

CONSULTATION REPORT

WORKING GROUP ON ALTERNATIVE REFERENCE RATES
FOR THE NORWEGIAN KRONE

OCTOBER 2018

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Introduction

Following the work on alternative reference rates abroad, a working group on alternative reference rate has been established in Norway. The objective of the working group is to establish an alternative reference rate that can be used as an alternative to today's Nibor. This report provides a more detailed discussion of the working group's work and assessments so far in the process. The working group requests feedback from market participants about the criteria for an alternative reference rate and the suitability of the candidates presented in this report. The working group also welcomes proposals for other candidates to an alternative reference rate. The working group would also like responses to specific questions relating to the proposals for an alternative reference rate.

The working group consists of participants from Norwegian banks and foreign branches with good insight into the Norwegian interest rate market and use of Norwegian reference rates. Norges Bank has the secretariat function. Responses and comments can be sent to the secretariat at ARR@norges-bank.no by end-day 9 November 2018. The working group will evaluate the feedback and draw up an anonymised summary.

The consultation report with responses will be presented at an open meeting at Norges Bank under the auspices of the working group on 20 November 2018 from 2pm to 4pm. An invitation to the meeting and the registration form can be found on the working group's website.¹ Any questions can be directed to the secretariat at ARR@norges-bank.no.

The report is divided into four sections. Section 1 describes the international background and the work on both existing and new foreign reference rates. Section 2 presents the working group in Norway. Section 3 presents the criteria that a reference rate should meet and describes possible alternative reference rates and the working group's assessment of those rates. Section 4 lists the questions to which the working group would like responses. Some aspects are further discussed in the appendix.

1. The international background and the work on foreign reference rates

1.1 Background

A reference rate is a standardised quote of a defined interest rate for different maturities. Standardisation enables the use of such interest rates as a reference for financial products. Reference rates can be a basis for the interest rates financial and non-financial undertakings must pay on their loans and deposits and for prices and settlement in the derivatives market. Reference rates can, for example, be used as a basis for agreeing floating rate payments for loans and bonds. In interest rate swap agreements (interest swaps), agreed fixed rates can be swapped for payments based on a floating reference rate.

Standardised reference rates reduce the complexity of financial contracts considerably compared with a situation where the parties to each contract must agree on the interest rate to be applied. Reference rates provide for transactions in more standardised contracts, thereby facilitating the execution of financial transactions in the same currency or across currencies. This lowers transaction costs and reduces asymmetric information. Reference rates thereby contribute to enhancing market efficiency.

¹ <https://www.norges-bank.no/en/Liquidity-and-markets/working-group-art/>

Today's reference rates are to a great extent quoted interest rates from a panel of banks. Quotes have traditionally been based on transactions in the unsecured interbank market. Since the financial crisis, however, activity in this market has shown a marked decline. Especially at somewhat longer maturities, there is no longer a market for unsecured interbank transactions, and quotes of ibor rates are based on judgement to a further extent than earlier.² At the same time, it came to light that international reference rates were being manipulated, which severely undermined confidence in these rates.

1.2 Work on foreign reference rates

In response to the financial crisis, work on reference rates was launched internationally. In 2013, IOSCO drew up a set of criteria that financial benchmarks should meet, and the EU has introduced a new regulatory framework for financial benchmarks (see Appendix 1).³ In 2014 the G20 countries, under the auspices of the Financial Stability Board (FSB), recommended reforming today's reference rates and finding alternative near risk-free interest rate benchmarks. Appendix 2 discusses whether a reference rate should be based on unsecured money market rates or risk-free rates.

In line with the FSB recommendations, administrators of the different ibor rates have implemented a number of reforms to ensure that today's reference rates meet international standards and regulatory requirements concerning for example oversight, control and transparency with regard to how reference rates are quoted. At the same time, a number of the ibor rates are no longer defined as interbank rates but rates that are to reflect the price of panel banks' short-term market funding. The European Money Market Institute (EMMI), which is the administrator for Euribor, conducted a pilot project in 2017 in an attempt to replace Euribor with a rate based on actual transactions based on the panel banks unsecured market funding, Euribor+. It transpired, however, that both the volatility and level of Euribor+ were too different from the original Euribor to enable a seamless transition. The administrators of both Libor and Euribor are now working to implement a waterfall structure in line with IOSCO's principles for financial benchmarks. The first step is transaction-based. If there are no underlying transactions, interpolations between transactions with similar maturities or earlier transactions can be used. If this is also not possible, the quotes will have to be based on judgement.⁴ A lack of underlying transactions in this market suggests that ibor rates will continue to be based on judgement to a large extent.

A substantial element of judgement, combined with stricter oversight and control requirements, has induced banks to become more reluctant to assume the legal risk incumbent on a panel bank. Some banks have already withdrawn from the Libor panel, and to prevent more withdrawals the UK Financial Conduct Authority (FCA) entered into an agreement with all panel banks whereby they undertake to quote Libor to the end of 2021. Thereafter, the authorities will no longer guarantee the continuation of Libor quoting. Concerns that Libor may not be sustainable a few years ahead have intensified focus on the work to find alternatives.

² ibor is an acronym for interbank offered rates and is a general term for the rates referred to as Libor, Euribor, Stibor, Nibor, etc.

³ [EU Regulation 2016/1011](#) sets out rules on the determination for financial benchmarks.

⁴ ICE will implement the transition to the new structure gradually. See [report](#) from April 2018. They expect the transition to be completed by the end of the first quarter of 2019. EMMI has recently conducted further tests of the new methodology and published a new [consultation report](#) 17 October 2018.

Working groups on alternative reference rates have been established in a number of countries. The working groups are mandated to find an alternative near risk-free reference rate, with a plan for its implementation. The working groups in the US and the UK, for example, published their recommendations for an alternative reference rate in 2017. The work in those countries has now entered a new phase of planning how the proposed reference rates can be implemented. The table below provides an overview of the proposed alternative reference rates in selected countries.

Table 1: Suggested alternative reference rates in some countries

Country	Alternative rate	Maturity	Secured/ Unsecured	Administrator	Start publishing
US	Secured Overnight Financing Rate (SOFR)	Overnight	Secured	Federal Reserve Bank of NY	April 2018
UK	Reformed Sterling Overnight Index Average (SONIA)	Overnight	Unsecured	Bank of England	April 2018
Switzerland	Swiss Average Rate Overnight (SARON)	Overnight	Secured	SIX Swiss Exchange	2009
Japan	Tokyo Overnight Average Rate (TONA)	Overnight	Unsecured	Bank of Japan	1985
Euro-area	Euro Short-Term Rate (ESTER)	Overnight	Unsecured	The European Central Bank	October 2019

Sources: Bank of England, Bank of Japan, European Central Bank, Federal Reserve Bank of New York, Swiss National Bank

As shown in the table, all the proposed reference rates have a maturity of only one day (overnight rates). One reason for this is that most money market transactions take place in the overnight market. The short maturities also mean that credit and liquidity premiums in these rates are minimal. An overnight rate will therefore be able to meet the regulatory requirements for reference rates.

In both the US and Switzerland, the working groups have recommended a secured overnight rate as the preferred reference rate. In the UK and Japan, the working groups have recommended an unsecured overnight rate as the preferred alternative to today’s reference rates. The euro-area working group proposed three potential candidates before summer, two secured and one unsecured overnight rate. The working group announced in mid-September 2018 that it recommended the unsecured overnight rate ESTER as the preferred alternative reference rate.⁵

⁵ The choice of an unsecured or secured rate as reference rate varies somewhat across countries, partly depending on the financial infrastructure of the countries. The US has chosen a secured rate (SOFR) rather than the unsecured rate (fed funds). This is partly because the fed funds market involves participants whose trades depend on the extent to which they have access to an account with the Federal Reserve and on what terms. The working group gave weight to the fact that the secured overnight market better reflects the banks’ actual financing possibilities. The UK chose an unsecured overnight rate (reformed SONIA), in particular because a good derivatives market linked to SONIA (OIS rates) has already been developed.

2. Working group on alternative reference rates for the Norwegian krone

Prospects suggesting that Libor may be discontinued a few years ahead also make it more pressing to find an alternative reference rate for the Norwegian krone. Today's reference rate for the Norwegian krone is Nibor (see Appendix 3). It is true that Nibor can conceivably exist independently of Libor, but this would give rise to challenges particularly in the case of contracts that involve both today's Libor and Nibor as reference rates (eg cross currency basis swaps between NOK and other currencies). Nor can it be ruled out, as an extreme consequence, that Nibor will be discontinued altogether. It is therefore desirable to find an alternative reference rate that can replace Nibor in both new and existing contracts.

As a response to the FSB's recommendations and the international work on reference rates, Norges Bank has in consultation with the financial industry taken the initiative to establish a working group on alternative reference rates for the Norwegian krone. The working group consists of participants from Norwegian banks and foreign branches with good insight into the Norwegian interest rate market and the use of Norwegian reference rates. Box 1 provides an overview of the members of the working group.

Box 1: Members of the working group on alternative reference rates for the Norwegian krone

Members:

Sparebanken Vest (Jørgen Gudmundsson, chair)

Danske Bank

DNB Bank ASA

Handelsbanken

Nordea Bank AB

Skandinaviska Enskilda Banken AB

Sparebank 1 SMN

Sparebank 1 Nord-Norge

Sparebank 1 SR-Bank ASA

Sparebank 1 Østlandet

Swedbank AB

Observers:

Finance Norway

Norges Bank

Secretariat:

Norges Bank

The main objective of the working group is to establish an alternative near risk-free reference rate for the Norwegian krone. The first part of the working group's work will consist of putting forward a proposal on an alternative reference rate and identify the conditions that must be in place for a successful transition to the alternative reference rate. Subsequently, the working group will work on how such a rate can be implemented as a reference rate.⁶

⁶ See the working group's [mandate](#).

3. Criteria and candidates

3.1 Criteria a reference rate should meet

The working group has agreed upon a list of criteria that an alternative reference rate for the Norwegian krone should meet (Box 2). These criteria are in line with international recommendations. A primary requirement is that the reference rate should fulfil regulatory requirements and meet international standards.

An alternative reference rate should also be sensitive to changes in Norges Bank's key policy rate and correlated with other Norwegian krone money market rates. The cash flows of a financial contract will then depend on the general interest rate level in the economy, which is determined by central bank monetary policy. The two parties to the contract can then focus on institution-specific factors, such as the credit risk associated with the borrower. Thus, using reference rates makes it easier for both the borrower and the lender to enter into a financial contract. The recommended reference rate should also be robust to changes in market structure, regulation and the monetary policy regime. It must also be clearly defined.

The reference rate should be set in such a way as to minimise the potential for manipulation. Hence it should as far as possible be based on actual, observable transactions, preferably in large, liquid markets. Furthermore, the calculation method should be transparent and easy to understand, with clearly defined underlying data.

The reference rate should be modelled in line with the alternative reference rates selected by other countries. The working group has also focused on the importance of ensuring demand for products referencing the alternative reference rate. In particular, a liquid and well-functioning derivatives market is important to enable the transition to an alternative reference rate.

Box 2: Preferred criteria for the selection of a Norwegian krone reference rate

Properties

Sensitive to changes in the key policy rate
Robust to changes in regulation and the monetary policy regime
Clearly defined
Correlated with other money market rates in NOK

Quality

Should be based on transactions in a robust and reliable market
Robust to changes in market structure
Minimal opportunities for manipulation

Method

Transaction-based data as far as possible
Clearly defined data
Calculation method that is transparent and easy to understand

Administration and monitoring

Comply with regulatory requirements for financial benchmarks

Other considerations

Should be modelled in line with alternative reference rates in other countries

Potential for the creation of a well-functioning derivatives market based on the reference rate

3.2 Assessment of alternative reference rates

The working group has identified and assessed candidates based on the criteria above (Table 2). The assessment of each candidate is described in more detail in the text following the table.

Table 2: Potential alternative reference rates for the Norwegian krone

Rate	Maturity	Explanation	Method
Key policy rate	Overnight	Rate on banks' deposits in Norges Bank up to a specified quota.	Decided by Norges Bank's Executive Board.
Nowa/ Reformed Nowa	Overnight	Rate on unsecured interbank loan.	Currently, Nowa is the volume-weighted average of panel bank transactions. The working group will consider alternative methods of calculation if the Nowa rate is reformed.
Expanded Nowa	Overnight	Expand today's Nowa to include unsecured loans between banks and non-banks.	To be decided.
Treasury bills	Three-month	Rate on Treasury bills issued by the Norwegian government.	A synthetic rate that is a weighted average of two Treasury bills, one with a shorter and one with a longer residual maturity.
Fx swap rate	Overnight	The alternative reference rate in the US (SOFR) swapped into NOK.	Calculated on the basis of SOFR and the tomorrow-next fx forward premium.
Repo rate	Overnight	Rate on secured loans with government bonds or covered bonds as collateral.	To be decided.

Key policy rate

The key policy rate in Norway is the sight deposit rate, the interest rate on banks' overnight deposits in Norges Bank up to a specified quota.⁷ The key policy rate has a strong impact on the shortest money market rates and has a number of the preferred characteristics of an alternative reference rate. The key policy rate does not, however, seem to be an appropriate choice as a reference rate, in particular because using the key policy rate as a reference rate could in some situations come into conflict with the conduct of monetary policy. In practice, the transmission of monetary policy is ensured by the central bank's liquidity management system (via the conditions set for Norges Bank's open market operations and standing facilities). During and after the financial crisis, a number of central banks introduced extraordinary monetary policy measures (such as quantitative easing, lines of credit to

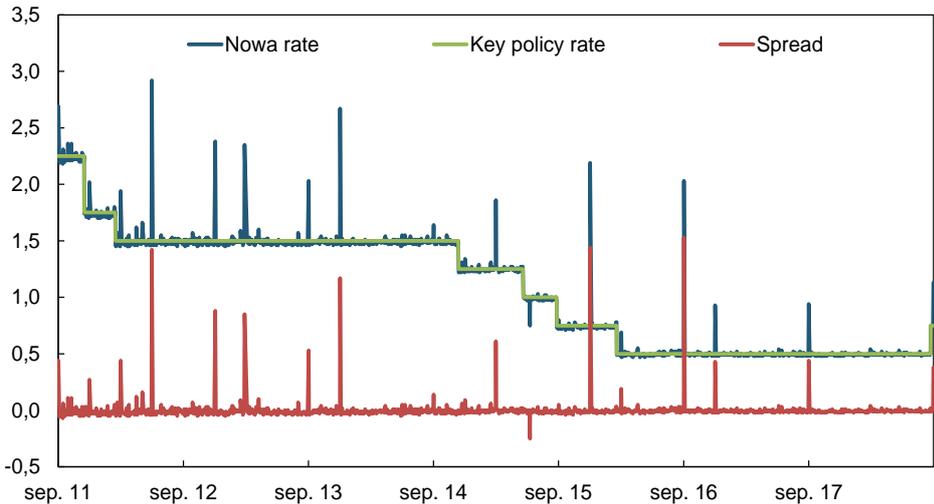
⁷ Banks receive interest at the key policy rate only on a specified quota of deposits. The interest rate on deposits in excess of the quota, the reserve rate, is lower. For more information, see [Banks' quotas](#). For more information on the liquidity management system, see [Norges Bank's liquidity management system](#).

banks etc.), which substantially increased the level of central bank reserves in the banking system. As a consequence, in some countries other central bank rates than the policy rate itself, have become more important for the conduct of monetary policy. As an example, the European Central Bank (ECB) has pursued a policy of maintaining a high level of excess liquidity in the banking system. The high level of excess liquidity pushed the EONIA rate down towards the central bank’s marginal deposit rate. As a result, this deposit rate is now the rate passing through to short-term money market rates. This experience shows that since central bank rates other than the policy rate can sometimes control market rates, the key policy rate will not be suitable as a reference rate.

Nowa/reformed Nowa

The Nowa (Norwegian Overnight Weighted Average) rate is the interest rate on unsecured overnight interbank lending in NOK. Banks borrow and lend central bank reserves in this market. The Nowa rate is calculated based on actual trades, and as such is an attractive alternative in view of the criteria for a transaction-based rate that is robust to potential manipulation⁸. The method of calculation is also transparent and easy to understand, and there is little room for judgement in the panel banks’ individual contributions. Nowa also meets the criterion of sensitivity to changes in the key policy rate and has historically tracked the sight deposit rate closely (Chart 1), with the exception of some days at the end of a quarter or year. Owing to regulatory requirements, banks are often very reluctant to lend reserves to other banks in these periods. To the extent lending actually takes place, interest rates are higher than normal. With the limited number of transactions on these days, the Nowa rate often has to be estimated.⁹ Nowa is then calculated based on panel bank estimates of the interest rate they would have offered on a hypothetical loan. As banks will be less interested in lending on these days, interest rates are often very high. This results in adverse effects in the form of higher spread between the key policy rate and Nowa. This spread has on some days been close to 150 basis points.

Chart 1: Nowa rate (percent), key policy rate (percent) and spread between key policy rate and Nowa (percentage points). August 2014– September 2018



Source: Norges Bank

⁸ The Nowa panel currently comprises 11 panel banks that make daily submissions to Norges Bank. For more information on the Nowa rate, see the [Nowa rules](#) on the Finance Norway website.

⁹ Norges Bank calculates Nowa provided data is available from at least three banks and total reported turnover is at least NOK 250 million. Nowa estimates are based on figures for actual loans supplemented by panel bank estimates. Since the introduction of Nowa in autumn 2011, Nowa has been estimated around 30 times.

Low lending activity in the overnight market could also be a problem on other days, and turnover in today's market is very limited. On average, less than half of the 11 panel banks report daily lending activity to Norges Bank. In the working group's opinion, it is doubtful whether today's Nowa rate meets the preferred criteria for a reference rate based on a robust and reliable market. At the same time, the Nowa rate is the only overnight rate that is available in today's market.

The problems posed by Nowa are mainly related to the days when the rate has to be estimated. The working group has discussed whether alternative methods of calculation could reduce the increased spread on days when Nowa is estimated. For example, excluding the highest and lowest estimates could contribute to a lower average Nowa rate on the days when Nowa is estimated. Another option is to change the definition of Nowa. Today, Nowa is defined as a lending rate. Changing the definition from lending rate to borrowing rate will probably remove some of the more extreme effects when Nowa is estimated. There is reason to believe that a reformed Nowa rate will to a greater extent meet the preferred criteria for a reference rate, and the working group wants to explore these possibilities.

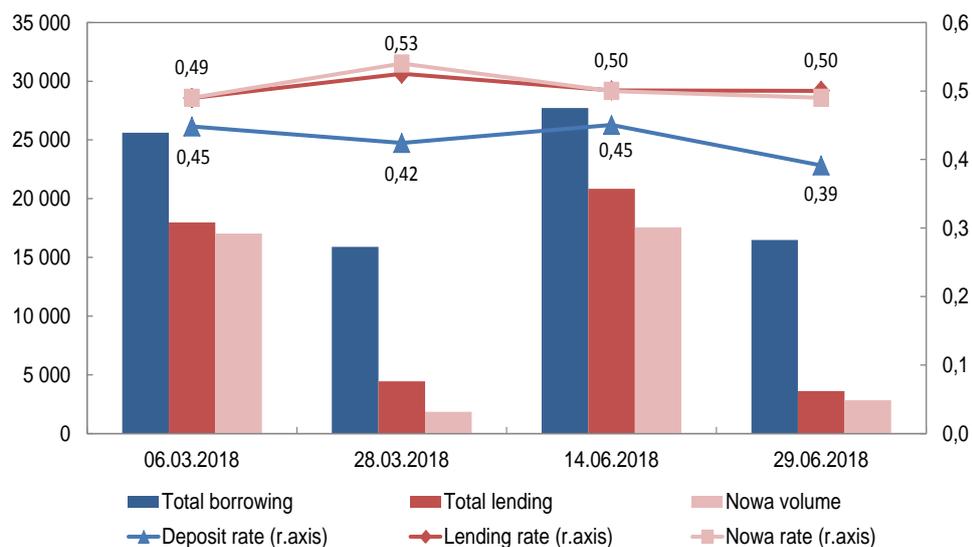
Expanded Nowa

The new alternative reference rate for the euro area, ESTER, is based on a broader set of underlying data than today's overnight rate EONIA. The data include both interbank transactions and transactions between banks and non-bank participants. ESTER is calculated based on money market data reported daily to the European Central Bank (ECB). Norges Bank has taken the initiative to introduce similarly daily reporting of transaction data for the Norwegian money market. These data enables Nowa to be expanded by including overnight transactions between banks and enterprises, as opposed to today's Nowa, which only includes interbank transactions. Expanded Nowa based on a larger market may possibly be less volatile at quarter- and year-ends than today's Nowa.

One problem with expanded Nowa is that neither the rate nor the underlying data are available at present. Norges Bank has announced that data collection will commence by the end of the first quarter of 2019. However, it will take time from the start of data collection until an expanded Nowa has been established. Furthermore, ascertaining whether an expanded Nowa would be a suitable and robust alternative will require observing movements over quarter- and year-ends.

In order to get some idea of how this market will look, the banks in the working group have reported transaction data on unsecured overnight borrowing and lending on a sample of days to Norges Bank. Results are shown in Chart 2. The test reports show that borrowing volumes are far higher than lending volumes. Lending volumes seem to a great extent to correspond to today's Nowa reporting. The volume-weighted borrowing rate will as expected be somewhat lower than today's Nowa. Borrowing volumes also fall at quarter-ends, but less pronounced than lending volumes. The working group holds the view that the possibility of using an expanded Nowa rate as an alternative reference rate is worth exploring.

Chart 2: Test reporting from the working group, reflecting unsecured borrowing and lending during four sample days. Total volume in million NOK and the volume-weighted rate (percent). Nowa is included for comparison



Source: Norges Bank

Foreign exchange swap rate

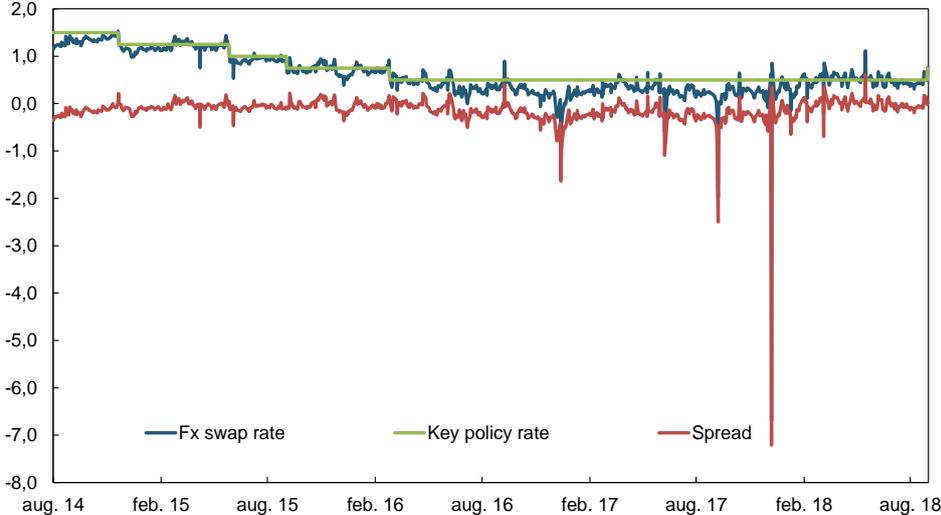
Krone-denominated liquidity is to a great extent redistributed in the foreign exchange swap market. The working group has therefore also looked at an alternative where the Norwegian krone reference rate is constructed as a foreign exchange swap rate, in the same way as today's Nibor rates (see Appendix 3 on Nibor). Since most of the transactions in the fx swap market are USD swaps, the alternative US reference rate SOFR provides a natural starting-point.

The SOFR rate reflects the price of secured overnight USD-denominated funding. The SOFR rate is calculated in a transparent manner that is easy to understand and is based on a transaction-based USD rate. This leaves little room for judgement. Most USD-NOK transactions in the fx swap market are tomorrow/next or T/N swaps.¹⁰ The working group has therefore looked at an alternative where the NOK rate is calculated by adjusting the SOFR rate for the price of exchanging USD for NOK using transaction prices in the T/N market.

Chart 3 shows such an interest rate calculated using screen-based fx swap prices. As illustrated by the chart, such a rate will be subject to high volatility, to a great extent as the result of wide fluctuations in forward rates in the T/N market. The chart also shows that the implied fx rate will in periods be far below the key policy rate. This will be true in periods where the dollar rate that the banks that are active in the USD-NOK market fund themselves to is higher than SOFR. In the opinion of the working group, such a rate would breach several of the preferred criteria for an alternative reference rate, including its potential to differ widely from the key policy rate and other Norwegian krone market rates.

¹⁰ The reason for using forward rates in the T/N market is that the redistribution of krone liquidity mostly takes place in this market, cf. figures from [Norges Bank's money market survey](#) for April 2018.

Chart 3: Fx swap rate), key policy rate (percent) and spread between key policy rate and forex swap rate (percentage points). August 2014–August 2018

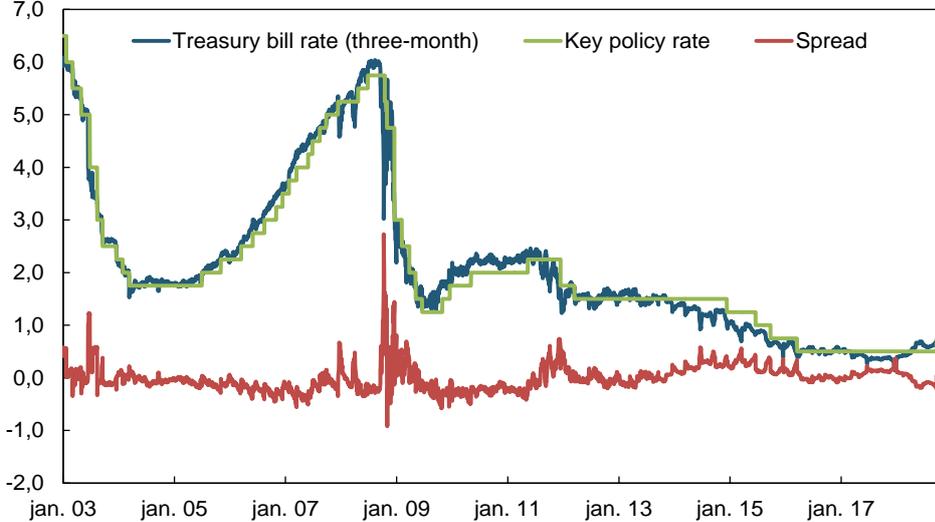


Sources: Bloomberg, Thomson Reuters and Norges Bank

Treasury bills

The interest rate on three-month Treasury bills has been suggested as an alternative in a number of other countries, but has a number of clear disadvantages as a reference rate. Interest rates on government papers are strongly influenced by conditions particular to the government debt market, for example time-varying liquidity and “safe haven” premiums. This was clearly evident during the financial crisis in the increased spread between the key policy rate and interest rates on Norwegian Treasury bills (Chart 4). Treasury bill rates will also vary with the government’s financing needs and issue volumes, and it is not advisable to choose an alternative reference rate that could constrain or influence decision-making related to government debt management. Treasury bill rates are also regarded internationally as less suitable as reference rates.

Chart 4: Treasury bill rate (three-month, percent), key policy rate (percent) and spread between key policy rate and Treasury bill rates (percentage points). 2003 - 2018



Source: Norges Bank

Repo rates

Several countries have now proposed an overnight repo rate as an alternative reference rate (for example SOFR in the US). However, the repo market in Norway is small, and turnover is considerably lower than in the unsecured overnight market. A number of banks have internal indicative yield curves for repo transactions, but there is no complete overview and no “official” repo yield curves in Norway. Today’s repo market has a small number of participants, and the market in its current form and size does not meet the criteria for a reference rate based on a transaction-based, robust and reliable market.

For a repo rate to be suitable as a reference rate, it would be necessary to establish a robust and transparent market based on standardised collateral and maturities. In the working group’s view, this will be difficult unless Norges Bank begins to use repo rates in its open market operations and thus play a central role in formalising a Norwegian repo market.

One alternative is for the central bank to change today’s liquidity management regime and start to offer standardised repos with fixed maturities, providing the basis for increased activity and a larger number of active participants in the repo market. In the working group’s opinion, such a solution is likely to stimulate activity in the overnight repo market, which in turn could serve as the basis for an alternative reference rate.

One challenge posed by Norges Bank’s use of standardised repos is the wide fluctuations in structural liquidity (Chart 5). Structural liquidity is defined as the level of liquidity in the banking system prior to Norges Bank’s open market operations. Fluctuations in structural liquidity are primarily caused by ingoing and outgoing payments over the government’s account. During the last years, the level of structural liquidity has varied between NOK -50 billion and NOK +120 billion. To maintain the total quantity of reserves in the banking system at the preferred level, Norges Bank adds or withdraws funds from the reserves in the banking system via F-loans and F-deposits, which are adjusted in volume and maturity depending on the projections for structural liquidity. Given the current situation where government transactions cause large fluctuations in structural liquidity, it would be difficult to introduce standardised repos.

The working group has discussed a solution whereby the government’s account is moved out of the central bank and into the banking system. This solution would be in line with government account management in Sweden. Moving the government’s account out of Norges Bank would considerably reduce the fluctuations in structural liquidity, see Chart 5.

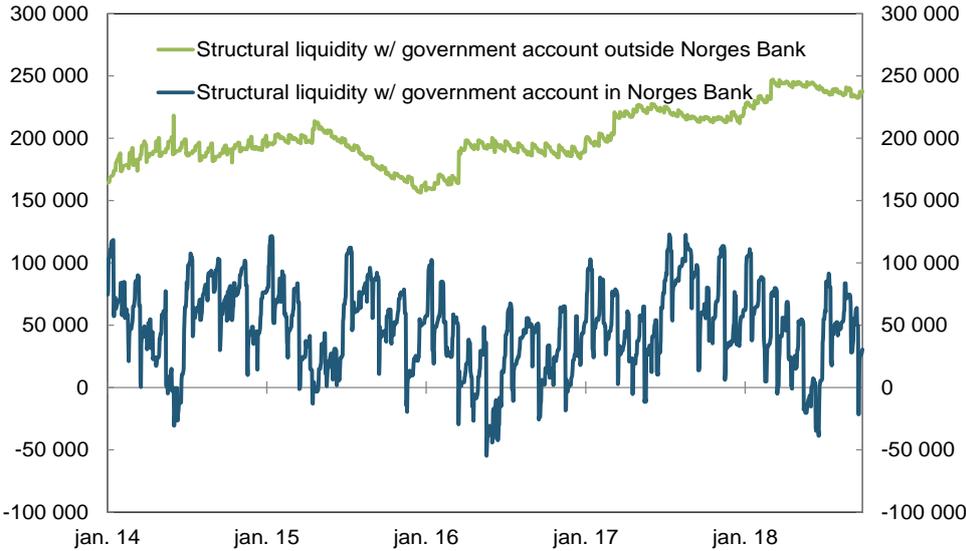
For Norges Bank to start using standardised repos as part of the liquidity management regime, however, structural liquidity in the banking system would have to be negative. Banks would then have a continuous need for liquidity and thereby an incentive to bid regularly to access liquidity via Norges Bank’s open market operations. As a solution to this issue the working group has discussed that Norges Bank could introduce a reserve requirement, meaning that banks would be required to hold a certain amount of reserves as a deposit in the central bank.

However, such a solution poses a number of challenges. First, moving the government’s account out of Norges Bank would result in a substantial increase in structural liquidity in the banking system compared with today (Chart 5). To ensure that banks would be in a debt position vis-à-vis Norges Bank, reserve requirements would have to be very high, ie in the region of NOK 160-260 billion, as shown in the chart. As reserves held as part of a reserve requirement will not count as high-quality liquid assets (HQLA) in the liquidity coverage ratio (LCR), such a solution would probably result in a

marked reduction in banks' liquidity coverage.¹¹ Furthermore, the current Norges Bank Act provides limited scope for the introduction of reserve requirements, but the proposed new Act allows for such a solution, as long as the reserve requirement is a liquidity management tool.¹²

The working group has discussed whether there is a way Norges Bank can withdraw surplus liquidity without affecting banks' liquidity coverage to the same extent, for example by issuing central bank certificates. Nevertheless the working group has decided not to go further with this option as it seems to be a long way to go before a sufficiently robust Norwegian krone repo market can be established. Moving the government's account is a particular issue. If the government should decide on this solution, a thorough study would have to be conducted and the process would likely take several years. Furthermore, how such a solution would function in practice is highly uncertain. Given the tight deadline for the transition to alternative reference rates in other countries, this option is therefore not regarded as a practicable way of establishing an alternative NOK reference rate. The working group nonetheless holds the view that moving the government's account would promote a well-functioning NOK money market and that the government, whatever the decision on alternative reference rates, should in time consider the proposal.

Chart 5. Structural liquidity with the government's account in Norges Bank and estimated volatility if the government's account were to be moved out of Norges Bank. 2014-2018. In millions of NOK



Source: Norges Bank

¹¹ Under the current LCR framework, reserves held on account at the central bank – as part of the reserve requirement – are not included in the calculation of HQLA in the LCR. Only reserves in excess of the reserve requirement are regarded as HQLA. By comparison, today's sight deposits are fully eligible as HQLA (without haircuts).

¹² This is formulated in Section 3-1 (3) of [the proposed new Norges Bank Act](#) and discussed on p. 324 and pp. 334-335 (in Norwegian only).

4. Questions related to alternative reference rates

About the candidates for alternative reference rates

- To what extent would your firm be affected by the introduction of a new reference rate? Why/why not?
- What do you regard as the three most important criteria for an alternative reference rate?
- Are there any preferred criteria an alternative reference rate should meet that are not mentioned in this report?
- Should an alternative Norwegian krone reference rate be close to risk-free, in line with the new alternative reference rates in other countries?
- How important is it for a reference rate used in banks' loan and debt contracts to reflect risk premiums?
- How important is it for a reference rate used in derivative contracts to reflect risk premiums?
- If Libor is discontinued, should Nibor be retained as a reference rate? If so, why?
- Do you support the working group's assessment that Nowa/reformed Nowa and expanded Nowa are the most relevant candidates? Which do you regard as most appropriate and why?
- Should other candidates be considered? If so, which rates could be candidates?

About specific candidates

Nowa/reformed Nowa:

- What is the current Nowa rate's greatest weakness as an alternative reference rate, and how can this be rectified, if possible?
- What is your bank's opinion of finding alternative methods of calculation for the estimated Nowa rate, such as excluding the lowest and highest observation, or defining Nowa as a borrowing rate instead of a lending rate?
- To what extent is today's Nowa already in use as a reference rate in loan contracts and derivatives by you or other market participants (to your knowledge)?

Expanded Nowa:

- Would expanded Nowa (which also includes loans between banks and non-banks) be more appropriate than today's Nowa as an alternative reference rate?
- There is currently no OIS (overnight indexed swap) market in Norge. The potential to create a well-functioning derivatives market based on the alternative reference rate is one of the criteria for selection of a reference rate. What is your view of the possibility of creating an OIS market based on Nowa or expanded Nowa as the underlying rate?

5. Appendix

Appendix 1: IOSCO's Principles for Financial Benchmarks

The International Organization of Securities Commissions (IOSCO) has drawn up a set of criteria that financial benchmarks should meet (cf Section 2.2). In 2014, the G20 countries, under the auspices of the Financial Stability Board (FSB), endorsed the adoption of these criteria as the international standard.

Some criteria are related to *supervision and oversight of the benchmark*, which are intended to ensure confidence in the reference rate. There is to be an administrator with responsibility for defining the benchmark and the entire process related to data collection, calculation and publication of the benchmark. The process must be transparent, so that anyone can oversee and verify the calculation of the benchmark. The administrator must also have arrangements in place to prevent conflicts of interest in the calculation of the benchmark and establish complaints procedures regarding a benchmark determination. This will reduce the potential for manipulation of the benchmark.

There are also criteria related to *benchmark design*, which are intended to ensure that the benchmark credibly reflects the price in the market that the benchmark seeks to measure. An important criterion is that the benchmark should be based on actual transactions in a liquid market, where the benchmark reflects the behaviour of market participants. This will make manipulating the benchmark more difficult and increase confidence in it. The principle also provides guidelines for the use of expert judgement in calculating the benchmark, eg, at times when the transaction volume is insufficient for quoting the benchmark. This criterion requires a transparent hierarchy of data inputs and expert judgement that clearly specifies when the benchmark is based on actual observations and when it is based on expert judgement.

Furthermore, there are criteria related to *changes to the benchmark methodology and contingency plans*, which are intended to ensure that financial contracts have robust fall-back provisions in the event of changes to the benchmark. This applies in particular when the benchmark ceases to exist or if the parties that use the benchmark for other reasons must transition to a new benchmark.

Appendix 2: Differences between near risk-free reference rates and reference rates containing a risk premium

Current ibor rates are unsecured money market rates, where three-month maturity is particularly important. In the international work on reference rates, risk-free or near risk-free interest rates are now recommended, preferably overnight rates (secured and unsecured).

Overnight rates are referred to as risk-free or near risk-free, even if they are unsecured, because their maturity is only one day. Secured rates (repo rates) are referred to as risk-free because they are collateralised (regardless of maturity).¹³ However, unsecured money market rates, like current ibor rates, reflect both the risk-free interest rate and various risk premiums. Ibor rates as they are currently quoted will reflect the average credit and liquidity premiums of the relevant panel banks.

The choice of reference rates involves among other things the extent to which risk premiums are to be transferred between the parties to a financial contract. If a risk-free interest rate is used as benchmark,

¹³ The extent to which repo rates may be assumed to be risk-free depends on the quality of the collateral pledged.

the payments associated with the contract will only reflect the general interest rate level in the economy.¹⁴ If an unsecured money market rate is used as the benchmark, the payments will also reflect premiums banks face when obtaining wholesale funding, in addition to the general interest rate level.

From a bank's perspective, it may in some cases be advantageous for the reference rate to reflect risk premiums associated with banks' funding costs. The main reason is that a number of assets on bank's balance sheets are linked to the reference rate. When the reference rate is related to banks' funding costs, changes in funding costs will impact both sides of banks' balance sheets. This may make it easier for banks to enter into loan and debt contracts, which in turn may be of importance for banks' funding and lending. A key question is the consequences for banks if current reference rates are replaced by near risk-free rates (cf list of questions in Section 4).

Even if unsecured money market rates of a certain maturity may be suitable as reference rates in banks' loan and debt contracts, such reference rates may be less suited to other areas. In derivative contracts in particular, risk-free rates may be better suited as reference rates. In derivative contracts there is not necessarily a desire to hedge against changes in banks' funding costs. When ibor rates were first introduced in the 1980s, derivatives were far less widespread than today. Moreover, money market premiums, the spread between the ibor rates and the expected policy rate, were fairly stable in the period before the financial crisis in 2008. Growth in the use of derivatives and more volatile money market premiums have made money market rates less suitable as reference rates in derivative contracts. For the same reason, risk-free rates may be more suitable for discounting future cash flows and derivatives margining. Furthermore, reference rates containing bank-specific risk may be less suitable as a benchmark in loan contracts issued by non-bank undertakings. In such cases, the parties to the contract are not necessarily exposed to bank-specific risk but only to the general interest rate level in the economy.

Appendix 3: Nibor, the main reference rate in Norway

The most commonly used reference rate in Norway is Nibor (Norwegian Interbank Offered Rate). Nibor is quoted at maturities of one week, and one, two, three and six months. Three- and six-month Nibor are particularly widely used as benchmarks in financial contracts. Nibor is quoted by six banks: DNB Bank ASA, Danske Bank, Handelsbanken, Nordea Bank AB, SEB AB and Swedbank AB.

Nibor is administered by Norske Finansielle Referanserenter AS (NoRe), which is wholly owned by Finance Norway. Details relating to underlying data, calculation method, publication, monitoring, complaints regarding Nibor submissions, requirements for the administrator and panel banks may be found on the NoRe website.¹⁵

According to the rules, Nibor shall reflect "the interest rates the bank would charge on lending in NOK to a leading bank. The interest rates should be regarded as the best possible estimates of market rates, but not as binding offers" ... A leading bank is ... "A bank with a high credit rating for short-term debt which is active in the Norwegian money and foreign exchange market on competitive terms."

The guidelines for panel banks' Nibor submissions state that the NOK rate must be determined as the sum of a foreign rate and the return derived from the difference between the spot rate and the forward

¹⁴ See BIS (2013) [Towards better reference rates: a central bank perspective](#).

¹⁵ See [Rules for the calculation and publication of Norwegian money market rates –Nibor](#).

rate (the forward premium). In practice, the panel banks base their Nibor submissions on a USD interest rate.¹⁶ The USD interest rates used by the panel banks are to reflect the bank's borrowing rates in the international money market. A spread is added to the NOK rate derived via a foreign exchange swap, so that the bank's Nibor submission most accurately reflects the interest rate the bank would charge for an unsecured loan in NOK to a leading bank that is active in the Norwegian money and foreign exchange market.¹⁷

¹⁶ Panel banks may also use a borrowing rate in another currency. The forward premium then reflects the price of exchanging the currency for NOK in the foreign exchange swap market.

¹⁷ See [Guidelines for panel banks' Nibor submissions](#).