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Norges Bank's balance sheet and earnings

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Norges Bank's balance sheet and earnings

By Ellen Aamodt and Marie Norum Lerbak, Norges Bank Markets and Banking Services¹

1 Introduction

As Norway's central bank, Norges Bank has executive and advisory responsibilities in the area of monetary policy and is responsible for promoting robust and efficient payment systems and financial markets. In this context, the Bank's balance sheet and its composition are key elements. The most important instrument of monetary policy, Norges Bank's key policy rate, determines the interest rate banks receive on their deposits in the central bank. The provision of liquidity to the banking system, or other loans to the banking system or individual banks, will impact on Norges Bank's balance sheet, as will the central bank's transactions in the foreign exchange market.

But what does Norges Bank's balance sheet consist of? What determines the dynamics between the different items, and how is the balance sheet affected by monetary or structural changes in the relationship between the central bank, the government and the banking system? What are the central bank's sources of income? These are among the questions discussed in this paper.

2 The main balance sheet items

Norges Bank's balance sheet is dominated by a small number of sizeable items. By far the largest is the Government Pension Fund Global (GPFG). Because Norges Bank manages the GPFG on behalf of the government, it appears in the Bank's balance sheet in the form of both a krone account and a foreign currency investment portfolio. Deposits in the krone account for the GPFG are a liability for Norges Bank, while the investment portfolio appears on the asset side of the balance sheet. The two are identical in size and also have an identical return, which means that they have no bearing on Norges Bank's earnings for the year. As the management of the GPFG is separate from traditional central banking operations, there will be no further discussion of the GPFG in this paper.

Chart 1. Simplified balance sheet for Norges Bank

Assets	Liabilities and equity
Lending to banks	Deposits from banks
Foreign exchange reserves	Deposits from the Treasury
Long term portfolio	Notes and coins
Money market portfolio	Krone account for the GPFG
Buffer portfolio	Equity
Foreign currency investments for the GPFG	
Other assets	

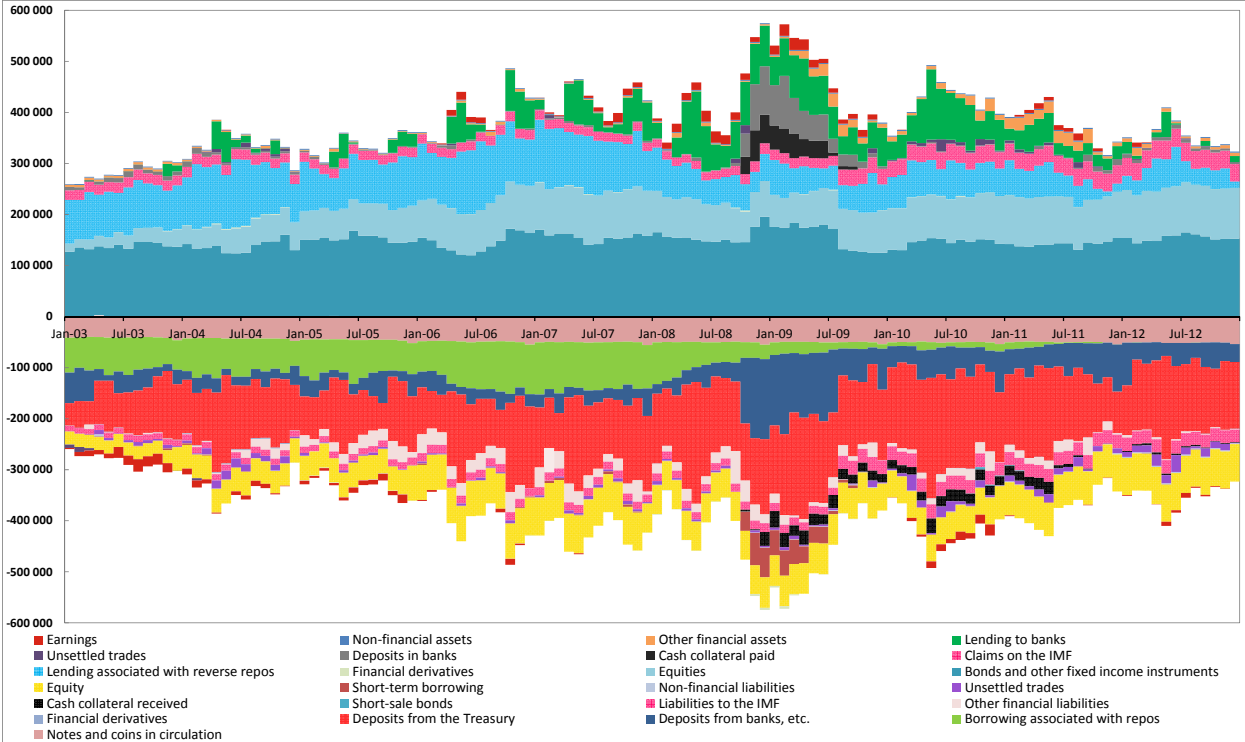
International reserves are the largest item on the asset side of the traditional central bank balance sheet. Lending to Norwegian banks can also be a relatively large item at times. This lending is determined by the need to supply central bank reserves to banks as part of Norges Bank's liquidity management or as an extraordinary measure in situations where the banking system is exposed to considerable stress (such as during the financial crisis that began in autumn 2008). On the liability

¹We are grateful for all the contributions and feedback from our competent colleagues.

side, deposits from the Treasury are a particularly large item and fluctuate considerably with payments to and from the Treasury account. Notes and coins in circulation and deposits from banks are also major items. The value of notes and coins in circulation is stable and varies little, while lending to banks – like deposits from banks – will be affected by the central bank’s liquidity management and the supply of reserves to the banking system. Historically, items related to the management of the foreign exchange reserves, such as repurchase agreements and securities lending, have also been significant balance sheet components. The same applies to equity, which can be viewed as the central bank’s buffer against losses. Chart 2 shows how the composition of Norges Bank’s balance sheet has evolved over the past decade. The various items are discussed in more detail below.

We look first at the foreign exchange reserves and items related to their management. We then cover banks’ deposits in Norges Bank, the Bank’s lending to banks, and the Treasury’s deposits in Norges Bank. As part of this, we give a brief presentation of the liquidity management system, as this is pivotal for banks’ deposits in the central bank and the central bank’s lending to banks. Finally, we discuss the central bank’s equity and notes and coins.

Chart 2. Norges Bank’s balance sheet, 2003-2012. Monthly data



Source: Norges Bank

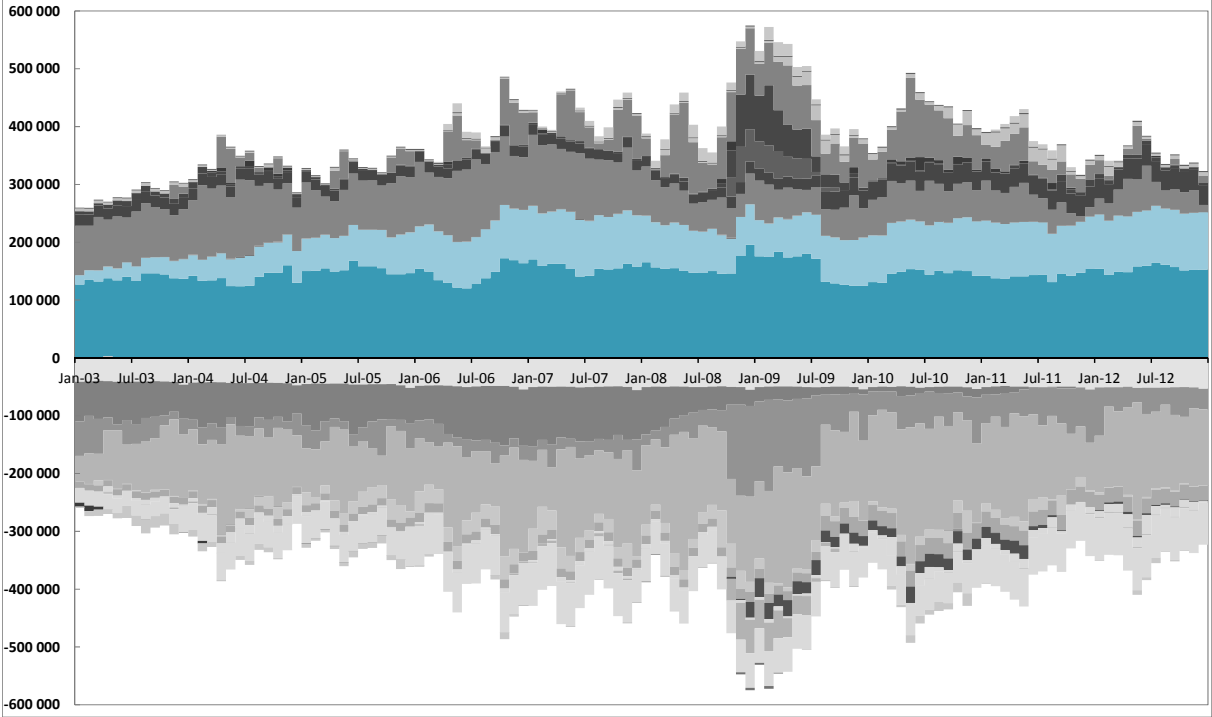
2.1 Foreign exchange reserves

International reserves are by far the largest asset item in Norges Bank’s balance sheet.² At the end of 2012, they amounted to NOK 300 billion, or 93 percent of total financial assets. The foreign exchange reserves accounted for more than 90 percent of international reserves and are Norges Bank’s holdings of financial assets in foreign currency which are to be available for transactions in the

² Excluding investments for the Government Pension Fund Global (GPF)G

foreign exchange market to implement monetary policy or promote financial stability.³ The foreign exchange reserves are also to be available to honour international obligations, primarily to the International Monetary Fund (IMF).⁴ In Chart 2a, the foreign exchange reserves are shown in dark blue (bonds) and light blue (equities) on the asset side of the balance sheet.

Chart 2a. Norges Bank's balance sheet, 2003-2012. Monthly data



The foreign exchange reserves may be invested in cash deposits, money market instruments, bonds, notes and equities.⁵ Investments in fixed income instruments, such as bonds, must be in US dollars, pound sterling, euros or yen.

The foreign exchange reserves are divided into a money market portfolio, a long-term portfolio⁶ and a buffer portfolio. The *buffer portfolio* is used to gather together purchases of foreign currency for the GPFG.⁷ The *money market portfolio* is between NOK 30 and 40 billion in size and is to be invested in such a way that it could be used within a single day for transactions in the foreign exchange

³The remainder of the international reserves are claims on the International Monetary Fund (IMF). These consist of holdings of special drawing rights (SDR), Norway's quota in the IMF and Norway's bilateral loans to the IMF. These reserves are not included in the foreign exchange reserves because they are not immediately available for use in implementing monetary policy or promoting financial stability.

⁴Pursuant to Section 25 of the Norges Bank Act, the Bank administers Norway's rights and fulfils the corresponding obligations ensuing from the country's membership of the IMF. Norway's total contingent liabilities to the IMF currently total around NOK 102 billion, but the IMF has so far drawn on only a small part of these loan facilities. Read more about this in Norges Bank's *Annual Report* for 2012, available here: <http://www.norges-bank.no/en/about/published/publications/annual-report---new/2012-annual-report>.

⁵The foreign exchange reserves may also be invested in financial derivatives that are naturally linked to instruments in which they may be invested.

⁶The long-term portfolio was previously known as the investment portfolio.

⁷The buffer portfolio is normally built up during the month and brought back down at the end of the month by transferring currency to the GPFG. Read more about the buffer portfolio in "Norges Banks kostnader ved kjøp av valuta til Statens pensjonsfond utland" [Norges Bank's costs for purchasing foreign currency for the Government Pension Fund Global], *Staff Memo* 4/13, by Sigbjørn Atle Berg, available here: <http://www.norges-bank.no/no/om/publisert/publikasjoner/staff-memo/2013/4/>.

market without realising significant losses. This means that it is invested in highly liquid instruments. The money market and buffer portfolios are managed by Norges Bank Markets and Banking Services.

The *long-term portfolio* is by far the largest of the portfolios⁸ and is managed by Norges Bank Investment Management (NBIM). The Executive Board has issued principles for the management of the foreign exchange reserves which require 30-50 percent of the long-term portfolio to be invested in equities. The fixed income instruments in which the portfolio is invested must be mainly liquid securities.⁹ More detailed guidelines for the management of the foreign exchange reserves are laid down by the Governor of Norges Bank.

The value of the foreign exchange reserves in krone terms can vary for two reasons: fluctuations in global equity and bond prices, and fluctuations in the krone exchange rate. At the end of 2012, for example, the value of the long-term portfolio was NOK 185.4 billion. The portfolio's value in international currency rose by NOK 4.9 billion in the fourth quarter, while a stronger krone reduced its value by NOK 2.5 billion. On balance, therefore, the portfolio grew by NOK 2.4 billion during the quarter. Changes in the value of the foreign exchange reserves are matched by corresponding changes in Norges Bank's earnings and equity. The impact of changes in the foreign exchange on the Bank's earnings is discussed further below.

The size of the foreign exchange reserves will also be affected by Norges Bank's foreign currency transactions with the banking system. They will grow if the Bank intervenes and uses NOK to buy foreign currency in the market.¹⁰ The Bank also buys currency to cover the annual transfers of petroleum revenue from the government to the GPF. The size of the foreign exchange reserves is affected by these purchases, partly because purchases may at times exceed actual transfers, and vice versa. This means that the buffer portfolio varies in size during the year. The calculation of how much foreign currency Norges Bank needs to buy for the GPF is based on set assumptions.¹¹ Due to deviations from these assumptions, the Bank has in some years purchased more currency over the year as a whole than transfers to the GPF would warrant.¹² This currency is normally used to cover the following year's transfers to the GPF. However, in 2002, for example, purchases above what was needed to build up the GPF were permanently transferred from the buffer portfolio to the long-term portfolio.

2.2 Items related to the management of foreign exchange reserves

Repurchase agreements, reverse repurchase agreements and securities lending transactions are used in the management of foreign exchange reserves, as indicated by the coloured areas in Chart 2b.

⁸At the end of 2012, the Bank's foreign exchange reserves stood at approximately NOK 268 billion, breaking down into NOK 227 billion in the long-term portfolio, NOK 34 billion in the money market portfolio and NOK 7 billion in the buffer portfolio.

⁹The guidelines for the investment of foreign exchange reserves are available here: <http://www.norges-bank.no/en/price-stability/foreign-exchange-reserves/guidelines>.

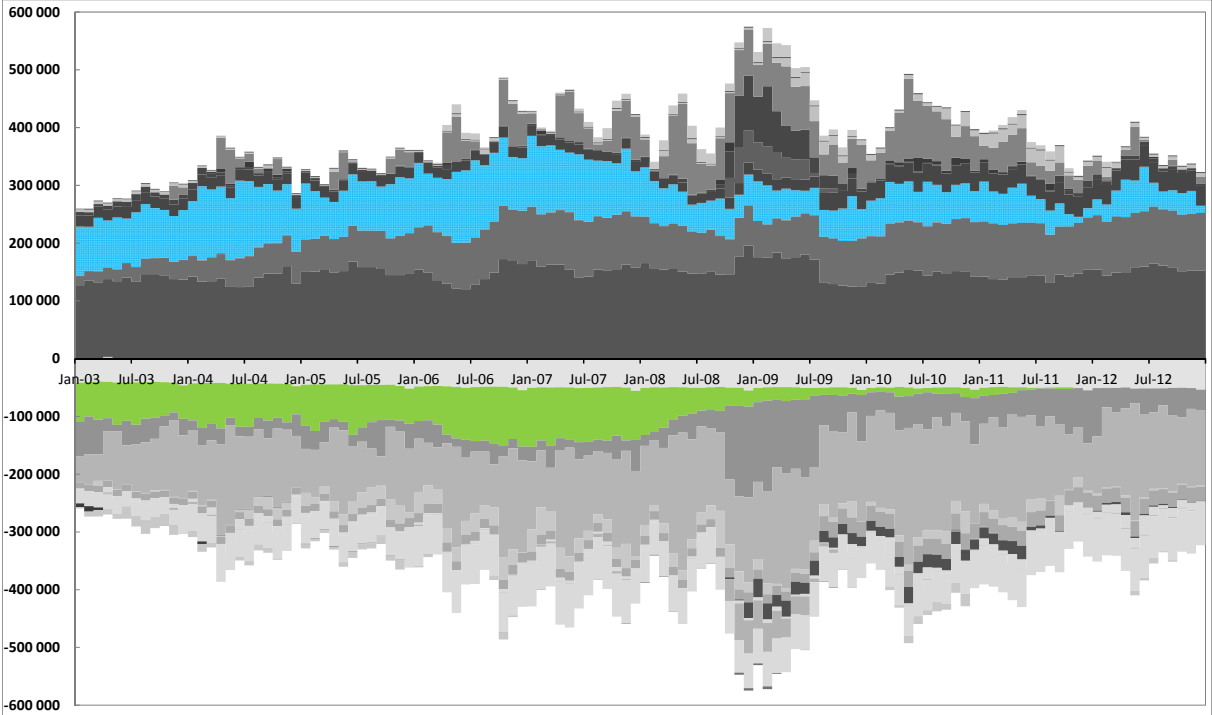
¹⁰ Norges Bank has not intervened in the foreign exchange market with the aim of influencing the krone exchange rate since 1999.

¹¹Read more in "The petroleum fund mechanism and Norges Bank's foreign exchange purchases for the GPF", *Economic Commentaries* 14/12, by Ellen Aamodt, available here: <http://www.norges-bank.no/no/om/publisert/publikasjoner/aktuell-kommentar/2012/14>.

¹²Read more in "Likviditetsstyringen i Norge og utviklingen i bankenes likviditet" [Liquidity management in Norway and developments in banks' liquidity], *Staff Memo* 10/2010, by Erna Hoff, available here: <http://www.norges-bank.no/no/om/publisert/publikasjoner/staff-memo/2010/staff-memo-102010>.

A *repurchase agreement* is the sale of a security with an agreement to buy it back again at a set time and price. Norges Bank uses these agreements to lend securities from the foreign exchange reserves in return for collateral in the form of cash.¹³ The aim may be to reinvest the cash collateral received at a higher interest rate and so generate additional income for the Bank. Norges Bank may also be party to *reverse repurchase agreements*. In this case the counterparty lends securities to Norges Bank in return for cash collateral from the Bank.^{14,15} The aim of these agreements can be to obtain a better return on the cash portion of the foreign exchange reserves.

Chart 2b. Norges Bank’s balance sheet, 2003-2012. Monthly data



The use of these instruments affects several different items on Norges Bank’s balance sheet. When a security is lent under a *repurchase agreement*, it is derecognised from the asset side of the balance sheet. The cash received is recognised as an asset under “Deposits in banks”, while the obligation to repay the cash is included under “Borrowing associated with repos” (shown in green on the liability side in Chart 2b). The security received by the Bank as collateral under *reverse repurchase agreements* is not recognised as an asset, but the cash used as collateral is derecognised from the asset item “Deposits in banks”, and the right to be repaid this cash is included as an asset under “Lending associated with reverse repos” (shown in light blue on the asset side in Chart 2b). This means that repurchase agreements increase the size of Norges Bank’s balance sheet, while reverse repurchase agreements do not affect its size.

The use of repurchase and reverse repurchase agreements is associated with both credit risk and market risk, even though these are, in principle, secured loans. With repurchase agreements, there is

¹³ This term covers the instruments known as repos and sell/buy-backs. There are legal distinctions between these instruments.
¹⁴ This term covers the instruments known as reverse repos, buy/sell-backs and tri-parties. Again there are legal distinctions between these instruments.
¹⁵ Rules have been laid down on the types of security that can be accepted as collateral.

the risk of the security lent not being returned to Norges Bank if the counterparty does not fulfil its obligations. The Bank will then be left with the cash collateral. One of the aims of repurchase agreements may be to use this cash collateral to purchase new securities, or to purchase more of the same securities as have been lent. This increases exposure to the chosen market, and the Bank stands to make more money if prices rise. If they fall, however, the Bank will be more exposed to losses on the portfolio.

With reverse repurchase agreements, there is the risk of the Bank being left with the securities put up as collateral if the counterparty does not fulfil its obligations. The value of these securities may have fallen due to market movements in the intervening period. This risk is taken into account by applying a “haircut” so that the collateral value of the securities is below their market value.

It can be seen clearly from Chart 2b that the volume of repurchase and reverse repurchase agreements outstanding was substantially reduced from the latter half of 2011. There was a particular reduction in securities denominated in euros. This was prompted by high risk in financial markets and a desire to reduce exposure. Repurchase agreements disappeared entirely from the balance sheet in 2012, while reverse repurchase agreements are still used to invest cash.

Norges Bank has also entered into agreements with external agents which entitle them to lend equities and bonds held by the Bank to other market participants. The aim of these loans is to generate income for Norges Bank.¹⁶ Following the increase in risk in financial markets in the second half of 2011, the Bank has scaled back this lending programme.

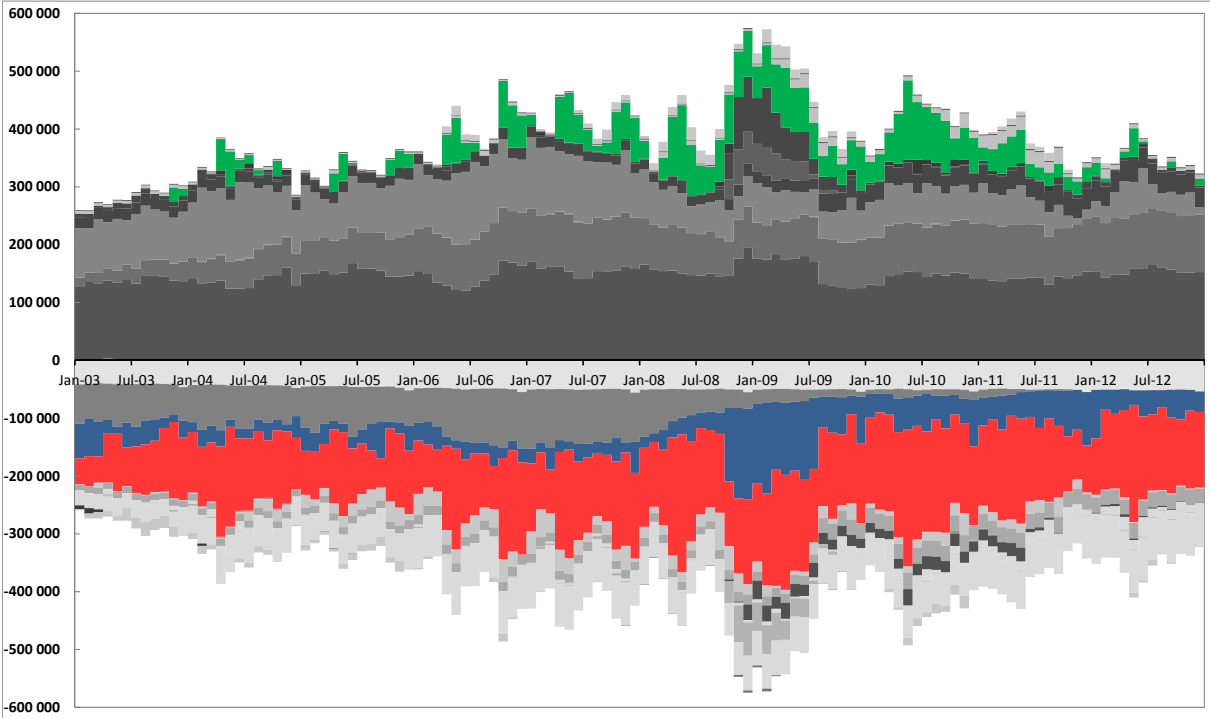
2.3 Treasury deposits, banks’ deposits and loans, and the system for managing banks’ reserves

The Norwegian government has an account with Norges Bank. All payments to and from the government are made through private banks, but at the close of business each day these payments are netted and the balance is returned to the main account at Norges Bank. It is common for government authorities to have an account with the country’s central bank, but some have their accounts in the private banking system. The Swedish government, for example, holds all of its deposits in commercial banks, while the US federal government has some of its holdings in private banks and some in the Federal Reserve.

The balance on the government’s account in Norges Bank is shown under “Deposits from the Treasury” on the liability side of Norges Bank’s balance sheet and is shown in red in Chart 2c. These deposits account for a substantial share of the balance sheet, averaging NOK 153 billion in 2012. At the end of the year, the balance on the account was NOK 131 billion, or 40 percent of the Bank’s liabilities (excluding the GPF). The balance fluctuates considerably during the year – between NOK 57 billion and NOK 250 billion in 2012.

¹⁶When a security is lent, the borrower transfers collateral in the form of cash or securities to the agent, who holds the collateral on behalf of Norges Bank. The securities lent are included in equities and bonds on the asset side in Chart 2. Cash collateral received is recognised under "Deposits in banks" along with a corresponding liability under "Cash collateral received" (shown in black on the liability side of the balance sheet).

Chart 2c. Norges Bank's balance sheet, 2003-2012. Monthly data



To have a sufficient buffer to cover both scheduled and unforeseen payment obligations, the government requires that Treasury deposits should not normally fall below NOK 50 billion. The government can increase these deposits by borrowing in the certificate and bond markets. Government lending to state banks and financing schemes has grown considerably in recent years, and the substantial payments involved have resulted in a decreased balance on the Treasury account and an increased need for government borrowing. An increase in borrowing leads to net interest expenses for the government. As we will discuss later, the interest on the Treasury account at Norges Bank is determined by global interest rates. When Norwegian interest rates are higher than those abroad, the interest cost of borrowing will exceed the government's income from holding deposits in Norges Bank.

Private banks also have accounts in Norges Bank. These "sight deposit accounts" are where banks deposit their surplus central bank reserves¹⁷ each day and hold them in the central bank overnight, and are referred to as "Deposits from banks". These deposits attract interest, up to a set quota, at Norges Bank's key policy rate. Banks' aggregate sight deposits in Norges Bank are also referred to as banks' liquidity. These reserves are the only approved means of payment between banks, and it is only the central bank that can create them. Banks need to have reserves so that they can settle payments between themselves. The reserves flow between banks' accounts in the central bank in a closed system.¹⁸ When one bank transfers money to another, this is settled by adjusting the two banks' balances at Norges Bank.¹⁹ Transfers between banks do not affect the total amount of reserves in the banking system, only how these reserves are distributed between the banks.^{20,21}

¹⁷ Central bank reserves, or simply reserves, are Norwegian kroner that the banks deposit in the central bank and must not be confused with the foreign exchange reserves.

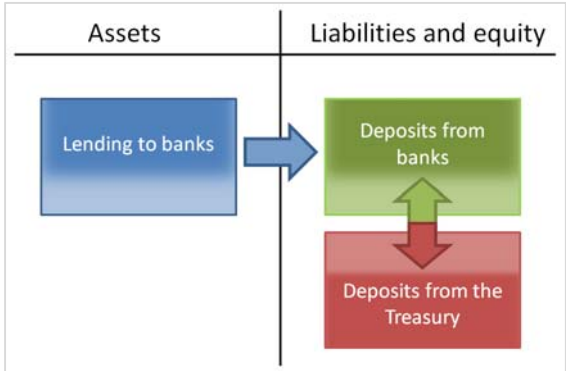
¹⁸ Payments between banks are settled through Norges Bank's settlement system (NBO). See <http://www.norges-bank.no/en/financial-stability/norges-banks-settlement-system>.

¹⁹ For example, if bank A transfers NOK 1 million to bank B, bank A's deposits in Norges Bank will decrease by NOK 1 million,

All payments to and from the government affect the total amount of reserves in the banking system. Payments *to* the government reduce banks' reserves, because the money is transferred from the banks' accounts at Norges Bank to the government's account at Norges Bank. Payments *from* the government increase banks' reserves, because the money is transferred from the government's account at Norges Bank to the banks' accounts at Norges Bank. These transactions between the government and the banking system are merely a redistribution between the two items "Deposits from banks" and "Deposits from the Treasury" on the liability side of the Bank's balance sheet and do not affect the size of the balance sheet.

Given the goal of keeping very short-term money rates close to its key policy rate, Norges Bank's liquidity management must ensure that there are always reserves in the banking system. This is achieved through various types of market operations. If reserves fall below a certain level, for example when taxes are paid to the government, the shortfall must be met by Norges Bank lending reserves to the banks. First the tax payments increase the government's deposits, and banks' deposits decrease accordingly. When banks' deposits fall, Norges Bank issues loans to the banks that same day, which, in turn, they must deposit in Norges Bank when the market closes. The items "Deposits from banks" (liability side) and "Lending to banks" (asset side) increase by the same amount. All in all, banks' deposits are unchanged, while Treasury deposits rise. Norges Bank's balance sheet grows by the amount of the loan to the banks. Similarly, when payments, such as pensions, are made from the government to the banking system, Treasury deposits decrease and banks' deposits increase accordingly. Because the duration of all market operations is tailored to the pattern for payments to and from the Treasury account, Norges Bank's lending to banks is reduced or eliminated entirely, and the size of the Bank's balance sheet decreases accordingly. The relationship between Norges Bank's lending to banks, banks' deposits in Norges Bank and Treasury deposits is illustrated in chart 3.

Chart 3. Relationship between Norges Bank's lending to banks, banks' deposits in Norges Bank and Treasury deposits



and at the same time bank B's deposits in Norges Bank will increase by the same amount.

²⁰ For a more detailed discussion, see "Misunderstood central bank reserves", *Economic Commentaries* 1/2012, by Tom Bernhardsen and Arne Kloster.

²¹ Norges Bank manages banks' reserves with the aim of keeping very short-term money rates close to its key policy rate. This is achieved through various types of market operation, which mean that the central bank either supplies reserves to the banks or withdraws reserves from the banking system. The system for the management of banks' reserves is described in more detail on the Bank's website at <http://www.norges-bank.no/en/price-stability/liquidity-management> and in "Systemer for likviditetsstyring: Oppbygging og egenskaper" [Systems for liquidity management: Structure and properties], *Staff Memo* 5/2011, by Olav Syrstad, available here: <http://www.norges-bank.no/en/about/published/publications/staff-memo/77962/78300>.

Since 2011 Norges Bank has aimed to maintain reserves in the banking system at an average NOK 35 billion with an interval of \pm NOK 5 billion around this level (as at April 2013). This means that when banks' reserves approach or exceed NOK 40 billion, Norges Bank will invite them to place the surplus in a fixed-rate deposit with a fixed maturity (F-deposit). The item "Deposits from banks" in Norges Bank's balance sheet will then consist of both sight deposits and F-deposits. When banks' sight deposits approach or undershoot NOK 30 billion, Norges Bank will invite them to borrow reserves, and the item "Lending to banks" will increase, as will the overall size of the balance sheet. In Chart 2c, banks' total deposits (overnight sight deposits and term deposits in the form of F-deposits) are shown in blue, and Norges Bank's lending to banks in the form of F-loans is shown in green.²²

If the government kept its cash holdings in the banking system rather than in Norges Bank, this would remove virtually all variation in banks' aggregate reserves.²³ Payments to and from the government would then merely be transfers of reserves between banks' sight deposit accounts. This would considerably reduce the need for market operations from Norges Bank to supply and withdraw liquidity.

2.4 Norges Bank's equity

Norges Bank's equity, shown in yellow in Chart 2d, consists of an adjustment fund, a transfer fund and "Other reserves". Any profit made each year is allocated to the adjustment fund until the fund reaches 40 percent of the market value of the foreign exchange reserves and 5 percent of the Bank's holdings of domestic securities. The Bank does not currently have any domestic securities on its balance sheet.²⁴ In practice, therefore, the adjustment fund is to be built up until it amounts to 40 percent of the market value of the foreign exchange reserves.²⁵ The aim of the adjustment fund is to provide a buffer against fluctuations in Norges Bank's results. At the end of 2012, it amounted to around 27 percent of the foreign exchange reserves.

If the adjustment fund hits this ceiling of 40 percent of the value of the foreign exchange reserves, any further profit is to be allocated to the transfer fund. A third of the balance on this fund is then transferred to the Treasury. There was no balance on the transfer fund at the end of 2012. Chart 4 illustrates the relationship between the adjustment fund and the transfer fund. The remainder of the Bank's equity is referred to as "Other reserves" and comprises the Bank's earnings for the year. Previous years' earnings will have been transferred to the other two funds, and potentially the Treasury.

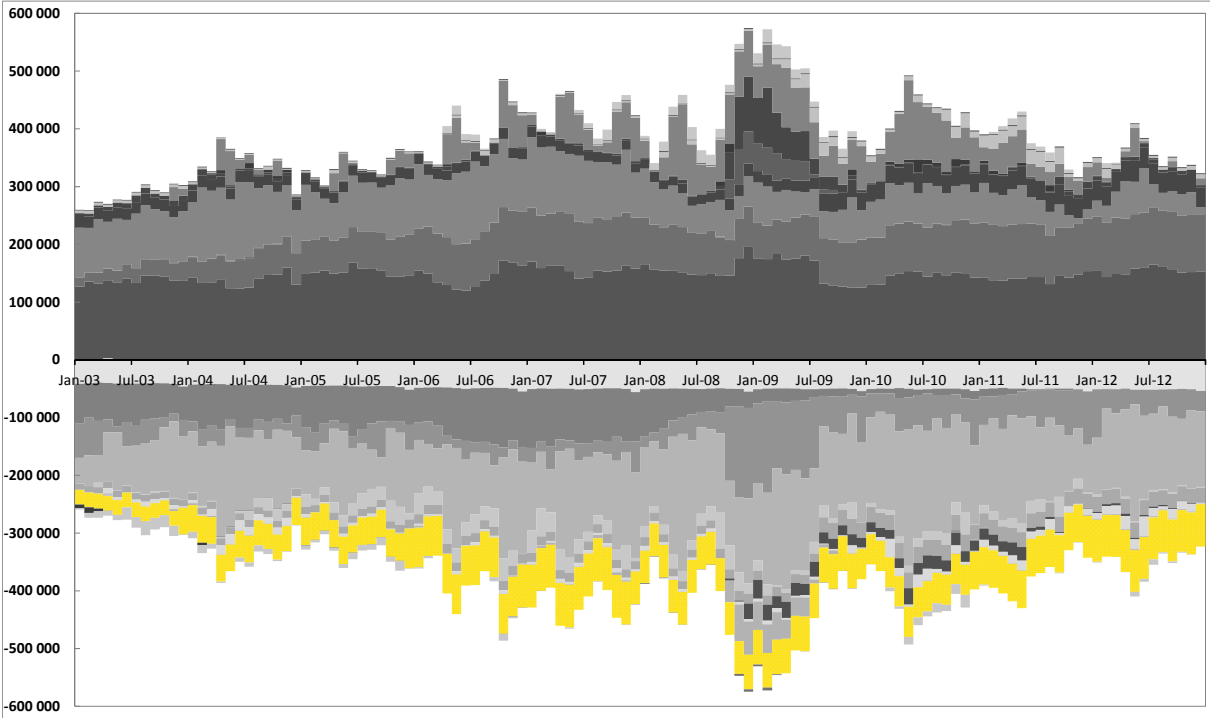
²² The deposit side also includes deposits on which interest is paid at the reserve rate, i.e. deposits over and above the quota qualifying for the sight deposit rate under the current system. The lending side also includes D-loans, i.e. loans that banks must take out (against collateral) from Norges Bank overnight if they have a negative balance with the Bank at the end of the day.

²³ Norges Bank's transactions with the banking system will still impact on structural liquidity. This means that there may be changes in liquidity levels if the Bank purchases foreign currency for the GPFG.

²⁴ The exception is when Norges Bank enters into reverse repurchase agreements with primary dealers in Norwegian government securities. These securities are recognised in the Bank's balance sheet for the term of the agreement.

²⁵ See the guidelines for the allocation and distribution of Norges Bank's earnings originally laid down by the Council of State on 7 February 1986 (and subsequently amended several times) and as mentioned in Norges Bank's annual report and financial statements.

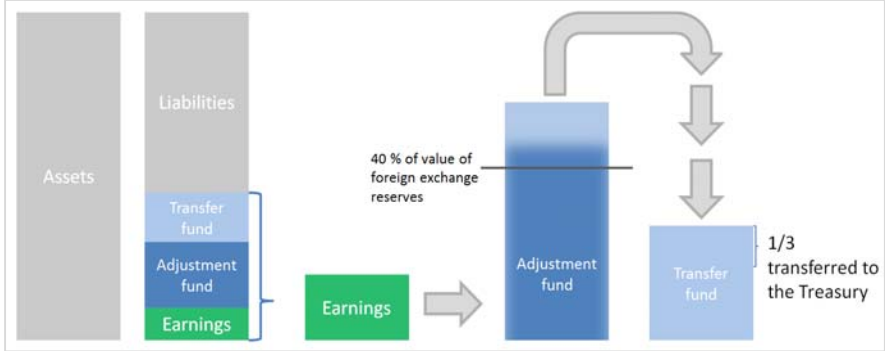
Chart 2d. Norges Bank's balance sheet, 2003-2012. Monthly data



NOK 8.9 billion was transferred from the transfer fund to the Treasury in 2001, the last time such a transfer was made. The following year Norges Bank made a loss of NOK 24.1 billion, and the 2001 transfer was returned from the Treasury to bolster the adjustment fund. The guidelines for the distribution of Norges Bank's earnings were amended with effect from 2002 so that a larger buffer could be built up in the adjustment fund.

Norges Bank's equity can be strengthened through a direct transfer of capital from the Treasury to the Bank. Capital can also be returned from the transfer fund to the adjustment fund if the latter falls below 25 percent of the Bank's net foreign exchange reserves. Transfers of this kind will take place until the adjustment fund reaches its full size as described above.

Chart 4. Illustration of the structure of Norges Bank's equity and transfers of profit to the Treasury

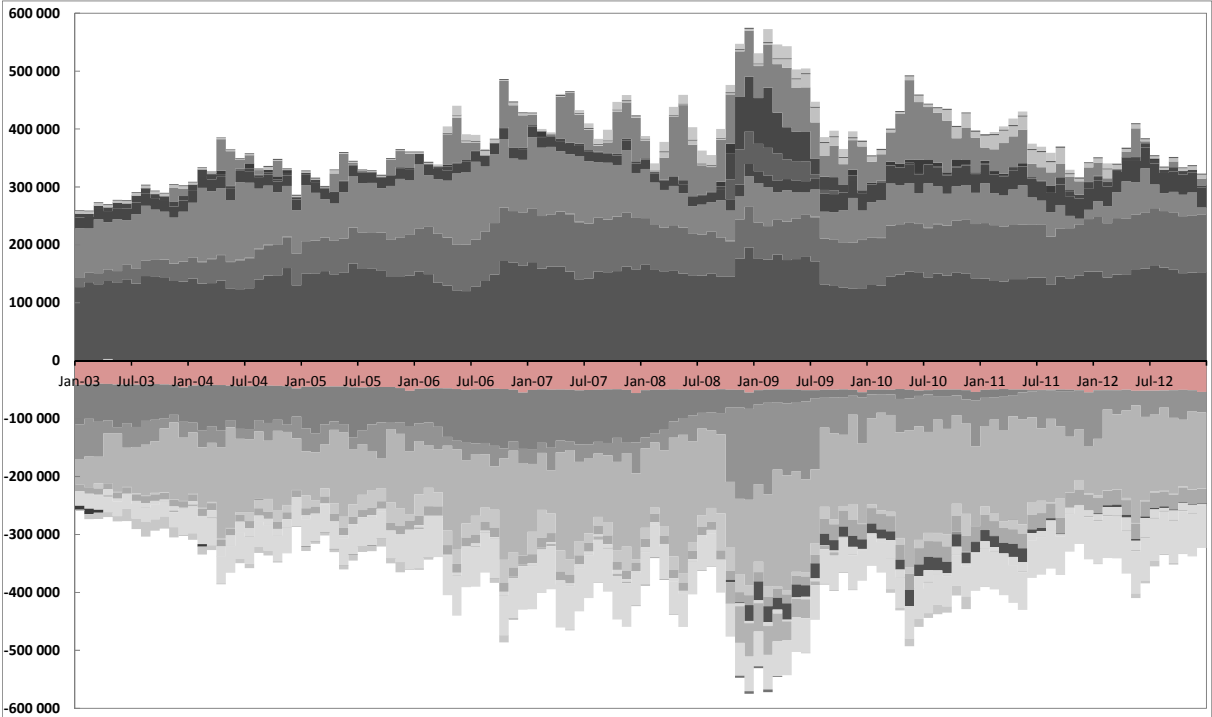


2.5 Notes and coins

Norges Bank has the sole right to issue notes and coins in Norway. Notes and coins are included on the liability side of the Bank's balance sheet because they represent claims from the public on Norges Bank. The total value of notes and coins in circulation has been around the NOK 50 billion mark in

recent years, making this one of the largest items on the liability side of the balance sheet, as can be seen from the pink area in Chart 2e. There is little variation in the total value of notes and coins in circulation, other than regular seasonal variations around Christmas, Easter and the summer holiday period when the public like to hold more cash than at other times of the year.

Chart 2e. Norges Bank’s balance sheet, 2003-2012. Monthly data



The amount of notes and coins in circulation is determined by the public’s demand for cash. When demand for notes and coins from the public increases, banks buy cash from the central bank by drawing on their accounts at Norges Bank and sell it on to the public. An increase in notes and coins in circulation will appear in Norges Bank’s balance sheet as a transfer between two items on the liabilities side – from “Deposits from banks” to “Notes and coins in circulation”. An increase in notes and coins will trigger a need to supply reserves to banks to offset the decrease in their deposits in Norges Bank, but the amounts will not be very large as variations in demand for notes and coins are normally limited.

3 How do changes in the balance sheet affect Norges Bank’s earnings?

3.1 Norges Bank’s income and expenses

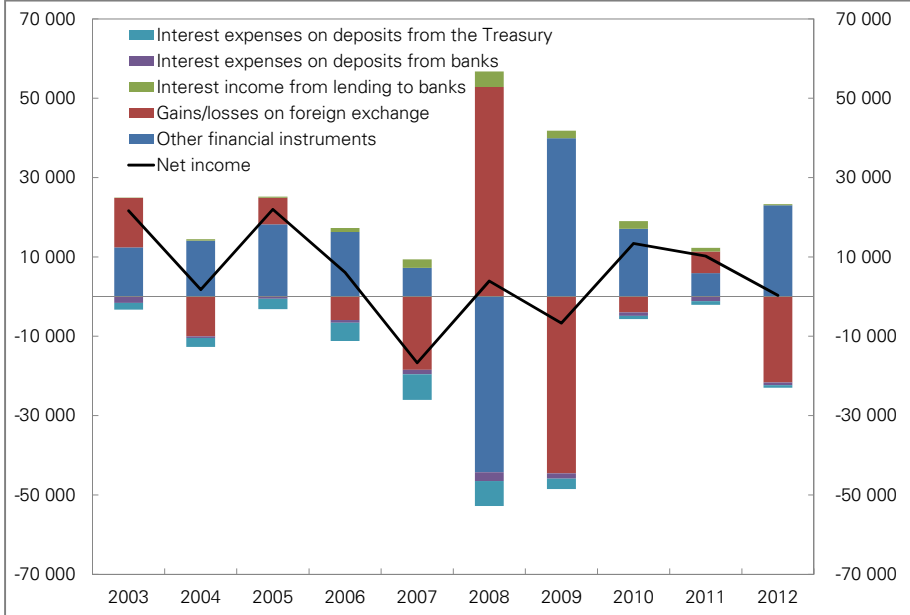
Chart 5 shows developments in Norges Bank’s financial income and expenses.²⁶ The Bank’s income consists mainly of interest, dividends and net gains on foreign exchange reserves. This is because the foreign exchange reserves are the largest asset on its balance sheet. Interest income from lending to banks is also a major income item at times. Norges Bank’s expenses consist primarily of interest paid on deposits from banks and the Treasury.²⁷ Since 2003, net income from financial instruments has averaged NOK 5.5 billion a year.

²⁶ Net operating income is disregarded.

²⁷ Personnel and other operating expenses totalled around NOK 3 billion in 2012.

One unique feature of a central bank is its sole right to issue money – not only notes and coins but also banks’ electronic deposits in the central bank (reserves). Notes and coins, recognised as a liability in the balance sheet, are not remunerated. Nor are any dividends paid on the Bank’s equity as is normally the case for businesses. The fact that notes, coins and equity do not pay a return will tend to mean that the income base in the balance sheet is larger than the cost base.

Chart 5. Norges Bank’s financial income and expenses, 2003-2012. Millions of NOK



Source: Norges Bank

3.2 The foreign exchange reserves

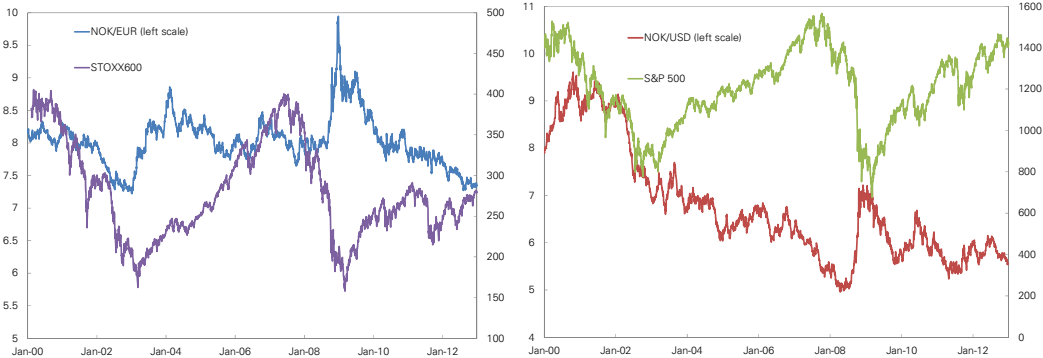
A high proportion of Norges Bank’s assets are invested in foreign currency, while its liabilities are mainly denominated in kroner. This means that movements in the krone exchange rate will have a major impact on the Bank’s earnings measured in kroner. A stronger krone will reduce the krone value of the foreign exchange reserves,²⁸ while a weaker currency will increase their krone value. As can be seen from Chart 5, a stronger krone can translate into substantial losses on the foreign exchange reserves in krone terms, as was the case in 2009. In other years, a weaker krone will increase the Bank’s earnings, as was the case during the financial crisis in 2008. Norges Bank’s earnings are also affected by movements in prices for the securities in which the foreign exchange reserves are invested. Thus the balance sheet has significant exposure to market risk, which requires Norges Bank to maintain sufficient levels of equity.

Chart 5 shows that gains and losses due to movements in exchange rates and gains and losses due to movements in prices for equities and bonds in the portfolio (referred to as “Other financial instruments” in Chart 5) have largely cancelled each other out over the past decade, especially in years with large movements. This can be explained by the krone strengthening in periods when global markets are rising, and weakening when they fall. This can also be seen from Chart 6, which shows the relationship between movements in the krone against the dollar and the euro (the two

²⁸ Even though the international purchasing power of the foreign exchange reserves may be unchanged.

largest currencies in the foreign exchange reserves) and movements in US and European stock markets.

Chart 6. Movements in exchange rates and stock indices, January 2000-December 2012



Source: Reuters EcoWin, Bloomberg

The greatest risk to Norges Bank’s earnings, and hence its equity, would therefore seem to be when a rising krone coincides with falling bond and share prices. Such a scenario could occur in a situation where the outlook abroad is weak, global equity and bond prices are in decline, and the krone is seen as a safe haven. Had the krone risen in 2008 by the same amount as it actually fell, we can see from Chart 5 that the Bank’s earnings for the year would have been a loss of NOK 100 billion. This would have wiped out the Bank’s equity.

3.3 Treasury deposits in Norges Bank and liquidity management

Both the government and banks have deposits in Norges Bank. While banks’ sight deposits attract interest at the key policy rate, Treasury deposits attract a rate linked to the return on the Bank’s assets, primarily the foreign exchange reserves.²⁹ This results in a better balance between interest income on the Bank’s assets and interest expenses on its liabilities. The aim is to reduce the risk to Norges Bank’s earnings.

The composition of the asset side of the Bank’s balance sheet means that, in practice, the interest rate paid on Treasury deposits is close to an average of three-month money market rates in euros and dollars, as can be seen from Chart 7. The two may deviate at times, mainly because interest on the Treasury account is calculated with a time lag.³⁰ When global interest rates fall, interest on the foreign exchange reserves will temporarily drop below the interest on Treasury deposits. Conversely, in periods of rising global interest rates, interest on the foreign exchange reserves will temporarily exceed the interest on Treasury deposits. If the interest rate on Treasury deposits were always exactly the same as that on the foreign exchange reserves, this interest rate risk would be eliminated.³¹ The absolute contribution to earnings from interest rate movements depends on the

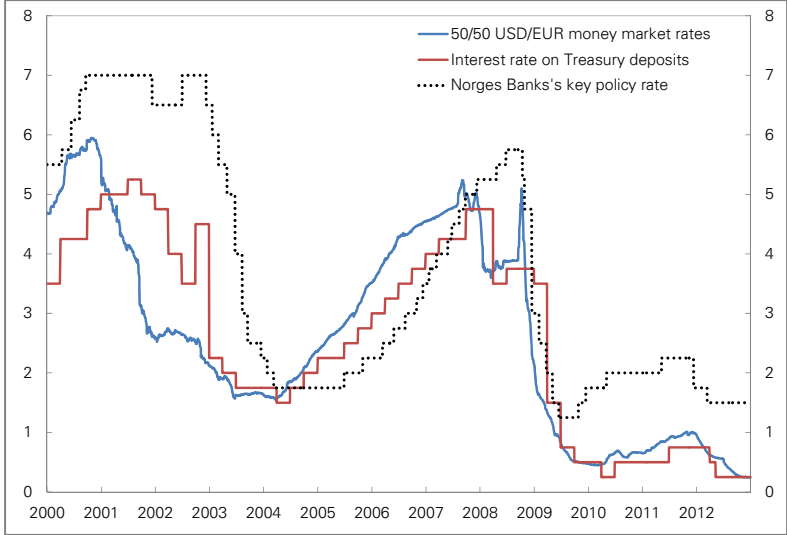
²⁹ The interest rate on the Treasury account (weighted according to its share of the asset side of Norges Bank’s balance sheet and adjusted for a spread between deposit and lending rates of 22 basis points) = (3-month NIBOR*share of NOK) + (3-month LIBOR USD*share of USD) + (3-month LIBOR GBP*share of GBP) + (3-month EURIBOR*share of EUR) + (3-month TIBOR*share of JPY) - 0.22.

³⁰ The interest rate on the Treasury account is set quarterly in advance (last trading day of the month one month before the start of the quarter. The indicative interest rate is rounded to the nearest quarter of a percent.

³¹ As an alternative, the Treasury’s deposits could conceivably attract interest at the sight deposit rate, but this would expose the Bank’s balance sheet to greater risk. The sight deposit rate is set on the basis of monetary policy considerations and may at times depart considerably from the interest rate on the foreign exchange reserves, which dominate the asset

size of the foreign exchange reserves and the size of Treasury deposits. As the foreign exchange reserves are larger than Treasury deposits, changes in the interest rate on the foreign exchange reserves will have a greater impact on the Bank’s earnings than changes in the interest rate on Treasury deposits.

Chart 7. Interest rate on Treasury deposits, average of three-month money market rates in dollars and euros, and Norges Bank’s key policy rate. January 2000-December 2012



Source: Norges Bank, Bloomberg

Even if the interest rate on Treasury deposits were exactly the same as that on the foreign exchange reserves, Norges Bank’s earnings would still be affected by absolute fluctuations in Treasury deposits and, to some extent, its liquidity management.

Treasury deposits affect the Bank’s earnings because payments to and from the Treasury account have an impact on structural liquidity in the banking system, i.e. the reserves in the banking system before Norges Bank’s market operations. When payments into the Treasury account reduce bank reserves below the desired level, Norges Bank will normally supply reserves to the banks in the form of fixed-rate loans (F-loans). Similarly, when payments out of the Treasury account increase reserves in the banking system above the desired level, the Bank will normally withdraw reserves from the banking system in the form of fixed rate deposits (F-deposits). In F-loan auctions, the sight deposit rate (the Bank’s key policy rate) acts as a floor for bidding, while in F-deposit auctions it acts as a ceiling. In isolation, Norges Bank makes a profit on F-loans, because, on average, banks have to pay a few basis points more than the sight deposit rate for these loans, whereas they have to deposit the reserves they are allotted in the F-loan at the sight deposit rate. In isolation, Norges Bank also makes a profit on F-deposits, because the interest rate it pays banks on F-deposits is normally a few basis points below the sight deposit rate.

side. If Treasury deposits attracted interest at the sight deposit rate, the contribution to Norges Bank's balance sheet would be positive in periods when domestic interest rates are below those abroad, and negative in periods when domestic rates are above those abroad. Domestic interest rates have been higher than global rates in recent years, which means that the contribution to the Bank’s balance sheet would have been negative.

Whether Norges Bank makes gains or losses in its liquidity management due to fluctuations in the Treasury account depends on (i) whether the interest rate on Treasury deposits is above or below the sight deposit rate, and (ii) whether payments are being made in or out of the Treasury account. There are four possible scenarios, as illustrated in Table 1:

Table 1. Effect on Norges Bank’s earnings (+ denotes positive effect, – denotes negative effect)

	Interest rate on Treasury deposits below sight deposit rate	Interest rate on Treasury deposits above sight deposit rate
Payments to Treasury	+	-
Payments from Treasury	-	+

If the interest rate on Treasury deposits is lower than the sight deposit rate, Norges Bank stands to benefit from the Treasury rather than banks having deposits in the Bank:

- Payments to the Treasury increase Treasury deposits and decrease banks’ deposits. In isolation, this will increase Norges Bank’s earnings. It may also mean that banks end up in a borrowing position due to a decline in structural liquidity. Norges Bank must then supply liquidity in the form of F-loans, which are also positive for the Bank’s earnings in isolation.
- Payments from the Treasury decrease Treasury deposits and increase banks’ deposits. In isolation, this will pull down Norges Bank’s earnings. Banks’ deposits in Norges Bank take the form of either sight deposits, which attract the sight deposit rate, or F-deposits, which attract a marginally lower interest rate. Given that the interest rate on Treasury deposits is lower than the interest rate on F-deposits, Norges Bank’s earnings will be reduced.

If the interest rate on Treasury deposits is higher than the sight deposit rate, Norges Bank stands to benefit from banks rather than the Treasury having deposits in the Bank:

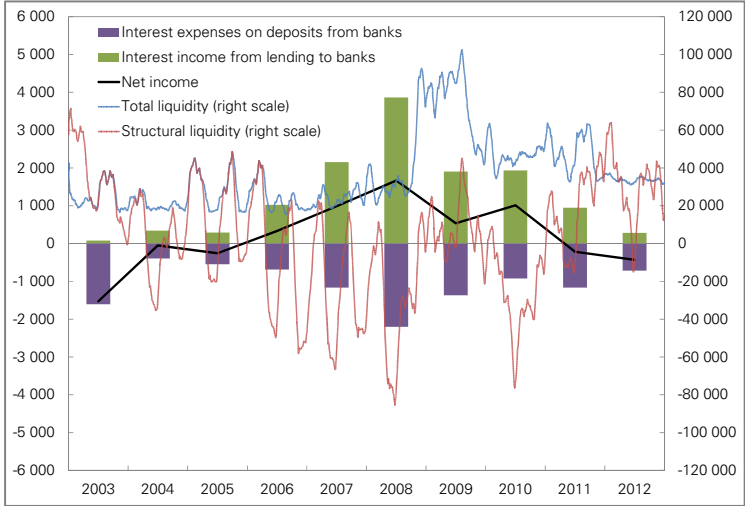
- Payments to the Treasury increase Treasury deposits and decrease banks’ deposits. In isolation, this will pull down Norges Bank’s earnings. It may also mean that banks end up in a borrowing position due to a decline in structural liquidity. Norges Bank must then supply liquidity in the form of F-loans, which will, in isolation, improve the Bank’s earnings, because the interest rate on F-loans is marginally higher than the sight deposit rate. However, the net effect on earnings will be negative because the interest rate on F-loans will normally be only a couple of basis points above the sight deposit rate and so below the interest rate on Treasury deposits (the assumption in this example).
- Payments from the Treasury decrease Treasury deposits and increase banks’ deposits. This pushes up Norges Bank’s earnings. Banks’ deposits in Norges Bank take the form of either sight deposits, which attract the sight deposit rate, or F-deposits, which attract a marginally lower interest rate. Either way, Norges Bank’s earnings increase.

The examples above show that Norges Bank’s earnings depend on the level of structural liquidity, i.e. the reserves in the banking system before the Bank’s market operations, which, in turn, are determined largely by the banking system’s transactions with the Treasury.

Chart 8 shows the contributions to earnings from liquidity management in isolation, i.e. the interest income and expenses from lending to banks and deposits from banks. As expected, Norges Bank has made more money from liquidity management in years when structural liquidity has been low and

total liquidity/reserves in the banking system have been high. In these years, (i) the Treasury has increased its deposits at the expense of banks' deposits, and (ii) Norges Bank has lent reserves to the banks, while the interest rate on Treasury deposits has been below the sight deposit rate.

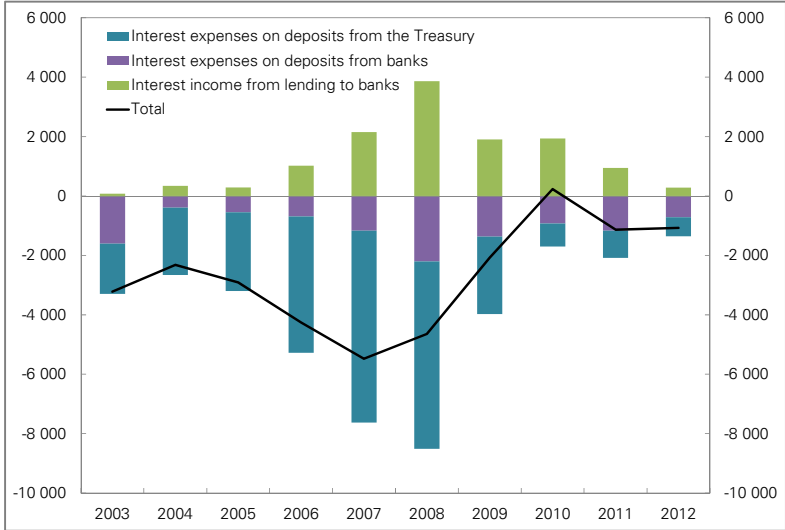
Chart 8. Contributions to earnings from liquidity management, 2003-2012



Source: Norges Bank

Chart 9 extends Chart 8 to include the contribution to earnings from interest expenses on Treasury deposits. Treasury deposits are the largest liability item in the Bank's balance sheet and are large in relation to banks' deposits. This explains why interest expenses on Treasury deposits have been higher than those on bank deposits even though the rate of interest on Treasury deposits in recent years has been lower than that paid to banks on their sight deposits. Had the Treasury been paid the same rate of interest on its deposits as banks, this would have hit Norges Bank's earnings hard during this period.

Chart 9. Income and expenditure excluding the foreign exchange reserves, 2003-2012. Millions of NOK



Source: Norges Bank

In this analysis of income and expenses from managing liquidity and the Treasury account, it should be remembered that Norges Bank is owned by the state. It is therefore the state that would have to inject equity into the Bank if successive years of losses pulled its equity below a certain level. Similarly, it is the state that receives any surplus when Norges Bank makes a profit and the buffers protecting the central bank against market risk on the income side are sufficient.

3.4 Notes and coins

The issue of notes and coins is a source of income for the central bank, and an increase in notes and coins in circulation will boost Norges Bank's earnings. The public's holdings of cash can be seen as an interest-free loan to the central bank. When the value of notes and coins in circulation increases, so does the amount of interest-free financing.

If banks draw on their reserves in Norges Bank to pay for withdrawals of notes and coins, their deposits in the central bank decrease, and so do the central bank's interest expenses.³² If banks do not have sufficient reserves to pay for withdrawals of notes and coins, they will need to borrow reserves from the central bank, which will boost the central bank's interest income. In other words, either the central bank's interest income will rise or its interest expense will fall when there is an increase in notes and coins.

Gains made by a central bank on the issue of notes and coins are known as seigniorage. This is the interest-free financing from notes and coins less the cost of producing and distributing cash. Seigniorage can be approximated by multiplying the total value of notes and coins in circulation by the average return on Norges Bank's asset items.³³ Norges Bank's annual gains from its sole right to issue kroner also include gains from liquidity management. Since the volume of notes and coins in circulation is determined by the public, any notes stolen from Norges Bank or counterfeit notes in circulation entail a loss for the central bank. Counterfeit notes replace part of the demand for notes and coins that would otherwise have given the central bank an increase in interest income or decrease in interest expenses. Notes stolen from Norges Bank will entail a loss for the Bank equivalent to the face value of the notes, as the Bank is unable to cancel these notes. On the other hand, the central bank will gain when notes and coins in circulation are lost. Banks will then end up buying new notes and coins to replace those that have disappeared, assuming that demand for notes and coins is unchanged.

If the public no longer wishes to use cash as a means of payment, banks will return it to Norges Bank,³⁴ and their deposit accounts in the central bank will be credited accordingly. The decrease in the amount of cash in circulation will reduce Norges Bank's earnings, as interest income will fall and interest expenses will rise. When Norges Bank decides to withdraw notes or coins, its obligation to redeem them expires after a period of 11 years. Any notes and coins not returned to the Bank within

³² This would be the case in practice in a system with a permanent surplus of central bank reserves.

³³ This corresponds to the definition of seigniorage used in report SOU 2013:9 "Riksbankens finansiella oberoende och balansräkning" [The Riksbank's financial independence and balance sheet] on the Swedish central bank's balance sheet and earnings.

³⁴ Banks would have had to buy the notes and coins back from their customers.

this period, either because they have been lost or for other reasons, will be a source of income for the central bank.³⁵

4 Summary

This memo discusses the main components of Norges Bank's balance sheet and their contribution to the Bank's earnings. The foreign exchange reserves are the largest balance sheet item, and the return on these reserves is the Bank's most important source of income. At the same time, they are associated with market risks which could lead to substantial losses for the Bank and therefore require the Bank to maintain sufficient levels of equity. Movements in the balance sheet items related to lending to banks, deposits from banks and deposits from the Treasury are closely interlinked. They are crucial for liquidity management, which is the practical implementation of monetary policy. Compared with the contribution to earnings from the foreign exchange reserves, the central bank's income and expenses from liquidity management are minor. Interest expenses on Treasury deposits may seem considerable, but the risk to equity is limited, because the interest paid to the Treasury on its deposits in the central bank is tied to the return on the foreign exchange reserves. Norges Bank is the sole issuer of notes and coins in Norway. Notes and coins are included as a liability in the balance sheet, but the Bank does not pay any interest on them, unlike other liabilities.

³⁵ The central bank also incurs expenses in producing and distributing cash. These need to be allowed for when calculating the implicit gains from the issue of notes and coins.