BANK OF ENGLAND

March 2017

The reform of SONIA

Consultation feedback and the design of SONIA

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This document includes illustrative calculations, based on the Bank of England's Sterling Money Market data collection, which are intended only to show how the new SONIA methodology would work, and should not be used for any other purpose.

Contents

Executive summary

The Bank recently consulted on its plans to reform the SONIA interest rate benchmark.(1)

Views were sought on: the Bank's proposals to change the methodology for calculating SONIA and the scope of eligible transactions; a revised definition of SONIA which facilitates its future evolution, if necessary; the Bank's approach to transition; and issues related to the daily publication of SONIA.

This document summarises the feedback received, sets out the Bank's response, and details changes made as a result. The key features of reformed SONIA are summarised in Box 1, and an update on its statistical properties are provided in Box 2.

Respondents were generally supportive of the Bank's proposal to restructure the definition of SONIA into two parts. The new definition has two components: the underlying interest (an enduring statement of the economic concept to be measured) and the methodology (detailing the data inputs and the method of calculation of the benchmark).

There was extensive feedback on the proposed underlying interest. In some cases this was supportive; but two areas of concern featured prominently. The first was that some respondents viewed the underlying interest as too broadly defined — in particular, because it does not identify SONIA as an unsecured deposit rate. A second concern centred on the way the Bank proposed to capture the 'near risk-free' character of SONIA using the description: '*in circumstances where credit, liquidity and other risks are minimal*'. Some respondents were unclear as to whether inputs to SONIA would be invalidated during periods of financial stress, whether market-wide or at an individual institution.

The Bank has given further careful consideration to these issues. It may be helpful to restate the respective roles of the underlying interest and statement of methodology, which are essential and complementary components of the definition of SONIA. The methodology fully defines the input data for SONIA and how the index is to be calculated at a given point in time. The underlying interest comes into play only when reviewing the methodology to assess whether evolution is required, and guiding any resulting changes. It provides a conceptual anchor for SONIA, providing users with assurance over the nature of their economic exposure when using SONIA, while allowing for the measurement of that exposure to change if necessary, through a transparent process of benchmark evolution.

The Bank acknowledges that, in its consultation, the description of the underlying interest as a 'definition' may have engendered confusion about its relationship to the overall definition of SONIA. For clarity we have therefore amended this and now refer to the *statement* of underlying interest and *statement* of methodology as the two components of the *definition* of SONIA.

On the first main area of concern expressed by respondents, the Bank believes that a broadly defined underlying interest is necessary to allow scope for benchmark evolution, if required. To define the underlying interest more narrowly, for example with explicit reference to 'unsecured' money markets, may provide greater assurance about the future methodology, but would limit the scope to evolve the rate in response to any material future changes in the underlying market, which could in turn necessitate a difficult and potentially disorderly transition to an alternative benchmark.

On the second main area of concern, relating to uncertainty about SONIA input data in circumstances where risks are not 'minimal', the Bank emphasises that the methodology, not the statement of underlying interest, determines the inputs to the daily calculation of SONIA. The role of the administrator is to choose a methodology which will reflect the underlying interest, but recognising that the closeness may vary on occasions, for example as risk premia fluctuate. But there will be no filter — or judgement from the Bank — to exclude specific transactions as a result. Any necessary changes to the input data would instead take place via the evolution of the methodology.

In view of these arguments, the Bank has not made any changes to the wording of the statement of underlying interest in response to these two areas of feedback.

Other feedback on the underlying interest related to the use of the terms 'wholesale' and 'overnight'. Some respondents noted that, without a precise definition, the term 'wholesale' was open to interpretation. In contrast, one respondent

(1) For the October 2016 consultation, see www.bankofengland.co.uk/markets/Documents/soniareformcp1016.pdf and for the February 2017 consultation, see www.bankofengland.co.uk/markets/Documents/soniareformcp0217.pdf.

queried whether stating 'overnight' was adding unnecessary specificity which was better suited to the statement of methodology. The Bank judges that, for the purposes of the underlying interest, it is sufficient that a term is broadly understood. Therefore the Bank will retain the term 'wholesale' in the statement of underlying interest, as the precise definition used is provided in the Reporting Instructions for the Sterling Money Markets (SMM) data collection, which is referred to in the statement of methodology. Consistent with this approach, the word 'overnight' has been substituted with 'short-term' in the statement of underlying interest, because the tenor of eligible transactions is more appropriately specified in the statement of methodology.

Regarding the specific calculation methodology for reformed SONIA, the Bank intends to proceed with the trimmed mean since feedback was supportive of this proposal. Several respondents suggested lowering the minimum transaction size threshold for input data from £25 million to £10 million, on the grounds that this could boost robustness by increasing daily volumes. In fact doing so would result in additional average daily volumes of £3.5 billion, and produce a rate on average a further 0.2 basis points below current SONIA. In view of the limited increase in volumes and the divergence from the definition and properties of existing SONIA, the Bank has concluded that a reduction in the transaction size threshold is not warranted at this stage.

In response to feedback, the Bank has amended the structure of the statement of methodology to draw out the individual aspects more clearly.

In the consultation the Bank specified a process by which future evolution of the methodology can occur (Section 2.4). Respondents requested further details on the governance around this evolution process, and emphasised the importance of end-user engagement. The Bank accepts these points and has further clarified both the circumstances in which evolution would be contemplated and what the process would be — including documenting the role of end-users.

As proposed, the threshold for republication of SONIA, for example as a result of data errors, will be two or more basis points. In response to feedback, any such republication will be made no later than midday on the same day. The Bank also confirms that it will implement the information to be published on a daily basis as proposed: the daily volume and the 10th, 25th, 75th and 90th volume-weighted percentiles, alongside the headline rate.

In contingency scenarios, the Bank will produce a rate based on the average spread of SONIA to Bank Rate over the past five days. The Bank has also clarified the circumstances under which a contingency methodology would be used: where five or more reporting institutions fail to provide data on time and this has resulted in daily volume lower than 70% of the past five days.

Drawing these elements together, Box 1 summarises the key features of reformed SONIA.

There was near-unanimous support for the Bank's proposed 'point-in-time' switchover to reformed SONIA. As announced in February, the reforms are now anticipated to be implemented in March or April 2018. This provides around twelve months between this publication of the specification for reformed SONIA and its implementation. The precise date for transition will be announced with at least six months' notice.

Box 2 provides an update on the statistical characteristics of reformed SONIA. In summary, in the sample of available data:

- The average daily transaction volume underpinning reformed SONIA is £39.4 billion, on average around four times that for current SONIA.

- Reformed SONIA is on average a little more than 1 basis point lower than current SONIA and is highly correlated.

Box 1
Key features of reformed SONIA

Definition of SONIA
The definition of SONIA has two elements:

(i) Statement of underlying interest (Section 2.2)
SONIA is a measure of the rate at which interest is paid on sterling short-term wholesale funds in circumstances where credit, liquidity and other risks are minimal.

(ii) Statement of methodology (Section 2.3)
On each London business day, SONIA is measured as the trimmed mean, rounded to four decimal places, of interest rates paid on eligible sterling denominated deposit transactions.

The trimmed mean is calculated as the volume-weighted mean rate, based on the central 50% of the volume-weighted distribution of rates.

Eligible transactions are:

- reported to the Bank's Sterling Money Market daily data collection, in accordance with the effective version of the 'Reporting Instructions for Form SMMD';
- unsecured and of one business day maturity;
- executed between 00:00 hours and 18:00 hours UK time and settled that same day; and
- greater than or equal to £25 million in value.

Review and evolution of the methodology (Section 2.4)
Periodic review of the methodology
The administrator will periodically review the current methodology with a view to ensuring that it continues adequately to measure the underlying interest.

In doing so the administrator will review conditions in the relevant market in order to assess whether that market has undergone or is undergoing structural change that may warrant changes to the benchmark methodology. In particular, the administrator will seek to determine whether the relevant market continues, and is expected to continue, to function sufficiently well and have sufficient volumes to form the basis for a robust and credible benchmark.

The administrator will also take account of representations from users of SONIA and the external SONIA Advisory Committee as to the possible need for changes in the methodology.

Changes to methodology
If the administrator determines, on the basis of its review, that changes to the benchmark methodology are warranted, it may make such changes as it reasonably considers necessary in order to address any issues identified.

Such changes may include, for example, refinements to the calculation methodology or scope of eligible transactions within the relevant market. They may also include the introduction of a methodology which has reference to other actively-traded money market instruments, for example UK gilt collateralised repurchase agreements, or to the Bank of England official interest rates, so long as the administrator considers that they provide an appropriate measure of the underlying interest.

Before making any changes to the benchmark methodology the administrator will (i) follow its benchmark governance procedures, including review by the external SONIA Advisory Committee; and (ii) to the extent possible or practicable, conduct a public consultation to enable persons affected to provide feedback on the proposed change.

SONIA republication policy (Section 3.2)
- SONIA will be republished on a given day if the calculation of the benchmark based on the most up-to-date data is two or more basis points away from the earlier published rate.
- Republication will be no later than midday on the same day, but the Bank would republish earlier if ready to do so.
- The Bank will only republish SONIA once for a given day.

Short-term contingency arrangements (Section 4)
The Bank will consider that the data submitted via its Sterling Money Market daily data collection is sufficient to produce SONIA unless:

- five or more reporters in the unsecured population have failed to submit a valid file; and
- the volume of SONIA-eligible transactions is <70% of the mean of the previous five business days.

If these data sufficiency conditions are not met, SONIA will be determined as:

The level of Bank Rate plus the mean of the spread of SONIA to Bank Rate over the previous five publication days, excluding the days with the highest and lowest spread to Bank Rate. For these purposes the relevant level of Bank Rate is that at the close of the SONIA transaction window.

Box 2
Update on the characteristics of reformed SONIA

This box outlines illustrative statistical characteristics of reformed SONIA, based on the statement of methodology outlined above.[1] It compares headline rates and daily volumes for reformed SONIA with current SONIA. The data presented have been compiled using SONIA-eligible input data reported to the Bank's Sterling Money Market data collection, up to and including 3 March 2017.

For a provisional set of 'early adopters', comprising roughly 75% of the full population, data are available from 1 February 2016; the vast majority of the reporting population has been contributing since 1 July 2016; and the full population have been reporting since 2 November 2016.[2]

Chart A shows reformed SONIA and the 10th, 25th, 75th and 90th percentile rates of the volume-weighted distribution; the set of interest rates the Bank will publish daily at 9:00am.

Chart A Reformed SONIA and percentile rates

Over the sample period, reformed SONIA is on average a little more than 1 basis point below current SONIA (**Chart B**). Average daily volumes for reformed SONIA since 1 July 2016 have been £39.4 billion, or around four times larger than those underlying current SONIA (**Chart C**).

Table 1 presents summary statistics comparing reformed SONIA with current SONIA.

Chart B Comparison of current and reformed SONIA

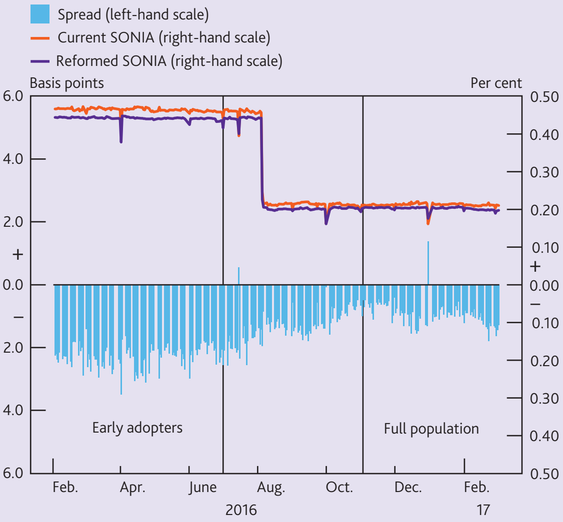

Chart C Daily volumes and number of trades in current and reformed SONIA

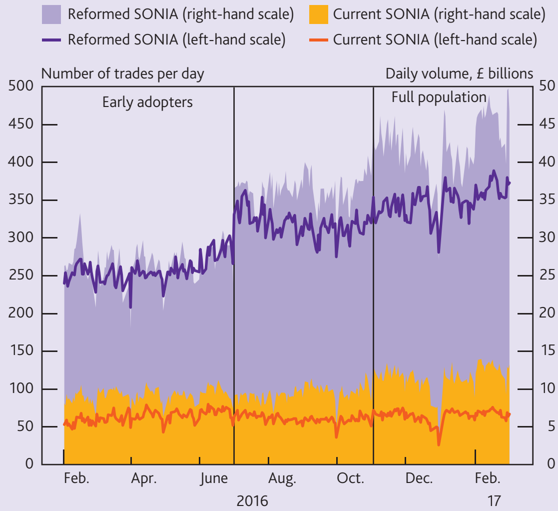

Table 1 Summary statistics on reformed SONIA, since 1 July 2016

	Reformed SONIA	Current SONIA
Average spread to SONIA (basis points)	-1.14	
Correlation of daily changes with daily changes in SONIA[(a)]	0.96	
Mean daily volumes (£ billions)	39.4	10.6
Mean number of trades	334	63

(a) Based on data since 4 July 2016.

(1) All data presented in this box are available on the Bank's website at www.bankofengland.co.uk/markets/Documents/soniareform0317.xlsx.
(2) The data presented in the February 2017 supplementary consultation were compiled using the same reporting population.

1 Introduction

In October 2016 the Bank consulted on its proposals for the reform of SONIA, a critical interest rate benchmark in sterling markets. In February 2017 a supplementary consultation set out an updated proposal regarding the averaging methodology for reformed SONIA.(1)

Responses to the October 2016 consultation were received from a total of 16 stakeholders; the February 2017 consultation received seven responses. Respondents included individuals, banks, market infrastructure providers and trade associations. The anonymised responses, along with a list of respondents, are published on the Bank's website.(2)

This document sets out the main issues raised by respondents, explains how the Bank has responded to this feedback, and sets out the resulting specification for reformed SONIA.

Section 2 covers the definition of SONIA, including the methodology, and the process for evolution of the methodology. Section 3 covers issues relating to the publication of SONIA. Section 4 describes the short-term contingency arrangements in case of disruption to the normal production of SONIA. Section 5 sets out arrangements for transition to reformed SONIA. Section 6 sets out next steps.

The annex provides a 'blackline version' of the definition of SONIA and the approach to evolution, showing changes between proposals in the October 2016 consultation and those which will be implemented in response to the feedback received.

(1) For the October 2016 consultation, see www.bankofengland.co.uk/markets/Documents/soniareformcp1016.pdf and for the February 2017 consultation, see www.bankofengland.co.uk/markets/Documents/soniareformcp0217.pdf.
(2) See www.bankofengland.co.uk/markets/Documents/soniaconsultationresponses0317.pdf.

2 Definition of SONIA and evolution of methodology

2.1 Structure of the definition

As explained in the October 2016 consultation document, the Bank's proposed definition of SONIA sought to respond to developments in regulatory best practice, in particular by being structured in such a way as to facilitate future evolution, should that become necessary, while minimising disruption to contracts which reference the rate. The Bank proposed to achieve this by formalising the existing high-level and detailed descriptions of SONIA provided by Wholesale Markets Brokers' Association Ltd (WMBA) into two distinct parts:

- a definition of the underlying interest of SONIA, intended to be an enduring statement of the economic concept that SONIA seeks to measure;
- a statement of the methodology of SONIA, which describes how the specified underlying interest is currently to be measured, outlining the relevant data inputs and the relevant method of calculation.

Feedback on the Bank's proposal was near-unanimously supportive of the two-part structure. Most agreed that the ability for the Bank to evolve the methodology for producing SONIA was an important strand in meeting the requirements of regulatory best practice for benchmarks. The Bank will therefore proceed with the two-part structure for the definition of SONIA.

Nevertheless the Bank acknowledges that, in its consultation, the description of the underlying interest as a 'definition' may have engendered confusion about its relationship to the overall definition of SONIA. For clarity we have therefore amended this and now refer to the *statement* of underlying interest and *statement* of methodology as the two components of the *definition* of SONIA.

The Bank's response to feedback on the specific wording of the definition reflects the complementary role of the two statements. Therefore while the statement of underlying interest is largely unchanged, the wording of the statement of methodology has been more extensively amended.

2.2 Statement of underlying interest

In defining the underlying interest of SONIA, the Bank noted that current uses of SONIA tended to be in circumstances where exposure to near-risk free interest rates was sought. In this context, the Bank interpreted that 'near risk-free' refers to interest rates where the influence of liquidity, credit and other risk premia were minimal.

As such, the Bank proposed that the underlying interest for SONIA be:

SONIA is a measure of the rate at which interest is paid on sterling overnight wholesale funds in circumstances where credit, liquidity and other risks are minimal.

The Bank received detailed feedback on this proposal — including from the Working Group on Sterling Risk-Free Rates at its 14 October 2016 meeting.(1) Respondents provided comments in two main areas.(2)

The first area of feedback was that the proposed underlying interest of SONIA might be too broad, potentially leading to uncertainty as to the potential scope of any future evolution. In particular, there was some concern that evolution to incorporate transactions in the secured money markets could be problematic, especially were this to be implemented during periods of market stress, where it is possible that rates in the secured and unsecured market might diverge.

The second area of feedback centred on the way the Bank proposed to capture the 'near risk-free' character of SONIA using the description: *'in circumstances where credit, liquidity and other risks are minimal'*. Some respondents commented that, without precisely defining these risks, including how and on what frequency they were to be measured, there was scope for different interpretations. For some this related to a concern that the integrity of SONIA might be called into question, for example at times of general market stress where credit, liquidity and other risks may have a tendency to rise across all transactions captured. Others were unclear as to whether the input data would be filtered to ensure they met this condition on a continuous basis, for example to exclude a subset of contributed data on a given day if one or more individual entities are subject to concerns regarding their creditworthiness.

(1) See www.bankofengland.co.uk/markets/Pages/benchmarks/rfr.aspx.
(2) In addition, some respondents questioned whether specifying 'interest paid' might prevent the inclusion of transactions with negative interest rates. The Bank is satisfied that, as the direction of interest payment is not specified, interest payments are sufficiently captured regardless of which party pays or receives the interest.

The Bank has given further careful consideration to these issues. It may be helpful to elaborate on the respective roles of the underlying interest and statement of methodology, which together comprise the definition of SONIA.

As noted in the Bank's consultation, the underlying interest is intended to be an enduring statement of the economic concept that SONIA seeks to measure. The proposed underlying interest reflects that the primary use of SONIA is as a proxy for risk-free rates. Risk-free rates are an economic construct — in practice they cannot be directly observed. A range of observed market prices could be used to provide proxy measures of risk-free rates, including overnight secured and unsecured deposit rates. These measures will have relative advantages and disadvantages as measures of risk-free rates.(1) The purpose of the underlying interest is not to discriminate between alternative measures by defining the precise input data for SONIA. Rather it is to provide assurance to users of SONIA that, should it be necessary to alter the methodology (for example in response to structural change in markets), the new methodology would be one that also acted as a proxy for risk-free rates. In order to act as a conceptual anchor for any future evolution of SONIA in this way, an essential feature of the underlying interest is that it is sufficiently broadly defined.

The role of the methodology is to precisely define the current input data and how it is used to measure the underlying interest. While a range of input data could in principle be used to measure the underlying interest, in practice the overriding concern in the present reform process has been to maintain continuity with existing SONIA, so far as possible. For that reason the methodology specifies that the input data for reformed SONIA will be unsecured deposits. Changes to the methodology would be made only in circumstances set out under 'review and evolution of methodology'. Such changes might be necessary, for example, in response to long-term structural change which undermines the ability of the existing methodology to provide a robust and credible benchmark. However the Bank expects such changes to be highly infrequent.

This discussion emphasises that both the underlying interest and methodology are essential, and complementary, components of the definition of SONIA. The methodology fully defines the input data for SONIA and how the index is to be calculated. The underlying interest comes into play only when reviewing the methodology to assess whether evolution is required, and guiding any resulting changes.

Returning to the first main area of concern expressed by respondents — the fact that the underlying interest is too broadly defined — the Bank believes that this is necessary to allow scope for benchmark evolution, if required. Specificity about the input data, including in relation to transaction size, is provided by the methodology. To define the underlying interest more narrowly, for example with explicit reference to 'unsecured' money markets, may provide greater assurance about the future methodology, but would limit the scope to evolve the rate in response to any material future changes in the underlying market, which could in turn necessitate a difficult and potentially disorderly transition to an alternative benchmark.

On the second main area of concern, relating to uncertainty about SONIA input data in circumstances where risks are not 'minimal', the Bank emphasises that the methodology, not the statement of underlying interest, determines the inputs to the daily calculation of SONIA. The role of the administrator is to choose a methodology which will reflect the underlying interest, but recognises that the closeness may vary on occasion, for example as risk premia fluctuate. But there will be no filter — or judgement from the Bank — to exclude specific transactions as a result of such day-to-day fluctuations in risk premia.(2) Instead any prolonged divergence between the methodology and underlying interest — for example due to structural change — would prompt the administrator to consider whether the methodology needs to evolve. Changes to the input data in response to changes in risk premia would therefore only take place via the evolution of the methodology in accordance with the process laid out in Section 2.4.

In view of these arguments, the Bank has not made any changes to the wording of the statement of underlying interest in response to these two areas of feedback.

Other feedback on the underlying interest related to the use of the terms 'wholesale' and 'overnight'. Some respondents noted that, without a precise definition, the term 'wholesale' was open to interpretation. In contrast, one respondent queried whether stating 'overnight' was adding unnecessary specificity which was better suited to the statement of methodology. The Bank judges that, for the purposes of the underlying interest, it is sufficient that a term is broadly understood. Therefore the Bank will retain the term 'wholesale' in the statement of underlying interest, as the precise definition used is provided in the Reporting Instructions for the SMM data collection, which is referred to in the statement of methodology. Consistent with this approach, the word 'overnight' has been substituted with 'short-term' on the grounds that the precise tenor of eligible

(1) Some respondents thought that the proposed underlying interest more naturally implied a secured overnight deposit rate, on the basis that secured rates virtually eliminate credit risk. In practice the credit risk in an overnight unsecured deposit is also likely to be minimal — although there may be more of a difference at times of financial stress. It is also worth noting that secured rates are affected not only by the supply and demand of cash, but also the supply and demand of collateral, which may not directly reflect developments in risk-free rates.

(2) It should be noted that specific transactions could be excluded if they are identified as being erroneous, through the Bank's regular plausibility checking process for SMM data.

transactions is more appropriately specified in the statement of methodology.[1]

The statement of underlying interest for SONIA will therefore be:

Statement of underlying interest

SONIA is a measure of the rate at which interest is paid on sterling short-term wholesale funds in circumstances where credit, liquidity and other risks are minimal.

2.3 Statement of methodology

Following the decision to broaden the range of inputs to SONIA to include bilaterally negotiated as well as brokered unsecured deposit transactions, the Bank set out its proposals for the detailed methodology for calculating SONIA. In doing so, the Bank sought to minimise any changes, in order to maintain continuity with current SONIA wherever possible, while achieving the aim of strengthening SONIA.

Measuring the average interest rate

In the February 2017 supplementary consultation, the Bank proposed a change to the averaging methodology used to calculate the SONIA benchmark to be a trimmed volume-weighted mean rate, based on the central 50% (by volume) of the volume-weighted distribution of rates.[2]

Almost all respondents to the consultation were supportive of this proposal, noting that, relative to the previously proposed volume-weighted median it is less sensitive to erroneous transactions and produces a rate which is more consistent with current SONIA. One respondent preferred the median for a range of reasons, including its simplicity.

Reformed SONIA will therefore be calculated using the proposed trimmed mean methodology.

Minimum transactions size for inclusion in SONIA

Many respondents recognised that it was desirable to maintain consistency with the current methodology unless there was a material benefit to the robustness of the benchmark. In this context, some argued that a lower transaction size threshold might improve the robustness of the benchmark by increasing underlying volumes.

In reviewing the minimum trade size, the Bank considered how best to strike a balance between maintaining consistency with current SONIA and making meaningful improvements to its robustness. A reduction in the transaction size threshold to £10 million, as suggested by some respondents, would result in additional average daily volume of £3.5 billion, with no material reduction in reporter concentration. A trimmed mean using the lower £10 million threshold would be, on average, a further 0.2 basis points below current SONIA.

In view of the limited increase in volumes and the divergence from the definition and properties of existing SONIA, the Bank has concluded that a reduction in the transaction size threshold is not warranted at this stage. As with other elements of the SONIA methodology, this will remain under review and may evolve over time.

Statement of methodology

Notwithstanding specific views on the proposals for the SONIA methodology, discussed above, respondents were generally supportive of the Bank's proposed wording of the statement of methodology for SONIA. However, some respondents made helpful suggestions for improvements to the wording and structure of the statement.

The statement of methodology for SONIA will therefore be:

Statement of methodology

On each London business day, SONIA is measured as the trimmed mean, rounded to four decimal places, of interest rates paid on eligible sterling denominated deposit transactions.

The trimmed mean is calculated as the volume-weighted mean rate, based on the central 50% of the volume-weighted distribution of rates.

Eligible transactions are:

- reported to the Bank's Sterling Money Market daily data collection, in accordance with the effective version of the 'Reporting Instructions for Form SMMD';
- unsecured and of one business day maturity;
- executed between 00:00 hours and 18:00 hours UK time and settled that same day; and
- greater than or equal to £25 million in value.

In view of the reference to the SMM data collection in the proposed statement of methodology, two respondents noted the importance of ensuring that, where changes to the SMM data collection affect the scope of transactions eligible

(1) While overnight rates are among the best available measures of risk-free rates, and this is captured in the statement of methodology, it is plausible that future changes in market structure could result in transactions migrating to other tenors.
(2) The Bank initially consulted on a proposal to calculate reformed SONIA using the volume-weighted median, but amended that proposal in the supplementary consultation published in February 2017.

for SONIA, such changes are made in a transparent and well-documented manner.

The Bank is aware of this interdependency and has addressed the issue within the Reporting Instructions for the SMM data collection, which outline the population of reporting institutions and the scope of transactions to be reported, and therefore affect the scope of SONIA eligible transactions.(1) In Section 5.4.3 of those Reporting Instructions, the Bank has outlined that it would provide at least twelve months' notice of a change in scope of reporting for SMM. Recognising the link to the SONIA methodology, the Bank has amended the Reporting Instructions to add a sentence at the end of that section:

Any changes that affect the SONIA methodology would be subject to a parallel review by the external SONIA Advisory Committee and to public consultation, in line with the process for other changes to the SONIA methodology.

2.4 Review and evolution of the methodology

Alongside the statement of underlying interest and the statement of methodology, the Bank proposed a process for the review and evolution of the methodology for reformed SONIA. The Bank expects the methodology for reformed SONIA to be robust to a range of market conditions, and expects the unsecured deposit market to continue to provide the basis for a robust and credible benchmark for the long term. However, future developments in the structure of the market from which input data are collected cannot be predicted with certainty. As such, it is important to recognise that the methodology may need to evolve in response to any such changes, so that the benchmark can continue to provide an adequate measure of the underlying interest.

Respondents emphasised the need for appropriate governance of any evolution of the methodology. In particular, some respondents felt that the initial proposal provided too great a degree of flexibility to the Bank in making any changes. Accordingly, those respondents requested that the Bank should provide further information and reassurance regarding the governance and consultation processes associated with any evolution. In addition, some feedback suggested that in considering any evolution, analysis of the potential market impact of the proposals should be included explicitly within the process.

The Bank acknowledges that end-users of SONIA should be consulted as part of any evolution of the benchmark — as they have been throughout this current reform process. We have therefore set out in the revised policy the role of the SONIA Advisory Committee (a committee comprising of external market participants, convened by the Bank to provide advice on SONIA-related matters) in the process for reviewing and, if necessary, evolving the methodology and noted the presumption for a public consultation on any evolution, other than in rare circumstances which mean that would not be possible or practicable.

In the consultation the Bank's discussion of benchmark evolution focused on the possibility that structural change might undermine the integrity of the existing methodology. However the Bank believes there is also merit in allowing scope for incremental refinements to the methodology aimed at maintaining or improving its efficacy, for example in response to changes in market practice. The possibility of such changes, which would be subject to the same process as any other change to the methodology, is now explicitly recognised in the final policy for the review and evolution of the methodology. This is set out below.

(1) See www.bankofengland.co.uk/statistics/Documents/reporters/defs/instructions_smm.pdf.

Review and evolution of the methodology

Periodic review of the methodology

The administrator will periodically review the current methodology with a view to ensuring that it continues adequately to measure the underlying interest.

In doing so the administrator will review conditions in the relevant market in order to assess whether that market has undergone or is undergoing structural change that may warrant changes to the benchmark methodology. In particular, the administrator will seek to determine whether the relevant market continues, and is expected to continue, to function sufficiently well and have sufficient volumes to form the basis for a robust and credible benchmark.

The administrator will also take account of representations from users of SONIA and the external SONIA Advisory Committee as to the possible need for changes in the methodology.

Changes to methodology

If the administrator determines, on the basis of its review, that changes to the benchmark methodology are warranted, it may make such changes as it reasonably considers necessary in order to address any issues identified.

Such changes may include, for example, refinements to the calculation methodology or scope of eligible transactions within the relevant market. They may also include the introduction of a methodology which has reference to other actively traded money market instruments, for example UK gilt collateralised repurchase agreements, or to the Bank of England official interest rates, so long as the administrator considers that they provide an appropriate measure of the underlying interest.

Before making any changes to the benchmark methodology the administrator will (i) follow its benchmark governance procedures, including review by the external SONIA Advisory Committee; and (ii) to the extent possible or practicable, conduct a public consultation to enable persons affected to provide feedback on the proposed change.

3 Publication issues

3.1 Daily publication of SONIA data

The majority of respondents were content with the Bank's proposed daily publication of information on the volume and distribution of transactions feeding into SONIA. However, some thought that no additional information beyond the headline rate should be provided, in order to avoid informing prospective manipulators of the benchmark. By contrast, others requested additional detail, for example by maintaining the current publication of aggregate volumes transacted at each individual rate; or minimum and maximum daily rates.

This feedback clearly highlighted the trade-off between transparency of the data inputs to the benchmark calculation and the concern that a full data set could inform prospective manipulators of the benchmark.

SONIA, calculated using the trimmed mean methodology, will generally not be sensitive to manipulative transactions of plausible size. The Bank is satisfied that its original proposal provides useful information to benchmark users on the distribution of the input data without disclosing sufficient information to be used maliciously. Minimum and maximum daily rates will not be published, due to the potential disclosure of individual institutions' contributed data.

Therefore, the statistics published alongside reformed SONIA will be those proposed in the October 2016 consultation. An example of the planned daily publication is shown in **Table D**.

Table D Example publication for SONIA[(a)]

Date	30 March 2017
SONIA	0.2500%
Aggregate volumes	£35,000 million
10th percentile	0.2000%
25th percentile	0.2400%
75th percentile	0.2600%
90th percentile	0.3000%

(a) All data contained are illustrative.

The Bank is still considering whether to publish other summary statistics for SONIA on a less frequent basis; for example, skewness measures, number of transactions, and information on reporting errors which have not resulted in a republication of SONIA.

Moreover, the SMM data collection captures all activity in the sterling secured and unsecured money markets, from overnight to one-year maturity. The Bank anticipates publishing regular summary statistics compiled from the broader SMM data and requested views from respondents on which market segments would be of most interest. Respondents' views will be taken into account in the design of the published statistics, which will be outlined in a *Bankstats* article in due course.

3.2 Republication of SONIA

The Bank proposed a procedure for the republication of SONIA in the event that data errors are discovered which resulted in a two or more basis point impact on SONIA. Almost all respondents to the consultation were in agreement that this threshold appropriately balanced the trade-off between accuracy and timeliness of SONIA.

In addition all respondents agreed that a deadline for republication would be helpful, but many felt that such a deadline should be relatively early in the day, for example midday, as republications towards the end of the working day would increase risk of settlement issues on contracts referencing SONIA (further exacerbated for those operating in time zones ahead of London). Given this feedback, the Bank has decided that the deadline for any republication of SONIA will be 12:00.

There was a split of views on timeliness of republication: some preferred the clarity of a point in time republication; while others preferred to have the republished rate at the earliest opportunity, echoing their arguments for a deadline early in the day. Consistent with choosing a publication deadline early in the day, the Bank recognises that it is helpful for users to see the republished rate sooner rather than later and therefore republications to SONIA will occur at the earliest opportunity. Reflecting users' preference for certainty, SONIA will be republished at most once per day.

SONIA republication policy

- SONIA will be republished on a given day if the calculation of the benchmark based on the most up-to-date data is two or more basis points away from the earlier published rate.
- Republication will be no later than midday on the same day, but the Bank would republish earlier if ready to do so.
- The Bank will only republish SONIA once for a given day.

3.3 Licenses for the use of SONIA

There was broad agreement with the approach set out by the Bank. We are considering this further, including through discussions with potential licensees. The Bank anticipates that licenses for use of SONIA will be in place well ahead of the transition to reformed SONIA.

If any firm wishes to obtain a license or discuss the issue in greater detail, please contact:
benchmarkadministration@bankofengland.co.uk.

4 Short-term contingency arrangements

In line with best practice, the Bank is implementing robust and resilient systems and processes for the calculation of SONIA, with appropriate contingency procedures in place. Nevertheless, as an ultimate backstop in the event of disruption to the normal production of SONIA, the Bank proposed to publish a policy setting out a contingency methodology based on historical published SONIA data.

4.1 Data sufficiency

The Bank has considered the conditions under which the data received on a given day may be insufficient to produce a SONIA rate that is representative of market activity that day. It is important that these conditions should be objective in order to minimise the role of judgment on the part of the Bank in producing SONIA.

Our approach has been to define data sufficiency thresholds beyond which missing data could plausibly have a material impact on SONIA. These thresholds have been calibrated by assessing the impact on hypothetical reformed SONIA of removing combinations of reporting banks, or reported transactions, based on SMM data reported to date.

As a result of this analysis, the contingency methodology will be invoked if: five or more reporters have failed to submit a valid file, and the volume of SONIA-eligible transactions is less than 70% of the mean of the previous five business days. It is expected that, based on these thresholds, the contingency methodology should only be triggered in exceptional circumstances.

Example scenarios for how this policy would be implemented are outlined in **Table A**. The Bank will continue to keep this data sufficiency policy under review.

Table A Example scenarios for ascertaining data sufficiency

	Per cent of past five days' mean volume	
Number of institutions failed to report	70% or more	Less than 70%
Less than five	Sufficient	Sufficient
Five or more	Sufficient	Insufficient

4.2 Contingency methodology

Almost all respondents were supportive of the Bank's proposed approach of basing the contingency methodology on Bank Rate with the addition of an average spread to SONIA calculated over some recent period. A small number of respondents suggested the methodology should include parameters to account for seasonal patterns in the recent data (for example, dips in the rate at quarter-end dates) or to place higher weight on more recent transactions.

The Bank has considered this feedback and analysed the performance of a variety of contingency methodologies. The Bank's analysis has shown that using recent data is the most reliable predictor of future SONIA: for example a hypothetical contingency rate calculated using the SONIA spread to Bank Rate over the last five published days is a better proxy for actual SONIA than a contingency rate based on the spread over longer periods.

Moreover, consistent with feedback, the Bank considers it important that the methodology minimises the impact of seasonal or other idiosyncratic changes in the spread to Bank Rate, by excluding outliers. As such, the Bank will take the mean of the past five days' spread to Bank Rate, but exclude the days with the highest and lowest spreads. An example calculation is shown in **Table B**.

Table B Example calculation of the contingency rate

Day	SONIA	Bank Rate	Spread to Bank Rate	Rank	To be averaged for contingency rate?
T–5	0.1950	0.25	-0.0550	4	Yes
T–4	0.1890	0.25	-0.0610	5	No
T–3	0.2230	0.25	-0.0270	1	No
T–2	0.2120	0.25	-0.0380	2	Yes
T–1	0.2010	0.25	-0.0490	3	Yes
T: contingency rate	**0.2027**	0.25			

In the event that the contingency methodology is used, this will be clearly indicated to licensees in the data file provided.

A rate calculated via the contingency methodology will be subject to the same republication policy as a rate published under normal production procedures, as detailed in Section 3.2. For example, in a scenario where data is initially considered insufficient causing SONIA to be published using the contingency rate, but subsequently sufficient data inputs are available before midday, the Bank will recalculate the rate. If this results in a rate two or more basis points away from that originally published, the Bank will republish SONIA.

This methodology is only intended to be used for relatively short-term contingency events. If such an event was expected to be prolonged, the Bank would consider the appropriate response at the time, including with reference to the SONIA Advisory Committee. In the event that the event was unlikely to be resolved, this would likely prompt a process for evolution of the benchmark.

The short-term contingency arrangements for SONIA are summarised below.

Short-term contingency methodology

The Bank will consider that the data submitted via its Sterling Money Market daily data collection is sufficient to produce SONIA unless:

- five or more reporters in the unsecured population have failed to submit a valid file; and
- the volume of SONIA-eligible transactions is <70% of the mean of the previous five business days.

If these data sufficiency conditions are not met, SONIA will be determined as:

The level of Bank Rate plus the mean of the spread of SONIA to Bank Rate over the previous five publication days, excluding the days with the highest and lowest spread to Bank Rate. For these purposes the relevant level of Bank Rate is that at the close of the SONIA transaction window.

5 The transition to reformed SONIA

5.1 Mechanics of the transition

The Bank proposed that the switchover from current to reformed SONIA be implemented as a 'point-in-time' change on a pre-specified date. **Table C** summarises this approach.

Table C Proposed mechanics of the transition to reformed SONIA

Day before switch ($T_S - 1$)	Day of switch (T_S)	Day after switch ($T_S + 1$)
SONIA produced and published for day $T_S - 1$ by the WMBA using current inputs and methodology.	Data collected by the Bank for calculation of reformed SONIA. No SONIA rate is published.	Reformed SONIA is published for day T_S by the Bank.

In the feedback received, almost all respondents to the consultation agreed that the proposed point-in-time switchover to reformed SONIA was the preferred approach.

Therefore, the Bank confirms it will implement the transition as previously proposed.

5.2 Timetable for transition

The Bank set out its revised timetable for the transition to reformed SONIA in the 2017 supplementary consultation. The Bank continues to anticipate that the transition to reformed SONIA will occur in March or April 2018. The change in timing from that set out in the October 2016 consultation was in part in response to feedback received to that consultation.

The revised implementation timetable therefore allows around twelve months between the confirmation of the design of reformed SONIA — contained in this document — and its implementation. During this time around 80% of currently outstanding SONIA referencing transactions will mature.

The Bank had previously proposed that the notice period for the transition to reformed SONIA would be at least nine months, that it would confirm the month of transition with around nine months' notice and publish the precise date for the transition with at least six months' notice. Additionally, the Bank sought views on the period or particular days that could be targeted or avoided in choosing the day of transition.

Feedback on these proposals was mixed. Around two thirds of respondents were supportive of the nine month notice period. However, some respondents argued that a slightly longer notice period for transition would help to ensure that any operational and systems changes or changes to market practice can be implemented, tested and embedded sufficiently, ahead of the change.

Similarly, most respondents were happy with the proposal to provide a precise date for the transition with a six month notice period, acknowledging the trade-off between choosing a precise date too soon, at the risk of that date needing to change.

Helpful feedback was also provided on the types of days to avoid when selecting the precise date of transition. Many suggested that the Bank seek to avoid:

- dates at the end of the month or quarter;
- MPC decision announcement dates;
- dates around UK and other bank holidays; and
- end-of-year periods, when many firms implement IT change freezes.

A number of respondents suggested that the date for transition be selected as a Monday, which would allow for any systems changes to be made over a weekend.

Consistent with its previous proposal, the Bank will announce the precise date for transition at least six months in advance.

5.3 An update on readiness for the transition

The Bank will be publishing SONIA at 09:00 on the London business day following that to which the rate pertains.

The Bank sought feedback on operational issues which may arise from the change in publication time. Respondents reiterated a number of potential operational changes related to IT systems, including price and data feeds for collateral remuneration and end-of-day profit and loss measures. Respondents also noted the potential impact of later publication time on the timely settlement of sterling overnight index swap (OIS) transactions, under current market practice.

The Bank acknowledges that a smooth transition will be required. To that end, the Bank is continuing to work closely with the key users of SONIA to ensure the transition proceeds smoothly, including:

- ISDA — through its Rates Market Infrastructure Group — is continuing to co-ordinate a consensus across market participants as to whether settlement of sterling OIS should continue as currently settled or be deferred by one day. Once consensus has been reached this will be communicated via a guidance note published on the ISDA website subject to agreement from ISDA member firms.

- LCH continues to consult with market participants regarding the approach to be taken for the calculation of interest on margin balances; ie Price Alignment Interest (PAI). They remain confident of their ability to have solutions in place which conform to the planned timetable.

- Following helpful feedback provided on the types of financial contract which may need to be amended in light of the Bank's reforms to SONIA, the Bank will approach producers of that documentation in order that any necessary changes can be made.

The Bank will continue to consider what additional steps are appropriate to further support a smooth transition.

6 Next steps

The Bank anticipates that the transition to reformed SONIA will occur in March or April 2018; the precise date for transition will be announced at least six months in advance.

Ahead of transition to reformed SONIA the Bank will publish further relevant information for users and publish a further update on the characteristics of reformed SONIA.

Information on the Bank's governance arrangements as administrator of SONIA will also be made available. In doing so, the Bank will present its assessment of its compliance with the IOSCO Principles for Financial Benchmarks,[1] explaining where this is not appropriate given the Bank's position as the United Kingdom's central bank.

(1) See www.iosco.org/library/pubdocs/pdf/IOSCOPD415.pdf.

Annex Changes to SONIA definition and process for evolution of the methodology

Original text is taken from Box 2 of the October 2016 consultation. Changes shown are those made in response to feedback received. The 'clean' text is in Box 1 on page 7.

~~Proposed d~~Definition of SONIA

The definition of SONIA has two elements:

(i) Statement ~~Definition~~ of underlying interest

SONIA is a measure of the rate at which interest is paid on sterling short-term ~~overnight~~ wholesale funds in circumstances where credit, liquidity and other risks are minimal.

(ii) Statement of methodology

On each London business day, SONIA is measured as the trimmed mean, rounded to four decimal places, ~~volume-weighted median~~ of interest rates paid on eligible sterling denominated ~~unsecured wholesale one business day maturity~~ deposit transactions.

The trimmed mean is calculated as the volume-weighted mean rate, based on the central 50% of the volume-weighted distribution of rates.

Eligible transactions are:

- ~~in sterling, settled same day, as~~ reported to the Bank's Sterling Money Market daily data collection, in accordance with the effective version of the 'Reporting Instructions for Form SMMD';
- unsecured and of one business day maturity;
- executed between 00:00 hours and 18:00 hours UK time, and settled that same day; and
- greater than or equal to ~~with a minimum transaction size of~~ £25 million in value.

~~It should be understood that this statement of methodology may change in accordance with the 'Process for evolution of methodology' below.~~

Review and ~~Process for~~ evolution of the methodology

Periodic review of the methodology

The administrator will periodically review the current methodology with a view to ensuring that it continues adequately to measure the underlying interest. In doing so the administrator will review conditions in the relevant market in order to assess whether that market has undergone or is undergoing structural change that may warrant changes to the benchmark methodology. In particular ~~doing so~~, the administrator will seek to determine ~~whether the current methodology continues to adequately measure the underlying interest, and~~ whether the relevant market continues, and is expected to continue, to function sufficiently well and have sufficient volumes to form the basis for a robust and credible benchmark. ~~The administrator may take account of representations from users of SONIA as to the possible need for changes in the methodology.~~

The administrator will also take account of representations from users of SONIA and the external SONIA Advisory Committee as to the possible need for changes in the methodology.

Changes to methodology

If the administrator determines, on the basis of its review, that changes to the benchmark methodology are warranted, it may make such changes as it reasonably considers necessary in order to address any issues ~~that it has~~ identified.

~~If the administrator reasonably considers it necessary, s~~Such changes may include, for example, refinements to the calculation methodology or scope of eligible transactions within the relevant market. They may also include the introduction of ~~introducing~~ a methodology which has reference to other actively-traded money market instruments, for example UK gilt collateralised repurchase agreements, or to the Bank of England official interest rates ~~Bank Rate~~, so long as the administrator considers that they provide an appropriate measure of the underlying interest.

Before making any changes to the benchmark methodology the administrator will (i) follow its benchmark governance procedures, including review by the external SONIA Advisory Committee; and (ii) to ~~To~~ the extent possible or practicable, conduct a public consultation to enable ~~before making any material change the administrator will consult with~~ persons affected to provide feedback on the proposed ~~by the~~ change.