



Norges Bank's settlement system

Annual Report 2023

Financial Stability
Interbank Settlement

Contents

Introduction	2
1. Description of NBO	2
2. Operation of NBO	3
2.1 Operational stability	3
2.2 System solution upgrades	3
3. Enhancement of operational tasks	4
3.1 New standard for payment messaging – ISO 20022	4
3.2 New solution for real-time payments	5
3.3 Government payments in real time	5
3.4 Next-generation settlement system	5
4. Balance of risks	6
4.1 Developments	6
4.2 Systematic risk management	6
4.3 Risk-mitigation measures	7
5. Continuity and contingency arrangements	7
5.1 Continuity and contingency plans	7
5.2 Contingency exercises	7
5.3 NBO Continuity Forum	8
6. Compliance	8
6.1 International recommendations	8
6.2 Audits and monitoring	8
7. Account management – Key figures and changes in 2023	9
7.1 Key figures	9
7.2 Turnover in NBO	9
7.3 Access to Norges Bank's lending facility	11
7.4 Changes in account management	12
7.5 Prices and fees in NBO	14

Introduction

Pursuant to the Central Bank Act, Norges Bank shall facilitate a stable and efficient system for payment, clearing and settlement between undertakings that hold accounts with the Bank.¹ The purpose of Norges Bank's settlement system (NBO) is to settle payments securely and efficiently between banks and other financial sector undertakings with an account at Norges Bank. The operation of NBO was stable through 2023, and relevant standards and requirements for critical infrastructure are considered met.

The 2023 *Norges Bank's Settlement System Annual Report* discusses main activities and measures related to the operation and development of NBO in 2023. Banks and other financial sector undertakings may have accounts with Norges Bank in order to further the purpose of Central Banking and they are subject to more detailed terms and conditions. At the end of 2023, a total of 119 banks and other financial undertakings had such accounts, down from 121 in 2022.

Average daily turnover in NBO increased by NOK 16bn to NOK 355bn in 2023. Highest daily turnover in NBO was on 15 March, totalling NOK 745bn. At year-end, banks had sight and reserve deposits amounting to NOK 38bn. Key figures for NBO in 2023 are discussed in more detail in Section 7.

Since autumn 2020, Norges Bank has collaborated with the central banks of Sweden and Iceland to introduce a new payment message standard for use in the Nordic region (ISO 20022). The specifications for the new messages, the migration strategy and the overall schedule for the transition to ISO 20022 in NBO were announced in 2022 Q1. The plan is to adopt the new standard by November 2025.

In Norges Bank's strategy² for the period 2023-2025 focus is given to the research and design of the payment system of the future. Among other things, Norges Bank will decide on the design of the next generation NOK settlement system.

1. Description of NBO

Norges Bank is the ultimate settlement bank in the Norwegian payment system. All NOK electronic payments are ultimately settled between banks in NBO. This includes ordinary payments by households and

¹ [Act of 21 June 2019 No 31 relating to Norges Bank and the Monetary System etc. \(the Central Bank Act\) - Lovdata \(in Norwegian only\)](#)

² [Norges Bank's strategy 2023–2025 \(norges-bank.no\)](#)

firms, large payments in the financial and foreign exchange markets, and payments involving the public sector. NBO is also used to implement Norges Bank's monetary policy, whereby the policy rate is the deposit rate on banks' accounts and central bank reserves are added to and withdrawn from banks' accounts with NBO.

Banks can participate directly or indirectly in the different payment settlements in NBO. Indirect participation means that a bank (indirect participant) uses another bank (direct participant) for its payment settlements in NBO. The majority of Norwegian banks settle their payments indirectly in Norges Bank through another bank. At the end of 2023, 20 banks' clearings were settled directly in NBO. These are mainly the largest Norwegian banks and Norwegian branches of Nordic banking groups.

NBO consists of a Real Time Gross Settlement (RTGS) system for payment settlement and a subsystem for processing banks' pledged collateral for loans. The global SWIFT network is used as the primary channel for payment orders and other financial messaging³. NBO account holders also have access to their accounts via a system resembling a web-based banking application (NBO Online) based on communication through a secured network solution. As a rule, each account holder has a main account, a loan account and one or more sub-accounts.

2. Operation of NBO

2.1 Operational stability

The settlement function in NBO needs to be efficient, secure and without material deviations. Settlement system operations were stable through 2023 and there were no material deviations. There were two instances where operational problems at other financial infrastructure participants made it necessary for Norges Bank to extend NBO's opening hours in order to execute payment settlements on the same day.

2.2 System solution upgrades

NBO system solutions are regularly upgraded in line with suppliers' recommendations to ensure both relevant customer support and the recommended security level for the system solutions. In addition, functional upgrades are carried out to the extent that new functionality is required. This is driven by technological advances and adjustment to

³ SWIFT: Society for Worldwide Interbank Financial Telecommunication.

amended standards. Extensive testing and exercises are carried out before upgrading system solutions in order to adequately maintain operations.

3. Enhancement of operational tasks

3.1 New standard for payment messaging – ISO 20022

NBO currently uses standard messaging formats developed by SWIFT (SWIFT FIN) for all payment messages and other communication to and from NBO. The quantity of information that the messages can carry is limited. In addition, the predefined fields are often used differently from system to system, and much of the information is entered in free text fields. This excessively restricts the possibilities for more automated processing of payments by banks and their customers.

There is broad international and national consensus for the proposal to base messaging formats in the payment infrastructure on the ISO 20022 standard, and in 2018, the SWIFT board of directors decided to fully migrate several of today's SWIFT FIN messages to ISO 20022 for cross-border payments. This standardisation will enable banks and other financial infrastructure participants to use messages across financial market infrastructures (FMIs). Furthermore, increased cross-border standardisation will make it easier for banks to meet regulatory requirements (money laundering regulations, etc.). ISO 20022 messages will be able to contain more information than the current messaging formats, thus facilitating increased automation and more efficient payment processing.

In 2020, Norges Bank initiated a collaboration with the banking industry to make the transition to ISO 20022 in NBO and other key parts of the payment infrastructure. In the same year, Norges Bank started a collaboration with the central banks of Sweden and Iceland and the supplier of NBO's core system to adapt ISO 20022 for use in the Nordic region. Adjustments to the ISO messages specifically for NBO have been carried out in consultation with a working group consisting of representatives from DNB Bank ASA, Danske Bank, Skandinaviska Enskilda Banken AB, Bits AS and TietoEVERY Norway AS. Other NBO account holders that send individual payments via SWIFT were offered the opportunity to participate in the working group.

New ISO 20022-based messaging means that messages will be exchanged directly between participants in NBO and Norges Bank. The specifications for the new ISO 20022 messages are published in SWIFT MyStandards. Norges Bank started joint testing with participants at the end of February 2024 and plans to migrate participants from the current SWIFT FIN format to the ISO 20022 format in NBO by November 2025.

3.2 New solution for real-time payments

A well-functioning real-time payment solution is a key component of an efficient payment system. Real-time payments are payments where money is made available on the payee's account seconds after payment is initiated. The share of payments settled in real time will likely increase in the coming years.

Norges Bank is researching whether to offer real-time gross interbank settlement of retail payments in central bank money, and the assessment so far is that this will be the best platform for developing Norwegian real-time payments in the years ahead. In October 2021, Norges Bank decided to start a formal dialogue with the European Central Bank (ECB) on potential participation in the European solution for real-time payments TARGET Instant Payment Settlement (TIPS). Whether Norges Bank should extend settlement services to include real-time payments through participation in the Eurosystem's TIPS service will be discussed once the formal dialogue with the ECB is completed in summer 2024.

3.3 Government payments in real time

In 2022, a dialogue was started between the Norwegian Agency for Public and Financial Management (DFØ), DNB Bank ASA, Nordea Bank Abp, Bits AS and Norges Bank to clarify how banks, DFØ and Bits AS can facilitate government payments in real time. The dialogue continued in 2023.

In most cases, payments to government agencies require the use of a payment identifier, which banks have not permitted in the current established solution for real-time payments (instant payments). It is therefore appropriate to see an introduction of government real-time payments in connection with banks allowing the use of payment identifiers, such as customer identification (CID) numbers, in their real-time payment solutions. The dialogue between market participants will therefore be adapted to the enhancement of real-time payment solutions.

3.4 Next-generation settlement system

In Norges Bank's strategy for the period 2023-2025⁴, focus is given to researching the payment system of the future and deciding on the design of the next generation NOK settlement system. Owing to technological advances and changes in the settlement systems of other countries, it is important to begin the process of overhauling the settlement system. A key question is whether the settlement system of

⁴ [Norges Bank's strategy 2023–25 \(norges-bank.no\)](https://www.norges-bank.no/om-bank/strategi/2023-2025)

the future should build on the current model, with dedicated solutions for Norges Bank, or whether other solutions such as connection to the ECB's TARGET settlement system will be more appropriate. A hybrid model, where some parts of the settlement services are provided from a dedicated platform and other parts from a common platform, will also be considered.

A decision on the design of the next generation NOK settlement system is assumed to have a perspective of around 30 years. Norges Bank facilitates the involvement of relevant government bodies, the banking industry and market participants in the process so that important needs and considerations are taken into account. In autumn 2023, Norges Bank conducted a consultation on the next generation settlement system and received consultation responses from the largest market participants and banking associations.⁵

4. Balance of risks

4.1 Developments

The threat landscape for digital infrastructure has gradually worsened in recent years, and according to threat and risk assessments from the⁶ Norwegian National Security Authority (NSM), Norwegian entities must maintain and strengthen contingency arrangements in the period ahead. This requires cooperation across enterprises, sectors and national borders. NSM highlights situational awareness, protection of critical infrastructure and cyber security as strategic risk areas of particular importance for national security.

Important societal functions depend on suppliers and subcontractors. These supplier chains may have unknown and serious vulnerabilities that are exploited, and no societal function is more secure than the weakest link. This requires the ability to detect and avert activities that also threaten security in the supplier chains on which NBO depends.

4.2 Systematic risk management

Norges Bank has appointed a risk forum to establish a common understanding and to strengthen collaboration between different fields of expertise on issues related to risk in the settlement system. The Risk Forum is chaired by the Executive Director of Financial Stability and also comprises five directors from units within interbank settlement,

⁵ [Høring om neste generasjons oppgjørssystem i norske kroner \(norges-bank.no\)](#) [Consultation on the next generation settlement system in NOK (norges-bank.no)] (in Norwegian only)

⁶ [Risk 2023 - Norwegian National Security Authority \(in Norwegian only\) \(nsm.no\)](#) and [Risk 2024.pdf \(nsm.no\)](#) (in Norwegian only)

compliance, crisis management and IT. Each quarter, the Forum reviews risk assessments to provide a basis for internal activity reports. In addition, the external suppliers of operating platforms and system solutions provide insight into their relevant risk assessments that are of significance for deliveries to the settlement system. There is also collaboration with the security authorities where relevant. The balance of risks in the settlement system is updated continuously when significant incidents or changes occur.

4.3 Risk-mitigation measures

In recent years, Norges Bank has implemented extensive measures to prevent cyber incidents from affecting the settlement system. Significant improvements have been made to the internal IT security environment, and NBO's operating platform is physically and logically separate from the rest of Norges Bank's system portfolio.

Supplier follow-up is an important risk-mitigation measure that was also a focus of attention in 2023. Furthermore, scenario-based exercises have been improved to help ensure that contingency arrangements are robust and relevant in the face of changes to the balance of risks.

5. Continuity and contingency arrangements

5.1 Continuity and contingency plans

In order to strengthen the resilience and efficiency of NBO, continuity and contingency measures have been established for key operations and electronic communication with other key participants. The planning framework consists of an overall plan and detailed disruption, continuity and contingency routines.

Operational routines are updated regularly and in the event of operational changes. Common procedures have also been established for managing deviations between Norges Bank and external participants that send clearing and payment orders for settlement in NBO, such as Bits AS (NICS), Mastercard Payment Service Infrastructure (Norway) AS, Euronext Securities Oslo (Verdipapirsentralen ASA) and CLS Bank⁷.

5.2 Contingency exercises

Norges Bank prepares annual exercise plans for different settlement system functions, both internal exercises and exercises in collaboration

⁷ CLS: Continuous Linked Settlement is an international system for the settlement of foreign exchange transactions. Banks that use CLS for settlement in NOK make payments to and receive payments from CLS via CLS Bank's account with NBO.

with external participants. Norges Bank also participates actively in exercises planned and carried out by other international operators such as SWIFT and CLS Bank. After the exercises, experiences are exchanged and measures to enhance deviation routines and contingency management are implemented.

5.3 NBO Continuity Forum

NBO Continuity Forum is a collaborative body for banks and other key financial infrastructure participants in Norway. The forum was established by Norges Bank in 2015 and aims to improve communication and enhance the level of participants' expertise on interrelationships in the payment system. The forum will also coordinate contingency plans and the management of material deviations in the payment infrastructure that may affect settlement in NBO. A deviation at one of the key participants will have a swift impact on other participants, and effective collaboration when dealing with such situations will help mitigate adverse effects.

6. Compliance

6.1 International recommendations

The operation and development of the settlement system must comply with relevant international recommendations and requirements for critical infrastructure. The International Principles for Financial Market Infrastructures (PFMI) developed by CPMI⁸-IOSCO⁹ constitute an international standard for FMIs. PFMI is supplemented with a separate guidance on cyber resilience for FMIs prepared by CPMI-IOSCO. Norges Bank will continue conducting a new self-evaluation against these principles in 2024.

In 2023, Norges Bank completed SWIFT CSP – CSCF Self Attestation in collaboration with PwC. The review shows compliance with the mandatory controls.

6.2 Audits and monitoring

NBO is monitored by various bodies. Norges Bank's external auditor Ernst & Young AS (EY) has reviewed certain areas for NBO in connection with the annual audit of Norges Bank's accounts. NBO is also audited by Internal Audit at Norges Bank. The most recent audit was conducted in 2022.

⁸ CPMI: Committee on Payments and Market Infrastructures. The CPMI is a committee comprising representatives of central banks.

⁹ IOSCO: International Organization of Securities Commissions. IOSCO is the international organisation of securities market regulators.

Norges Bank is the licensing authority for interbank systems (clearing and settlement) pursuant to the Act relating to Payment Systems etc and supervises licensed systems. Norges Bank also exercises a supervisory function over the payment system and other FMIs pursuant to the Central Bank Act. As part of this supervisory and oversight function, Norges Bank places emphasis on, inter alia, systems complying with international recommendations for important FMIs (cf Section 6.1). Based on these recommendations, NBO is also monitored internally.

7. Account management – Key figures and changes in 2023

7.1 Key figures

Table 1. Key figures for NBO over the past five years

	2023	2022	2021	2020	2019
<i>Daily average, in billions of NOK</i>					
- Turnover	355	339	301	421	259
- Banks' deposits	34	32	33	35	34
- Lending facility (securities)	456	405	418	498	303
- F-deposit	8	8	17	83	27
<i>Daily average, number</i>					
- Payment orders	3 782	3 540	3 188	2 935	2 745
<i>Number at year-end</i>					
- Accounts	119	121	126	130	130
- including accounts for banks	111	113	118	122	123
- Users of NBO Online	478	481	539	550	600

7.2 Turnover in NBO

In 2023, average daily settlement came to NOK 355bn, up from NOK 339bn in 2022. Turnover in NBO was highest on 15 March, at NOK 745bn. On this day, F-deposits reached maturity, and payments were made of employer's national insurance contributions, financial tax and student loans to the Norwegian State Educational Loan Fund. Turnover was lowest on 2 January, at NOK 114bn. At the end of 2023, banks' sight and reserve deposits totalled NOK 38bn.

In 2023, an average of 3,782 payment orders were settled daily, up from 3,540 in 2022.

Chart 1 Turnover in billions of NOK and number of transactions.
Monthly average. 2023

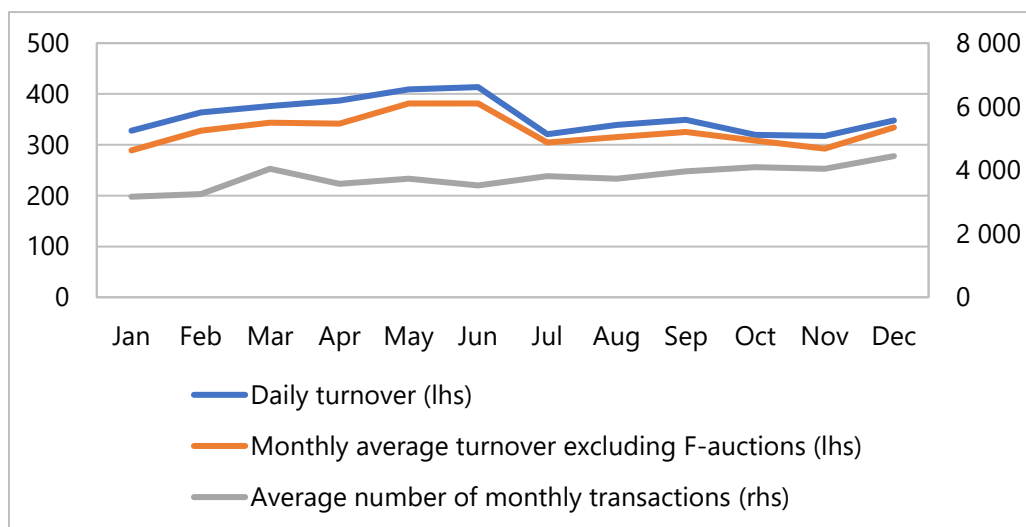
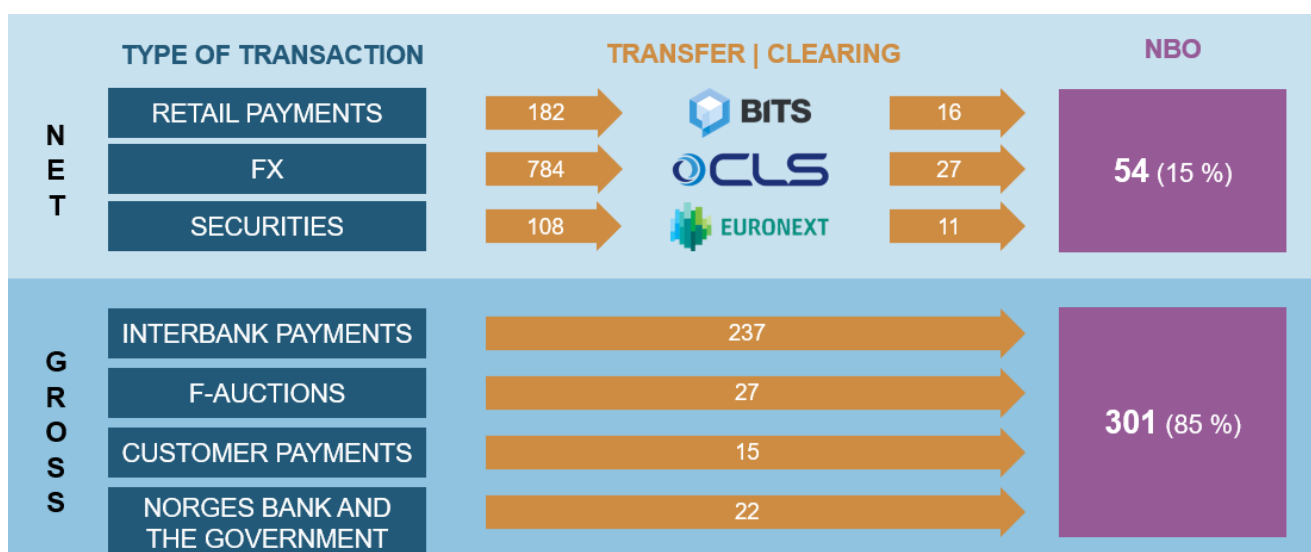


Chart 2 Payment system - Distribution of turnover in NBO in 2023. Daily average in billions of NOK



Sources: Bits AS, Euronext Securities Oslo, CLS Bank and Norges Bank

Turnover in NBO is broken down as follows:

- Gross settlement is settlement of individual payments in real time and accounts for 85% of turnover in NBO (Chart 2). Gross settlement includes large financial transactions and is mainly related to foreign exchange trading and liquidity management. All Norwegian banks with accounts with NBO can participate directly in gross settlement, but only 10–15 banks participate actively.

- NICS¹⁰, net settlement mainly includes customer payments from clearing by Bits AS. NBO settles net positions between banks. In 2023, daily payments averaging NOK 182bn were cleared to NOK 16bn by Bits AS for settlement in NBO.
- Securities settlement (VPO) includes payments between banks for trades in securities. The cash leg of the VPO is settled in NBO as cleared positions. Actual settlement of the securities, ie the transfer of ownership, takes place in Euronext Securities Oslo.
- NBO includes payment obligations to CLS in NOK. In 2023, banks' daily trades averaged NOK 784bn, with cleared payment obligations to CLS averaging NOK 27bn (purchased NOK less sold NOK).

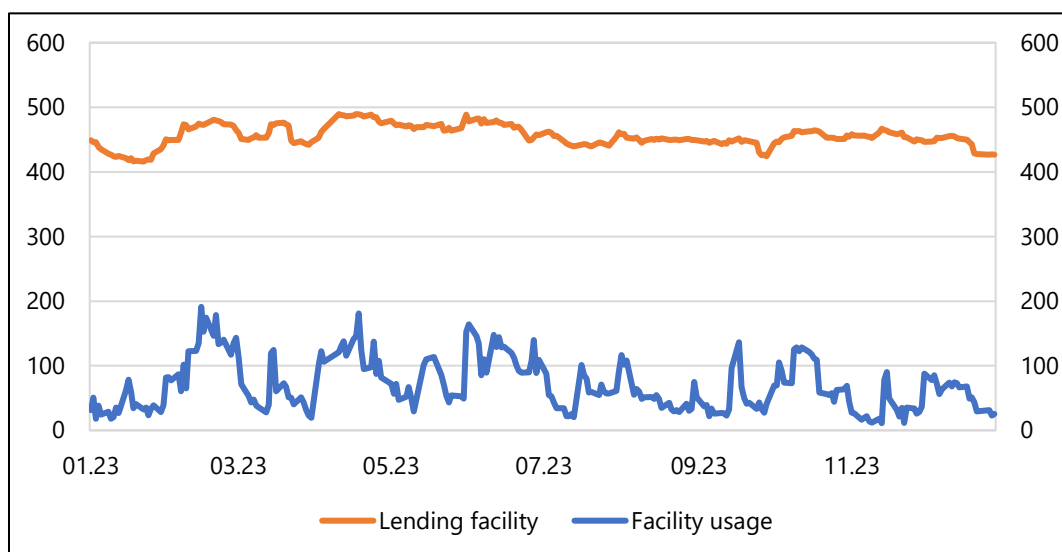
7.3 Access to Norges Bank's lending facility

Banks may borrow from Norges Bank against securities, F-deposits in Norges Bank or deposits in Danmarks Nationalbank or Sveriges Riksbank under the Scandinavian Cash Pool (SCP) arrangement. Such loans contribute to streamlining payment settlement and the conduct of monetary policy. Central counterparties may be given access to the lending facility through the day by pledging securities as collateral.

The lending facility for each account holder is calculated based on the securities pledged in a central securities depository approved by Norges Bank for this purpose. Approved securities depositories are Euronext Securities Oslo (Verdipapirsentralen ASA), Euroclear Bank SA/NV in Belgium and Clearstream Banking SA in Luxembourg.

¹⁰ NICS: Norwegian Interbank Clearing System

Chart 3 Daily borrowing facility and usage. In billions of NOK. 2023



In 2023, the lending facility averaged NOK 456bn, up from NOK 405bn in 2022. The facility¹¹ was highest in April, at NOK 481bn and lowest in December, at NOK 445bn. Actual facility usage¹² averaged NOK 71bn, ie about 15% of the total. Average monthly facility usage was highest in February, at NOK 122bn and lowest in November, at NOK 31bn. The highest total intraday borrowing varied between NOK 11bn and NOK 101bn.

7.4 Changes in account management

At the end of 2023, 111 banks¹³ had accounts with NBO, down from 113 in 2022. One bank and the Norwegian Banks' Guarantee Fund have a contingency account agreement that can be used in special situations. In addition, CLS Bank has an account with NBO for daily settlement of the krone leg of foreign exchange trades. Cboe Clear Europe (formerly EuroCCP NV), LCH Limited, LCH SA and Nasdaq Clearing AB are central counterparties in financial instrument trading and also have accounts with NBO. Furthermore, the Bank for International Settlements (BIS) has an account with NBO. The total number of accounts with NBO at end-2023 was 119, down from 121 in 2022. In addition, there is an account with NBO for the settlement of government payments.

¹¹ Lending facility figures apply to securities pledges and do not include F-deposits or deposits in other central banks under the SCP arrangement.

¹² Figures for facility usage apply to intraday loans and any F-loans.

¹³ Link to list of banks with accounts at NBO: [Banks with accounts at Norges Bank \(norges-bank.no\)](https://norges-bank.no)

The following changes were implemented during the year:

- Boligbanken ASA started using its account with NBO with effect from February 2023.
- Hemne Sparebank (acquiring bank) and Åfjord Sparebank were merged with effect from 3 April 2023 under the name Trøndelag Sparebank.
- SIX-x clear AG discontinued its account holding at Norges Bank from 3 April 2023.
- SpareBank 1 SMN (acquiring bank) and SpareBank 1 Sørre Sunnmøre were merged with effect from 1 May 2023 under the name SpareBank 1 SMN.
- Sbanken ASA was merged into DNB Bank ASA with effect from 2 May 2023.
- Bank Norwegian, a branch of Nordax Bank AB (publ), changed its name to Bank Norwegian, a branch of NOBA Bank Group AB (publ). The change was announced in the Register of Business Enterprises on 8 June 2023.
- Jernbanepersonalets Sparebank changed its enterprise name to JBF Sparebank on 22 August 2023.

The new Central Bank Act and lending regulation from 2020 entailed changes in the criteria for which institutions may open an account with Norges Bank and the terms and conditions that apply to account management. One main requirement is that account management must promote the purpose of Central Banking, which is *to maintain monetary stability and promote stability of the financial system and an efficient and secure payment system*. The Lending Regulation distinguishes between monetary policy counterparties, which have access to all of Norges Bank's lending and deposit facilities, and other counterparties, which may have access to Norges Bank's standing lending and deposit facilities or parts thereof. In the assessment of such cases, particular emphasis is placed on the extent to which the counterparty participates actively in the payment system or whether the counterparty's holding of an account will contribute to financial stability or otherwise further the purpose of central banking activities.

Most Norwegian banks have an account with NBO. Norges Bank has also permitted central counterparties, central securities depositories and banks in the EEA with cross-border operations in Norway and central banks to apply to open an account. A number of such institutions have

requested accounts in recent years. These are regarded as *other counterparties* pursuant to the rules in the Lending Regulation, and special terms and conditions have been laid down for these accounts.

7.5 Prices and fees in NBO

Banks and other financial sector undertakings pay for account and settlement services in Norges Bank. Prices are set annually so that revenue covers two-thirds of the cost of implementing, developing and operating the settlement system.

In autumn 2023, Norges Bank decided to increase prices by approximately 20% in the period between 2023 and 2024. In the period between 2022 and 2023, prices increased by about 19%. For both years, the increase mainly reflected the costs of a new IT operating solution for NBO, general price and wage inflation and the enhancement of IT security in the settlement system. In addition, mergers of banks and fewer participants in the cash leg of securities settlement mean that total costs are distributed among fewer account holders.

The fees for breaches etc. of the terms and conditions for account management have been retained without change from 2023 to 2024.

Prices in 2023 generated an income of NOK 125.7m, compared with approximately NOK 107.2m in 2022.



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