the best balance between the different objectives of monetary policy. When the interest rate forecast reflects a monetary policy stance that strikes a reasonable balance, it will help to make monetary policy more predictable (Bergo 2006). Although considerable uncertainty still prevails, it is then easier for economic agents to evaluate the interest rate outlook. This helps to make monetary policy more efficient. The interest rate path is conditional on future economic developments and Norges Bank's understanding of how the economy works. This arrangement is in line with the recommendations from theory, but so far only three central banks publish their own interest rate forecasts. The Reserve Bank of New Zealand has published interest rate forecasts since as far back as 1998, Norges Bank since 2005, and Sveriges Riksbank since February 2007. Staff at the Central Bank of Iceland also prepare an interest rate forecast as a basis for interest rate decisions. A number of other central banks are considering publishing their own interest rate forecasts.²⁵

²⁴ For practical reasons, it may be the deputy governor who presents the proposal to the Executive Board and communicates its decision externally, but this will then be on behalf of the governor.

²⁵ For example, the governor of the Bank of England said in May 2007 (King 2007): "We shall keep in close touch with our colleagues in central banks that do publish forecasts of policy rates to see what we can learn from their experience. If we feel that there are net benefits from following their example, then we will do so."

5 Summary

The last 20 years have brought major changes in monetary policy, both in Norway and abroad. Central banks have become independent in their use of policy instruments, and the objective of interest rate setting is to promote price stability. In addition, the organisation of decisions internally in several central banks has been altered. In most central banks, decisions are now taken by a committee. Central banks have also become more transparent.

For reasons of democracy, an independent central bank must be transparent. A central bank must also communicate its expectations of developments in interest rates and the economy in order to make monetary policy more effective. The form this communication takes will probably depend on how decisions are taken internally in the bank. If responsibility rests with the governor alone or with a collegial committee, an interest rate path and the associated reasoning can be communicated. With more individualistic committees, this may be more demanding, but they may publish detailed minutes.

There are differences between the frameworks in different countries. These differences apply particularly to the size, composition and working methods of the monetary policy committee, and the way in which the central bank communicates. These differences are probably a reflection of the fact that banks operate in different economies and have different traditions, which can explain different ways of working. Theoretical and empirical research does not give a clear answer about what is the optimal framework.

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Turbulence in credit markets – mortgage financing at home and abroad

Speech by Governor Svein Gjedrem at the annual meeting of the Norwegian Savings Banks Association¹

Financial markets in different countries have become more closely interwoven over the past few years. New participants have appeared and new and more complex products to diversify risk have been introduced – also across national borders. Some of these products were put to the test for the first time during this autumn’s turbulence in credit and money markets. Triggered by problems in the subprime mortgage market in the US, the turbulence quickly spread to other parts of the financial markets.

In my remarks today, I will try to describe the driving forces behind these developments and the contagion effects on the Norwegian money and credit markets, with a discussion of the lessons to be drawn.

Turbulence in the financial sector

The US subprime mortgage market has expanded sharply in recent years. These mortgages often have low interest rates at the beginning of the loan term followed by higher interest rates after a period. Subprime mortgages are based on expectations of a rise in house prices. Borrowers can refinance their mortgage when house prices rise and thus maintain their debt-servicing capacity. Alternatively, they can sell their house at a profit.

In 2006, there was a turnaround in the US housing market and the rise in house prices began to slow (see Chart 1). This pulled the carpet from under many investments and resulted after a period in rising defaults on mortgages. These developments then triggered widespread turbulence in money and credit markets.

The US mortgage market has gradually developed into a complex structure with a large number of participants. The distance between borrower and investor can be considerable. Chart 2 shows possible interlinkages in the US subprime market. There is a long chain of intermediaries. On the one side is a borrower who wishes to take out a mortgage in order to buy a house. Between the borrower and the lender is an agent who functions as sales channel. The lender is a financial institution specialising in granting and following up these mortgages. The ABS

special purpose vehicle buys the mortgage and packages it with other mortgages. The mortgages are financed by tranching securities. The mezzanine tranches are sold to another special purpose vehicle, which repackages them and issues CDOs. A conduit invests in the senior tranches and obtains its financing by issuing asset-backed commercial paper. The commercial paper is bought by a money market fund, which in turn has received its capital from savers.

Banks can be involved in all stages of the chain. A bank may have an ownership share in and/or provide credit lines to both the lender and several other types of special purpose vehicles. If problems arise in one of more of the intermediaries, the responsibility easily falls on the bank. US and European banks have also invested in securities issued by special purpose vehicles.

An important part of the process is the packaging of mortgages by special purpose vehicles. The senior tranches have a high rating. The subprime mortgage market has thus gained access to funding from insurance companies and other asset managers that would not otherwise have invested in this market, and credit risk associated with these mortgages has been spread to international financial markets.

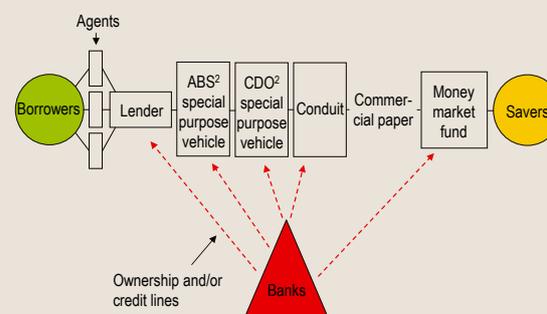
Rising defaults on subprime mortgages resulted in a

Chart 1 House prices in the US¹⁾. 12-month rise. Per cent. Jan. 1988 – July 2007



¹⁾ S&P Case-Shiller composite index
Source: Reuters (EcoWin)

Chart 2 Interlinkages in the US subprime mortgage market¹⁾



¹⁾ The chart shows an example of possible interlinkages
²⁾ ABS: Asset-backed securities. CDO: Collateralised debt obligation. For a more detailed description, see Economic Bulletin no. 1/2006, p 35

¹ The speech was held in Hamar on 11 October 2007. Minor changes in the text have been made for linguistic reasons only.

Chart 3 Credit spreads on US subprime asset-backed securities. First half of 2006 vintage. Percentage points



Source: Lehman Brothers

sharp rise in the yield spread between securities backed by this type of loan and US government bonds (see Chart 3).

The turmoil quickly spread to other parts of the financial markets.

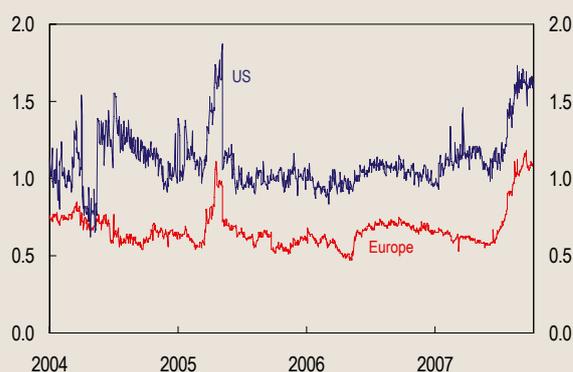
Uncertainty arose in banks that were directly or indirectly exposed to losses on subprime mortgages. Banks' oversight of their own potential losses was poor. It was also unclear to what extent special purpose vehicles would draw on credit lines. A number of private equity companies had difficulty obtaining financing in bond markets for their leveraged buy-outs. As a result, banks that had guaranteed temporary funding for these companies were left holding these loans for longer than originally planned. For both these reasons, banks did not know how much their balance sheets would grow. This created uncertainty as to their own liquidity requirements.

Banks were also uncertain about the size of potential losses in other banks. Information was not available to indicate which banks were exposed to losses in the US subprime market. In addition, it was difficult to pin down the actual risk associated with subprime-related securities. Banks became highly reluctant to lend to each other, resulting in a marked increase in money market rates.

Several funds began to lose money on securities backed by US mortgages. As a result, customers wanted to redeem their investments. The funds were forced to sell securities in order to meet their customers' demands. Since a number of the securities they held were not easy to trade, the funds were pressured into selling highly rated paper. This led to a fall in prices even for highly rated securities.

Equity prices fell, and bond markets saw a pronounced rise in credit spreads (see Chart 4). In spite of high earnings and a low level of defaults, credit spreads have risen for both US and European corporate bonds with a BBB rating. Credit spreads have also increased

Chart 4 Corporate bond credit spreads¹⁾. Five years' maturity. Percentage points



¹⁾ BBB rated bonds

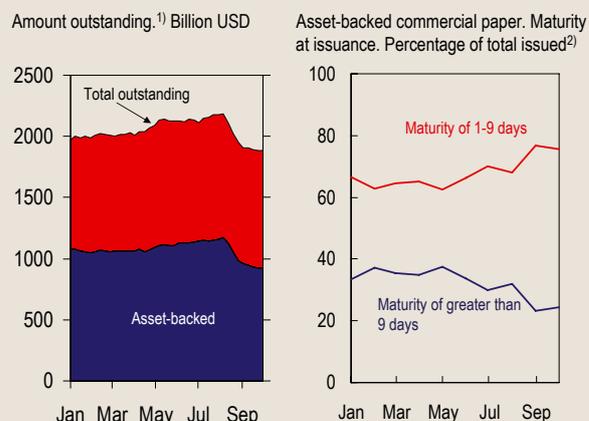
Source: Reuters (EcoWin)

for US bonds with speculative-grade ratings, i.e. ratings lower than BBB-, even though there are no signs of more widespread problems in these markets. For emerging markets, credit spreads have increased somewhat, but the impact of the turbulence on these markets seems so far to be moderate. Equity markets have also seen a turnaround and in a number of countries have now regained lost ground.

The market for asset-backed commercial paper has been severely affected (see Chart 5). The amount of paper outstanding has fallen markedly, and the share of short-maturity paper has increased. This is in part due to the withdrawal of a number of money market funds from this market. Substantial losses in this type of fund would have resulted in customer flight and funds are therefore having to dispose of their investments in markets that are now considered uncertain.

The current turbulence differs from previous periods of turbulence. The impact on equity markets and emerging economies has been limited. This time, we are

Chart 5 Commercial paper. Amount outstanding and terms to maturity. 2007



¹⁾ Weekly figures

Sources: Federal Reserve and Norges Bank

²⁾ Monthly figures

dealing with a credit and liquidity squeeze at the core of the financial system. This affects many participants, including large banks.

Subprime mortgages account for more than 6 per cent of the total volume of mortgages in the US. However, the problems in this segment are spreading to other housing market segments. The housing supply increases because of the rise in the number of foreclosures, and housing demand declines as it becomes more difficult for new borrowers to obtain a mortgage. This may lead to a further decline in house prices. The resulting wealth effects may have a dampening impact on household consumption.

Banks' accountants and auditors are now working hard to calculate losses and reductions in earnings. In order to limit the macroeconomic effects it is important that banks put this episode behind them as soon as possible. At the same time, we know – not least from the Nordic countries' experience in the 1980s and 1990s – that the situation is demanding when the value of collateral falls. The most realistic scenario is therefore that it will probably take time for the turbulence to abate.

There are important lessons to be learned here. The turbulence has revealed a number of shortcomings, primarily in the markets themselves, but also in the regulatory and supervisory systems.

First, it became apparent that there are serious shortcomings in the banks' originate-and-distribute model. Banks used to retain mortgages on their balance sheets. They had an incentive to assess the credit risk carefully in order to avoid losses. Now it has become common for banks to grant mortgages and then sell them in capital markets, to investors that have traditionally purchased securities, such as pension funds and life insurance companies, but also to special purpose vehicles established for this purpose. The mortgages have thus been removed from the banks' balance sheets, leaving the banks apparently free of credit risk.

The sale of mortgages via the securities market can diversify risk and make the financial system more stable and robust. However, the risk has proved to be considerably more concentrated than participants themselves or supervisory agencies had believed. At the same time as banks sold mortgages to special purpose vehicles, they established credit lines to these same vehicles. When the special purpose vehicles encountered funding difficulties, they had to draw on their credit lines. This put credit risk back on banks' balance sheets.

Second, there were shortcomings in the regulatory system. Through high credit lines to special purpose vehicles, some banks had large exposures to a single counterparty. Banks may have used a loophole in the old capital adequacy rules, Basel I, where the risk weight for unused credit lines was zero in banks' capital requirements. If national regulations for large exposures were based on Basel I, this may explain why some of the beleaguered German banks had extended credit lines

that were many times larger than their capital. Under the new capital adequacy rules, Basel II, banks are required to set aside capital against all of these credit lines.

Third, there were shortcomings in the US subprime mortgage market. A substantial share of these mortgages was sold through agents, such as estate agents and mortgage brokers. The agents' earnings were based on high lending volumes, and they did not have to bear any risk for losses on these mortgages. Adverse incentives are created when the responsibility for credit assessment and the responsibility for bearing risk are separated. As a result, agents have extended loans to many borrowers who do not have the capacity to service these loans.

Fourth, the question has been raised whether the agencies rating the securities issued by special purpose vehicles are independent enough. Growth in these agencies' earnings in recent years has to a large extent derived from rating these securities. Rating is requested and paid for by banks. High ratings result in sales to more investors. Without high ratings, this market would be far less attractive and the agencies would lose some of their earnings. This may have generated incentive problems. In addition, the agencies, which have specialised in the assessment of corporate bonds, may have lacked the expertise to rate mortgage-backed securities.

Fifth, there have been shortcomings in the supervisory system. As mentioned above, some German banks have taken substantial off-balance-sheet risk. In the US, neither agencies nor lending institutions have been subject to federal supervision, and the various lending institutions and brokers have operated under different regulatory and supervisory regimes with varying intensities of enforcement effort.²

Both supervisory authorities and banks have underestimated liquidity risk. Special purpose vehicles and banks have invested in long-term assets and taken out short-term loans.

The problems in the US mortgage market and the contagion effects in other financial market segments have had negative consequences for many financial institutions and banks. One US bank has gone bankrupt so far. Several US mortgage institutions have had to close or have been bought by other institutions. In Europe, the bank in greatest difficulty has been taken over and more banks are expected to be taken over by other financial institutions in the period ahead.

Financial market turmoil has had a severe impact on the British bank Northern Rock. This bank, with its low deposit-to-loan ratio, was not able to renew its short-term financing in money markets and was forced to turn to the Bank of England for assistance. When the news broke, many customers rushed to the bank to withdraw their savings. The UK had not experienced such panic-driven withdrawals since 1866. The Financial Services Compensation Scheme was not sufficient to calm the bank's customers. Finally, the Chancellor of the Exchequer announced that the government would

² Ben S. Bernanke: "Subprime mortgage lending and mitigating foreclosures." Remarks before the Committee on Financial Services, US House of Representatives, Washington DC, 20 September 2007. *BIS Review* 104/2007.



guarantee all deposits in addition to the cover already available.³ Only then did the long queues outside the bank's branches disappear. When the worst was over, Northern Rock share prices had fallen by over 70 per cent (see Chart 6).

Compared with the UK and other countries, Norway has a generous deposit-guarantee scheme covering deposits up to NOK 2 million per depositor per bank. Norwegian banks are required to be members of the scheme. Branches of foreign banks in Norway are not required to be members of the scheme, but some have chosen to join it.

Just as important as the amount guaranteed under the scheme is how quickly the deposits can be released. This will partly depend on the amount of capital in the guarantee fund. The rapid release of funds also depends on sound procedures for bank data centres and automated systems.

Central banks can respond in a number of ways to combat the kind of turbulence that several countries have now experienced (see summary in box). One response is to supply short-term liquidity, as a number of central banks have done, including Norges Bank.

Another way to respond is to supply liquidity with a longer maturity. Central banks in the euro area, the US and the UK opted for this response, as a number of banks were finding it difficult to obtain loans with somewhat longer maturity on the market.

A third response is to lower the discount rate. Banks that have miscalculated their liquidity requirements can obtain a loan through the discount window facility. Normally, the discount rate has a fixed premium above the key policy rate.⁴ On Friday 17 August, the Fed reduced this premium and lowered the discount rate by 0.5 percentage point.

All central bank loans are backed by securities or

Box. Central bank responses

Supply short-term liquidity	US, euro area, the UK, Canada, Switzerland, Japan, Norway
Supply longer-term liquidity	US, euro area, the UK
Lower the discount rate	US
Widen the range of securities accepted as a collateral by the central bank	Australia, the UK
Provide liquidity support on special terms	the UK

some other form of collateral. A fourth response is to approve a wider range of collateral. The central banks in the UK and Australia expanded their range of approved collateral during the turbulent period.

A final response is to provide liquidity support on special terms. Central banks can provide this support if a bank faces pressing short-term liquidity problems. The Bank of England approved a liquidity support facility for Northern Rock.

In situations where the need for extraordinary measures arises, central banks must weigh two important considerations against each other. The objective of financial stability in the short term must be weighed against the possibility of encouraging excessive risk-taking in the longer term. When central banks intervene and bail out operators that have taken on too much risk, this may be perceived as insurance against excessive risk-taking – so called moral hazard, which may increase the risk of similar situations arising in the future.

Moral hazard may be related to single institutions that take on too much risk. In these cases, it is manageable. The authorities design measures in such a way that shareholders, management and staff, and probably also lenders, suffer substantial losses. The authorities do not issue any form of comprehensive insurance whatsoever.

It is more complicated when banks herd with other banks in taking on excessive risk. This herd behaviour was described by John M. Keynes in 1931:

*"A sound banker, alas, is not one who foresees danger and avoids it, but one who, when he is ruined, is ruined in a conventional way along with his fellows, so that no one can really blame him."*⁵

Note that a banker's reputation might thus be intact, although not her job or assets. The management of the

³ On Monday 17 September, HM Treasury issued the following statement: "I can announce today that following discussions with the Governor and the Chairman of the FSA, should it be necessary we, with the Bank of England, would put in place arrangements that would guarantee all the existing deposits in Northern Rock during the current instability in the financial markets". On Thursday 20 September, HM Treasury specified the accounts that were covered by the guarantee issued on 17 September. The guarantee covers all accounts existing at midnight on Wednesday 19 September and all accounts in Northern Rock re-opened in the future by those who closed them between Thursday 13 September and Wednesday 19 September, inclusive. The guarantee covers future interest payments, movements of funds between existing accounts, and new deposits into existing accounts. HM Treasury also stated that it would cover existing and renewed wholesale deposits and existing and renewed wholesale borrowing which was not collateralised.

⁴ In Norway, the premium is one percentage point.

⁵ John M. Keynes (1931): "The Consequences to the Banks of the Collapse of Money Values", *Essays in Persuasion*, and Wolf, Martin (2007): "Life Could Yet Follow Death for the Idea of Securitisation", *Financial Times*, 3 October 2007

Nordic banking crisis also showed that it is possible to respond in order to reduce moral hazard, i.e. reduce the risk of a repetition of the herd behaviour that led to the crisis.

Expectations of a slowdown as a result of falling house prices in the US have resulted in some increase in credit premia in Norway as well. Equity prices on the Oslo Stock Exchange fell during the turbulence, but have recently picked up again somewhat.

The spread of market turbulence to Norwegian financial institutions is a pure contagion effect. Surveys by Kredittilsynet (Financial Supervisory Authority of Norway) show that Norwegian banks are not directly exposed to losses related to the US subprime market. And no Norwegian banks operate in the same way as the British bank Northern Rock, with its extensive debt-financing in money markets.

Contagion occurred because a substantial share of Norwegian banks obtain financing abroad. The euro-dollar market has been a frequently used source of financing for Norwegian banks. This is both because Norwegian banks have substantial dollar lending and because this market is used as a source of NOK, i.e. banks borrow in dollars and then swap them for NOK.

In the early 1990s, a market was established for pure krone liquidity, called the NIDR (Norwegian Interbank Deposit Rate) market, but this market has few participants and low liquidity.

Since the beginning of August, the euro-dollar market has not functioned well. This has affected the Norwegian money market. The difference between the money market rate and the expected key policy rate has widened considerably, although less than in major markets abroad (see Chart 7). This has resulted in a rise in banks' borrowing costs – at least for a period. This might have an impact on banks' profitability.

Turnover time for deposits and loans in the inter-bank market has also increased and loan terms have decreased.

Norwegian banks and mortgage companies are now also entitled to issue mortgage-backed bonds. The rules for covered bonds entered into force on 1 June 2007. Norwegian covered bonds are very different from US CDOs backed by subprime mortgages. The regulations ensure that Norwegian covered bonds are a more transparent and substantially more secure investment alternative. Norwegian mortgages have a maximum loan-to-value ratio of 75 per cent. In addition, all holders of covered bonds have the same claim over the cover pool.

A number of conclusions can be drawn from the turmoil in credit and money markets. Problems in markets far beyond Norway's borders may have an impact on Norwegian banks even if the banks are not directly involved. As a result of the globalisation of financial markets and new and complex instruments, turbulence spreads quickly.

Banks extend long-term loans. They should therefore be cautious about basing borrowing growth on short-term financing. They should ensure access to a solid local deposit base or long-term bond issues for any expansion.

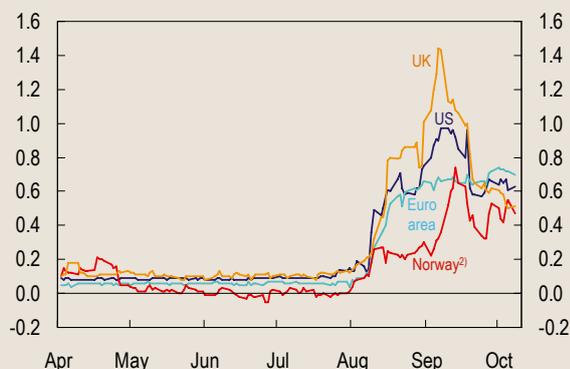
When times are good, it may be difficult to perceive and assess risk. New products that are wholly dependent on favourable economic developments are not viable. New products must be robust to slowdowns and unforeseen events.

The housing market in Norway and the financial position of households

The recent turbulence originated in the US housing market. I will now turn to developments in the housing market and household saving and investment decisions in Norway.

Growth in household credit has been high for a long period, accompanying the sharp rise in house prices (see Chart 8). The increase in housing wealth has amplified the demand for loans.

Chart 7 Difference between money market rates and expected key policy rates.¹⁾ 3-month maturity. Percentage points. 2007

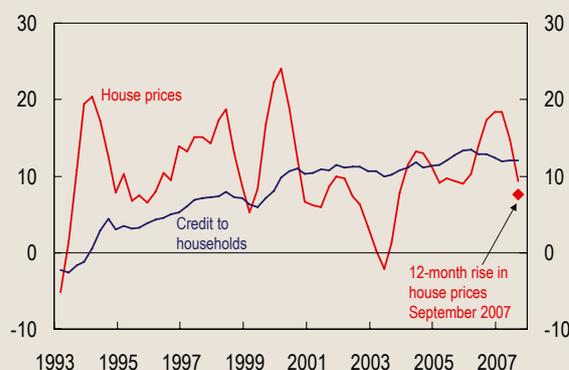


¹⁾ The expected key rate is measured by Overnight Indexed Swap (OIS)

²⁾ Estimates

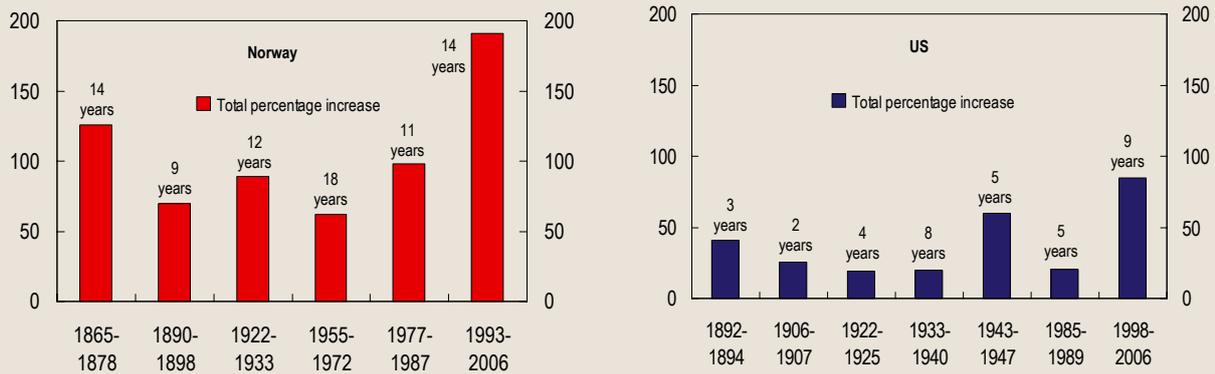
Sources: Reuters (EcoWin) and Norges Bank

Chart 8 Rise in house prices and credit to households. 4-quarter rise



Sources: Association of Real Estate Agents, ECON, Finn.no, Association of Real Estate Agency Firms and Statistics Norway

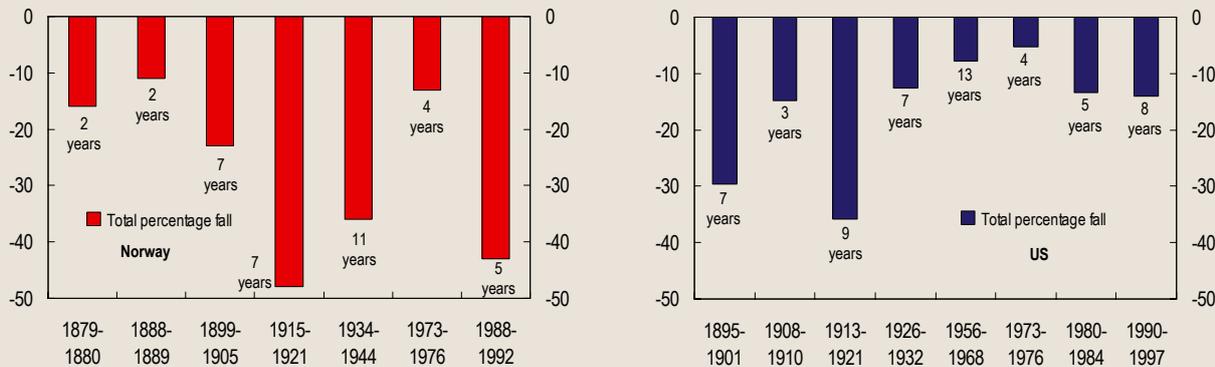
Chart 9 Periods of rising house prices in Norway (1865-2006) and the US (1892-2006).¹⁾ Number of years and total percentage increase



¹⁾ The periods comprise consecutive years of rising real house prices. A few years of falling real house prices might occur in the analysed periods

Kilder: R. Shiller, Statistics Norway and Norges Bank

Chart 10 Periods of falling house prices in Norway (1865-2006) and the US (1892-2006).¹⁾ Number of years and total percentage decline



¹⁾ The periods comprise consecutive years of falling real house prices. A few years of rising real house prices might occur in the analysed periods

Kilder: R. Shiller, Statistics Norway and Norges Bank

The annual rise in house prices in Norway has been positive since 1992. In real terms, prices have almost trebled, making this the second longest period of rising real house prices since 1819. The rise in house prices accelerated through 2006, and the market showed signs of increased risk-taking and even a state of euphoria.

Periods of sharply rising house prices have occurred previously (see Chart 9).

House prices have risen in many countries. Up to 2006 the US experienced the longest period of an uninterrupted rise in house prices. This period lasted for nine years, while the rise in house prices in Norway has lasted for 14 years. Furthermore, the total increase in real house prices in the US through the last period of expansion was far lower than in Norway. House prices have generally risen more in Norway than in the US in periods of expansion.

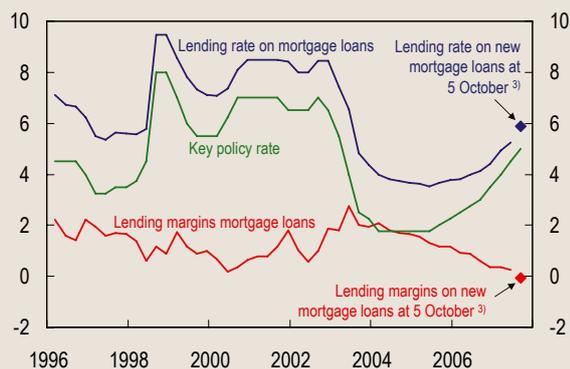
Developments in house prices reflect periods of expansion – often long – that are followed by a contraction. In periods when house prices have fallen in Norway, they have declined at a faster pace than during downturns in

the US (see Chart 10). It is only to be expected that fluctuations in Norway are much wider than in the US, with its many large local markets. In addition, the extensive use of adjustable-rate mortgages in Norway might be one of the reasons why movements in house prices are more pronounced here than in other countries.

In recent months, there have been signs of an impending turnaround in the housing market in Norway. The rise in house prices has slowed. The housing supply has increased considerably this year and in September reached its highest level since November 2002. In the last three months, prices have fallen when the figures are adjusted for normal seasonal variations. There is none the less no definitive evidence that we are approaching a more long-term decline. Demand for housing in Norway has also been supported by strong economic growth and a marked rise in the number of households.

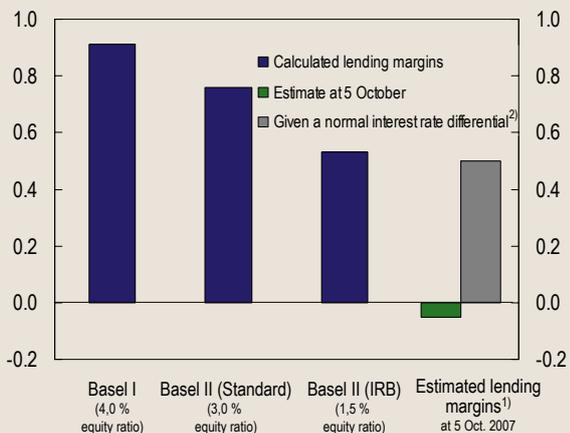
Intensified competition for market shares has put pressure on banks' lending margins. In recent years, mortgage borrowing rates have not always risen to the same extent as Norges Bank's key policy rate (see Chart 11).

Chart 11 Lending rate and lending margins on mortgage loans¹⁾ and Norges Bank's key policy rate²⁾. Annual percentage rate and percentage points



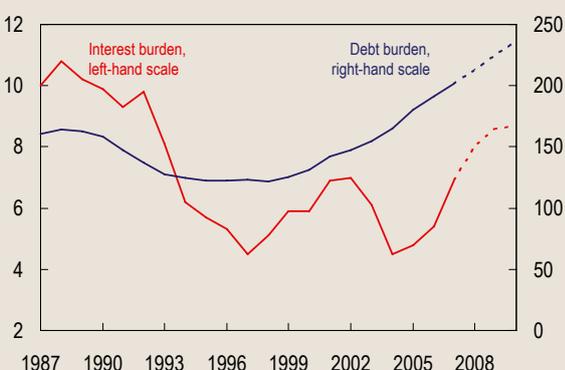
¹⁾ Repayment mortgage loans. Credit lines secured on dwellings are not included
²⁾ Interest rates at end of quarter
³⁾ Estimate for a selection of banks. Loan of NOK 1 million and loan-to-value ratio of max. 60 %
 Sources: Statistics Norway, Norsk Familieøkonomi, Skandiabanken and Norges Bank

Chart 12 Estimate of lending margins on new mortgage loans. Calculated lending margins for fully secured mortgage loans³⁾. Percentage points



¹⁾ Estimate for a selection of banks. Loan of NOK 1 million and loan-to-value ratio of max. 60 %
²⁾ Assumed difference between 3-month NIBOR and key policy rate of 0.35 percentage points
³⁾ Assumed that administration costs and loan losses equal 0.30 per cent of lending volume
 Sources: Norsk Familieøkonomi, Skandiabanken and Norges Bank

Chart 13 Projections of household debt burden¹⁾ and interest burden²⁾. Per cent



¹⁾ Loan debt as a percentage of liquid disposable income less estimated reinvested dividend payments
²⁾ Interest expenses after tax as a percentage of liquid disposable income less estimated reinvested dividend payments plus interest payments
 Sources: Statistics Norway and Norges Bank

The introduction of new capital adequacy requirements (Basel II) has also influenced banks' lending margins. Under Basel II, risk weights on lending are required to reflect differences in risk to a greater extent. Risk weights for mortgages, for example, have been sharply reduced. This will lead to a considerable reduction in capital adequacy requirements for Norwegian banks. The new rules were introduced in Norway in 2007, but it is likely that many banks began to adjust to the effects even before the rules were introduced. This has resulted in a fall in banks' interest margins.

Banks' average lending margin on new mortgages is estimated at -0.05 percentage point at the beginning of October (see Chart 12). As mentioned above, the money market rate is clearly higher than the key policy rate as a result of the problems in the interbank market. With normal interest rate formation in money markets, given our key policy rate, the average lending margin would have been ½ percentage point.

Norges Bank's estimates show how low lending margins on fully secured mortgages could fall when banks have a required return on the equity underlying the mortgages of 15 per cent. Lending margins are determined by expected loan losses, the loan's administrative costs, the share of the loan financed by the bank's equity capital, and the required return on equity. In the estimates, it is assumed that expected loan losses and administrative costs will be 0.3 per cent of the lending volume. The method banks choose to calculate capital adequacy will affect the share of lending that is financed by equity capital.

Under Basel I, the average lending margin on fully secured mortgages is estimated to be 0.9 percentage point (Chart 12). Using the standardised approach under Basel II, banks will be able to operate with an average margin on fully secured mortgages of 0.8 percentage point. Banks using the internal rating-based advanced approach under Basel II, will be able to make the largest reduction in their lending margins. As an illustration, we have assumed that the share of equity capital is 1.5 per cent. The average lending margin on fully secured mortgages could then be 0.5 percentage point. In conclusion, we should be able to say that the decline in lending margins has probably come to an end.

It will come as no surprise if lending margins rise somewhat ahead. It is now likely that a number of banks are not achieving a satisfactory return on new loans. Banks may have compensated for this by having low deposit rates. However, as mentioned above, there has been a marked rise in borrowing costs. Even if some of the increase should be reversed, competition for ordinary deposits will have to intensify ahead – also in view of the greater uncertainty experienced by many banks with regard to funding in the money market.

A number of features of household behaviour make households more vulnerable to economic disturbances. Household debt has grown at a faster pace than income

since 1999. Both the debt burden and the interest burden have increased markedly and are expected to continue to rise somewhat in the years ahead (see Chart 13).

Most household loans are adjustable-rate loans. This is perhaps not so surprising. In the post-war period up to the late 1980s, the Norwegian State Housing Bank played a key role in mortgage financing, and banks' lending rates were regulated. The interest rate for house purchases was politically determined, and – for a period that was perhaps surprisingly long – borrowers were confident that their best interests were being safeguarded. The question of whether borrowers should choose an adjustable or fixed borrowing rate – in order to be able to safeguard their own interests to a greater extent – became more relevant after the credit market liberalisation of the 1980s. However, in almost the entire period since then, the nominal interest rate level has exhibited a falling tendency, first as a result of a decline in inflation expectations, then after 2000 due to a decline in real interest rates. Borrowers who chose a fixed-rate loan have therefore not benefited from falling interest rates during the fixed rate period. There are few success stories to be heard from borrowers who chose fixed-rate loans. This will probably change ahead.

The share of mortgages with a high loan-to-value ratio has increased in recent years, particularly among young borrowers. In addition, more households are choosing interest-only mortgages. The opportunity to postpone paying the principal can act as a buffer when servicing the debt becomes more demanding. For many households, this buffer has already been used.

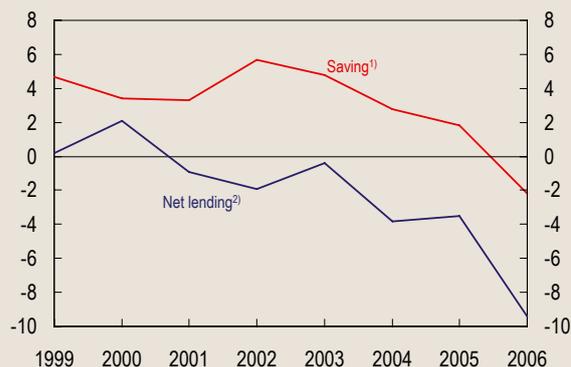
The increase in household borrowing has not been matched by a similar increase in investments in financial assets. The household saving ratio has been on the decline since 2002 and was very low, probably negative, in 2006 (see Chart 14). Household saving also seems to be negative this year. This means that in addition to financing housing investments by raising loans, borrowers are also financing some of their consumption – often a new car or boat – by increasing their (net) debt.

Norway has a substantial current account surplus (see Chart 15). If oil prices remain high, this might also be the situation in the years ahead.

Most of the current account surplus is matched by capital outflows from the state to the Government Pension Fund – Global. Adjusted for these outflows, the surplus has been between NOK 0 and 70 billion in recent years. It is also likely that oil companies invest substantial foreign exchange earnings abroad. In the chart, the term basic balance has been used for the current account adjusted for the estimated capital outflows from the state and oil companies. The basic balance has been negative in the past few years and is estimated to fall close to minus NOK 150 billion this year and next.

The large basic balance deficit reflects that mainland industries and households combined run a substantial saving deficit (see Chart 16).

Chart 14 Household saving and net lending. Percentage of disposable income

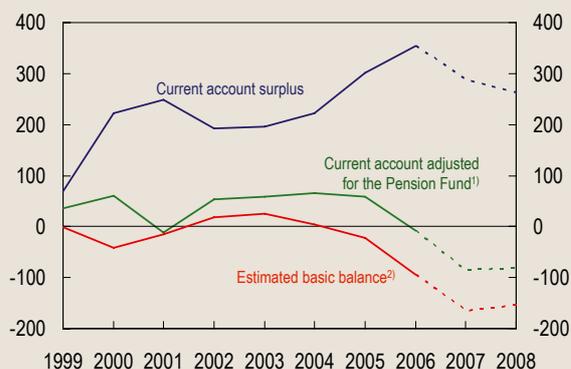


¹⁾ Household saving from the National Accounts adjusted for household dividend payments from the Dividend Statistics and for estimated reinvested dividend payments in the period 2000-2005

²⁾ Net lending from the Credit Market Statistics adjusted for estimated reinvested dividend payments in the period 2000-2005

Sources: Statistics Norway and Norges Bank

Chart 15 Current account surplus and estimated basic balance. Billions of NOK

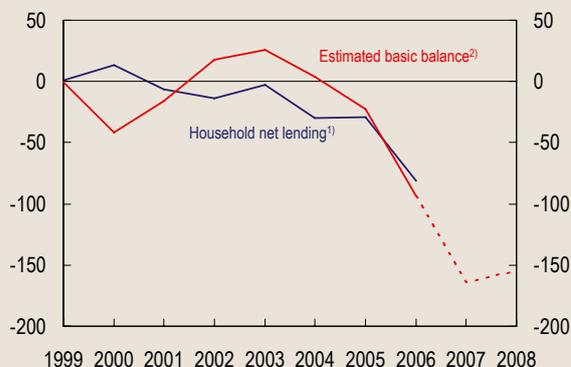


¹⁾ Adjusted for annual allocation to the Government Pension Fund - Global, and fixed income and dividend income for the Fund

²⁾ Adjusted for transfers to the Fund and the share of oil companies' income kept in foreign currency

Sources: Ministry of Finance, Statistics Norway and Norges Bank

Chart 16 Estimated basic balance and household net lending. Billions of NOK



¹⁾ Net lending from the Credit Market Statistics adjusted for estimated reinvested dividend payments in the period 2000-2005

²⁾ Adjusted for annual allocation to the Government Pension Fund - Global, fixed income and dividend income for the Fund and the share of oil companies' income kept in foreign currency

Sources: Ministry of Finance, Statistics Norway and Norges Bank

Developments in banks' balance sheets and sources of liquidity are influenced by these flows. The saving deficit is to a great extent financed by raising capital abroad, often through banks. Access to and pricing of this funding is influenced by the recent turbulence in international money markets.

The situation has similarities with the situation in the mid-1980s. Then, as now, there was a large saving deficit in the private sector of the mainland economy, while high petroleum revenues laid the basis for a current account surplus. Norges Bank built up foreign exchange reserves while banks financed household and corporate saving deficits, partly by raising loans abroad. With the decline in oil prices, confidence in the Norwegian economy faltered, capital flowed out of the country and out of banks' balance sheets. Norges Bank had to step in as lender to the banks.

The developments that followed the decline in oil prices in 1986 will not be repeated. In 1986, confidence in the Norwegian economy faltered while inflation was high and rising. Monetary policy measures had to be applied – through a resolute fixed exchange rate regime from summer 1986 – to restore confidence in the national and international value of the Norwegian krone, i.e. to reduce inflation.

The Norwegian economy is on a much stronger footing now than it was in 1986. None the less, fluctuations in household saving and corporate saving and investment could pose challenges for both monetary policy and our banks.

The outlook ahead

The past 15 years have been a golden era for the Norwegian economy. It must also have been a privilege to be in a position to engage in banking activities in Norway in this period.

Selling loans has been easy, there have been virtually no losses, and deposits and borrowing have been stable. Banks have in addition been particularly adept at making use of new technologies and being more cost-effective. The combination has led to favourable results.

Lending growth will probably have to be reduced and losses may rise. More emphasis will have to be given to keeping costs in check and to risk and asset-liability management. Perhaps banks will spend more of their resources on attracting deposits and a little less on selling loans.

In any event: Keep an eye on your earnings.

Tables previously published in *Economic Bulletin*

The Statistical Annex in Economic Bulletin has been reduced with effect from no. 1/06. The subsequent issues provided an overview of the statistics published up to and including no. 4/05, with website references. As from no. 1/07, the Statistical Annex has been removed entirely, partly because the majority of Norges Bank's statistics gathering activities have been transferred to Statistics Norway and partly because the statistics are updated more frequently on the Internet. The following is a list of tables published in Economic Bulletin up to and including 4/06, with website references.

1. Norges Bank. Balanse sheet
<http://www.norges-bank.no/publisert/balanse/>
2. Norges Bank. Investments for Government Pension Fund – Global
<http://www.norges-bank.no/petroleumsfondet/rapporter/>
3. Banks. Balanse sheet
<http://www.norges-bank.no/front/statistikk/no/fiks/>
<http://www.ssb.no/emner/10/13/10/orbofbm/>
4. Banks. Loans and deposits by public sectors
<http://www.norges-bank.no/front/statistikk/no/fiks/>
<http://www.ssb.no/emner/10/13/10/orbofbm/>
5. Banks. Profit/loss and capital adequacy data
<http://www.ssb.no/emner/10/13/10/orbofrk/>
6. Banks. Average interest rates on NOK loans and deposits
<http://www.ssb.no/emner/11/01/orbofrent/>
7. Securities registered with the Norwegian Central Securities Depository (VPS), by issuing sector, nominal value
<http://www.ssb.no/emner/11/01/vpstat/>
8. Securities registered with the Norwegian Central Securities Depository (VPS), by holding sector, market value
<http://www.ssb.no/emner/11/01/vpstat/>
9. Credit indicators and money supply
<http://www.ssb.no/emner/11/01/k2/>
<http://www.ssb.no/emner/11/01/m2/>
<http://www.ssb.no/emner/11/01/k3/>
10. Financial accounts of the household sector
<http://www.ssb.no/emner/09/01/finsek/>
11. Consumer price indices
<http://www.ssb.no/emner/08/02/10/kpi/> (CPI for Norway only)

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