SONIA as the RFR and approaches to adoption

The Working Group on Sterling Risk-Free Reference Rates

June 2017

Executive Summary

The Working Group on Sterling Risk-Free Reference Rates ('the Group') was set up by the Bank of England to recommend a near risk-free reference rate (RFR) and promote its adoption as an alternative to sterling Libor.

In April 2017, the Group recommended SONIA – the unsecured overnight rate, which is undergoing a process of reform by the Bank of England – as its preferred RFR.

The Group recognises that widespread agreement on the direction the market should take is necessary for successful adoption. This paper therefore begins by explaining why the Group recommended SONIA as the sterling RFR.

The Group preferred reformed SONIA to the two available secured overnight rate candidate RFRs – the sterling Repo Index Rate or sterling SONET – since their collective assessment was that it best met the selection criteria (see **Section 2** for details).

First, while both secured and unsecured candidate RFRs currently have generally high daily transaction volumes, reformed SONIA will additionally have the ability to evolve if the unsecured money market experiences decline as a result of material structural change, which should reassure users that the rate will be remain viable over the long-term.

Second, the market for wholesale unsecured deposits is conceptually straightforward and movements in the rate are likely to be stable and highly correlated with Bank Rate. In contrast, movements in secured RFRs may occasionally be less readily explainable, for example where they are driven by technical factors such as the availability of collateral.

Third, SONIA is currently used as the reference rate for sterling Overnight Indexed Swaps (OIS), which in turn provides the standard sterling risk-free discount curve. As such, the choice of SONIA avoids the difficulty of needing to establish a secured RFR as the primary overnight reference rate – and in turn enables faster progress towards adoption.

Following the recommendation of SONIA as the RFR, the Group's focus shifts to the broader adoption of SONIA in sterling markets (see **Section 3** for details). This paper also sets out the Group's early thinking on adoption and invites engagement from current and potential users of SONIA. Specific feedback is sought on:

- The development and promotion of interest rate derivative products which reference the RFR, including the design of a futures contract;
- The appropriate scope of adoption of the RFR across broader financial markets beyond derivatives – such as loan or bond markets – including whether a term RFR might be necessary; and
- The potential scope for voluntary conversion of legacy portfolios which currently reference Libor to reference the RFR.

More generally, the Group invites expressions of interest in participating in the further development of adoption plans (see **Section 4** for details).

1. Introduction

The Working Group on Sterling Risk-Free Reference Rates

1. In 2013 the G20 commissioned the Financial Stability Board (FSB) to review systemically important interest rate benchmarks. This was in response to well-documented cases of manipulation and false reporting, together with the decline in the liquidity of interbank unsecured funding markets.

2. The resulting FSB report, published in July 2014,[1] concluded that, particularly for derivatives transactions, nearly risk free reference rates (RFRs) are in many cases more suitable than reference rates that include a term bank credit risk component, such as Libor. It therefore recommended the development and use of RFRs – alongside the reform of existing 'IBOR' benchmarks, including Libor.

3. The Working Group on Sterling Risk-Free Reference Rates ('the Group') was established by the Bank of England in March 2015 to implement this recommendation. Its objective is to identify a preferred RFR for sterling markets and promote its use as a robust alternative to Libor, particularly in sterling interest rate derivatives.

4. The Group is market-led and its voting members are major dealers participating in sterling derivatives markets.[2] That reflects the central role dealers play in the market, and the role they will be expected to play in supporting wider adoption of the RFR. To ensure full transparency, minutes of the Group's meetings have been published. **Box 1** provides further details on the Group.

5. In April 2017 the Group announced reformed SONIA as its recommended RFR – marking the end of the first phase of its work. That decision resulted from two years of diligent work by member firms, and was informed by input from a wide range of stakeholders in sterling derivatives markets, including pension funds, hedge funds, corporates, infrastructure providers and banks. Part of that work was to help shape the development of candidate RFRs – in fact this was a key driver of the timing of the Group's decision.

6. The Group's decision does not create binding obligations for any market participants. Instead it is intended to act as a signal of market support for a particular benchmark (SONIA), and a platform to promote its broader adoption as an alternative to sterling Libor. It is therefore important that the Group's decision – which is naturally representative of the views of a core set of derivatives users – benefits from the support of the wider community of users of sterling interest rate benchmarks.

7. **Section 2** of this paper explains why the Group recommended SONIA as the sterling RFR, with the aim of building support for, and inviting feedback on, this recommendation.

8. **Section 3** outlines the Group's initial thinking on how to promote adoption of SONIA as an alternative to sterling Libor. Specifically, it outlines first thoughts on the development

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[1] The FSB Report is available here: www.fsb.org/2014/07/r_140722/

[2] It should be noted that – as a private sector group – the views and outputs of the Working Group are not necessarily endorsed by the Bank of England or the Financial Conduct Authority.

of interest rate products referencing SONIA; it seeks feedback on what the appropriate scope of RFR adoption across financial markets might be, including the potential need for a term RFR; and briefly requests views on the desirability of amending existing Libor contracts to reference SONIA.

9. **Section 4** outlines next steps.

Box 1 – The Working Group on Sterling Risk-Free Reference Rates

The Working Group is a private sector group comprised of senior representatives from major sterling swap dealers. The International Swaps and Derivatives Association (ISDA) and LCH also participate in a non-voting capacity. ISDA provides guidance on issues related to robust contract design and reference rate transition, and LCH represents the views of the central counterparty (CCP) sector for relevant sterling markets.

Representatives from the Bank of England and the Financial Conduct Authority (FCA) participate as ex-officio members. The Group is chaired by François Jourdain, Chief Compliance Officer (and former head of Treasury Funding and Investments) at Barclays International.

The key deliverables of the Group are to:

- Identify and promote the development of robust alternative sterling RFRs;
- Evaluate candidate RFRs and recommend one for adoption in sterling markets;
- Develop a plan to promote broad-based adoption of the recommended RFR, with particular focus on the sterling interest rate swap market;
- Agree metrics of success and a timeline for implementation; and
- Recommend robust contractual fallback procedures in the event of benchmark unavailability.

Individual members of the Group are expected to represent the aggregate view of their respective firms and draw on their firm's resources where appropriate.

For voting and decision making, each member firm has one vote. Decisions and recommendations should be reached by consensus, if possible, or otherwise by a two-thirds super majority. Neither the Bank of England, the FCA, ISDA nor LCH are eligible to vote.

The Group's website contains full details of the Terms of Reference, membership, meeting agendas, minutes and other materials.[3]

The Group published an Interim Report in June 2016.[4]

[3] The Group's website is available here: www.bankofengland.co.uk/markets/Pages/benchmarks/rfr.aspx
[4] www.bankofengland.co.uk/markets/Documents/sterlingoperations/rfr/2016/rfrwgintrep16.pdf

2. The choice of SONIA as the preferred RFR

Determining the candidate RFRs

10. In April 2015, the Group agreed initial criteria for the selection of the sterling RFR.[5] The selection criteria set out key properties for a successful sterling RFR. These include: the availability of sufficient and reliable underlying market data; robustness to changes in market structure; appropriate controls and governance; and the extent to which the RFR reflects actual market funding rates. The selection criteria also outlined the importance of actual and potential end-user demand for RFR-linked derivatives. Other considerations included the ease of market adoption and the consistency with RFRs being developed in other international markets.

11. Based on these selection criteria, the Group identified candidate RFRs which fell into four broad categories: unsecured rates; secured rates; official Bank Rate; and other alternatives. These four initial options were assessed against the Group's selection criteria – more information is available in the Group's Interim Report.[6]

12. Following this assessment, the Group decided to focus on two categories in choosing its preferred RFR: unsecured overnight rates, and secured overnight rates. The focus on overnight rates reflects the fact that money market transactions are heavily concentrated in the overnight tenor, and because these rates include minimal credit or liquidity risk.

13. As outlined in its Interim Report, the Group wanted to identify potential RFRs based on activity in the overnight secured and unsecured money markets. It considered SONIA – once reformed by the Bank of England – to be a viable candidate unsecured RFR. However in the Group's view there was not a candidate secured RFR that performed well against the initial selection criteria. Therefore, the Group published a set of design criteria in December 2015 to encourage the production of new secured RFRs:[7] this helped to catalyse the development of two new secured indices.

14. In late 2016, the Group identified three candidate RFRs that were currently, or soon-to-be, available:

(i) **SONIA** – an overnight unsecured rate produced by the Bank of England, which is currently undergoing a process of reform.

(ii) **Sterling Repo Index Rate (RIR) –** an overnight rate based on repurchase agreements collateralised by UK gilts ('gilt repo') conducted across the Brokertec platform, produced by NEX Data.

(iii) **Sterling SONET** – an overnight rate based on all gilt repo transactions cleared through LCH and all delivery-by-value gilt repo transactions settled through Euroclear's CREST system, produced by FTSE-Russell.

[5] The Selection Criteria are available in detail here: www.bankofengland.co.uk/markets/Documents/sterlingoperations/rfr/rfrselection.pdf
[6] The Interim Report is available here: www.bankofengland.co.uk/markets/Documents/sterlingoperations/rfr/2016/rfrwgintrep16.pdf
[7] For more information, see www.bankofengland.co.uk/markets/Documents/sterlingoperations/rfr/sterlingsecure.pdf

Chart 1 and **Chart 2** show the rates and the underlying volumes for the three candidate RFRs. Further details on each of these candidate rates are available in the **Annex**.

Chart 1 – Comparison of candidate RFR interest rates, since February 2016

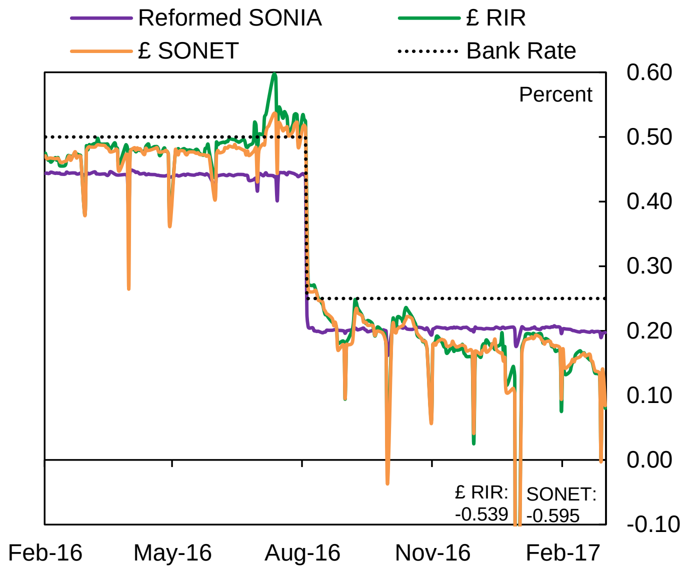
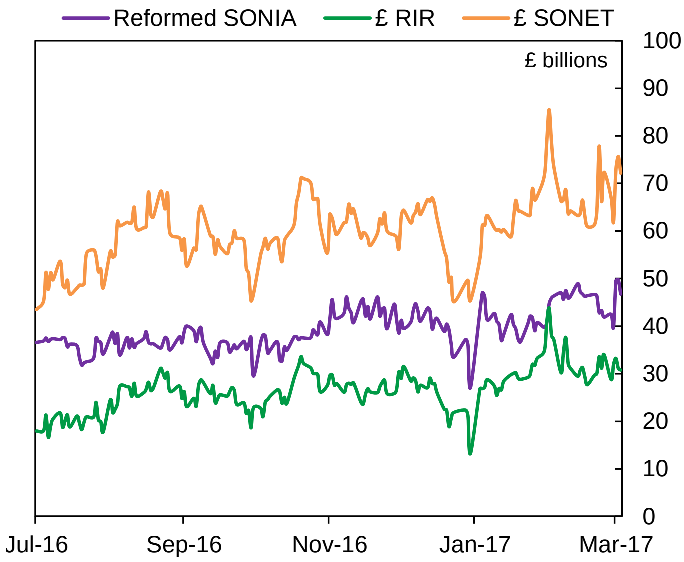


Chart 2 – Comparison of underlying volumes for the candidate RFRs, since July 2016



<u>Outreach to market participants</u>

15. In mid-2015 the Group conducted an initial round of end-user outreach to: understand the broad requirements of stakeholders; identify potential constraints over RFR selection; and validate the Group's proposed selection criteria.[8]

16. In this initial round of outreach, end-users surveyed did not express clear and consistent preferences between the two candidate types of RFR under consideration. Most indicated that, in their use of interest rate swaps, there was no need for the reference rate to reflect credit or term risk premia, and that alignment of the reference rate with the contractual discount curve used for swap valuation would be a desirable outcome.

17. In late 2016, a further round of outreach was conducted in order to seek views on the available candidate RFRs. This outreach focused on those stakeholders who in the first round of discussions had held firmer views on the choice of RFR, specifically pension funds, insurance companies and bank treasuries.

18. Overall, the feedback was largely consistent with the 2015 end-user outreach. Liquidity of swap markets referencing the RFR, and the absolute level of the RFR swap curve (used for discounting liabilities) were generally considered at least as relevant as the choice between secured and unsecured rates.

19. There was also some discussion on the relative importance of gilt repo in stakeholders' investment and hedging strategies – and relatedly, whether it was desirable for movements in the RFR to reflect market pressures on regulatory reporting dates, such as year-end – although these considerations were generally concluded to be lower priority than proximity to Bank of England's official policy rate ('Bank Rate') and liquidity of

[8] Targeted stakeholders included: clearing houses and market infrastructures; real money investors and hedge funds; pension funds and insurance companies; building societies, bank treasuries and swap dealers; large corporates; and sovereigns, supranationals and agencies.

instruments referencing the RFR. Additionally, feedback from pension and insurance companies indicated that alignment of the RFR with the 'Solvency II' risk-free interest rate curve mandated by the European Insurance and Occupational Pensions Authority (EIOPA) would help catalyse market adoption of the RFR.[9]

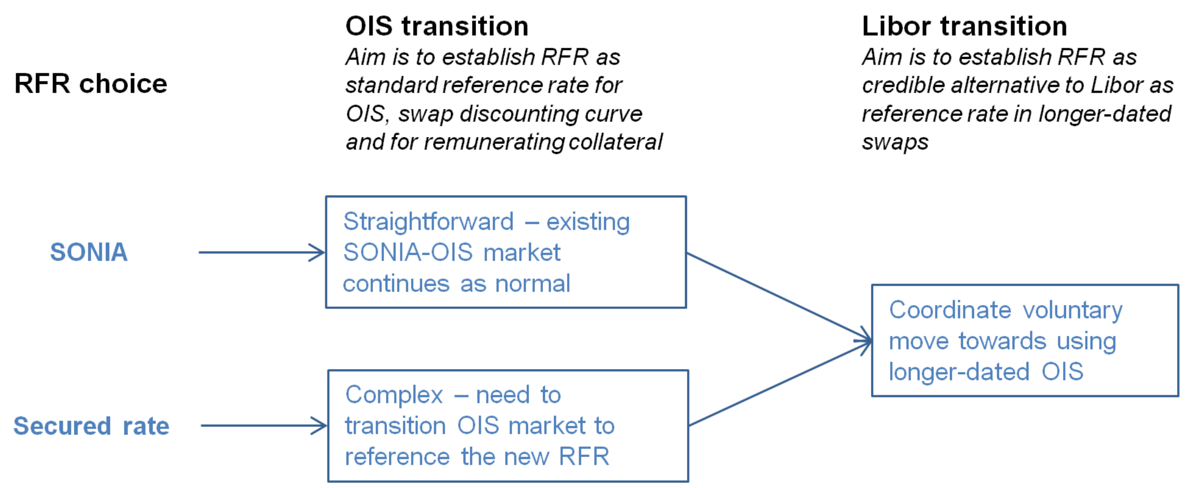
Transition considerations in RFR choice

20. The Group reasoned in its Interim Report that an RFR could only be a credible Libor alternative if it were first established as the primary sterling overnight rate. Specifically, the RFR should be used as the reference rate for the sterling OIS market, which provides the standard discount curve used to value swap positions; and as the standard rate used to remunerate cash collateral balances.

21. That would have the effect of aligning the discount curve and swap reference rate for sterling RFR swaps, eliminating an unwelcome source of basis risk that currently exists for Libor swaps discounted by SONIA OIS. This tailwind was thought likely to be a crucial spur to adoption.

22. RFR adoption therefore has two phases, as shown in **Box 2**. In the first phase the RFR is established as the standard overnight reference rate in the sterling OIS market. The second stage is to encourage trading in OIS across the entire yield curve so that RFR-referenced swaps are available as a liquid alternative to Libor.

Box 2: The two stages of RFR adoption:



23. Since the Group has now recommended SONIA as the preferred RFR, the first stage is straightforward as SONIA is already the established reference rate for sterling OIS. The Bank of England's reform process will involve a seamless transition from SONIA to reformed SONIA.[10] For more information on the Bank's reforms to SONIA, see **Box 3**.

24. In contrast, the choice of a secured RFR would have required the transition of existing SONIA-referenced OIS onto the new RFR – an altogether more complex proposition. Further details on the approach the Group proposed to take to OIS transition

[9] For more information, see: eiopa.europa.eu/Pages/News/EIOPA-Publishes-Monthly-Technical-Information-for-Solvency-II-Relevant-Risk-Free-Interest-Rate-Term-Structures-End-Decemb.aspx
[10] For more information, see Section 5 of 'The reform of SONIA: Consultation feedback and the design of SONIA', available at www.bankofengland.co.uk/markets/Documents/soniareformresponse0317.pdf

for a secured rate – were it to have been necessary – are available on the Group's website.[11]

Box 3 – The reform of SONIA

In July 2015 the Bank announced its plans to reform SONIA.[12] Since then, the Bank has consulted on the benchmark design, using feedback received to inform the final design which was presented in March 2017.[13] Overall, the reform process will result in:

- the Bank being the administrator, including responsibility for the calculation and publication of SONIA;
- the coverage of SONIA being broadened to include overnight unsecured transactions negotiated bilaterally as well as those arranged via brokers, using the Bank's Sterling Money Market Data Collection as the data source;
- the averaging methodology for calculating SONIA changing to a volume-weighted trimmed mean;
- a definition of SONIA which facilitates the evolution of the rate, were that to be necessary, including a detailed process for any evolution; and
- reflecting the change in data source and the need to process the greater volume of transactions captured, the publication of SONIA moving to 09:00 on the business day following that to which the rate pertains.

Reformed SONIA is on average a little more than 1 basis point below current SONIA (**Chart 3**). 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 4**).

These reforms are anticipated to be fully implemented by April 2018. The precise date for transition will be announced at least six months in advance. Ahead of transition, the Bank will publish further relevant information for users, such as governance, and an update on the characteristics of reformed SONIA.

Chart 3: Comparison of current and reformed SONIA

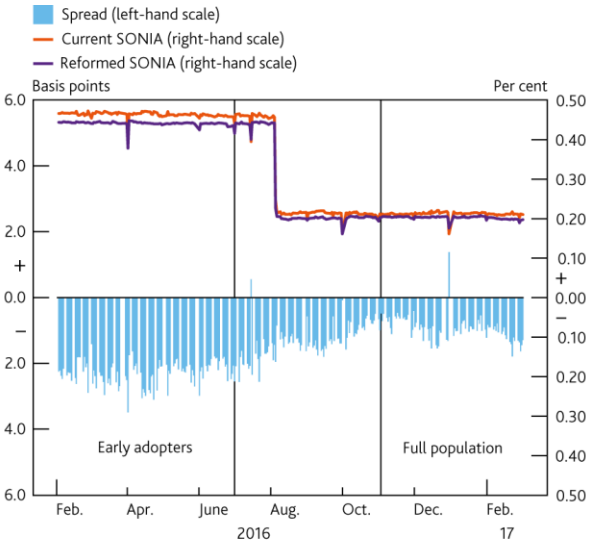
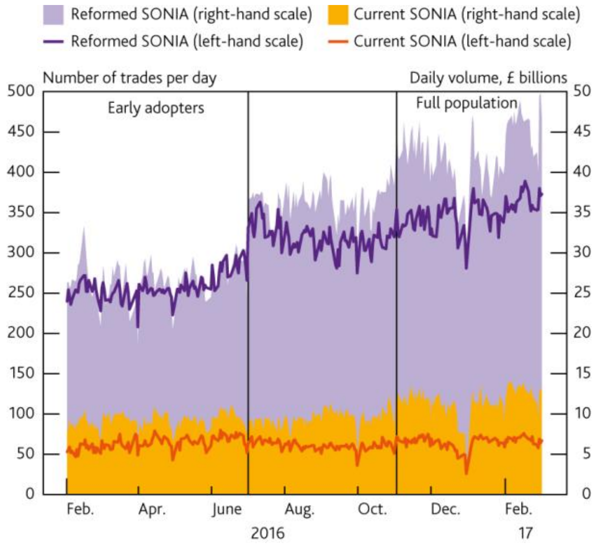


Chart 4: Daily Volumes and number of trades in current and reformed SONIA



[11] www.bankofengland.co.uk/markets/Documents/sterlingoperations/rfr/oistransition.pdf
[12] www.bankofengland.co.uk/publications/Pages/news/2015/062.aspx
[13] www.bankofengland.co.uk/markets/Documents/soniareformresponse0317.pdf

Assessment of candidate RFRs against the Selection Criteria

25. At its meeting on 7 April 2017, the Working Group assessed the available candidate RFRs against the agreed selection criteria.

26. This collective assessment was intended to provide, so far as possible, a common basis to inform individual member firms' preferences over the candidate RFRs – although individual members' views inevitably differed in places. These preferences, and hence the votes of Group members, also depended on their individual view of the relative importance of the various selection criteria.

27. **Box 4** summarises the Group's assessment, showing for the candidate RFRs whether each criterion was: successfully met; partially met; not met; or where an assessment was infeasible at the time. The text below provides more detail for some key selection criteria:

(i) Sufficient and reliable market data: the daily volumes underpinning reformed SONIA are robust, having been around four times that for current SONIA – averaging £39.4 billion in the period 1 July 2016 to 3 March 2017. Daily volumes for the candidate secured RFRs are also generally high, demonstrating robustness of the underlying market and hence the benchmarks. £ SONET comprises transactions conducted on other electronic repo trading platforms in addition to Brokertec, as well as uncleared DBV transactions settled through CREST, and hence volumes are higher than £ RIR volumes (average £58.8 billion vs. £26.7 billion over the same period, respectively).

(ii) Robustness to changes in market structure: a number of Group members believe that secured overnight lending is likely to be more robust in the long term than unsecured overnight lending, which has been a declining source of funding for banks. The Group noted that, through its revised definition of SONIA, the Bank has outlined a detailed process for evolution, which would provide reassurance to users that the rate would remain robust even in the event that the unsecured market experienced material decline as a result of structural change.

(iii) Appropriate governance and commercial sustainability: the Group considers the administrators of all three candidates to have effective governance procedures. The Bank of England is viewed as having strong controls over processes relevant to SONIA, as the data are collected via statute. The Bank is considered less likely to be affected by conflicts of interest that might arise for commercial administrators.

(iv) Sensitivity to market conditions and policy rates: Some members argue that the gilt repo market has a broader and more diverse set of participants than the unsecured market, with activity on both sides of the market: demonstrated by movements in rates at month-end dates, as well as rate increases around the UK's referendum of EU membership in June 2016 and falls in average rates in late-2016 in response to collateral availability. Reformed SONIA's proximity to, and likely correlation with, Bank Rate is considered by others to be a desirable property for an RFR.

(v) Ease of understanding: SONIA is based on the market for wholesale, unsecured overnight deposits. The unsecured cash deposit market is conceptually straightforward. The rate is relatively stable and highly correlated with the policy rate, so changes in the rate are readily understandable. In contrast, movements in repo rates may be driven by technical factors in the market (for example relating to the supply of and demand for collateral) which might not be so readily understandable for RFR users who are not active in repo.

(vi) Ease of OIS transition: SONIA is currently used widely as the reference rate for sterling Overnight Indexed Swaps (OIS), which in turn provides a discounting curve for sterling interest rate swap portfolios. As such, no transition of the OIS market would be required to facilitate the broader use of SONIA as the RFR. In contrast, currently neither £ SONET nor £ RIR are established reference rates.

As noted above, a complex transition away from SONIA as the primary reference rate in sterling OIS would have been required before widespread adoption of a secured RFR could be expected to proceed. This would have required near-unanimous support from market participants – a level of support that would have been difficult to achieve in a reasonable timeframe.

(vii) Same day availability of the RFR: Reformed SONIA will be published at 09:00 on the following business day, which may impact or delay settlement of sterling OIS and/or collateral remuneration payments. The Group believes these operational issues are manageable. Both secured rate candidates will be published on a 'same-day' basis: £RIR shortly after the close of sterling markets at around 18.30 and £ SONET valuations later in the evening at 21:00. This might allow use of the rates – for example in end-of-day or overnight data processing – on the same day, although for some users there may be little practical difference between 21:00 same day and 09:00 the following day.

(viii) Ability to build a term extension: the Group believes that a term RFR could be produced using any of the three candidates. There are different potential methods to produce a term RFR – which are discussed in Section 3 – and the Group will seek additional input from other market participants in order to identify the most appropriate method, if necessary to do so.

(ix) Consistency with RFRs chosen for use in other currencies: **Box 5** discusses the current state of concurrent initiatives for selecting an RFR in other jurisdictions. There is currently no consistency in the choice of RFR between unsecured or secured across jurisdictions. Instead, each currency jurisdiction has chosen the RFR which is deemed most appropriate for their respective market.

Question 1: Based on the Group's assessment of the candidates against the selection criteria, do you agree with the choice of SONIA as the preferred RFR? Do you have any additional views on this assessment?

Box 4 - Assessment of the candidate RFRs against the selection criteria

Meets criteria | Partially meets criteria | Does not meet criteria | Unclear at this stage

	Unsecured	Secured	
	Reformed SONIA	**ICAP £ RIR**	**FTSE £ SONET**
1. Basic properties of current or future benchmark			
a. Assessment v IOSCO and evolving regulatory requirements, e.g.			
· Sufficient and reliable market data to produce robust and reliable index (quantity, quality, availability of data for the administrator)	Meets criteria	Meets criteria	Meets criteria
· Robustness of data inputs to changes within market, e.g. venue of trading	Meets criteria	Partially meets criteria	Meets criteria
· Minimal opportunities for market manipulation	Meets criteria	Meets criteria	Meets criteria
· Published and governed by an appropriate administrator	Meets criteria	Meets criteria	Meets criteria
· Commercial sustainability for administrator and data contributors	Meets criteria	Unclear at this stage	Unclear at this stage
· Appropriate controls and governance for administrator and data contributors	Meets criteria	Meets criteria	Meets criteria
b. Transparency and sustainability			
· Clarity of definition	Meets criteria	Meets criteria	Meets criteria
· Clarity of calculation/setting	Meets criteria	Meets criteria	Meets criteria
· Acceptable/stable fallback mechanisms	Meets criteria	Unclear at this stage	Unclear at this stage
· Clarity of development in future states of the market or procedures for evolution	Meets criteria	Partially meets criteria	Partially meets criteria
· Does not constrain monetary policy	Meets criteria	Meets criteria	Meets criteria
c. Sensitivities – clarity and appropriateness of sensitivities, in present and future, to e.g.:			
· Market conditions:			
§ Credit	Partially meets criteria	Meets criteria	Meets criteria
§ Liquidity premia	Meets criteria	Partially meets criteria	Partially meets criteria
§ Period-end effects	Meets criteria	Partially meets criteria	Partially meets criteria
· Proximity to policy rate	Meets criteria	Meets criteria	Meets criteria
· Regulatory change	Unclear at this stage	Unclear at this stage	Unclear at this stage
· Changes in the monetary policy framework	Meets criteria	Meets criteria	Meets criteria
2. Existence of actual and potential end-user demand for RFR-linked derivatives based on Working Group assessment and outreach to end users			
a. Suitability as reference rate in wholesale markets (e.g. collateral agreements, swaps, clearing agreements, loans, deposits, FRNs), e.g.			
· Extent to which reflects actual market funding rates	Meets criteria	Meets criteria	Meets criteria
· Benchmark behaves in generally expected manner during normal and non-standard conditions	Meets criteria	Partially meets criteria	Partially meets criteria
· Robust and resilient in times of market stress	Unclear at this stage	Unclear at this stage	Unclear at this stage
· Ability to be used as a discounting curve for valuation	Meets criteria	Meets criteria	Meets criteria
· Ability to be used as a risk-free rate for accounting purposes	Meets criteria	Meets criteria	Meets criteria
· Useable for collateralised transaction scenarios	Partially meets criteria	Meets criteria	Meets criteria
· Ability to develop futures contracts based on benchmark	Meets criteria	Meets criteria	Meets criteria
b. Suitability as reference rate in retail markets			
· Ease of understanding by non-sophisticated users	Meets criteria	Partially meets criteria	Partially meets criteria
c. Assessment of likely end-user demand for RFR derivatives arising from its prospective use as a reference rate in wholesale/retail applications (e.g. does it decrease basis risk in aggregate?)	Meets criteria	Meets criteria	Meets criteria
3. Other considerations for adoption/transition			
a. Sterling focussed			
· Ease of calculation	Meets criteria	Meets criteria	Meets criteria
· Ease /low cost of implementation	Meets criteria	Meets criteria	Meets criteria
· Ease of adoption as an alternative to LIBOR for relevant contracts	Partially meets criteria	Partially meets criteria	Partially meets criteria
· Ease of transition from SONIA, if necessary	Meets criteria	Does not meet criteria	Does not meet criteria
· Same day availability (e.g. at close of business)	Does not meet criteria	Meets criteria	Partially meets criteria
· Ease of building a term curve extension	Meets criteria	Meets criteria	Meets criteria
b. International considerations			
· Consistent with RFRs chosen for other currencies	Unclear at this stage	Unclear at this stage	Unclear at this stage
· Accepted internationally	Meets criteria	Meets criteria	Meets criteria

Conclusions and vote result

28. Group members voted for their preferred RFR following the meeting on 7 April 2017.

29. Twelve members voted in favour of SONIA as their preferred RFR, with the remaining four preferring £ SONET. The vote in favour of SONIA therefore exceeded the two-thirds super majority required by the Group's Terms of Reference.

30. Of the four whose preference was £ SONET, three were willing to support the majority view in favour of SONIA. SONIA therefore received near-unanimous support as the sterling RFR.

31. While there were sound arguments in favour of both secured and unsecured options, in the end the difficulty of OIS transition was the key factor for many Working Group members. The choice of SONIA avoids this difficulty and enables faster progress towards adoption, in line with the timeframe suggested by the Bank of England.[14]

32. Despite their preference for SONIA as the sterling RFR, the Group believes that production of two new additional benchmarks measuring activity in the gilt repo markets significantly enhances the transparency of the sterling money markets and improves the resilience of sterling interest rate benchmarks. Having a range of benchmarks available clearly benefits the infrastructure of sterling markets.

[14] For more information, see www.bankofengland.co.uk/markets/Documents/sterlingoperations/rfr/2016/letter061216.pdf

Box 5 – International initiatives to promote RFRs

The objectives of the Group are aligned with wider international work towards the FSB's recommendations on benchmark reform. Market participants and authorities in several key currencies are working together closely, either through existing industry bodies or through the establishment of working groups.

In the US, the Alternative Reference Rates Committee (ARRC) recently identified a broad US Treasuries repo financing rate as the rate that, in its consensus view, represents best practice for use in certain new U.S. dollar derivatives and other financial contracts.[15] The broad US Treasuries financing rate identified has been proposed to be published by the Federal Reserve Bank of New York in cooperation with the Office of Financial Research.[16]

Having chosen, the ARRC envisages a 'phased transition' towards the recommended RFR. Initially, transition will focus on the development of liquid futures and bilateral OIS markets. In the dollar market, such liquidity is considered to be a pre-requisite for a full transition strategy to move a significant proportion of the derivatives markets away from Libor.

In Switzerland, efforts by the National Working Group (NWG) to reform the unsecured tom/next rate underpinning the Swiss franc overnight index swap curve (TOIS) proved unsuccessful, and the discontinuation of this benchmark has been scheduled for end-2017.[17] The NWG has therefore recommended that the overnight secured benchmark rate, SARON, replace TOIS as the floating leg on overnight index swaps by the end of the 2017. The NWG is therefore working towards this replacement in cooperation with market participants.

The Study Group on Risk-Free Reference Rates in Japan announced its chosen RFR in the Japanese Yen markets in December 2016: the uncollateralised overnight call rate, calculated and published by the Bank of Japan.[18] The Study Group continue to investigate market practices and contract design regarding the adoption of their chosen rate as the RFR.

[15] For more information, see www.newyorkfed.org/medialibrary/microsites/arrc/files/2017/ARRC-press-release-Jun-22-2017.pdf

[16] For more information, see www.newyorkfed.org/markets/opolicy/operating_policy_170524a

[17] For more information, see snb.ch/n/mmr/reference/discontinuation_20170126/source/discontinuation_20170126.n.pdf

[18] For more information, see www.boj.or.jp/en/paym/market/sg/rfr1612c.pdf

3. Adopting SONIA as an alternative to sterling Libor

33. Following the recommendation of SONIA as the RFR, the Group is now working towards the adoption of SONIA as an alternative to sterling Libor. The Group's thinking on adoption strategies is currently in its early stages, and has three strands.

34. The first strand focuses on how adoption could be facilitated by the development of interest rate derivative products referencing SONIA. A suite of complementary products could help create the conditions for broader adoption of SONIA, even though it is likely that a transfer of liquidity from Libor is likely to be gradual.

35. The second strand recognises that demand for derivatives stems in part from hedging of underlying instruments, and seeks feedback on the potential use of SONIA in instruments other than interest rate derivatives.

36. The third strand considers the feasibility of converting existing Libor contracts to reference SONIA, which could help to drive SONIA adoption for new business due to the need for ongoing hedging of legacy positions.

37. The following sub-sections seek feedback from market participants on specific questions related to these strands, recognising that adoption must be market-led. The Group expects to develop its thinking on adoption over the next year, including via responses to this paper.

<u>Adoption of the RFR for interest rate derivative products</u>

38. In line with FSB report's recommendations, the Group has so far focused on the applicability of the RFR in derivatives markets.

39. As part of this, the Group has begun to consider the building blocks for derivative instruments which would reference SONIA as the RFR. It is anticipated that broad adoption of SONIA would be facilitated by the availability of a suite of complementary interest rate products.

SONIA interest rate futures contract

40. Three month Sterling (Short Sterling) Futures contracts are amongst the most actively traded instruments in the short-end of the sterling interest rate curve.[19] Market participants have suggested that complementing these contracts with new SONIA futures contracts would be an important element of the overall SONIA adoption plan.

41. Potential providers of SONIA futures are in discussion with Group members, and other market participants. In order to maximise the likelihood of product success, providers will need to carefully consider the preferences of prospective users, including risk managers and speculators, and design contract specifications accordingly.

42. Relevant considerations for a contract specification may include: the term of the future; whether a simple or a compound interest calculation is used; whether settlement involves physical delivery (for example of a swap) or is cash-settled; and the most appropriate rollover dates.

[19] For more information, see: www.theice.com/products/37650330/Three-Month-Sterling-Short-Sterling-Future

Question 2: Do you have any views on the preferred design and use of a SONIA futures contract?

Maturity extension for cleared sterling OIS

43. SONIA is already established as the reference rate in the sterling OIS market. Sterling OIS transactions can currently be cleared through a CCP for maturities up to 31 years. Market participants such as life insurance companies and pension funds naturally have liabilities with very long maturities, and are large and active users of long-maturity interest rate derivatives to hedge those liabilities.

44. In order to boost market adoption of SONIA as an alternative to Libor, especially with the life insurance and pension fund community, the Group believes that clearing eligibility for OIS will need to be extended beyond 31 years.

45. One CCP, LCH Swapclear, is currently exploring the possibility of extending clearing eligibility for sterling OIS swaps out to 50 years and expect that this may be available towards the end of 2017, subject to regulatory approval.

Question 3: Do you have any views on the extension of maximum maturities for cleared sterling OIS products?

Other issues related to the adoption of SONIA

46. There are issues related to the adoption of SONIA which the Group has not yet begun to consider in detail. Therefore, initial thoughts from stakeholders on a number of issues are particularly welcomed, including:

- Promoting the understanding and use of asset swap structures which reference SONIA as the variable rate. This includes assessing any potential impact arising from not knowing cash flows in advance (Libor payments are currently set at the start of the floating-rate payment period), instead floating-rate payments referencing SONIA are typically set at the end of the interest period based on realised daily fixings (mirroring the convention for OIS contracts).
- Promoting the understanding and use of cross currency basis swap structures which reference OIS on both currency legs. This includes: an assessment of the potential basis risks arising from referencing (for example) a secured overnight rate in one currency and an unsecured overnight rate in the other;[20] and to consider the suitability for clearing of OIS-based cross currency swaps. More broadly, consideration of the use of RFR-based OIS for building interest rate forward curves and in turn foreign exchange forward points will be necessary.
- Promoting the understanding and use of swaption structures with reference to OIS as the underlying product.

[20] For example, interest rate squeezes driven by collateral scarcity in the secured rate of one currency are unlikely to be reflected in the unsecured rate of the other currency.

- Identifying any potential regulatory, accounting or other market practices which embed use of Libor in financial markets and assessing the feasibility of amending such practices.

Question 4: Are there any other issues related to the development of interest rate derivatives products referencing SONIA, which the Group need to consider?

<u>Exploring the scope of SONIA adoption in financial markets</u>

47. As noted, the Group's focus to date has been on adopting the RFR within the derivatives markets where a near risk-free rate may in principle be preferable for users. However in many cases derivatives are used to hedge underlying instruments that may reference Libor. For example, many variable rate loans and bonds currently pay interest or coupons with reference to Libor; those payments may then be hedged using Libor-linked derivatives.

48. That suggests that adoption of SONIA in derivatives can be supported by – and may hinge on – adoption in other products. The Group is therefore interested in the scope for SONIA to be used in a broader range of applications including (but not limited to) the following, which predominantly reference Libor currently:

- Floating rate notes (FRNs);
- Securitisations;
- Syndicated loan agreements;
- Bilateral corporate loan agreements;
- Term wholesale deposits;
- Term repurchase agreements;
- Total return swap structures;
- Commercial real estate and other mortgage agreements;
- Trade finance facilities; and
- Overdraft facilities.

49. There may be advantages for participants in other markets from referencing SONIA, which has the benefit of being wholly transaction-based, and which avoids exposure to term bank credit premia which may be unnecessary.

50. More broadly there are substantial network efficiencies from aggregating liquidity in a particular benchmark. The more widespread is the use of the RFR, the greater will be the incentive for further use. That suggests exploring the potential for SONIA to be used in a wide range of applications.

Question 5:
a) What do you think is the appropriate scope of SONIA adoption across the broader financing instruments?

b) What issues might arise in relation to referencing SONIA in these instruments?

c) Are there other instrument types for which SONIA could be adopted as the primary reference rate, which the Group should consider?

Potential use of a term RFR

51. The Working Group's recommended RFR, SONIA, is an overnight rate. However, interest payments for financial products are typically made at less frequent intervals. For products referencing Libor, payments are made corresponding to the term of the Libor rate referenced – for example, every three or six months. Since Libor is a term rate, these payments are known in advance at the beginning of the payment period.

52. Consistent with the choice of RFR, the Group's preference is that, in the future, market participants would use the overnight rate but with cash flows generated from the average of realised daily SONIA fixings over the desired tenor, or payment frequency. This average could either be a simple mean or a daily compounded interest rate over the period – the current convention for sterling OIS products.

53. A disadvantage of the approach might be that interest payable is not known until the end of the payment period; i.e. they are 'backward-looking'.

54. The Group recognises that some participants may prefer a term benchmark, so cash flows can be known in advance with certainty. As such, there could be interest in 'forward-looking' term alternatives which could be derived from the RFR yield curve – in common with the current approach to using Libor.

55. There are two potential methods for calculating a forward-looking RFR using pricing data from SONIA-referencing derivative markets. One is to take the fixed leg of a set maturity OIS contract (e.g. 3 or 6 months) as the term reference rate. Such a rate could, for example, be produced either from executable quotes for OIS on regulated electronic trading platforms; or by using rates on executed transactions of OIS on a particular day. Alternatively, term fixings could be derived from SONIA futures order book data. In order to fix constant maturity 3 and 6 month OIS rates, it may be necessary to interpolate between futures settlement dates.

56. A disadvantage of creating a forward-looking term RFR is that both methods would require the development of an additional benchmark 'fixing'. In the absence of strong controls and governance, this could create an additional fragility for benchmark users: the robustness of the ultimate benchmark becomes a function of the depth of the derivatives market referencing the RFR, rather than a function of depth of overnight unsecured cash market.

57. Therefore, the Group's current view is that for many purposes it may be most appropriate to encourage broader adoption of overnight RFR fixings (i.e. a backward-looking RFR), but is seeking further views on whether a term RFR would be necessary.

Question 6:

a) Recognising the trade-offs between a backward- and forward-looking RFR, do you believe that a term RFR is necessary?

b) Are there particular markets which could struggle to adapt to using overnight fixings?

c) Do you have a preference for the potential construction of a forward-looking term

RFR?

d) Would multiple term options (e.g. 1-month, 3-month, and 6-month) be necessary, or could a single term fixing option be acceptable?

Using the RFR in legacy portfolios

58. The Group's focus has so far been on adoption of SONIA as the RFR for new financial contracts. However, as noted above, benchmark usage tends to be reinforced by strong network effects in financial markets. One example is that existing exposures to a benchmark are likely to create future hedging needs and therefore additional exposures to that benchmark.

59. The Group wishes to understand other market participants' views on the appropriateness and feasibility of voluntary adoption of the RFR in legacy financial contracts. In simple terms this might involve the substitution of SONIA into contracts which currently reference Libor, potentially including in associated collateral agreements.

60. This task is likely to present an additional layer of complexity to that of adopting SONIA as the reference rate in new contracts. However, the benefits to market participants from using aligned discount and projection reference rates across both legacy portfolios and new contracts are likely to be substantial, in particular through an aggregate reduction in basis risk.

Question 7: Do you agree that there are merits in exploring the conversion of legacy portfolios – across both interest rate derivatives and other instruments – to reference the RFR?

61. The Group is interested in views on issues and challenges that might arise as part of an effort to convert legacy Libor portfolios to reference SONIA. For example, there is a question as to how to deal with the economic discrepancy arising from the basis between the Libor and SONIA, in particular the lack of bank credit and term premia within SONIA. Another issue is to ensure sufficiently broad participation in any conversion mechanism to avoid a situation where market participants with two-way positions are left with basis risk arising from unequal conversion on the two sides of their portfolio.

Question 8: What other issues might arise as part of an effort to convert legacy Libor portfolios to reference SONIA?

4. Next steps

62. The Group has invited a number of interested market participants to a conference on 6 July 2017. The conference will provide a forum for the discussion of the topics raised in this paper. It will explore the reasoning for the Group's decision and the opportunities and challenges of RFR adoption. Proceedings of the conference will be made available on the Group's web page shortly afterwards.

63. Because attendance at the conference is limited, the Group would be happy to host further sessions, if there is sufficient demand, in early autumn 2017. Interested parties should contact RFR.Secretariat@bankofengland.co.uk.

64. Opening the Group's thinking and subsequent decision to further scrutiny is intended to help achieve a consensus on SONIA as the recommended RFR. The focus must then shift towards adoption. The many challenges of adoption mean that a broader set of market participants will need to play an active role. The Working Group therefore invites expressions of interest to join adoption sub-groups and to suggest additional topics for discussion.

65. Feedback on the questions in this paper and any additional comments are requested by 29 September 2017. Please email these to RFR.Secretariat@bankofengland.co.uk. The Group will discuss all feedback and publish an anonymised summary of responses online.[21]

[21] Where respondents provide a response which includes information to be treated as confidential, they should clearly indicate the information provided which should be treated as such. If a request for disclosure is subsequently received, in accordance with access to information regimes under the Freedom of Information Act 2000 or the Data Protection Act 1998, respondents' indications will be taken into account, but no assurance can be given that confidentiality can be maintained in all circumstances. An automatic confidentiality disclaimer generated by a respondent's IT system on emails will not, of itself, be treated as constituting notice that a respondent regards any information supplied as confidential.

Annex – Summary information for each candidate RFR

	SONIA	£ SONET	£ Repo Index Rate
Administrator	Bank of England	FTSE-Russell	NEX Data
State of production	Live; undergoing reform. Reform expected to be implemented by April 2018 (details below refer to reformed SONIA)	Live: available in Indicative form only	Live daily publication.
Benchmark definition	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.	Sterling SONET is a measure of the sterling risk free reference rate for secured overnight funds	The £ Repo Index Rate is a daily sterling repo index that measures the effective cost of funding for Sterling Government bonds.
Eligible transactions	- Unsecured wholesale deposit transactions 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.	- Repurchase agreements collateralised with UK Government securities (specific gilt and DBV transactions); - With one business day maturity; - To settle on the day that is used in the £SONET index calculation; and - No minimum transaction size	- Repurchase agreements collateralised with UK Government securities (specific gilt and DBV transactions); - Overnight, Tom-Next or Spot-Next transactions, but in all cases to settle on the day that it is used in a £RIR index calculation ("Common Settlement") - No minimum transaction size
Data source	Transactions reported to the Bank's Sterling Money Market daily data collection	Cleared transactions from leading inter-dealer brokers (specific gilt and DBV), and uncleared transactions settled through the Euroclear CREST service (DBV only).	Transactions executed on NEX's Brokertec trading platform, which are centrally cleared.
Calculation methodology	A 'trimmed mean' calculated as the volume-weighted mean rate, based on the central 50% of the volume-weighted distribution of rates.	Volume-weighted trimmed mean; trades with the furthest rates from the average are iteratively trimmed until 75% of volume remains.	Volume-weighted trimmed mean, where the specific collateral trades with the furthest rates from the average are iteratively trimmed until 75% of volume remains.
Average daily volumes	£39.4 billion (For the period 1 July 2016 – 3 March 2017)	£58.8 billion (1 July 2016 – 3 March 2017)	£26.7 billion (1 July 2016 – 3 March 2017)
Average spread to Bank Rate	-5.3 bps (1 Feb 2016 – 3 March 2017)	-3.8 bps (1 Feb 2016 – 3 March 2017)	-4.5 bps (1 Feb 2016 – 3 March 2017)

	SONIA	£ SONET	£ Repo Index Rate
Standard deviation of daily changes	0.9 bps (1 Feb 2016 – 3 March 2017, excl. 4 August 2016)	7.5 bps (1 Feb 2016 – 3 March 2017, excl. 4 August 2016)	7.0 bps (1 Feb 2016 – 3 March 2017, excl. 4 August 2016)
Publication time	09:00, the following day	21:00, same day	18:30, same day
Governance	Governance arrangements will be designed in line with international regulatory best practice for benchmark administration, and include some form of external advisory mechanism. To be published prior to transition to reformed SONIA.	FTSE Russell Governance Board provides ultimate oversight of methodologies and approval of enhancements. A £ SONET Advisory Committee has been established to facilitate input from external market participants.	NEX Data has adopted the IOSCO Principles for Financial Benchmarks and is preparing registration in order to comply with 1st January 2018 EU Benchmark Regulation.
Evolution procedures	The rate is defined in two parts, to facilitate the evolution of the benchmark in the future without disruption to contracts and processes that use it. The Bank will periodically review the current methodology with a view to ensuring that it continues adequately to measure the underlying interest.	The rate is defined in two parts, to facilitate the evolution of the benchmark in the future without disruption to contracts and processes that use it. This structure allows for the future evolution of the rate, in consultation with the £SONET Advisory Committee, without requiring a change in the Underlying Interest.	–
Costs of use	SONIA is freely available to the public, via the Bank of England's Interactive Statistical Database, with a one day lag. Licenses for different types of usage to be issued and charged for on a cost-recovery basis.	Usage will be licensed and £ SONET will be made available on a Fair, Reasonable and Non-Discriminatory (FRAND) basis. Charges will be structured to encourage usage	£ RIR is free to use for personal and non-commercial activity. All commercial usage and redistribution is subject to a licence. Licences in respect of writing OTC derivatives shall not be subject to a fee but will be subject to appropriate licensing.
Further information	www.bankofengland.co.uk/markets/Documents/soniareformresponse0317.pdf	www.ftse.com/products/indices/gbp-sonet	www.nexdata.com/indices/money-markets/sterling-repo-index-rate-rir/downloads/

List of Questions

Question 1: Based on the Group's assessment of the candidates against the selection criteria, do you agree with the choice of SONIA as the preferred RFR? Do you have any additional views on this assessment?

Question 2: Do you have any views on the preferred design and use of a SONIA futures contract?

Question 3: Do you have any views on the extension of maximum maturities for cleared sterling OIS products?

Question 4: Are there any other issues related to the development of interest rate derivatives products referencing SONIA, which the Group need to consider?

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