

# The central bank's liquidity policy in an oil economy

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**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.<sup>2</sup>

## 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.

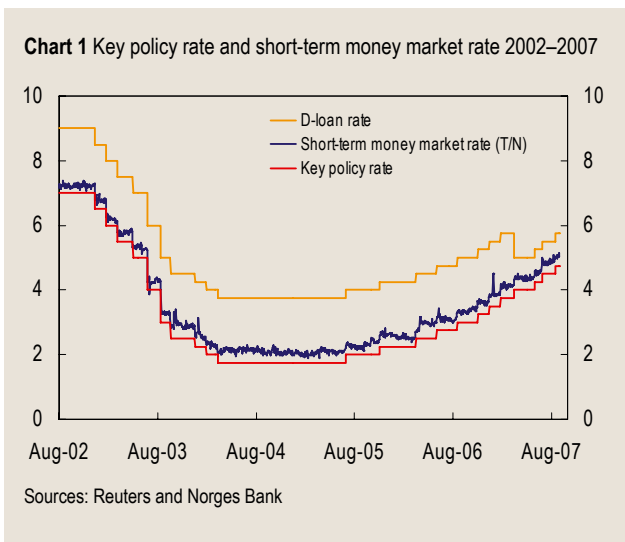
The objectives of monetary policy and the process leading to Norges Bank's interest rate decisions are outlined above.<sup>3</sup> Besides publishing interest rate decisions and assessments of future developments, Norges Bank must ensure that changes in the key rate actually influence short-term money 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

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<sup>2</sup> 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.

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



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.<sup>4</sup> Intraday D-loans are used by the banks to obtain liquidity when settling payment transactions (see Box 1).

## The implementation of liquidity policy<sup>5</sup>

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-loans<sup>1</sup>

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.

<sup>1</sup> More detailed rules on D-loans and F-loans are issued in circulars published on Norges Bank's website: [www.norges-bank.no](http://www.norges-bank.no). See also Box 2 later in this article.

<sup>4</sup> 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.

<sup>5</sup> 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 budget<sup>6</sup> –
- 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.<sup>7</sup>

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

<sup>6</sup> 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.

<sup>7</sup> 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.

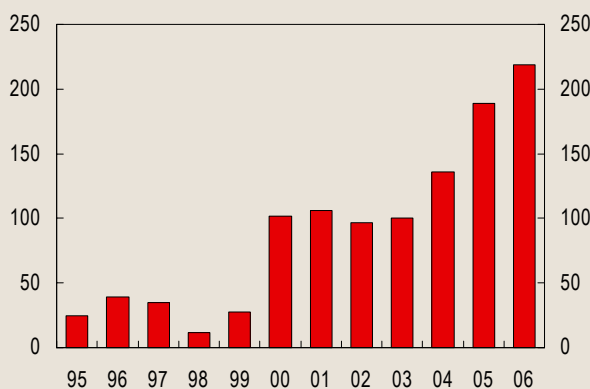
There are major variations in structural liquidity during the year. This is due primarily to government ingoing and outgoing payments. The general pattern is that liquidity falls markedly on days when taxes and duties fall due, and then builds up again as a result of government expenditures and Norges 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.

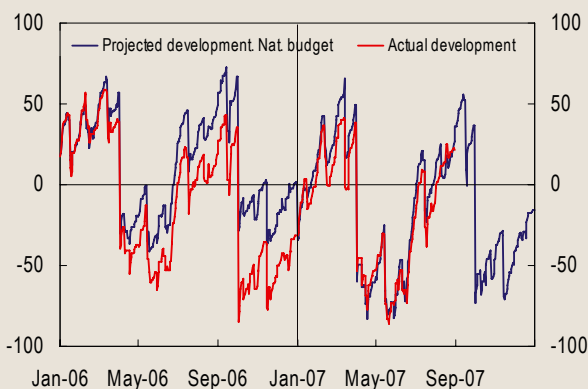
There is therefore a need for frequent revisions of the forecast. In some cases, movements in oil prices and the outlook for oil prices have deviated so far from the assumptions in the government budget that the transfer to the Pension Fund and, thereby, foreign currency pur-

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



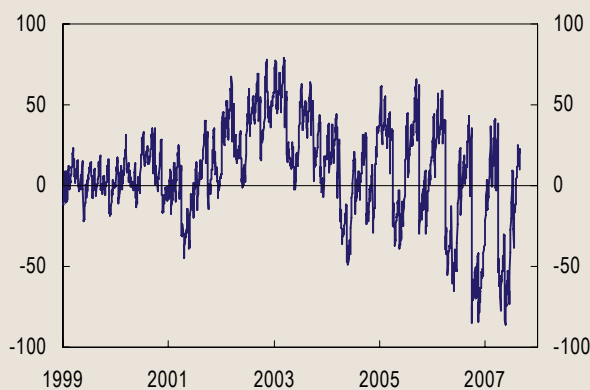
Sources: Statistics Norway and Norges Bank

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



Sources: Ministry of Finance and Norges Bank

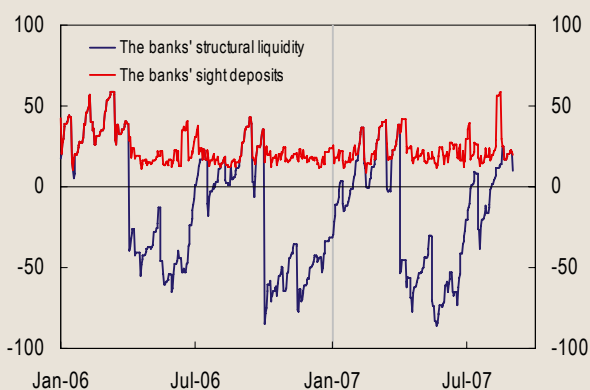
**Chart 4** The banks' structural liquidity 1999–2007. Billions of NOK



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.<sup>8</sup>

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

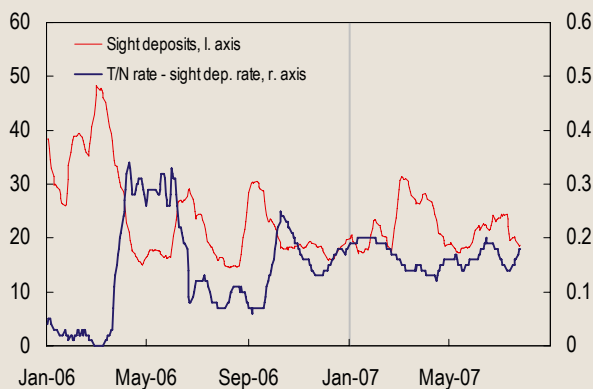
## BOX 2: F-loans

- 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

<sup>8</sup> The results of the latest F-loan auctions are published on Norges Bank's website: [www.norges-bank.no](http://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.<sup>1</sup>

<sup>1</sup> 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.<sup>9</sup> 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.

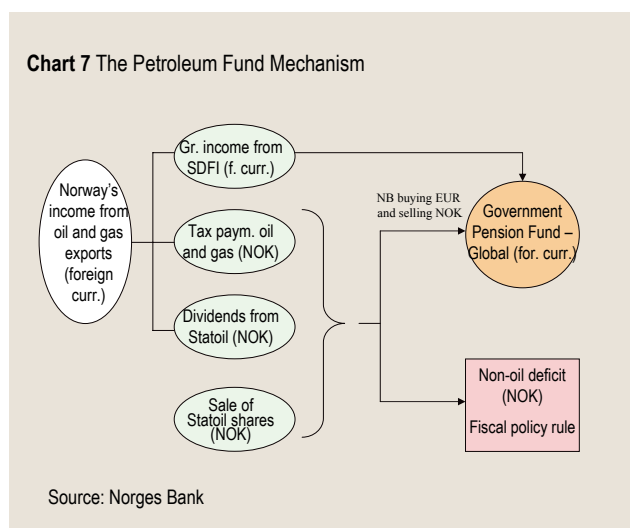
<sup>9</sup> In spring 2006, this period lasted somewhat longer due to uncertainty resulting from the possibility of a labour conflict in the Norwegian banking sector.

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.<sup>10</sup>

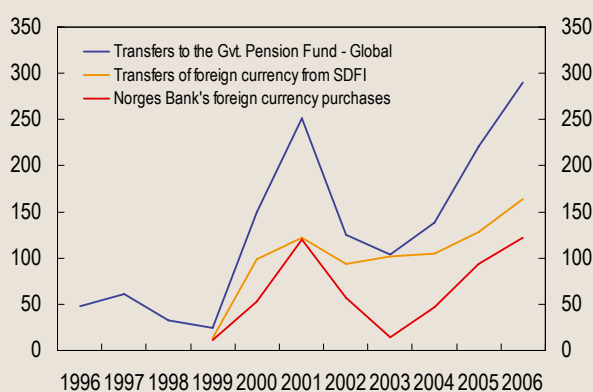
The petroleum fund mechanism is illustrated in Chart 7. Government revenues from petroleum activities are denominated partly in foreign currency and partly in



<sup>10</sup> 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.

<sup>11</sup> 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.<sup>11</sup>

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.

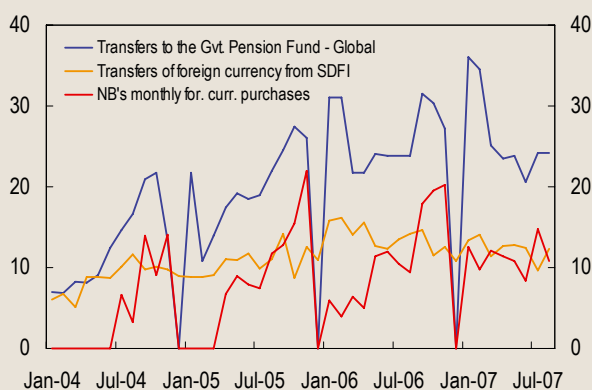
In this way, Norges Bank’s foreign exchange reserves are built up during the month. This is matched partly by an increase in Treasury deposits (counter-entry to the transfer of currency from the SDFI) and partly by an increase in bank deposits (counter-entry to Norges Bank’s foreign currency purchases).

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.

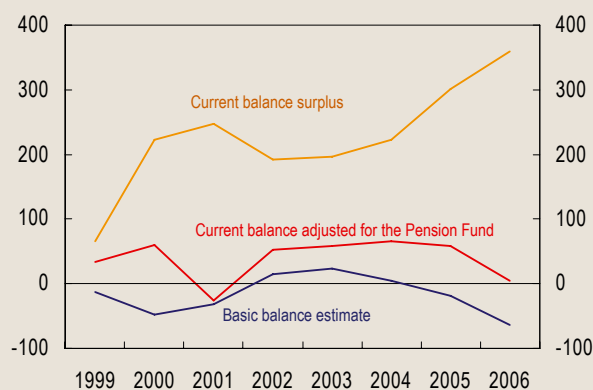


**Chart 9** Monthly transfers to the Government Pension Fund – Global 2004–2007. Billions of NOK



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

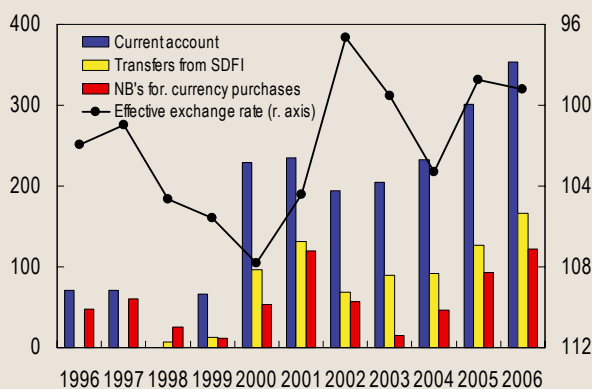
exchange purchases, which reflect variations in taxes on oil companies' earnings, in the oil-adjusted deficit on the government budget, and in the SDFI's expenses, show wider fluctuations. Norges Bank's foreign currency purchases also fluctuate more widely from month to month (see Chart 9).

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.

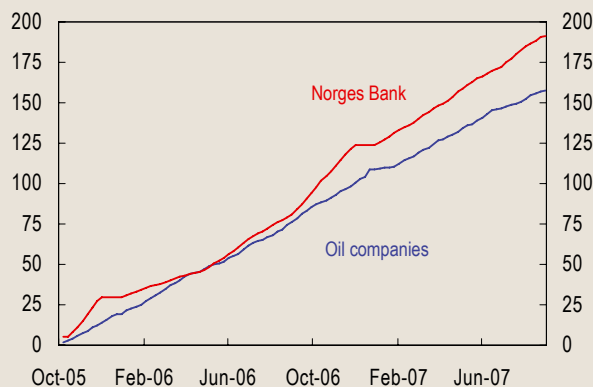
Foreign exchange statistics gathered since October

**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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