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Norges Bank

Staff Memo

Structural liquidity: What has driven the historical development and what might occur in the years ahead?

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1. Background

The primary objective of Norges Bank's liquidity policy is to ensure that short-term money market rates are close to the policy rate. Norges Bank achieves this by setting the terms and conditions for bank loans and deposits and by controlling the quantity of unrestricted overnight deposits in the central bank (central bank reserves). Norges Bank ensures that banks' total central bank reserves are close to the target of 35bn Norwegian Krone (NOK) by either providing liquidity via F-loans against collateral or withdrawing liquidity via F-deposits. Structural liquidity is the level of banks' deposits in Norges Bank prior to the Bank's market operations.

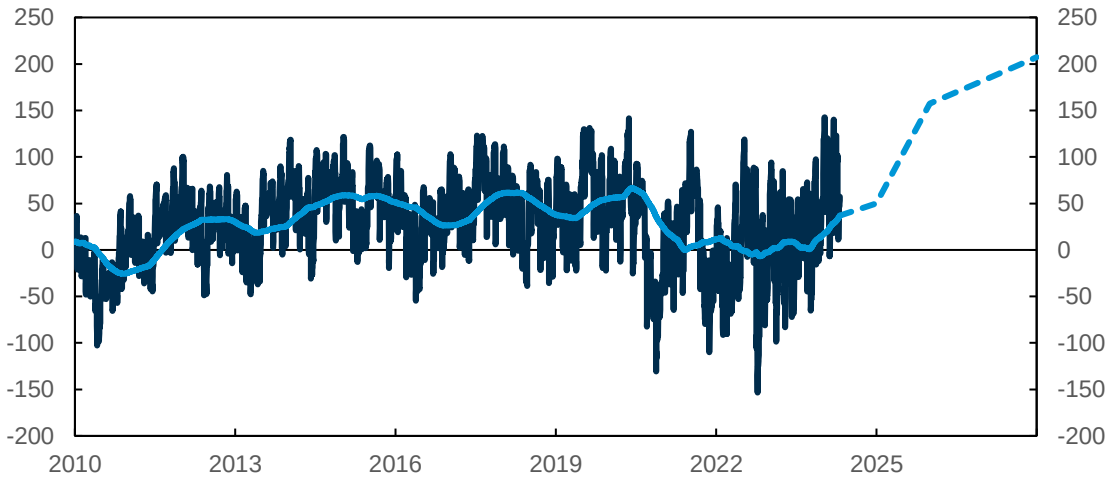
Historically, the level of structural liquidity has fluctuated, but has averaged somewhat above zero (Chart 1). The government's treasury single account system in NOK is maintained by Norges Bank and the government's transactions with the banking system have been the main reason for both near-term and long-term fluctuations in structural liquidity. In 2022, structural liquidity was at a generally low level because funds had built up in the government's account. A record-high payment of petroleum tax in October 2022 caused structural liquidity to fall to a historically low level. As a result, short-term money market rates rose sharply, which also spilled over to rates further out on the yield curve (see Huse, Pettersen and Sævareid (2023)).

Against the backdrop of the turbulence in the money market in autumn 2022, the Ministry of Finance appointed a working group in 2023 to examine government transactions and their impact on the money market. In spring 2024, the working group published its report with several specific recommendations that will affect structural liquidity (see Ministry of Finance (2024a)). If the working group's recommendations are adopted, structural liquidity will, all else equal, increase markedly in the coming years (Chart 1). Structural liquidity is expected to rise to around NOK 150bn at the end of 2025 and close to NOK 200bn in 2027. In practice, this means a transition to a considerably higher level of structural liquidity.

Higher structural liquidity means that banks' deposits in the central bank increase. With the current liquidity management system, deposits in excess of NOK 35bn are withdrawn using F-deposits. Regardless of whether surplus liquidity is in the form of unrestricted or fixed-term deposits, banks' liquidity will be strengthened and the risk premium on swapping USD for NOK in the FX swap market will probably be reduced. Increased deposits from banks on Norges Bank's balance sheet may thus affect money market liquidity premiums. One of the objectives of the liquidity policy is to provide a framework for liquidity and credit risk to be borne as far as possible by the private agents in the financial system, which implies that the central bank shall, as little as possible, influence money market risk premiums at maturities beyond a few days (see Norges Bank (2021)). Following the publication of the working group's report, Norges Bank stated that once it has been clarified which of the working group's recommendations that will be adopted, then Norges Bank will assess whether there is a need to adjust the liquidity policy or the balance sheet (see Norges Bank (2024)).

This *Memo* is structured as follows: Section 2 describes in more detail the relationship between structural liquidity, the Liquidity Coverage Ratio (LCR) and interest rate formation in the money market. Section 3 discusses a decomposition of factors that have affected the level of structural liquidity over time. Section 4 contains technical projections of how the level of structural liquidity may develop in the years ahead in the light of the proposals from the working group on government transactions. The projections do not take into account any potential balance sheet adjustments made by Norges Bank.

Chart 1: Structural liquidity in the banking system. Daily observations and one-year moving average. 1 January 2010 – 26 April 2024. Projected level at year-end 2024-2027. [1] *In billions of NOK*



Source: Norges Bank

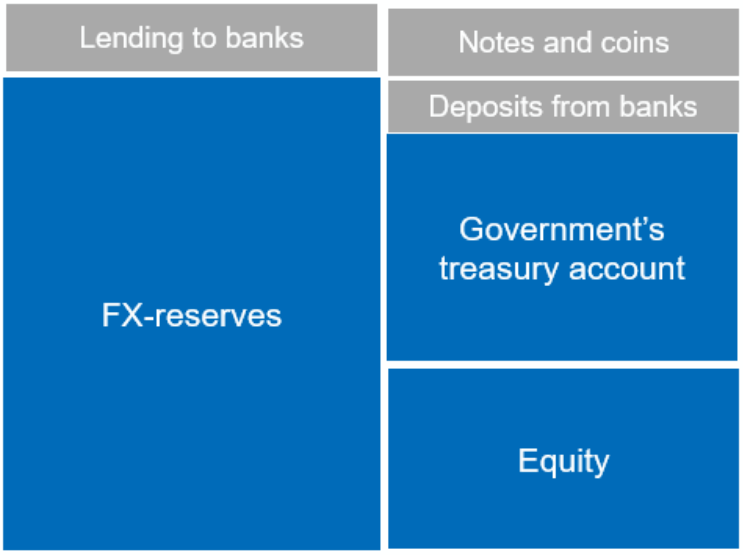
2. Structural liquidity, Norges Bank's liquidity management and LCR

Both banks and the government have deposit accounts with Norges Bank. On Norges Bank's balance sheet, these deposits are shown on the liability side (Chart 2). Norges Bank determines the sum of the total deposits on the balance sheet, but not the distribution between banks and the government. Norges Bank can create new deposits either by providing loans against collateral to banks or by purchasing other assets.

The primary objective of Norges Bank's liquidity policy is to ensure that the shortest money market rates are kept close to the policy rate. Norges Bank achieves this by steering the total volume of banks' central bank reserves towards NOK 35bn, through either liquidity-providing F-loans or liquidity-draining F-deposits. Central bank reserves are the final means of settlement between banks and their most liquid asset.

[1] See Section 4 for details.

Chart 2: Illustration of Norges Bank's balance sheet



Structural liquidity is the level of banks' deposits in Norges Bank prior to central bank market operations. Changes in structural liquidity are influenced by autonomous factors. The most important autonomous factors are:

1. Payments between the government's account with Norges Bank and the general public's accounts in the banking system
2. Norges Bank's foreign exchange transactions
3. Government borrowing
4. Changes in the amount of banknotes and coins in circulation

As an example, when firms pay taxes to the government, liquidity is withdrawn from the banking system while government deposits rise. When the government pays pensions and social security benefits, liquidity is supplied to the banking system. When Norges Bank buys foreign exchange and sells NOK, liquidity is supplied to the banking system. When banks buy banknotes and coins from Norges Bank, they pay using deposits in the central bank and structural liquidity falls. The pattern of government payments and receipts, maturities and issues of government bonds and Norges Bank's foreign exchange transactions normally leads to fluctuations in structural liquidity within each year, but the government has had as a principle that their transactions should not affect the level of structural liquidity over time. However, Chart 1 shows that the level of structural liquidity has fluctuated over time. The level was markedly higher in the period between 2011 and 2019 than in the years before and since, owing to reasons discussed in Section 3.

The introduction of the Liquidity Coverage Ratio (LCR) in NOK for banks has likely increased the importance of structural liquidity for money market premiums (see Hagen and Stiansen (2023)). The LCR requirement implies that banks must hold a portfolio of liquid assets that is sufficient to cover their net liquidity outflow during a 30-day stress period (Equation 1). Norwegian banks must meet LCR requirements for all currencies and individually for NOK and other significant currencies. A total LCR requirement of 100 percent was introduced for Norwegian banks at the end of 2015. In autumn 2017, a 50 percent LCR requirement in NOK was introduced for large Norwegian banks that have the euro or USD as their significant currency. In recent years, several other Nordic banks

have also been required to meet specific LCR requirements in NOK by their respective supervisory authorities.

$$(1)\ LCR_{NOK} = \frac{High\ Quality\ Liquid\ Assets}{Outflows - MIN(Inflows,\ 0.75 * Outflows)} \geq 50\ \%,$$

A fall in structural liquidity reduces banks' LCR ratios. When structural liquidity falls, banks lose deposits on the liability side and central bank reserves on the asset side. In isolation, the loss of deposits leads to a strengthening of banks' LCR. This is because deposits have a run-off factor in LCR of between five and one hundred percent, depending on the type of deposit. When banks lose deposits, outflows are reduced and therefore also the denominator in banks' LCR. The fall in the denominator will be greater the higher the run-off factor is for the deposits that banks lose. At the same time, the numerator in bank's LCR falls as banks lose reserves that are included as a liquid asset in the LCR with a weighting of one hundred percent. Since the deposits the bank loses are multiplied by a run-off factor of between five and one hundred percent, the numerator will usually fall more than the denominator in the banks' LCR when structural liquidity falls, reducing the LCR.[2]

F-loans will not normally help banks maintain their LCR when structural liquidity falls, since the collateral they provide in F-loans is essentially the same as those approved as liquid assets in the LCR. Banks can replace the reserves they lose in the event of a fall in structural liquidity with F-loans but must then deduct collateral provided in the calculation of liquid assets in the LCR. Banks may to some extent pledge securities that are not included in the NOK-LCR as collateral for F-loans, such as their own covered bonds or securities denominated in foreign currency. However, if the F-loans mature within 30 days, the rules are designed so that banks must take into account repayment in the form of reserves at maturity of the F-loan when calculating the limits for the composition of the liquidity buffer, i.e. the unwinding mechanism. This means that banks' holdings of Level 1A assets in the LCR may act as a constraint on how much banks can borrow in F-loans, even if they do not use these to borrow from Norges Bank.

When structural liquidity falls, banks can maintain their LCR in NOK and increase the predictability of their own liquidity position by obtaining NOK against foreign currency in FX swaps at maturities exceeding 30 days. The market for NOK FX swaps is the largest and most liquid part of the Norwegian money market (see Stiansen (2022)). Normally, a fall in structural liquidity leads to a rise in the implied interest rate on borrowing NOK in the FX swap market. In addition, the unwinding mechanism may entail that banks are less able to offer NOK at maturities of less than 30 days when structural liquidity becomes very negative.[3] For example, a record-high petroleum tax payment in the autumn of 2022 contributed to structural liquidity falling to a historically low level. This led to a substantial rise in the shortest-term Norwegian money market rates (see Huse,

[2] As an example, if structural liquidity falls by 100, liquid assets (numerator) will fall correspondingly. Banks will lose deposits of 100, which are included under outflows in the denominator multiplied by a run-off factor. For example, if the average run-off factor is 50 percent, the denominator will fall by 50 and the LCR will fall.

[3] A letter from Norges Bank to the Ministry of Finance on the treatment of Norges Bank's F-loans in the LCR dated 9 February 2024 is attached to the report of the working group (see Ministry of Finance (2024a)).

Pettersen and Sævareid (2023)). Money market premiums with somewhat longer maturities also rose markedly.

A low long-term level of structural liquidity increases the risk that large payments to the government will have a substantial impact on short-term money market rates and thereby affecting the attainment of Norges Bank's liquidity policy objectives.

3. Decomposition of structural liquidity

3.1 The petroleum fund mechanism and other public sector payments

The government's net cash flow from petroleum activities (petroleum revenues) is either used to cover the non-oil budget deficit or saved in the Government Pension Fund Global (GPFG). If petroleum revenues are larger than the non-oil deficit, the excess is allocated to the GPFG, and if petroleum revenues are smaller than the deficit, funds are withdrawn from the GPFG. The petroleum fund mechanism is the system that channels petroleum revenues for spending or saving.

Petroleum revenues consist of revenues from the government's own oil company in foreign currency (the State's Direct Financial Interest (SDFI) revenues) and petroleum taxes and dividends from Equinor in NOK. SDFI revenues are sold on an ongoing basis to Norges Bank's petroleum buffer portfolio. The transfer to the GPFG is given by:

(2) $$Transfers\ GPFG = SDFI + petroleum\ taxes\ and\ dividends + non\ oil\ deficit$$

The government's need for foreign currency for transfers to the GPFG is covered by FX purchases from Norges Bank on behalf of the government and is given by:

(3) $$FX\ purchases\ GPFG = Transfers\ GPFG - SDFI$$

Alternatively, the above equations can be combined and FX purchases expressed as:

(4) $$FX\ purchases\ GPFG = Petroleum\ taxes\ and\ dividends + non\ oil\ deficit$$

Equation (4) shows that the foreign exchange purchases correspond to the government's surplus or deficit in NOK. If petroleum taxes and dividends exceed the non-oil deficit, then Norges Bank sells NOK on behalf of the government and vice versa if the petroleum taxes are less than the non-oil deficit.

Chart 3.1: Petroleum fund mechanism when petroleum revenues in NOK exceed the non-oil deficit

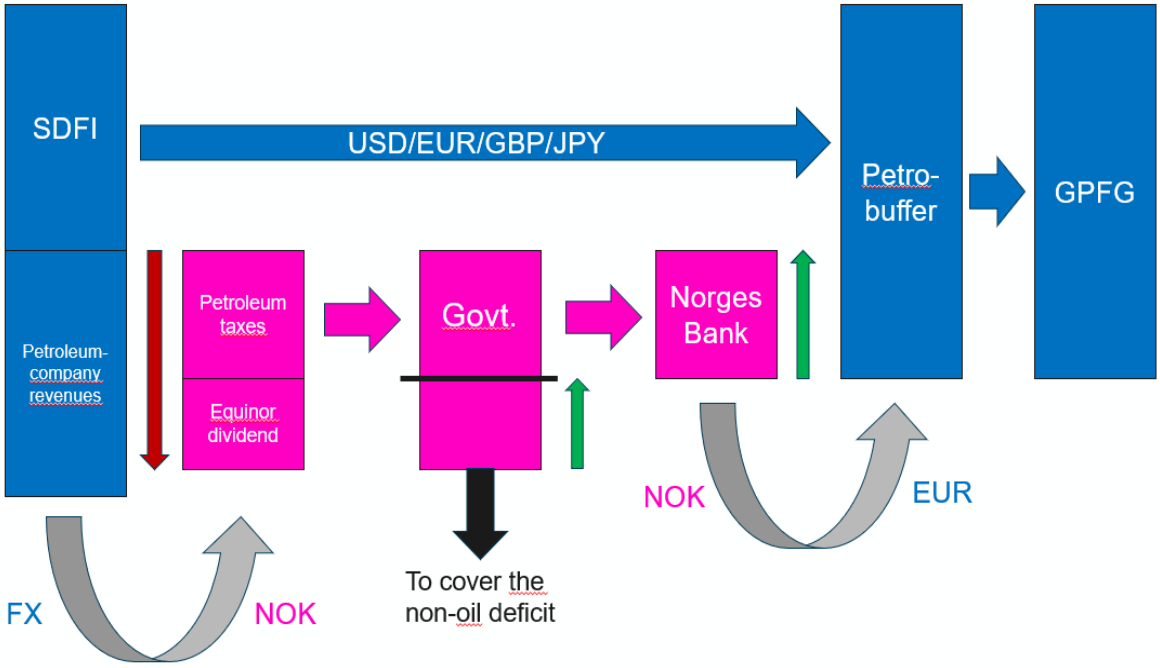


Chart 3.1 illustrates the petroleum fund mechanism when petroleum revenues in NOK exceed the non-oil deficit, as has been the case in recent years. Payment of petroleum taxes and dividends from Equinor to the government drains liquidity from the banking system, and net payments from the government, which in total will equal the non-oil deficit, supply liquidity to the banking system. Norges Bank sells excess petroleum revenues in NOK and purchases foreign currency for the petroleum buffer portfolio for transfer to the GPFG. The foreign exchange purchases supply liquidity to the banking system and are planned and smoothed evenly over the year. The liquidity-draining effect from petroleum taxes and dividends is, in principle, fully offset by liquidity provision from the government's non-oil deficit and foreign exchange purchases. This means that the petroleum fund mechanism has a neutral effect on structural liquidity of the banking system (liquidity neutrality). Box 1 illustrates the petroleum fund mechanism and liquidity neutrality using a numerical example.

Box 1. Illustration of the petroleum fund mechanism and liquidity neutrality

The effect of the government's use of petroleum revenues on structural liquidity can be illustrated with a numerical example. Assume petroleum revenues in NOK in the form of petroleum taxes and dividends from Equinor of NOK 200 and non-oil deficit of NOK 100. For the sake of simplicity, we disregard petroleum revenues in foreign currency. The government must therefore transfer 100 to the GPFG and needs to purchase foreign currency equal to 100 to cover the transfer. When oil companies pay taxes and dividends to the government, they draw on their deposits in private banks and transfer them to the government's account in Norges Bank. In Norges Bank's settlement system, banks pay by drawing on their deposits in the central bank. Banks' deposits in the central bank are thus reduced by 200 and the government's deposits in the central bank increase correspondingly (Table 3.1).

Table 3.1: Norges Bank's balance sheet after payment of petroleum taxes and dividends

Assets		Equity and liabilities	
GPFG		GPFG krone account	
Loans to banks		Banknotes and coins	
FX reserves		Deposits from banks	-200
		Deposits from the govt.	+200
		Equity	
Total		Total	

The government needs to obtain foreign exchange for transfers to the GPFG. Norges Bank conducts the foreign exchange transactions to the GPFG on behalf of the government. Norges Bank buys foreign exchange and sells NOK equal to 100 from the banks in the foreign exchange market. The NOK sales are credited to banks' deposit accounts in Norges Bank, which increase by 100. On the asset side of the balance sheet, the foreign currency to be transferred to the GPFG is temporarily placed in the petroleum buffer portfolio in the foreign exchange reserves (Table 3.2).

Table 3.2: Norges Bank's balance sheet after purchase of foreign exchange and sale of NOK to the GPFG

Assets		Equity and liabilities	
GPFG		GPFG krone account	
Loans to banks		Banknotes and coins	
FX reserves	+100	Deposits from banks	-200+100=-100
		Deposits from the govt.	+200
		Equity	
Total	100	Total	100

Furthermore, the government requests that Norges Bank transfers foreign currency equal to 100 to the GPFG. Norges Bank transfers currency equal to 100 from the petroleum buffer portfolio in the foreign exchange reserves. The government pays by drawing on its deposits in Norges Bank, which are reduced by 100 (Table 3.3).

Table 3.3 Norges Bank's balance sheet after transfers to the GPFG

Assets		Equity and liabilities	
GPFG	+100	GPFG krone account	+100
Loans to banks		Banknotes and coins	
FX reserves	+100-100=0	Deposits from banks	-200+100=-100
		Deposits from the govt.	+200-100=100
		Equity	
Total	100	Total	100

When the government spends NOK 100 over the budget, funds are disbursed from the government's account to the public's deposit accounts in private banks. The government's account will be reduced by 100 and banks' deposits in the central bank will increase by 100 (Table 3.4). When all transactions have been completed, bank and government deposits in Norges Bank and the foreign exchange reserves will remain unchanged from the outset. As with Chart 3.1, the example shows that the government's use and saving of petroleum revenues does not affect banks' total deposits in Norges Bank and that the mechanism is in principle liquidity-neutral.

Table 3.4 Norges Bank's balance sheet after government spending over the budget

Assets		Equity and liabilities	
GPFG	+100	GPFG krone account	+100
Loans to banks		Banknotes and coins	
FX reserves	+100-100=0	Deposits from banks	-200+100+100=0
		Deposits from the govt.	+200-100-100=0
		Equity	
Total	100	Total	100

Assume further that government expenditures excluding petroleum activities are lower than projected, so that the actual non-oil deficit is 50 and not 100. We also assume that this is not known to the government until the foreign exchange transactions and transfers to the GPFG for the year have been carried out. Instead of spending 100 over the budget, the government now spends only 50. Compared with Table 3.4, the government's account is now reduced by only 50 and banks' deposits in Norges Bank increase by only 50 (Table 3.5). As a result, banks' deposits have fallen by 50 from the outset. The government's account has increased by 50. The petroleum fund mechanism is no longer liquidity-neutral because the government has transferred too little to the GPFG and Norges Bank has sold too little NOK on behalf of the government.

Table 3.5 Norges Bank's balance sheet with deviation from liquidity neutrality

Assets		Equity and liabilities	
GPFG	+100	GPFG krone account	+100
Loans to banks		Banknotes and coins	
FX reserves	+100-100=0	Deposits from banks	-200+100+50=-50
		Deposits from the govt.	+200-100-50=50
		Equity	
Total	100	Total	100

3.1.1 Has the petroleum fund mechanism been liquidity-neutral in practice?

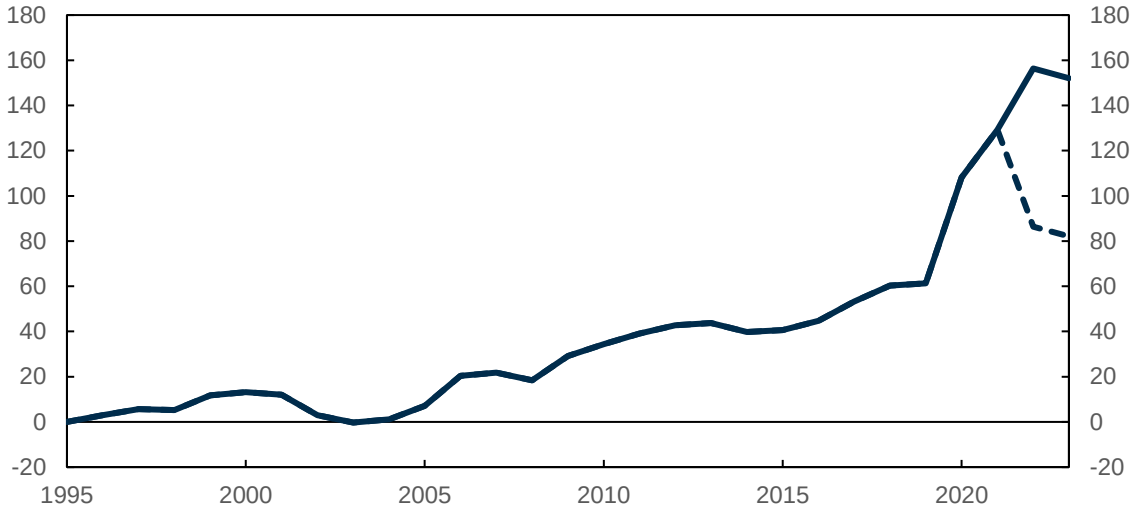
In practice, the size of petroleum revenues and the non-oil deficit will be uncertain until the government submits its final central government accounts in the spring of the following fiscal year. The transfers to the GPFG, and thus the foreign exchange transactions in the current fiscal year are therefore based on estimates for these amounts.

If the estimates deviate from actual figures, the transfers, and thus the foreign exchange transactions will also deviate from what they should have been. In that case, the petroleum fund mechanism does not have a neutral effect on structural liquidity. If, for example, the non-oil deficit is smaller than expected, it means that too much NOK has been purchased for the government's account. All else equal, this means that the government's account rises and banks' deposits fall from the starting point. This will also be the case if payments of petroleum revenues in NOK are higher than expected. In these cases, the petroleum fund mechanism will not be liquidity-neutral in practice. Too much or too little transferred due to deviations from the estimate for the net cash flow is automatically corrected in the following fiscal year, so that the transfer of the net cash flow to the GPFG becomes liquidity-neutral over time. On the other hand, deviating transfers related to the non-oil deficit are not automatically corrected.

Historically, the government's estimates of petroleum revenues have been close to actual figures, while the government has tended to overestimate the size of the non-oil deficit over time. Cumulative deviations between estimates from the balanced budget[4] and actual figures from the final government accounts show that the government has overestimated the non-oil deficit by almost NOK 150bn cumulatively since 1996, of which NOK 115bn is due to deviations since 2010 (Chart 3.2). The deviation is mainly due to the fact that the non-oil deficit was lower than projected in 2020, 2021 and 2022. In 2022, however, the government carried out a discretionary reversal from the government's account to the GPFG of NOK 70bn. Taking into account the reversal in 2022, the government has transferred roughly NOK 80bn too little to the GPFG since 1996, of which NOK 50bn since 2010. Too little transferred to the GPFG means that the petroleum fund mechanism has had a draining effect on structural liquidity.

[4] Latest published estimates for the current fiscal year.

Chart 3.2: Surplus in the central government accounts after transfers to the GPFG (solid line) including reversal in 2022 (broken line). Cumulative. 1996-2023. In billions of NOK

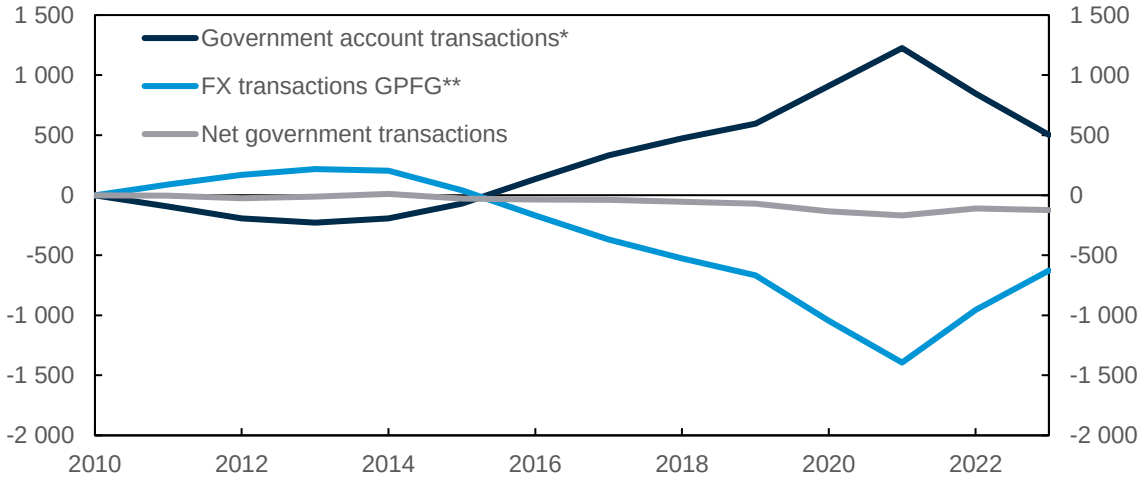


Source: Central government accounts

Chart 3.3 shows the cumulative effect of government transactions, foreign exchange transactions and the total effect on structural liquidity since 2010. The dark blue line shows that the liquidity supplied to the banking system from the central government and other public accounts, excluding transactions related to government debt management, has amounted to around NOK 500bn. Most of the payments are related to the payment of taxes and duties and the government's use of these funds over the central government budget, but liquidity provision in the form of Norges Bank's expenses is also included in this item. The fact that the cumulative payments (dark blue line) have supplied liquidity must be seen in the context of the fact that the net cash flow in NOK in the years 2014-2021 was lower than the non-oil deficit. In this period, Norges Bank therefore purchased NOK on behalf of the government to cover the remaining need for krone liquidity. Foreign exchange transactions (light blue line) have therefore had a liquidity-draining effect during the period. Cumulatively, liquidity drain from foreign exchange transactions on behalf of the government has amounted to around NOK 625bn since 2010. The net effect from the government's transactions and the foreign exchange transactions implies a liquidity drain of NOK 125bn since 2010 (see grey line in Chart 3.3[5]), the most important reason being that the petroleum fund mechanism has not been liquidity-neutral. The foreign exchange transactions of the GPFG also depend on certain other components that are not directly linked to the petroleum fund mechanism. For example, Norges Bank purchases NOK equivalent to the management fee related to the GPFG each year. These NOK purchases have accumulated to NOK 60bn since 2010 and mainly offset the inflow from Norges Bank's expenditure mentioned above.

[5] In principle, this amount can be compared with the fact that, according to the central government accounts, the government has transferred NOK 48bn too little to the GPFG since 2010. The discrepancy between the figures may be due to the fact that not all central government revenues and expenditures have a liquidity effect and/or that not all payments through central government and other public accounts in the liquidity statistics are related to revenues and expenditures in the central government budget. In addition, the liquidity effect from Norges Bank's income and expenses is included. However, the liquidity supply related to the costs associated with the management of the GPFG is counteracted by the fact that Norges Bank purchases NOK equivalent to the management fee from the government each year.

Chart 3.3: Government's transactions and foreign exchange transactions on behalf of the government. Cumulative liquidity effect. 2010-2023. In billions of NOK



*Liquidity effect from payments to and from the government and other public sector accounts, including net inflows from Norges Bank's operating expenses, less payments included in the government's borrowing needs and payments related to government bonds and Treasury bills

**Liquidity effect from Norges Bank's foreign exchange transactions on behalf of the government, including NOK purchases equal to remuneration for Norges Bank's expenses associated with the management of the GPFG (management fee)

Source: Norges Bank and central government accounts

3.2 Government debt borrowing

The government issues government bonds to meet its borrowing requirement. The requirement comprises lending from state banks and capital injections in connection with government ownership, maturation of bonds and neutralisation of the liquidity supplied from the government's use of dividend and interest transfers from Norges Bank.

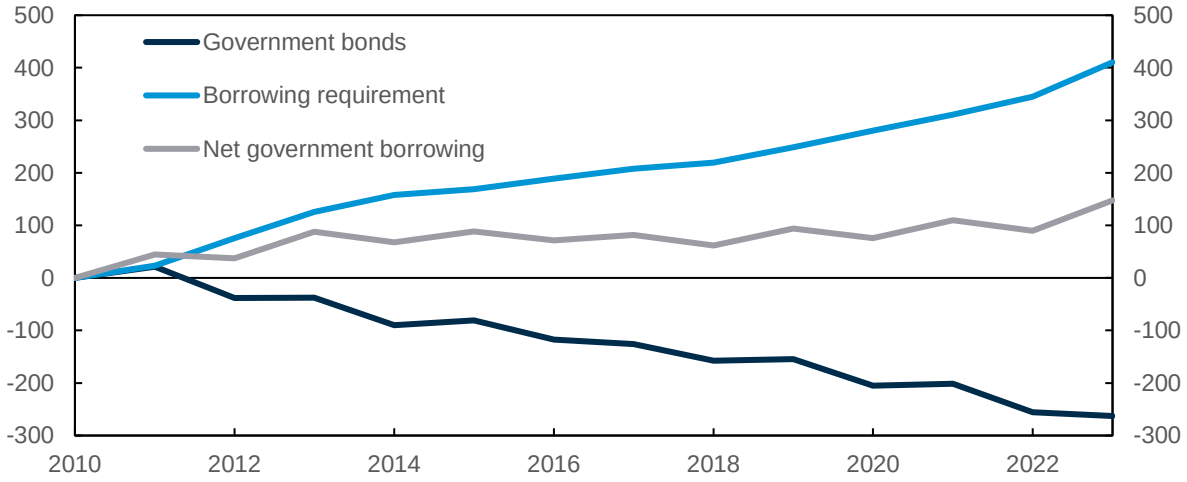
The central government budget aims to ensure that the government's borrowing transactions do not affect the liquidity in the banking system over time. When the government disburses loans from the Norwegian State Educational Loan Fund, the Norwegian State Housing Bank or similar, liquidity is supplied to the banking system and structural liquidity increases. Maturing outstanding government bonds have the same effect. Issuance of new government bonds drains liquidity from the banking system. Norges Bank transfers dividends and interest to the government by creating "new" NOK in the government's account. When the government spends these revenues over the central government budget, liquidity is also supplied to the banking system. The transfers of dividends and interest from Norges Bank to the government are therefore also included in the borrowing requirement. In 2024, however, the Ministry of Finance decided to halt the neutralisation from 2025 (see Ministry of Finance (2024b)). This means that the transfers from 2025 will no longer be included in the borrowing requirement.

The borrowing requirement is mainly covered by the issuance of long-term bonds but can also be met by drawing on the government's cash holdings in order to ensure predictability of borrowing from year to year and well-functioning government securities markets. Drawing on cash holdings

to cover the borrowing requirement entails supplying the banking system with liquidity. The annual borrowing program is based on estimates for items included in the borrowing requirement in the central government budget. Normally, no changes are made to borrowing during the year, unless extraordinary circumstances occur.[6] The actual annual borrowing requirement is normally unknown until the central government accounts are presented in the spring of the following year. If the actual borrowing requirement is higher than projected, borrowing supplies net liquidity to the banking system, and vice versa if the actual borrowing requirement is lower than projected.

Since 2010, the borrowing requirement has supplied liquidity to the banking system amounting to around NOK 400bn (Chart 3.4). At the same time, outstanding government bonds have drained liquidity equivalent to approximately NOK 250bn. This implies a net supply of liquidity of close to NOK 150bn. Svor (2023) provides a detailed description of budgeted and actual borrowing requirements, as well as borrowing of government debt since 2002[7].

Chart 3.4: Government debt borrowing. Cumulative liquidity effect.[8] 2010-2023. In billions of NOK



Source Norges Bank and central government accounts

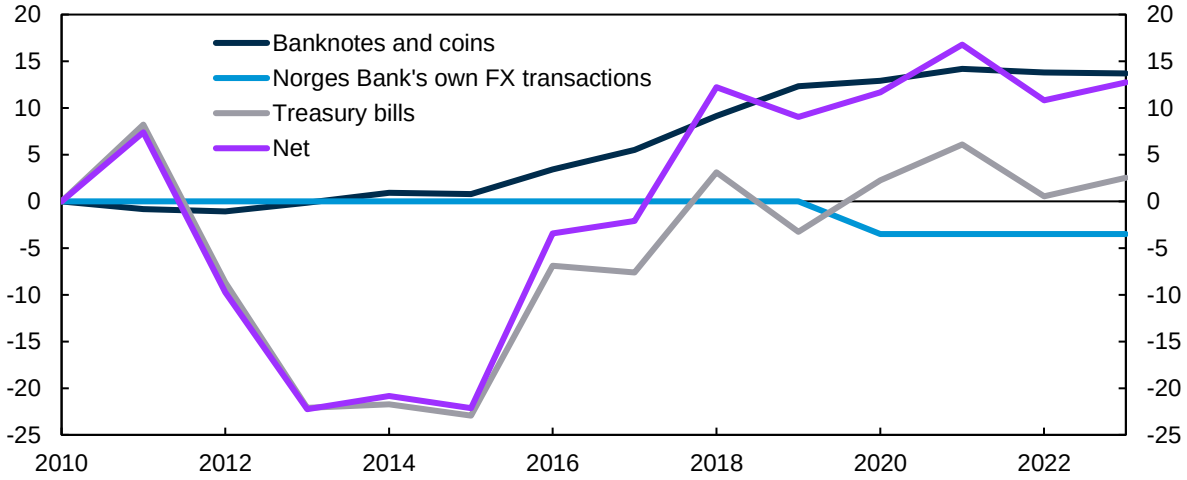
3.3 Other contributors to changes in structural liquidity

In addition to government transactions, Norges Bank's foreign exchange transactions on behalf of the GPFG and long-term government debt management, structural liquidity is also affected by changes in the stock of notes and coins in circulation, Norges Bank's own foreign exchange transactions and changes in Treasury bills outstanding. Since 2010, the stock of notes and coins

[6] One example is 2020, when borrowing requirements increased as a result of the re-establishment of the Government Bond Fund.
[7] The figures in Svor (2023) deviate somewhat from the liquidity statistics. The most important reason is that until 2023, ten-year government bonds matured every two years, and in Svor (2023), the maturities are distributed (accrued) over two years.
[8] Certain factors may contribute to some discrepancies between the actual liquidity effect and what is shown in the chart. For example, nominal values are used in the chart.

has fallen by NOK 14bn. When banks sell notes and coins back to Norges Bank, banks' deposit accounts with the central bank are credited and structural liquidity rises (Chart 3.5). Furthermore, Norges Bank's own foreign exchange transactions have reduced structural liquidity by NOK 3.5bn. The amount is entirely derived from interventions in the foreign exchange market in the spring of 2020, when Norges Bank bought NOK and sold foreign exchange to improve the functioning of the Norwegian krone market. When Norges Bank buys NOK from banks, banks pay by drawing on their deposits in the central bank, and structural liquidity falls. Since 2010, Treasury bills outstanding have fallen by NOK 2.5bn. In total, net inflows from banknotes and coins, Norges Bank's foreign exchange market interventions and Treasury bills amounted to NOK13 bn since 2010, which is a very small share of the total change in structural liquidity compared with the effect from other components.

Chart 3.5: Banknotes and coins, Norges Bank's own foreign exchange transactions and Treasury bills. Cumulative liquidity effect. 2010-2023. In billions of NOK



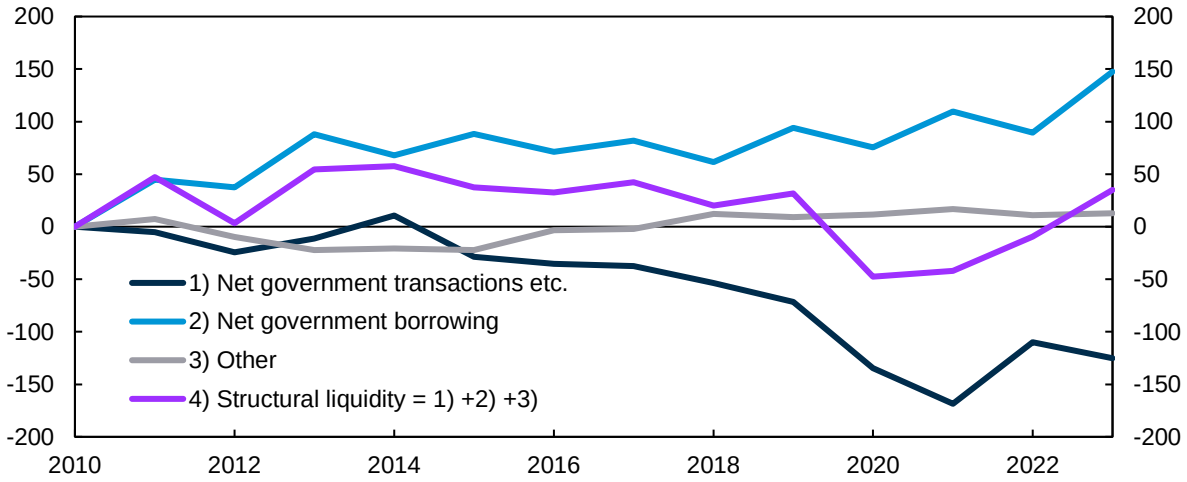
Source: Norges Bank

3.4 Decomposition of changes in structural liquidity

Chart 3.6 shows the cumulative change in structural liquidity since 2010 broken down by contribution from the various components discussed in the sections above. Together, the components constitute the cumulative change in structural liquidity. The chart shows that the long-term level of structural liquidity was at its highest in 2014, when it was close to NOK 60bn above the 2010-level. In 2020, the level was at its lowest, close to NOK 50bn below the 2010-level. In the period to 2014, certain deliberate choices by the government to reduce cash holdings contributed to an increase in structural liquidity. Since 2020, insufficient transfers to the GPFG and associated foreign exchange transactions have contributed to reducing the level of structural liquidity. In 2022, the extraordinary reversal of the GPFG contributed in the opposite direction. In addition, planned drawdowns on cash holdings and higher growth in loans from state banks than growth in outstanding government bonds led to an increase in structural liquidity in 2023.

Changes in the long-term level of structural liquidity are of importance both for banks and Norges Bank. In periods when the long-term level of structural liquidity is low, such as in the years 2020-2022, the lowest level within the year will, all else equal, be lower than in periods when the long-term level is higher. Norges Bank will always provide liquidity through market operations in the form of F-loans to bring the level of total liquidity to the target of between NOK 30bn and 40bn. However, it matters for banks whether liquidity is provided via F-loans or structurally (see Section 2).

Chart 3.6: Decomposition of structural liquidity. Cumulative liquidity effect. 2010-2023. In billions of NOK



Source: Norges Bank

4. Structural liquidity in the years ahead

Against the backdrop of the money market turbulence in autumn 2022, the Ministry of Finance appointed a working group in 2023 to examine government transactions and their impact on the money market. In April 2024, the working group published its report. The report contained several recommendations that, if implemented, will affect structural liquidity in the years ahead. Chart 4.1 shows the cumulative change in structural liquidity and the various components since 2010, including technical projections for the end of 2024, 2025, 2026 and 2027, taking into account the first-hand effects of the working group's recommendations. The projections thus not take into account any potential balance sheet adjustments from Norges Bank.

The working group recommends returning insufficient provisions from the government's account to the GPFG, amounting to NOK 82.1bn. The Revised National Budget for 2024 states that the Government will propose in the 2025 fiscal budget that these funds be returned to the GPFG in 2025 (see Ministry of Finance (2024c)). If the reversal is carried out in 2025, the government's need for foreign exchange for allocations to the GPFG will increase by NOK 82.1bn, all else equal. Foreign exchange purchases on behalf of the government will also increase correspondingly. In 2025, NOK sales under "net government transactions etc." will thus add NOK 82.1bn. In addition, the working group recommends introducing an automatic mechanism that corrects erroneous transfers to the GPFG related to discrepancies between the projected and realised non-oil deficits

in the following year. If the recommendation is carried out, the petroleum fund mechanism will be liquidity-neutral over a period of two years.

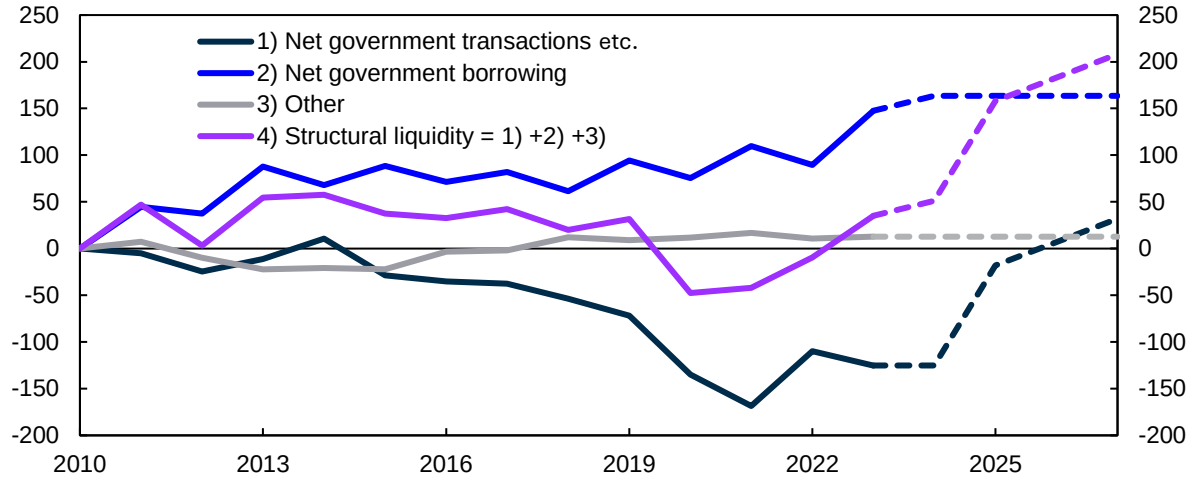
In addition, the Ministry of Finance has decided to cease neutralising transfers from Norges Bank to the government, which means that the government's use of the transfers over the budget is no longer matched by liquidity drain from government bond issuances. This entails liquidity provisioning corresponding to the interest and dividends transferred from Norges Bank to the government each year from 2025 onwards. The projections assume that transfers in 2025 to 2027 correspond to NOK 25bn each year, which is equal to the average of transfers in 2022, 2023 and the estimate for transfers in 2024. In the years 2024-2027, "net government transactions etc." will thus contribute liquidity equivalent to about NOK 160bn[9] (see dark blue broken line in Chart 4.1).

In Government Debt Management's Strategy and borrowing programme for 2024, drawdowns on cash holdings are planned of between NOK 11.4bn and 21.4bn. The projection in Chart 4.1 assumes the midpoint of close to NOK 16bn for 2024. As discussed earlier, outstanding government debt has increased less than the borrowing requirement over time, suggesting government debt borrowing will have a restrictive effect on structural liquidity in the period ahead. According to the working group's report, government debt borrowing is expected to draw in some liquidity in the years ahead to take account of the liquidity supply in 2023 (see Ministry of Finance (2024a)). Other considerations besides liquidity neutrality are also made in the management of government debt, including predictability of borrowing volumes and well-functioning government securities markets. Borrowing ahead is not yet known and will be published in the borrowing programs in the coming years. As a technical assumption, it is therefore assumed that government borrowing in the years 2025-2027 has a neutral effect on liquidity[10].

[9] Transfers from the government's account to the GPFG in 2025 of NOK 82.1bn + non-neutralised transfers of NOK 25bn each year from 2025 = NOK 157.1bn in the period.

[10] The borrowing for the following year is announced each year in the "Strategy and Borrowing Programme". The authors have no knowledge of Government Debt Management's assessments of borrowing ahead.

Chart 4.1: Decomposition of structural liquidity with technical projection. Cumulative liquidity effect. Actual figures in the period 2010-2023. Projections from 2024 - 2027[11]. In billions of NOK



Source: Norges Bank

Overall, developments in the components discussed above mean that structural liquidity will increase by close to NOK 170 bn[12] in the period between end-2023 and end-2027, to a level exceeding NOK 200bn, all else equal (see also Chart 1). This means that structural liquidity within the year will fluctuate around a gradually higher level the coming years. Norges Bank aims to keep total liquidity in the banking system close to NOK 35bn. This means that Norges Bank will have to offer liquidity-absorbing market operations in the form of F-deposits to a greater extent than before in order to draw in excess liquidity from the banking system. Regardless of whether the deposits are unrestricted or fixed-term deposits, banks' LCR will improve. This will likely lead to lower money market risk premiums.[13] [14] Beyond the shortest maturities, Norges Bank aims to influence risk premiums in the money market as little as possible. A substantial increase in structural liquidity may thus make the trade-offs in the liquidity management more challenging. Following the publication of the working group's report, Norges Bank announced that it will assess whether there is a need for changes to the liquidity policy or to the balance sheet once the decision has been made on how to follow up the working group's recommendations.

[11] The projections assume that the petroleum fund mechanism will be liquidity-neutral in the period ahead.
[12] NOK 157bn, cf footnote 9 + planned drawdown on cash holdings of NOK 16bn in 2024 = NOK 173bn for the period.
[13] See also Stiansen (2024).
[14] The forward pricing of the Nibor premium fell somewhat when the working group's report was published.

5. Summary

The level of structural liquidity is important for the attainment of liquidity policy objectives. Owing to the introduction of the LCR requirement in NOK, structural liquidity is likely more important for money market premiums than previously. Low structural liquidity increases the risk that large payments to the government will have a substantial impact on short-term money market rates. On the other hand, high structural liquidity strengthens banks' liquidity and thereby influences money market liquidity premiums.

Historically, structural liquidity has fluctuated somewhat but averaged slightly above zero, primarily reflecting deviations from liquidity neutrality in government transactions. In autumn 2022, a record-high petroleum tax payment led to turmoil in the money market. A working group was therefore appointed to look at the government transactions and the impact on the money market. In the spring of 2024, the working group published its report with a number of specific recommendations. If the recommendations are adopted, all else equal, one consequence, will be a higher level of structural liquidity. Norges Bank has stated that it will assess whether there is a need for adjustments to the liquidity policy or to the balance sheet once it has been clarified which of the recommendations will be adopted.

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