

ECONOMIC COMMENTARIES

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

NO 1 | 2016

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The petroleum fund mechanism channels government revenues from petroleum activities on the Norwegian continental shelf to spending via the central government budget and to saving in the Government Pension Fund Global (GPFG). On behalf of the government, Norges Bank executes the necessary foreign exchange transactions associated with government spending of petroleum revenues. The government's net purchases of NOK are mainly determined by the size of the non-oil budget deficit. Government spending of petroleum revenues and the need to exchange currency have passed through various phases: (i) oil taxes in NOK exceeded the non-oil budget deficit, so that Norges Bank sold NOK and purchased foreign exchange for the GPFG (ii) the deficit was approximately equal to oil taxes in NOK, (iii) the deficit was larger than taxes in NOK and Norges Bank had to sell foreign exchange from the State's Direct Financial Interest (SDFI) to finance the deficit and (iv) the deficit is larger than taxes in NOK and the SDFI's revenues, so that in addition to selling foreign exchange from the SDFI's revenues, Norges Bank must sell foreign exchange from a portion of the return on the GPFG. The size of government revenues from petroleum activities and the currency breakdown of these revenues have no effect on the government's net purchases of NOK.

Government revenues from petroleum activities are used to cover expenditure over the central government budget and for saving in the GPFG. The central government budget is initially set up with a deficit with oil revenues excluded, and all of the government's revenues from the petroleum sector are transferred to the GPFG. This is referred to as the "non-oil budget deficit". Subsequently, the deficit is financed through an account reversal from the GPFG.¹

The government receives revenues from petroleum activities in NOK and in foreign currency. Oil and gas companies that produce oil and gas on the Norwegian continental shelf convert their foreign exchange revenues into NOK and pay taxes to the government in NOK. Any dividend that the government receives from its holding in Statoil is also paid to the government in NOK.^{2, 3} Revenues from sales of government-owned petroleum via the SDFI is virtually all in foreign currency, and only a small percentage is in NOK. Through the SDFI, the government has ownership interests in fields and production facilities on the Norwegian continental shelf and thus is entitled to revenues from the sales of oil and gas from these fields. The SDFI is administered by the state-owned petroleum company Petoro. The government's foreign exchange revenue from the SDFI is sold on an ongoing basis to Norges Bank,

1 This commentary is an update and elaboration of two previous commentaries: Aamodt, E. (2014) "The petroleum fund mechanism and associated foreign exchange transactions by Norges Bank", Economic Commentaries 2/2014, Norges Bank, and Aamodt, E. (2012) "The petroleum fund mechanism and Norges Bank's foreign exchange purchases for the GPFG", Economic Commentaries 14/2012, Norges Bank.

2 Most of oil and gas companies' net income is transferred to the government in the form of taxes. Oil and gas companies' profits after tax represent only a small portion of income. Oil and gas companies have substantial gross revenues in foreign currency and gross expenses in NOK, which entail an exchange need in addition to tax payments, but this is not a part of the exchange of foreign currency associated with the petroleum fund mechanism.

3 Amounts of oil tax payable by oil and gas companies are transferred from these companies' accounts in Norwegian banks to the government's account with Norges Bank. Oil tax is payable six times a year: 1 February, 1 April, 1 June, 1 August, 1 October and 1 December. Dividend payment from Statoil is a direct transfer in NOK from Statoil's account in one of the Norwegian banks to the government account with Norges Bank.

and the equivalent value in NOK is deposited in the government's account with Norges Bank. Norges Bank deposits the foreign exchange purchased from the SDFI in a foreign exchange portfolio called the petroleum buffer portfolio (PBP)⁴. The revenue stream from petroleum activities is illustrated by the following equation:

Gross cash flow from petroleum activities = Oil taxes (OT_{NOK}) + Gross revenues from the SDFI ($SDFI_R$) + Dividend from Statoil

Each year, these revenues are used to cover the non-oil budget deficit and the SDFI's expenses⁵. Any revenues in excess of these NOK expenses are saved in the GPFG. Since the GPFG invests exclusively in foreign assets, all transfers must be made in foreign currency. This relationship is illustrated by the equation below:

Gross cash flow from petroleum activities = Non-oil budget deficit ($G-T$) + The SDFI's expenses ($SDFI_E$) + Transfers to the GPFG ($GPFG$)

This formula can also be rewritten to show the net cash flow from petroleum activities, facilitating comparison with the amounts in the central government budget:

Net cash flow from petroleum activities = Oil taxes + Net revenues from the SDFI + Dividend from Statoil = Non-oil budget deficit + Transfers to the GPFG

On behalf of the Ministry of Finance, Norges Bank executes the foreign exchange transactions that are necessary so that the currency breakdown of revenues from petroleum activities corresponds to the currency breakdown for the use of these revenues. The government's net purchases of NOK associated with the petroleum fund mechanism are determined by the size of the non-oil budget deficit and the SDFI's expenses. The non-oil budget deficit is clearly larger than the SDFI's expenses. Therefore, it is primarily the deficit that expresses the government's net purchases of NOK associated with the petroleum fund mechanism. However, the size of government revenues from petroleum activities and the currency breakdown of these revenues have no effect on net purchases of NOK.⁶ This can be illustrated on the basis of the recent fall in oil prices.

A result of falling oil prices is lower earnings for oil companies, also reducing the taxes that oil companies pay to the government in NOK. In isolation, this suggests a reduction in oil companies' purchases of NOK. Given unchanged spending of petroleum revenues, Norges Bank must convert some the government's foreign exchange income from the SDFI or a portion of the return on the GPFG to cover the government's need for NOK. The increase in NOK purchases by Norges Bank will equal the size of the reduction in NOK purchases by oil companies. As long as the government's petroleum revenue spending is unchanged, these two foreign exchange transactions will be equal, since the amount of NOK that is exchanged is the same.

4 The smaller portion representing the SDFI's revenues in NOK are transferred to the government's krone account with Norges Bank. In the equation below, Gross revenues from the SDFI comprise revenues in both foreign currency and NOK.

5 All of the SDFI's expenses comprise a separate item in NOK in the central government budget, but this amount is not included in the non-oil deficit. Petroleum revenues must therefore cover the non-oil deficit plus the SDFI's expenses. The SDFI has expenses in both NOK and foreign currency. Portions of the NOK intended to cover the SDFI's expenses are therefore converted back into foreign currency by Petoro's bank.

6 Furthermore, transactions associated with the petroleum fund mechanism are liquidity-neutral, in the sense that over time they do not affect central bank reserves in the banking system (banks' deposits in their accounts with Norges Bank). This is discussed in further detail in the appendix to this article.

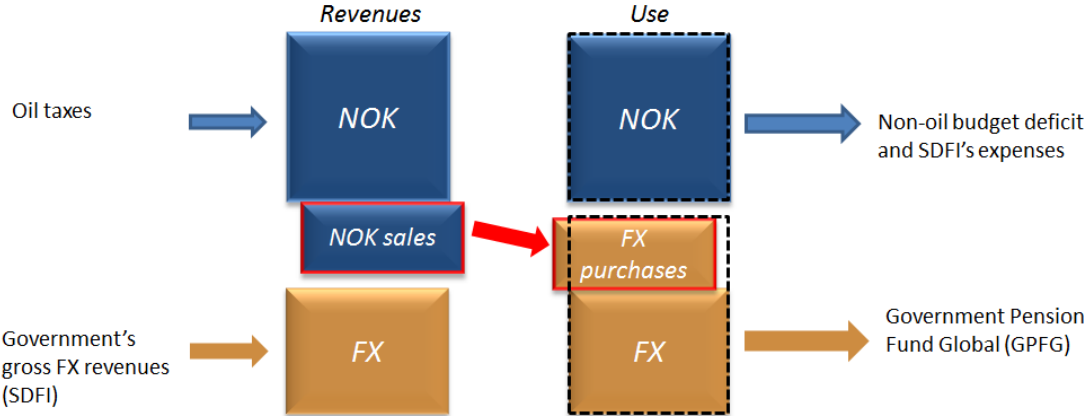
The only change is that Norges Bank performs a larger part (and the oil companies a smaller part) of the total conversion from foreign currency into NOK.

Furthermore, lower oil prices not only entail lower NOK revenues for the government, but also lower foreign exchange revenues from the SDFI. This foreign exchange shortfall must be replaced by transfers from the GPF, if the remaining revenues from the SDFI, along with oil taxes, are not large enough to cover the deficit and the government's expenses for the SDFI. However, whether the foreign exchange Norges Bank converts into NOK comes from the SDFI or the GPF has no effect on the government's net purchases of NOK. It is the size of the non-oil budget deficit and the SDFI's expenses that determine the government's net purchases of NOK. This is discussed in detail in the appendix.

The size of the cash flow that makes up the petroleum fund mechanism varies from year to year. Government revenues from petroleum activities are affected by oil and gas prices and by oil and gas production. On the expenditure side, government spending of petroleum revenues will depend on cyclical developments. Over the long term, the size of the government budget deficit is limited by the fiscal rule for the spending of petroleum revenues. Below, we look at four different scenarios for the cash flow in the petroleum fund mechanism that vary in their impact on the government's exchange need. In all of the examples, NOK revenues are for the sake of simplicity merged into a single item, so that "oil taxes" comprises oil taxes paid by oil and gas companies, dividend from Statoil and NOK revenues from the SDFI. Of these item components, oil taxes paid by oil and gas companies is clearly the largest.

- (1) Up to and including 2013, NOK revenues from petroleum activities were greater than spending in NOK ($OT_{NOK} > ([G - T] + SDFI_E)$). This NOK surplus was converted to foreign exchange and then transferred to the GPF along with the government's foreign exchange revenues from the SDFI. This is illustrated in Chart 1.

Chart 1. Petroleum fund mechanism when NOK revenues exceed NOK spending

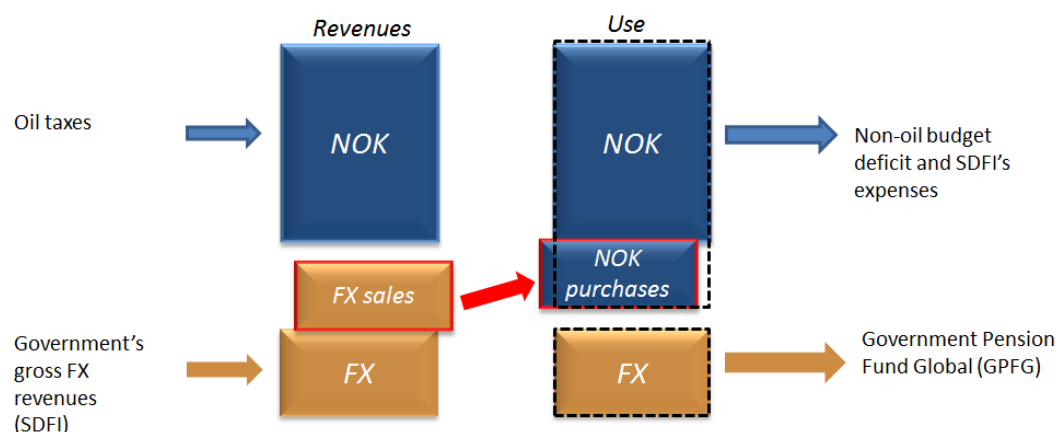


Given that petroleum revenue spending follows the fiscal rule over time, an increase in the size of the GPF will allow a larger structural non-oil budget deficit. Government spending of petroleum revenues has therefore shown a rising trend, despite lower revenues from the petroleum sector.

- (2) In 2014, NOK revenues from petroleum activities were approximately equal to spending in NOK ($OT_{NOK} \approx ([G - T] + SDFI_E)$).

- (3) In 2015, NOK revenues were insufficient to cover the non-oil deficit and the SDFI's expenses ($OT_{NOK} < ([G - T] + SDFI_E)$). Thus, portions of the foreign exchange revenues from the SDFI had to be converted into NOK. The remaining foreign exchange revenues were transferred to the GPFG. This is illustrated in Chart 2.

Chart 2. Petroleum fund mechanism when NOK revenues are less than NOK spending so that a portion of the foreign exchange revenues from the SDFI must be converted into NOK



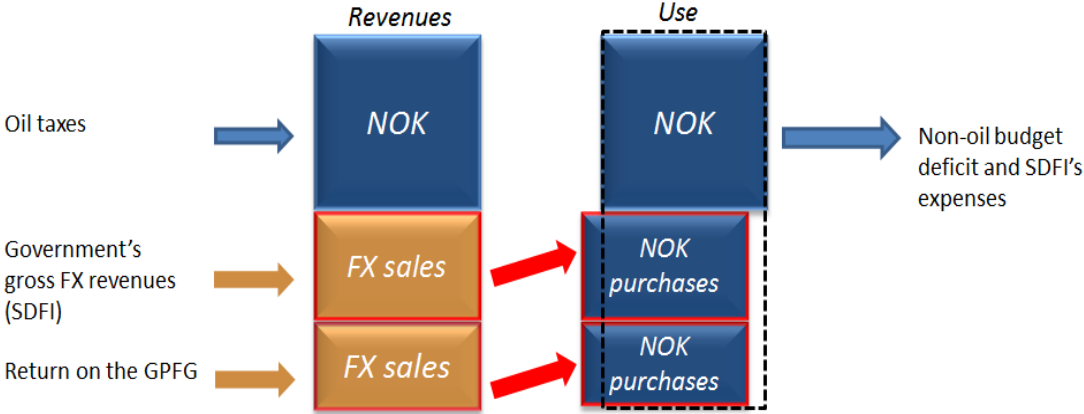
When the net cash flow from petroleum activities is insufficient to cover the structural non-oil budget deficit, the return on the GPFG finances the remainder, in line with the fiscal rule.

- (4) The central government budget for 2016 implies that the structural non-oil budget deficit and the SDFI's expenses will exceed the government's total revenues (in NOK and foreign currency) from the petroleum sector ($OT_{NOK} + SDFI_R < ([G - T] + SDFI_E)$). This means that in addition to converting all foreign exchange revenues from the SDFI into NOK, portions of the return on the GPFG will have to be converted into NOK. In the equations above, this corresponds to negative transfers to the GPFG (cf. equation below where foreign exchange is transferred from the GPFG). This is illustrated in Chart 3.

$$Oil\ taxes\ (OT_{NOK}) + Gross\ revenues\ from\ the\ SDFI\ (SDFI_R) + Dividend\ from\ Statoil + Transfers\ from\ the\ GPFG\ (GPFG) = Non-oil\ budget\ deficit\ (G-T) + The\ SDFI's\ expenses\ (SDFI_E)$$

Chart 3. Petroleum fund mechanism when the government's total NOK and foreign exchange revenues from petroleum activities combined are less than NOK spending

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More specifically, the central government budget from 2016 shows that the Government is planning to increase the non-oil budget deficit from NOK 179.6 billion in 2015 to NOK 207.8 billion in 2016. At the same time, the net cash flow from petroleum activities is budgeted to fall from NOK 217.9 billion to NOK 204.1 billion. In accordance with the budget, foreign exchange from the GPFG will therefore have to be converted into NOK in an amount corresponding to NOK 3.7 billion.

Oil prices have fallen sharply since the publication of the central government budget for 2016. As result, the government will likely have to use more of the GPFG return. At today's oil price, it may be necessary to use about NOK 80 billion of the GPFG return to finance the non-oil budget deficit in 2016⁷.

Chart 4 shows developments in the government's net cash flow broken down by NOK revenues (blue bars) and gross foreign exchange revenues from the SDFI (yellow bars), petroleum revenue spending in NOK (light blue area) and transfers from the GPFG (light yellow area). While taxes in NOK financed petroleum revenue spending up until 2014, the government needed to sell foreign exchange from SDFI revenues in 2015. In 2016, the government is also expected to sell foreign exchange from a portion of the GPFG return to finance the government's need for NOK

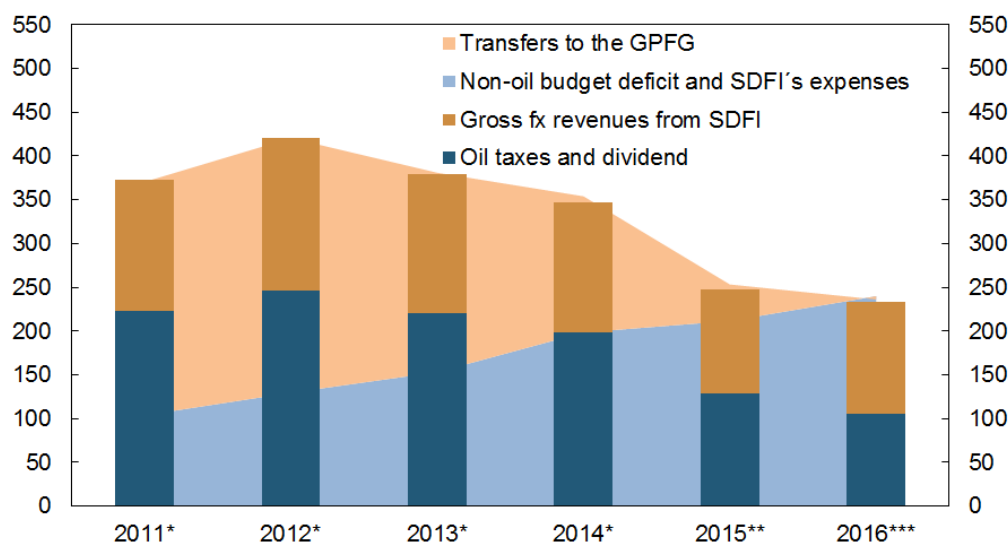
⁷ The estimate is based on impact calculations in Table 2.4 in the National Budget for 2016 based on an oil price of NOK 270 per barrel in 2016.

Chart 4. Key figures from the central government accounts 2011-2014, Revised National Budget for 2015 and the central government budget for 2016. In billions of NOK

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(1) Estimates of dividend for 2015 and 2016 are based historical amounts.

Sources: Ministry of Finance and Norges Bank. * Central government accounts ** Revised National Budget for 2015 *** National Budget for 2016

Estimation and execution of foreign exchange transactions associated with the petroleum fund mechanism

Norges Bank executes the foreign exchange transactions associated with the petroleum fund mechanism. This is a (commercial) banking service that Norges Bank performs on behalf of the government. These foreign exchange transactions are thus not executed on the basis of monetary policy assessments or to promote financial stability.

Norges Bank estimates the necessary foreign exchange transactions on the basis of current information about cash flows in NOK and foreign currency. The foreign exchange transactions are planned for the year as a whole and are smoothed. The daily amount to be exchanged is announced in advance of each month to ensure that Norges Bank's transactions are predictable for the market.

Ministry of Finance estimates of the net cash flow from the petroleum fund mechanism and the non-oil budget deficit are presented in the national budget and are thereafter updated regularly over the fiscal year. The difference between these two variables is the amount to be transferred to or from the GPFG for the year as a whole. Petoro provides Norges Bank with an estimate of annual gross foreign exchange revenues from the SDFI. Norges Bank's NOK transactions in a given year may be roughly estimated with the aid of the following equation (a positive sum indicates that the Bank will sell NOK and purchase foreign exchange):

$$\begin{aligned} & \text{Norges Bank's exchange need:} \\ & = \text{Transfers to the GPFG} - \text{The SDFI's gross foreign currency revenues} \\ & + [\text{Closing balance petrobuffer} - \text{Opening balance petrobuffer}] \end{aligned}$$

Here the transactions are estimated from the foreign currency side of the petroleum fund mechanism. If there are positive transfers to the GPFG that exceed the SDFI's

foreign exchange revenues, Norges Bank will sell NOK and purchase foreign exchange in the market. If the transfers to the GPFG are less than foreign exchange revenues, Norges Bank will purchase NOK and sell foreign exchange in an amount equal to the difference. If there are transfers from the GPFG (negative sign on the first variable in the equation above), Norges Bank will purchase NOK and sell foreign exchange in an amount equal to the sum of this amount and gross foreign exchange revenues from the SDFI.

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The transfers to or from the GPFG are smoothed over each month of the year. However, during the year, actual transfer requirements may vary from the estimates in the central government budget owing to changes in oil and gas prices, petroleum production and the cyclical situation. The Ministry of Finance provides Norges Bank with monthly updated estimates for transfers to or from the GPFG for the current month and remainder of the year. Petoro's estimates of foreign exchange revenues may also change during the year. In addition, Norges Bank receives detailed forecasts for the coming month's foreign exchange revenues. Changes in the estimates will affect the volume of foreign exchange transactions.

It is Norges Bank's aim to minimise the fluctuations in the volume of foreign exchange transactions in the course of the year. PBP makes it possible to smooth the volume of Norges Bank's foreign exchange transactions, despite variations in the cash flow. Owing to seasonal variations in the SDFI's revenues, the size of the PBP will fluctuate through the year. Any changes in the balance of the PBP can therefore also affect Norges Bank's foreign exchange transactions (illustrated in the equation above). The size of the PBP will generally remain approximately unchanged over time.

The equation above will also represent Norges Bank's estimate of the coming month's foreign exchange transactions, not just on an annual basis. In this case, the variable associated with the PBP will, as a rule, have a positive or negative value depending on seasonal variations in the SDFI's revenues and any changes in the estimates from the Ministry of Finance and Petoro.

Appendix: Petroleum fund mechanism, foreign exchange transactions and transactions on Norges Bank's balance sheet

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The government's net purchases of NOK are determined by government spending of petroleum revenues. The size of government revenues from petroleum activities and the currency breakdown of these revenues have no effect on the government's net purchases of NOK. This can be illustrated by a few examples:

1. Assume first that the non-oil budget deficit is zero and that the SDFI has no expenses. This means that the government is not spending petroleum revenues and that all revenues are transferred to the GPFG:

- Gross foreign exchange revenues from the SDFI are transferred to the PBP and then to the GPFG.
- Oil and gas companies sell foreign exchange and purchase NOK in the market equivalent to the amount of oil taxes.
- Norges Bank converts the entire oil tax payment from NOK back into foreign exchange. Because the budget deficit and the SDFI's expenses are both assumed to be equal to zero, Norges Bank purchases the same amount of foreign exchange as the oil and gas companies sell. Hence, net purchases of NOK are zero.

2. Assume a non-oil budget deficit, but that the sum of the deficit and the SDFI's expenses is lower than petroleum revenues in NOK. This implies that petroleum revenue spending is more than covered by petroleum revenues in NOK (situation to end-2013):

- Gross foreign exchange revenues from the SDFI are transferred to the PBP and then to the GPFG.
- Oil and gas companies sell foreign exchange and buy NOK in an amount equivalent to oil taxes.
- Norges Bank purchases foreign exchange and sells NOK in an amount equivalent to oil taxes less the budget deficit and the SDFI's expenses. Net purchases of NOK will be determined by the sum of the central government budget deficit and the SDFI's expenses.⁸

3. Assume a non-oil budget deficit, and that the sum of the deficit and the SDFI's expenses is equal to petroleum revenues in NOK. This implies that petroleum revenue spending is exactly covered by petroleum revenues in NOK (approximate situation 2014):

- Gross foreign exchange revenues from the SDFI are transferred to the PBP and then to the GPFG.
- Oil and gas companies sell foreign exchange and buy NOK in an amount equivalent to oil taxes.
- Since petroleum revenues in NOK are equal to petroleum revenue spending, Norges Bank will not purchase foreign currency. Net purchases of NOK are determined by the sum of the non-oil budget deficit and the SDFI's expenses.

⁸ For the sake of simplicity and to focus on the most important relationships, we disregard a few factors that may conceivably play a (probably minor) role for these foreign exchange transactions. All of the SDFI's expenses appear as an NOK item in the central government budget and together with the non-oil deficit represent the government's need for NOK. However, the SDFI has expenses in both NOK and foreign currency. Therefore, some of the NOK that goes to cover the SDFI's expenses will be converted back into foreign currency by Petoro's bank. Furthermore, there is reason to believe that Statoil, much of whose revenue is in foreign currency, converts foreign exchange into NOK prior to paying dividend in NOK. These effects are not discussed in the present examples.

4. Assume that the sum of the non-oil budget deficit and the SDFI's expenses is lower than the government's total petroleum revenues, but lower than revenues in NOK, so that NOK revenues alone are not enough to cover petroleum revenue spending:

- Gross foreign exchange revenues from the SDFI are transferred to the PBP.
- Oil and gas companies sell foreign exchange and buy NOK in an amount equivalent to oil taxes.
- Since petroleum revenue spending exceeds petroleum revenues in NOK, the government must finance the rest by converting portions of the foreign exchange revenues from the SDFI into NOK.
- The remainder of the foreign exchange revenues from the SDFI is transferred directly to the GPF. Also in this case, net purchases of NOK will be determined by the sum of the non-oil budget deficit and the SDFI's expenses.

5. Assume that the sum of the non-oil budget deficit and the SDFI's expenses is greater than the government's total revenues from petroleum activities. The government must then reverse funds from the GPF return to cover petroleum revenue spending:

- The government must convert all foreign exchange revenues from the SDFI into NOK.
- Oil and gas companies sell foreign exchange and buy NOK in an amount equivalent to oil taxes.
- Since petroleum revenue spending is now greater than the government's total petroleum revenues, funds will in addition have to be reversed from the GPF to the government budget. The government must sell foreign exchange from the GPF return and buy NOK in an amount equivalent to the portion of the budget deficit that is not covered by the government's petroleum revenues. Again, total net purchases of NOK will be determined by the sum of the non-oil budget deficit and the SDFI's expenses.

6. Assume a non-oil budget deficit and that government revenues from petroleum activities and the SDFI's expenses are both zero. The entire deficit must be financed by funds from the GPF return. This will be the situation prevailing when oil and gas resources on the Norwegian continental shelf are depleted:

- The government must then sell foreign exchange from the GPF return in an amount equivalent to the budget deficit. Net purchases of NOK will be determined by the size of the non-oil budget deficit.

The transactions associated with the petroleum fund mechanism have an impact on Norges Bank's balance sheet. The table below shows a simplified version of Norges Bank's balance sheet.⁹ The asset side comprises Norges Bank's loans to banks, foreign exchange reserves and foreign currency investments for the GPF. Foreign exchange reserves primarily consist of a long-term portfolio and a money market portfolio.¹⁰ In addition, the PBP is part of the foreign exchange reserves. In the table, the PBP is for illustrative purposes broken down into Norges Bank's foreign exchange purchases from the SDFI, foreign exchange from the GPF and Norges Bank's foreign exchange purchases in the market. The liabilities and equity side include deposits from banks, government deposits, notes and coins, equity and the government's NOK account for the GPF.

⁹ See "Norges Bank's balance sheet and results", Staff Memo 9/2013, Norges Bank, by Ellen Aamodt and Marie Norum Lerbak for a further description.

¹⁰ For more information on foreign exchange reserves, see <http://www.norges-bank.no/en/about/Mandate-and-core-responsibilities/foreign-exchange-reserves/>

Norges Bank's balance sheet (simplified). Petroleum buffer portfolio is for illustrative purposes broken down into three components: Norges Bank's foreign exchange purchases (FX) from the SDFI, foreign exchange from the GPFG and Norges Bank's foreign exchange (FX) purchases in the market.

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Assets	Liabilities and equity
Lending to banks	Deposits from banks
Foreign exchange reserves Long term portfolio Money market portfolio Petroleum buffer_SDFI-FX Petroleum buffer-GPFG-FX Petroleum buffer_FX bought in the market	Government deposits
Other	Notes and coins
Foreign currency investment for the GPFG	Equity
	Government NOK account for the GPFG

The examples below¹¹ are presented to illustrate the effect of the transactions associated with the petroleum fund mechanism on Norges Bank's balance sheet. A useful starting point is the formula for the use of the government's petroleum revenues to cover the non-oil budget deficit, the SDFI's expenses and transfers to the GPFG:

The government's gross cash flow from petroleum activities = Oil taxes + Gross revenues from the SDFI + Dividend from Statoil = Non-oil budget deficit + The SDFI's expenses + Transfers to the GPFG

1. *The non-oil budget deficit and the SDFI's expenses are both zero. The government's entire gross cash flow from the petroleum sector comes directly in foreign currency from the SDFI¹² and is transferred to the GPFG:*

- Norges Bank buys foreign exchange from the SDFI. "Petroleum buffer_SDFI-FX" (asset side) and "Government deposits" (liability and equity side) increase by equal amounts (Norges Bank buys foreign exchange and credits the government's account).
- The last business day each month, foreign exchange is transferred from "Petroleum buffer_SDFI-FX" to "Foreign currency investments for the GPFG" at the same time as an equivalent NOK amount is transferred from "Government deposits" to "Government NOK account for the GPFG" (Norges Bank sells the foreign exchange back to the government).

2. *The non-oil budget deficit and the SDFI's expenses are both zero. The government's entire net cash flow from the petroleum sector comes from oil taxes in NOK and is to be transferred to the GPFG:*

- Oil companies sell foreign exchange, buy NOK and pay taxes to the government (six times per year). The item "Deposits from banks" on Norges Bank's balance sheet is reduced, while the item "Government deposits" increases by the same amount.
- Norges Bank buys foreign exchange and sells NOK in an amount equivalent to the transfers to the GPFG. The items "Petroleum buffer_FX bought in the market" and "Deposits from banks" increase by equal amounts.
- The last business day each month, foreign exchange from "Petroleum buffer_FX bought in the market" is transferred to "Foreign currency

¹¹ A USD/NOK exchange rate of 9 is used in the examples.

¹² This means that the government's only source of petroleum revenues is the SDFI.

investments for the GPFG". An equivalent NOK amount is transferred from "Government deposits" to "Government NOK account for the GPFG" (Norges Bank sells foreign exchange bought in the market to the government).

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3. *The government has a non-oil budget deficit, but the deficit is smaller than oil taxes in NOK. For example, oil taxes in NOK are NOK 100, the non-oil deficit is NOK 20 and the SDFI's gross foreign exchange revenues are USD 33.33 (assume NOK 300), while the SDFI's expenses are NOK 2:*

- Oil companies sell foreign exchange, buy NOK and pay taxes to the government in an amount of NOK 100. The item "Deposits from banks" is reduced and the item "Government deposits" increases by NOK 100.
- The government spends NOK 22 (the deficit + the SDFI's expenses) of petroleum revenues. The item "Government deposits" is reduced by NOK 22, while "Deposits from banks" increases by NOK 22.
- Norges Bank buys NOK 78 worth of foreign exchange (assume USD 8.67) in the market, i.e. the difference between oil taxes in NOK less spending of petroleum revenues. "Petroleum buffer_FX bought in the market" increases by USD 8.67 and "Deposits from banks" by NOK 78 "Deposits from banks" remains unchanged in sum (-100+22+78=0).
- Norges Bank buys foreign exchange in an amount equivalent to USD 33.33 from the SDFI which is transferred to "Petroleum buffer_SDFI-FX" and a corresponding amount in NOK, NOK 300, is credited "Government deposits".
- USD 8.67 is transferred from "Petroleum buffer_FX bought in the market" to "Foreign currency investments for the GPFG". NOK 78 is transferred from "Government deposits" to "Government NOK account for the GPFG".
- USD 33.33 is transferred from "Petroleum buffer_SDFI-FX" to "Foreign currency investments for the GPFG" at the same time as NOK 300 is transferred from "Government deposits" to "Government NOK account for the GPFG".

4. *The government has a non-oil budget deficit that is larger than oil taxes in NOK. For example: oil taxes are NOK 100, the non-oil budget deficit is NOK 120 and the SDFI's gross foreign exchange revenues are USD 33.33 (assume NOK 300), while the SDFI's expenses are NOK 2:*

- Oil companies sell foreign exchange, buy NOK and pay taxes to the government in an amount of NOK 100. "Deposits from banks" is reduced and "Government deposits" increases by NOK 100.
- Norges Bank buys foreign exchange in an amount equivalent to USD 33.33 from the SDFI, which is transferred to "Petroleum buffer_SDFI-FX", and NOK 300 is credited "Government deposits". The item "Government deposits" increases by a total of NOK 400.
- The government spends NOK 120 (budget deficit) plus NOK 2 (the SDFI's expenses). The item "Government deposits" is reduced by NOK 122, while "Deposits from banks" increases by NOK 122. NOK 278 now remains in "Government deposits" to be transferred to "Government NOK account for the GPFG", while "Deposits from banks" has increased by a total of NOK 22.
- Norges Bank transfers USD 30.89 from "Petroleum buffer_SDFI-FX" to "Foreign currency investments for the GPFG". At the same time, NOK 278 is transferred from "Government deposits" to "Government NOK account for the GPFG".
- Norges Bank sells USD 2.44 (buys NOK 22) from "Petroleum buffer_SDFI-FX". The item "Deposits from banks" is reduced by NOK 22 (reserves in the banking system remain unchanged in sum).

5. *The government has a non-oil budget deficit that is larger than oil taxes in NOK and foreign exchange revenues from the SDFI. For example: oil taxes are NOK 50, the non-oil budget deficit is NOK 200 and the SDFI's gross foreign exchange revenues are USD 11.11 (assume NOK 100), while the SDFI's expenses are NOK 2:*

- Oil companies sell foreign exchange, buy NOK and pay taxes to the government in an amount of NOK 50. "Deposits from banks" is reduced and "Government deposits" increases by NOK 50.
- Norges Bank buys foreign exchange in an amount equivalent to USD 11.11 from the SDFI, which is transferred to "Petroleum buffer_SDFI-FX", and NOK 100 is credited "Government deposits".
- NOK 52 is transferred from "Government NOK account for the GPF" to "Government deposits". At the same time, USD 5.77 is transferred from "Foreign currency investments for the GPF" to "Petroleum buffer_GPF-FX". "Government deposits" increases by a total of NOK 202.
- The government spends NOK 200 (budget deficit) plus NOK 2 (the SDFI's expenses). "Deposits from banks" increases by a total of NOK 152.
- Norges Bank sells USD 16.89 (buys NOK 152) from "Petroleum buffer_SDFI-FX" and "Petroleum buffer_GPF-FX". The item "Deposits from banks" is reduced by NOK 152 (reserves in the banking system remain unchanged in sum).

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BANK'S FOREIGN
EXCHANGE TRANSACTIONS