Roadmap for Transition of Interest Rate Benchmarks:

From SGD Swap Offer Rate (SOR) to Singapore Overnight Rate Average (SORA)

30 August 2019

Association of Banks in Singapore and

Singapore Foreign Exchange Market Committee

DISCLAIMER

This report examines possible alternatives to the SGD Swap Offer Rate (**"SOR"**) in SGD derivatives and cash market products, given the risks to SOR arising from the likely discontinuation of LIBOR after end-2021. The report identifies the Singapore Overnight Rate Average (**"SORA"**) as the most suitable and robust alternative benchmark, and seeks feedback on a range of issues relating to the proposed transition roadmap.

The Association of Banks in Singapore (**"ABS"**), ABS Benchmarks Administration Co Pte Ltd (**"ABS Co."**), the Singapore Foreign Exchange Market Committee (**"SFEMC"**), and any persons or entities acting on their behalf, do not give any warranties or representations concerning any data and information contained in this report.

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1 Introduction

1.1 Global Developments

1.1.1 In July 2014, the Financial Stability Board Official Sector Steering Group (**"FSB OSSG"**) published a report on *"Reforming Major Interest Rate Benchmarks"* .[1] The report built upon the July 2013 IOSCO Principles for Financial Benchmarks (**"IOSCO Principles"**)[2], which sets out international standards for improving the robustness and integrity of financial benchmarks. A key recommendation of the FSB OSSG report was for relevant authorities and market participants to identify and develop near risk-free rates (**"RFRs"**), and to encourage derivatives market participants to transition to referencing the appropriate RFRs. In response, several major jurisdictions globally have identified RFRs for use in their respective currency areas:

- In the US, the Alternative Reference Rate Committee (**"ARRC"**)[3] had in June 2017 selected the Secured Overnight Financing Rate (**"SOFR"**) as its recommended alternative to USD LIBOR. SOFR was published in April 2018, and is a broad measure of the cost of borrowing cash overnight, collateralized by Treasury securities.[4] Each business day, the Federal Reserve Bank of New York (**"FRBNY"**) publishes the SOFR at approximately 8:00 am US Eastern Time.

- In the UK, the Working Group on Sterling Risk-Free Reference Rates[5] had in April 2017 identified the reformed Sterling Overnight Index Average (**"SONIA"**) to replace the GBP LIBOR. The reformed SONIA implemented in April 2018, captures a broader scope of overnight unsecured deposits by including bilaterally negotiated transactions alongside brokered transactions. SONIA is published every business day by the Bank of England (**"BOE"**) at 9:00 am London Time.

- In Europe, the Working Group on Euro Risk-Free Rates in September 2018 selected the Euro Short-Term Rate (**"ESTER"**) as the new Euro risk-free rate. ESTER is a new

[1] See FSB OSSG Report, "Reforming Major Interest Rate Benchmarks" (22 July 2014) <http://www.fsb.org/wp-content/uploads/r_140722.pdf>.

[2] See IOSCO Report, "Principles for Financial Benchmarks" (July 2013) <http://www.iosco.org/library/pubdocs/pdf/IOSCOPD415.pdf>.

[3] See Alternative Reference Rates Committee's (ARRC) website, <https://www.newyorkfed.org/arrc>.

[4] See FRBNY webpage on "Secured Overnight Financing Rate Data" < https://apps.newyorkfed.org/markets/autorates/SOFR>

[5] See BOE webpage on "Transition to Sterling Risk-Free Rates from LIBOR" <https://www.bankofengland.co.uk/markets/transition-to-sterling-risk-free-rates-from-libor>

wholesale unsecured overnight borrowing rate for Euro-area banks, which the European Central Bank (**"ECB"**) will publish from 2 October 2019 at 8:00 am Central European Time.[6]

- In Switzerland, the National Working Group on Swiss Franc Reference Rates[7] had in October 2017 recommended the Swiss Average Rate Overnight (**"SARON"**) as the alternative to CHF LIBOR. SARON is an overnight reference rate computed based on transactions and tradeable quotes in the CHF repo market, and is published by SIX Swiss Exchange at 8.30 am Central European Time.

- In Japan, the Cross-Industry Committee on Japanese Yen Interest Rate Benchmarks[8] had in March 2018 identified the Tokyo Overnight Average Rate (**"TONA"**) as the RFR for JPY. TONA is the weighted average of call rates for uncollateralised overnight transactions transacted via money brokers, and is published by the Bank of Japan (**"BOJ"**) every business day at 10:00 am Tokyo Time.

1.1.2 The RFRs identified by the other key jurisdictions are all overnight interest rate benchmarks, and comprise a mix of both secured and unsecured interest rates in their respective markets. An overview of the key characteristics of the RFRs identified in other key jurisdictions is set out in **Exhibit 1** below.

Exhibit 1: Overview of RFRs identified by jurisdictions globally

	United States	United Kingdom	Euro Area	Switzerland	Japan
Alternative Rate	SOFR	SONIA	ESTER	SARON	TONA
Administrator	FRBNY	BOE	ECB	SIX Swiss Exchange	BOJ
Secured	✓	X	X	✓	X
Overnight Rate	✓	✓	✓	✓	✓

[6] See ECB's webpage on Euro short-term rate (ESTER) <https://www.ecb.europa.eu/paym/initiatives/interest_rate_benchmarks/euro_short-term_rate/html/index.en.html>

[7] See Swiss National Bank's (**"SNB"**) webpage for The National Working Group on Swiss Franc Reference Rates <https://www.snb.ch/en/ifor/finmkt/fnmkt_benchm/id/finmkt_reformrates>

[8] See BOJ's webpage for Cross-Industry Committee on Japanese Yen Interest Rate Benchmarks <http://www.boj.or.jp/en/paym/market/jpy_cmte/index.htm/>

1.2 SGD Interest Rate Benchmarks Landscape

1.2.1 In Singapore, there are two key SGD interest rate benchmarks that are widely referenced in financial contracts, namely SIBOR and SOR. Both benchmarks are administered by the ABS Co[9]. Apart from these two benchmarks, the Monetary Authority of Singapore (**"MAS"**) publishes SORA, which is an interest rate benchmark based on unsecured overnight interbank SGD transactions brokered in Singapore. An overview of these three interest rate benchmarks is set out in **Exhibit 2** below, and further details are set out in the paragraphs that follow.

Exhibit 2: Overview of SGD Interest Rate Benchmarks

	SIBOR (current)	SOR	SORA
Definition	Rate at which a Panel Bank could borrow SGD in the unsecured interbank market	Effective rate of borrowing SGD synthetically, by borrowing USD and swapping for SGD	Average rate of unsecured overnight interbank SGD transactions brokered in Singapore
Methodology and Inputs	Trimmed average of input from a poll of 20 Panel Banks	Volume-weighted average rate of USDSGD FX swap transactions, with USD LIBOR as an input	Volume-weighted average rate of transactions reported by brokers in Singapore
Administrator	ABS Co.	ABS Co.	MAS
Tenor	1m, 3m, 6m, 12m	Overnight, 1m, 3m, 6m	Overnight

SIBOR

1.2.2 SIBOR is a key financial benchmark in Singapore, with Thomson Reuters as the calculation agent.[10] SIBOR is referenced in various types of financial products, including housing, commercial and syndicated loans, trade financing, and working capital financing. SIBOR is not typically used in SGD derivatives. Following recommendations from the FSB OSSG July 2014 report to strengthen the major IBORs by anchoring these benchmarks to actual transactions to the extent possible[11], **ABS and the SFEMC ("ABS-SFEMC") had proposed reforms to strengthen the SIBOR benchmark**.

1.2.3 SIBOR continues to be a relevant interest rate benchmark for cash market products, and work is ongoing to enhance its robustness.

[9] ABS Co. was established in June 2013 to own and administer the ABS Benchmarks in Singapore. It is a fully owned subsidiary of ABS.

[10] It is currently calculated from a survey of a panel of 20 banks and is available in four tenors – 1-month, 3-months, 6-months and 12-months.

[11] For IBORs that are derived from a waterfall of various data types, the benchmark administrator should promote the usage of actual transactions in the underlying market first, followed by transactions in related markets, then committed quotes, and thereafter indicative quotes.

- In December 2017, ABS-SFEMC issued a public consultation to seek feedback on proposals to enhance SIBOR. Following this, ABS-SFEMC finalised proposals to enhance SIBOR in July 2018. The key recommendations aimed to increase reliance on market transactions by using the following waterfall of inputs for submission: (a) transactions in the underlying wholesale funding markets, (b) transactions in related markets, and (c) expert judgement.

- On 1 July 2019, ABS Co. commenced transitional testing of the new enhanced waterfall methodology for SIBOR.[12] The testing of the new methodology is being conducted in parallel with the daily ongoing production of SIBOR, and the existing SIBOR submission and publication process will remain unchanged until further notice. The transitional testing is expected to be conducted for an initial period of six months till end December 2019, and the outcome will help determine if further refinements to the proposed methodology are necessary. After the completion of the transitional testing, ABS-SFEMC plans to provide an update in 2Q 2020, including the targeted implementation date of the new waterfall methodology for SIBOR.

SORA

1.2.4 SORA is published by MAS and reflects the volume-weighted average rate of all SGD overnight cash transactions brokered in Singapore between 9:00 am to 6:15 pm. It is published daily on the MAS website at around 6:30 pm currently and has been accessible at no charge since 1 July 2005.[13] SORA is underpinned by a deep and liquid overnight funding market, and is commonly monitored by money market participants as a reflection of daily conditions in the SGD money markets.

SOR

1.2.5 SOR is an FX swap implied interest rate benchmark calculated from actual transactions in the USD/SGD FX swap market, and uses USD LIBOR in its computation.[14] Unlike other jurisdictions where IBORs are used as reference rates for derivatives, SGD interest rate derivatives reference SOR. Apart from derivatives, SOR is also widely used in SGD cash market products, such as business loans, syndicated loans, retail mortgages, and floating rate notes.

[12] See ABS-SFEMC press release, "ABS Co. Commences Transitional Testing for the Enhanced SIBOR" (1 July 2019) <https://abs.org.sg/docs/library/abs-sfemc-media-release_01-july-2019_FINAL>

[13] See daily SORA rates published at MAS website, <https://secure.mas.gov.sg/dir/domesticinterestrates.aspx>

[14] See ABS Co. – "Calculation Methodology for SIBOR & SOR" < https://abs.org.sg/docs/library/calculation-methodology-abs-benchmarks_17072019>

1.2.6 UK authorities have announced that LIBOR would not be sustained by regulatory powers after end-2021, and highlighted that the discontinuation of LIBOR was not a "black swan event", but something which global financial markets should be prepared for.[15] As the SOR methodology relies on USD LIBOR in its computation, the likely discontinuation of LIBOR will impact the future sustainability of SOR. In view of this, ABS-SFEMC established a working group[16] in November 2018, to conduct a review of the implications of LIBOR discontinuation on the SOR benchmark, to explore possible options to address this risk, and to consult publicly to seek feedback from relevant stakeholders.

1.2.7 This report sets out the options considered for replacing SOR in SGD derivatives and cash market products, as well as ABS-SFEMC's recommendations and proposed transition roadmap to ensure that SGD interest rate markets continue to be robust, fair and efficient going forward.

[15] See Andrew Bailey's (Chief Executive of the FCA) speech, "Interest rate benchmark reform: transition to a world without LIBOR" (12 July 2018) <https://www.fca.org.uk/news/speeches/interest-rate-benchmark-reform-transition-world-without-libor>

[16] The working group comprises representatives from Standard Chartered Bank, DBS Bank Ltd, Oversea-Chinese Banking Corporation Limited, United Overseas Bank Limited, Citibank N.A., UBS AG., JP Morgan Chase Bank, N.A., Barclays Bank Plc, Deutsche Bank, Eastspring Investments (Singapore) Limited, GIC Pte Ltd, and ABS Co., and is supported by MAS.

2 Options for SOR Transition in SGD Derivatives

2.1 Option 1 - Reform SOR

2.1.1 ABS-SFEMC considered the possibility of replacing the USD LIBOR component in the SOR calculation methodology with another USD interest rate benchmark. If feasible, this would allow for the continued production of SOR, and minimize disruption to end-users.

2.1.2 However, SOFR, the ARRC's recommended alternative USD LIBOR, is an overnight benchmark, and cannot be easily used to produce forward-looking 1-month, 3-month and 6-month SOR benchmarks. [17] While there are plans to develop forward-looking term-SOFR based on futures and overnight indexed swap (**"OIS"**)[18] markets that reference SOFR, the US authorities had noted that such benchmarks are not intended for use in the derivatives markets. Instead, interest rate derivatives should directly reference the more robust SOFR, which is anchored by a very deep and liquid USD treasury repo market.[19] Furthermore, term-SOFR is expected to be published only in late-2021, which would not provide sufficient lead time for SOR transition. Finally, there was broad consensus within ABS-SFEMC to avoid continued reliance on a US interest rate benchmark in the computation of a key SGD interest rate benchmark, and to explore the adoption of a SGD benchmark which would be more reflective of domestic funding conditions.

2.2 Option 2 – Enhanced SIBOR

2.2.1 ABS-SFEMC also considered the use of the forthcoming enhanced SIBOR, as an alternative for SOR in SGD interest rate derivatives. SIBOR is well-understood by end-users, and SIBOR-based derivatives would be an effective hedge for existing SIBOR based assets and liabilities.

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[17] While SOFR can be compounded to produce 1-month, 3-month and 6-month equivalent rates, the compounded rates would only be known at the end of the period. Such backward-looking rates cannot be used to replace USD LIBOR in SOR, which is currently a benchmark of interest rates over the subsequent 1-month, 3-month or 6-month periods.

[18] OIS are a form of interest rate swaps which reference overnight interest rate benchmarks like SORA instead of term benchmarks like SOR, which other SGD interest rates swaps currently reference.

[19] See "Remarks At the Roundtable of the Alternative Reference Rates Committee" (2 November 2017) <https://www.federalreserve.gov/newsevents/speech/powell20171102a.htm> and

FSB Statement - "FSB Interest Rate Benchmark Reform – Overnight Risk-Free Rates and Term Rates" (12 July 2018). <https://www.fsb.org/wp-content/uploads/P120718.pdf>

2.2.2 However, taking into consideration the direction of global benchmark reforms, ABS-SFEMC assessed that there were significant risks in concentrating SGD derivatives markets on a single SIBOR benchmark.

- First, notwithstanding ongoing measures to enhance SIBOR by anchoring panel submissions to eligible wholesale funding transactions, the volume of such term transactions is generally much smaller than the volume of transactions in overnight interbank money markets, such as that which underpins SORA. This argues for the large and systemic SGD derivatives markets to directly reference SORA rather than the enhanced SIBOR, which would also be aligned to the approach in other key jurisdictions where derivatives markets will reference overnight interest rates benchmarks.

- Second, the enhanced SIBOR would be vulnerable to a discontinuation of USD LIBOR, given that it relies on SOR as an input in its waterfall methodology.[20] This necessitates the development of an alternative SGD benchmark to safeguard against SOR discontinuation risks.

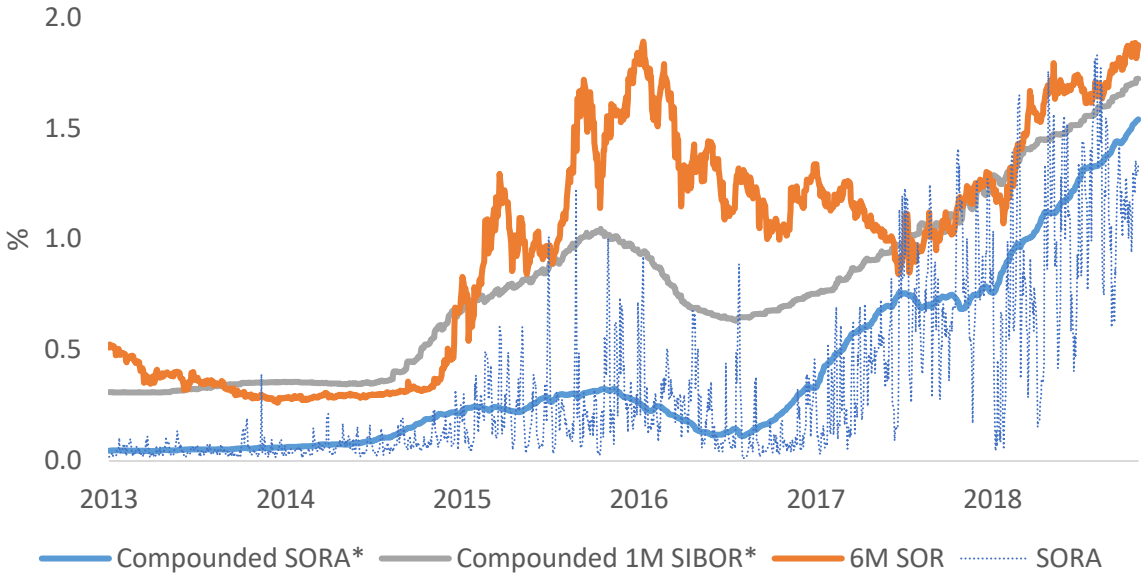
- Third, given the direction of global benchmark reforms, structural shifts in banks' key sources of funding, and shifts in derivatives market towards referencing of overnight interest rate benchmarks, ABS-SFEMC viewed that it was important to align the SGD market with international conventions and best practices. This will ensure the continued participation of global institutions and investors in the SGD derivatives market.

2.3 Option 3 – SORA

2.3.1 The third option examined by ABS-SFEMC entailed the use of SORA as an alternative to SOR in SGD interest rate derivatives. While there were some initial concerns around the volatility of SORA on a daily basis, it was recognised that financial products which reference overnight rates typically use an average rate over a period, and not a single day's rate. For example, a 5-year SGD OIS contract could be settled against the 3-month or 6-month compounded average SORA. As seen in the chart below, this compounded average SORA which financial contracts would use is more stable than the 6-month SOR, which most SGD derivatives currently reference.

[20] Under Level 2 of the enhanced SIBOR waterfall methodology, panel banks can adjust their rate submissions with changes observed in related transactions-based SGD benchmarks. This level currently only relies on SOR.

Exhibit 3: Compounded 6-month SORA against other SGD benchmarks



** For comparison, the period of compounding was adjusted to align with forward-looking SOR rates.*

2.3.2 ABS-SFEMC further considered the following factors in relation to the usage of SORA in SGD derivatives markets.

- SORA is a transaction-based benchmark underpinned by a deep and liquid overnight interbank funding market. This market is expected to remain active as banks will continue to require such overnight funding transactions for their daily cash management needs.

- SORA has been published by MAS since July 2005. The availability of a long historical time series for SORA allows market participants to perform technical analysis and model trends for risk management, asset-liability pricing, and trading purposes. This should be supportive of a broad-based market adoption of SORA-based derivatives.

- The use of an overnight interest rate benchmark in SGD derivatives markets is in line with similar developments in key global markets. As such, any measures needed to transition to SORA will have significant synergies with market participants' ongoing efforts to develop trading capabilities in other RFRs-based derivatives (e.g. SONIA, SOFR, TONA-based derivatives).

- As shown in **Exhibit 3** above, compounded average SORA has a stronger correlation to SIBOR than SOR. The weak correlation between SOR and SIBOR currently undermines the use of SOR-based interest rate derivatives for hedging of SIBOR exposures. Transition to SORA-based derivatives may provide market participants with a better

instrument for hedging SIBOR-based exposures as compared to existing SOR-based derivatives.

- While derivatives market participants are already familiar with the usage of overnight rates in derivatives such as OIS, the usage of SORA by the wider market and end-users will entail system changes, client outreach and education. Nevertheless, ABS-SFEMC viewed these as necessary efforts to align SGD markets with global developments and best practices, ensuring that our domestic derivatives and money markets continue to be vibrant and attractive globally.

3 ABS-SFEMC Recommendations

3.1 Outlook for SGD Interest Rate Benchmarks

3.1.1 **SORA for SGD Derivatives**: Having considered the above options, and for reasons outlined in paragraph 2.3.2, ABS-SFEMC recommends that SGD interest rate derivatives transition from SOR to SORA (i.e. Option 3). ABS-SFEMC will take proactive steps to implement the transition, and these will be covered in the following section.

3.1.2 **Multiple Rate Approach for SGD Cash Markets**: Unlike derivatives, ABS-SFEMC recommends that SGD cash markets could continue to use multiple rates as is the case today, where various interest rates (e.g. SORA, SIBOR, bank deposit/board rates) would coexist as reference rates**.** Such an approach is not unique to Singapore. [21]

- SORA could be an appropriate replacement for SOR in a variety of cash market products including floating rate notes/bonds, loans, mortgages and other instruments.[22] ABS-SFEMC is keen to work with early adopters that have interest to issue or transact in SORA-based cash market products. SORA-based cash products would benefit from being perfectly hedged using SORA-based derivatives. This reduces the basis risk for users, and will in turn facilitate the take-up of SORA-based derivatives.

- Nonetheless, ABS-SFEMC acknowledges that many cash market participants are currently more operationally familiar with a forward-looking term interest rate and recognises that SIBOR would continue to be a relevant reference rate for cash markets in the near and medium term.

- In addition, forward looking interest rate benchmarks based on derivatives referencing SORA (henceforth labelled as **"term-SORA"**) could be developed later when activity in the SORA-based derivatives market picks up. Such benchmarks could serve as alternative reference rates for cash market users.

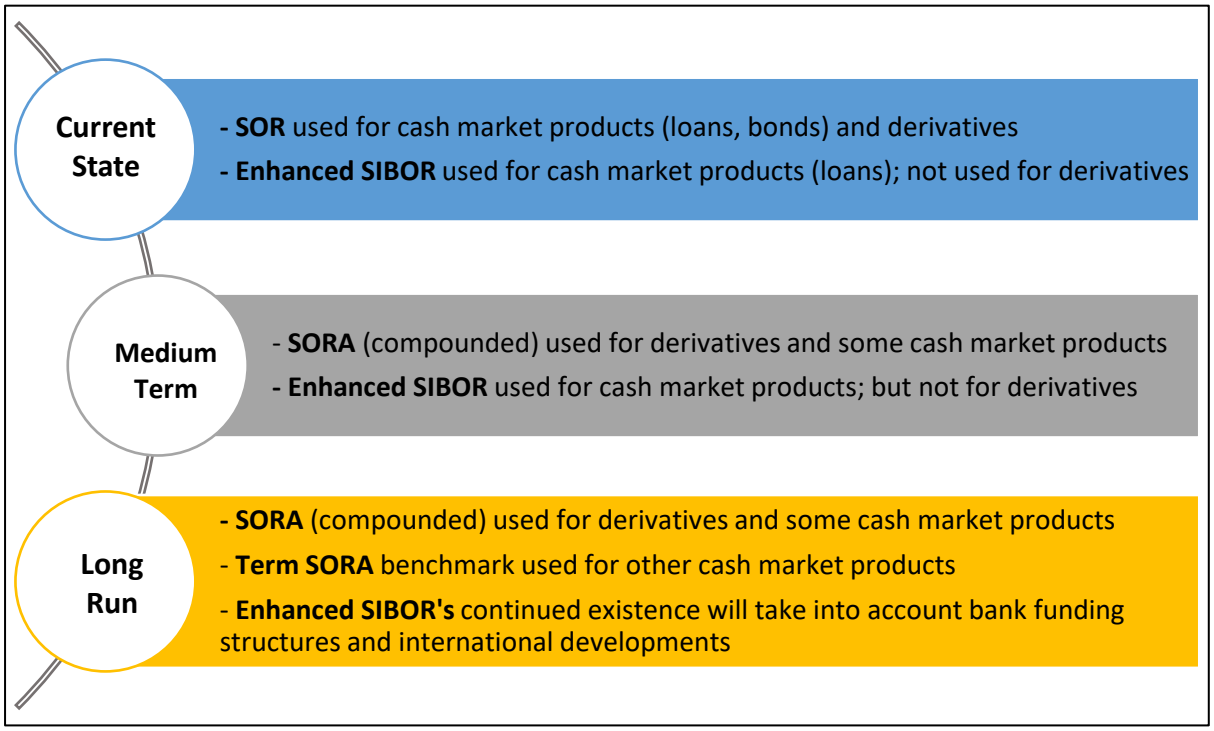
3.1.3 **Outlook for SGD Interest Rate Benchmarks**: Over the medium term, ABS-SFEMC envisages that SORA will be used directly in SGD derivatives and in some cash market products. The enhanced SIBOR will continue to be used in cash market products, but should not be used in SGD derivatives. In the long run, SORA will be used directly in derivatives and

[21] Other jurisdictions such as the EU, Japan, Australia, Canada, and Hong Kong are adopting a multiple rate approach, where each IBOR could be made sustainable and potentially co-exist with the RFR.

[22] See FSB OSSG's User Guide on Overnight Risk-Free Rates (4 June 2019) <https://www.fsb.org/wp-content/uploads/P040619-1.pdf>

some cash market products, and term-SORA could be an attractive alternative to enhanced SIBOR for cash market products. The availability of SORA-based derivatives will increase the attractiveness of using SORA and term-SORA in cash markets. The longer term outlook for SIBOR will take into account the evolution of bank funding structures and international developments. An overview of the outlook for SGD interest rate benchmarks is summarised in **Exhibit 4** below.

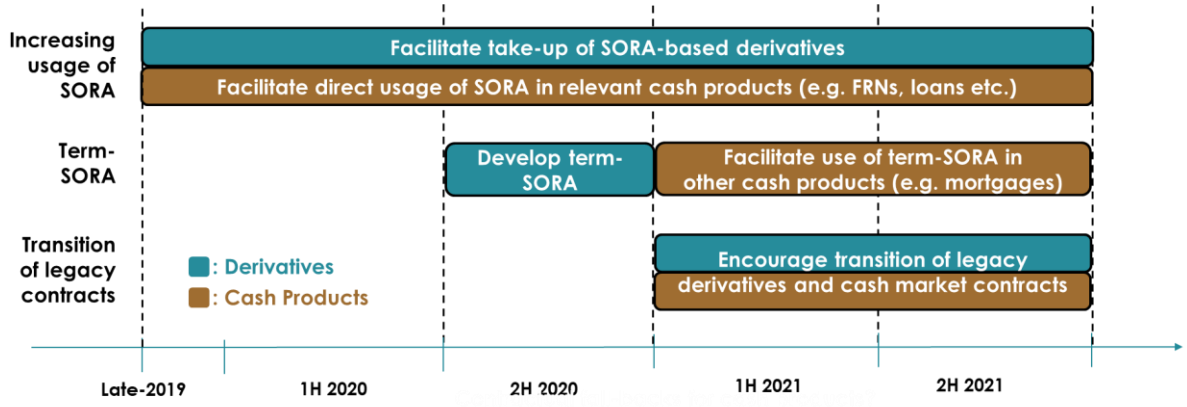
Exhibit 4: Outlook for SGD Interest Rate Benchmarks



3.2 Proposed Transition Roadmap: from SOR to SORA

3.2.1 ABS-SFEMC proposes a phased approach to the transition from SOR to SORA. This takes into account the usage of SOR by market participants of varying sophistication (including banks, non-bank financial institutions, corporates, and retail individuals), who may differ in their operational readiness to adapt to the use of an overnight interest rate benchmark. The phased approach also takes into account the need to deepen new SORA-based markets before transitioning legacy SOR-based contracts to reference SORA. An overview of the proposed areas of work that need to be undertaken to facilitate the transition from SOR to SORA is set out in **Exhibit 5** below.

Exhibit 5: Proposed Roadmap for SOR Transition



3.2.2 The specific areas of work envisaged include the following.

Derivatives

(a) **1H 2020**: Promote the take-up of SORA-based derivatives (i.e. OIS and cross-currency swaps[23]), which will gradually replace SOR-based interest rate derivatives. Possible areas of work include –

- developing standardized templates and market conventions, exploring central clearing, as well as addressing impediments to trading SORA-based derivatives;

- exploring measures to promote the trading of SORA-based derivatives, through initiatives such as the adoption of SORA for discounting of cleared derivatives transactions, studying the possible uses of SORA-based derivatives for hedging SIBOR-based assets/liabilities, and exploring the development of essential market infrastructure (e.g. broker involvement or brokering platforms) to support trading of SORA-based derivatives; and

- implementing contractual fall-backs in derivatives, in line with the May 2019 International Swaps and Derivatives Association (**"ISDA"**) public consultation on contractual fall-backs for SOR-based derivatives.[24] Including fall-back language within contracts is an important safety-net to mitigate a

[23] A cross-currency swap is an interest rate swap, involving the exchange of interest payments and principals denominated in two different currencies.

[24] ISDA had in May 2019 consulted on the fall-back methodology for SOR-based derivatives in the event of a permanent discontinuation of LIBOR, which is to compute a fall-back rate for SOR by using the fall-back rate to USD LIBOR. Where the fall-back methodology for USD LIBOR is to calculate SOFR in arrears, the fall-back rate for SOR would similarly be only known at or near the end of the interest period (i.e. backward-looking), fundamentally different from the current SOR, which is forward-looking.

disorderly discontinuation of SOR. However, they are not designed as, and should not be relied upon, for long-term use or as the primary mechanism for transition.

(b) **2H 2020**: Develop and evaluate options for publishing forward looking term-SORA benchmarks (based on derivatives referencing SORA), after sufficient liquidity in the underlying derivatives markets develops.

(c) **1H 2021**: Oversee the transition of legacy derivatives contracts referencing SOR. This may include developing industry guidance for compression of legacy SOR contracts, templates and infrastructure for trading of SOR-SORA basis, and addressing the possible impediments to transition, including tax and accounting treatment of transitioned contracts.

Cash Market Products

(d) **1H 2020**: Encourage the direct usage of SORA in relevant cash market products.

- Given the proposed multiple rate approach for cash markets, a key aspect of the work would involve understanding the types of cash market products that can directly reference SORA, and those that would require term-SORA or credit-sensitive benchmarks such as SIBOR.

- For example, new issuances of some cash products such as floating rate notes could directly reference SORA. Such products will benefit from the availability of SORA-based derivatives for hedging. The work could include the development of templates and product fact sheets for new SORA-based cash market products.

(e) **1H 2021**: Use of term-SORA in other cash market products. Where liquidity in derivatives market can support the development of term-SORA benchmarks, a wider variety of cash products (e.g. loans) could reference term-SORA. The further deepening of SORA-based markets would facilitate market participants' transition of legacy cash contracts to reference SORA.

Formation of a Cross-Industry Working Group

Given the wide ranging implications for banks, non-bank financial institutions, corporates and consumers, ABS-SFEMC recommends the formation of a cross-industry

working group with broad representation from key stakeholders, to coordinate the industry-wide transition from SOR to SORA. This working group is envisaged to help steer the development of industry best practices and conventions for the use of SORA in financial products, promote the take-up of SORA in financial markets, consult with relevant market participants, and coordinate public communication and client education across various product segments.

4 Invitation to Provide Feedback

4.1 ABS-SFEMC welcomes interested parties to provide feedback on its proposed transition roadmap and the proposed areas of work identified above. Specifically:

- Do you agree with the proposed transition roadmap and the approach set out in this report?
- Are there other work areas beside those highlighted in Section 3.2.2 above that should be pursued to facilitate a successful transition away from SOR to SORA?

4.2 Please submit your feedback to SORTransition@abs.org.sg by 31 October 2019. Electronic submissions are encouraged and written feedback[25] may be submitted to:

The Association of Banks in Singapore
#12-08, MAS Building
10 Shenton Way, Singapore 079117
Fax: 6224 1785
Email: SORTransition@abs.org.sg

Please note that all submissions received may be made public unless confidentiality is specifically requested for the whole or part of the submission.

4.3 Some frequently asked questions (**"FAQs"**) applicable to retail and institutional users can be found in Annex A and B respectively.

[25] The feedback template can be found at https://abs.org.sg/docs/library/feedback-template-on-roadmap-for-transition-of-interest-rate-benchmarks-from-sor-to-sora.docx.

ANNEX A: FAQs FOR RETAIL CUSTOMERS

GENERAL

Q1: Can SOR be retained beyond end-2021?

As SOR uses USD LIBOR as an input in its computation, the likely discontinuation of USD LIBOR after end-2021 directly impacts the sustainability of the SOR benchmark beyond that date. ABS-SFEMC had examined the possibility of reforming SOR by replacing the USD LIBOR component in the SOR calculation methodology with another USD interest rate benchmark, but concluded that such an approach would not work for the purposes of producing a financial benchmark. Further details on this issue may be found in paragraphs 1.2.5 and 2.1 of the Roadmap for Transition of Interest Rate Benchmarks (**"Roadmap"**).

Q2: What is SORA and where can I get data on this benchmark?

SORA is published daily by the MAS and reflects the volume-weighted average rate of all SGD overnight cash transactions brokered in Singapore between 9:00 am to 6:15 pm. It is published on the MAS website at around 6:30 pm currently and has been accessible at no charge since 1 July 2005. The historical series can be downloaded from the MAS website at

https://secure.mas.gov.sg/dir/domesticinterestrates.aspx

Q3: What is ABS-SFEMC doing to ensure that the market continues to function well in the SOR transition process?

ABS-SFEMC's priority is the integrity and functioning of the markets which depend on SOR. Hence, every effort will be made to ensure a smooth transition. To support this effort, it is important that all market participants understand the plans set out in the Roadmap and the required actions. Ample communication will be made in time to come.

LEGACY SOR CONTRACTS

Q4: What are the implications of the Roadmap for my outstanding consumer loan or mortgage that references SOR which matures after end-2021? What should I do about this?

There is no immediate impact on your loan or mortgage at this juncture. Your bank will be writing to you at the appropriate time, giving you enough notice to consider other loan packages that do not reference SOR.

NEW CONTRACTS

Q5: I am looking to take up a new consumer loan or mortgage. Should I avoid entering into any new loan or mortgage that references SOR?

There is no immediate impact on any new loan contract that reference SOR. Nevertheless, if you wish to take up a loan that references SOR, you should check that there are clauses that allow for a switch in reference benchmark rates should SOR be impacted by LIBOR discontinuation.

ANNEX B: FAQs FOR INSTITUTIONS

GENERAL

Q1: Can SOR be retained beyond end-2021?

As SOR uses USD LIBOR as an input in its computation, the likely discontinuation of USD LIBOR after end-2021 directly impacts the sustainability of the SOR benchmark beyond that date. ABS-SFEMC had examined the possibility of reforming SOR by replacing the USD LIBOR component in the SOR calculation methodology with another USD interest rate benchmark, but concluded that such an approach would not work for the purposes of producing a financial benchmark. Further details on this issue may be found in paragraphs 1.2.5 and 2.1 of the Roadmap for Transition of Interest Rate Benchmarks (**"Roadmap"**).

Q2: What is SORA and where can I get data on this benchmark?

SORA is published daily by the MAS and reflects the volume-weighted average rate of all SGD overnight cash transactions brokered in Singapore between 9:00 am to 6:15 pm. It is published on the MAS website at around 6:30 pm currently and has been accessible at no charge since 1 July 2005. The historical series can be downloaded from the MAS website at https://secure.mas.gov.sg/dir/domesticinterestrates.aspx

Q3: What is ABS-SFEMC doing to ensure that the market continues to function well in the SOR transition process?

ABS-SFEMC's priority is the integrity and functioning of the markets which depend on SOR. Hence, every effort will be made to ensure a smooth transition. To support this effort, it is important that all market participants understand the plans set out in the Roadmap and the required actions. Ample communication will be made in time to come.

Q4: I represent a consulting firm/law firm in this industry. How can I get connected to the work so that I can advise my clients better?

We welcome the efforts of the advisory and consulting community in helping to prepare the markets for any transition. You can submit your views to SORTransition@abs.org.sg and we will incorporate the feedback in our communications. Please note that all submissions received may be made public unless confidentiality is specifically requested, for the whole or part of the submission.

Q5: Why did ABS-SFEMC not consider SIBOR which will be enhanced soon, as a suitable alternative to SOR in SGD interest rate derivatives?

While SIBOR is well understood by the market, ABS-SFEMC assessed that the enhanced SIBOR would not be suitable. This is because the enhanced SIBOR relies on SOR as an input in its

waterfall methodology, and the possible discontinuation of SOR could undermine SIBOR. The large interest rate derivatives market should instead reference an overnight interest rate benchmark that is underpinned by a deep underlying market. In addition, SGD interest rate derivatives markets should be aligned with the global development where such markets reference overnight interest rate benchmarks, given that many global institutions participate in the SGD interest rate derivatives market.

LEGACY SOR CONTRACTS

Q6: What are the implications of the Roadmap for my outstanding contracts that reference SOR which mature after end-2021? What should I do about this?

There is no immediate impact on your outstanding contracts at this juncture. However, your firm should take stock of exposures and contracts that reference SOR, that may need to be transited at a later stage, to address the risk of permanent SOR discontinuation.

- Heading into 2021, it is envisaged that firms will need to actively transition out of contracts that reference SOR, for example, by agreeing with your counterparty on changing the contract's reference rate from SOR to alternative SGD interest rate benchmarks.

- As outlined in the Roadmap, SORA is the recommended alternative rate for which all SGD interest rate derivatives contracts should transit to. The Roadmap outlines a plan to develop active trading in SORA derivatives starting from 1H 2020. As liquidity deepens, this will provide reference pricing for counterparties to agree on terms to convert the reference rate in legacy contracts from SOR to SORA.

For cash market products like loans, the Roadmap outlines a multiple rate approach where SIBOR, SORA, and term-SORA (after this is developed) are possible alternatives to SOR. Your bank will be writing to you at the appropriate time, giving you enough notice to consider other loan packages that do not reference SOR.

NEW CONTRACTS

Q7: I am looking to enter into a loan and/or derivative contract. Should I avoid entering such contracts if it references SOR?

There is no immediate impact on any new loan or derivative contract that reference SOR, and you can continue to enter into such transactions. Nevertheless, in doing so, you should ensure

that there are clauses that allow you to switch reference benchmark rates in the event of a discontinuation of SOR.

According to the Roadmap, the industry has plans to develop active trading of SORA derivatives from 1H 2020. As such derivatives become available, we envisage that their usage will gradually increase and become an alternative to SOR-based derivatives. At the same time, it is envisaged that the industry will be developing new types of cash/loan products that reference SORA, which will provide further options for market participants.

Q8: Is the usage of overnight interest rates common in financial products? Is it risky since SGD overnight rates tend to fluctuate quite a bit from day-to-day?

The use of overnight interest rate benchmarks in financial products is increasing in other major currencies. These include the likes of futures referencing the Secured Overnight Financing Rate (SOFR), and overnight index swaps (OIS) in most major currencies. Market participants that have experience with such products should find the adoption of SORA-based derivatives to be relatively easier.

Globally, the use of overnight interest rate benchmarks (i.e. risk free rates or RFR) has been gaining traction in many key jurisdictions, including the UK and US. Against this backdrop, there has been useful guidance published on the use of such RFR, which would be useful reference as we encourage the use of SORA in SGD financial products.[26]

A key feature is that notwithstanding the volatility of SORA on a daily basis, financial products that reference overnight rates typically use an average over a period, and not a single day's rate. For example, a 5-year SGD OIS contract could be settled against the 3-month or 6-month compounded average SORA. As seen in Exhibit 3 of the Roadmap, this compounded average SORA rate which financial contracts use has been more stable than SOR, which SGD derivatives currently reference.

Q9: What are the market conventions for the trading of SORA OIS, cross currency swaps and other interest rate derivatives? What are the market conventions for the use of SORA in loans, bonds and other cash market products?

The establishing of new market conventions for the trading of SORA-based cash and derivatives market products would be among the first priorities of the Steering Committee

[26] See FSB OSSG's User Guide on Overnight Risk-Free Rates (4 June 2019) <https://www.fsb.org/wp-content/uploads/P040619-1.pdf>

for SOR Transition to SORA (SC- STS).[27] It is expected that industry guidance on these matters should be made available in 1H 2020.

[27] See MAS Press Release, "MAS Sets Up Steering Committee to Drive the Interest Rate Benchmark Transition from SGD Swap Offer Rate (SOR) to Singapore Overnight Rate Average (SORA)" (30 August 2019) <https://www.mas.gov.sg/news/media-releases/2019/MAS-Sets-Up-Steering-Committee-to-Drive-the-Interest-Rate-Benchmark-Transition-from-SGD-SOR-to-SORA>