# Consultation Paper on the Evolution of SIBOR

*04 December 2017*

*ABS Benchmarks Administration Co Pte Ltd and Singapore Foreign Exchange Market Committee*

DISCLAIMER

This consultation paper sets out the proposals to strengthen the SGD Singapore Interbank Offered Rates (**"SIBOR"**) methodology, and seeks feedback on a range of issues. 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 it.

# Contents

# 1 Introduction

## 1.1 Global Developments

1.1.1 In July 2014, the Financial Stability Board (**"FSB"**) Official Sector Steering Group (**"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 benchmark administrators of the major Interbank Offered Rates (**"IBORs"**)[3] to strengthen the IBORs by anchoring them to actual transaction data, to the extent possible[4].

1.1.2 In response to the FSB OSSG's recommendations, the benchmark administrators of the major IBORs have been taking steps to enhance their respective IBORs.

- In the UK, ICE Benchmark Administration Ltd (**"ICE BA"**), which administers LIBOR, outlined a roadmap for implementation of a waterfall methodology. The new LIBOR waterfall methodology provides for the following submission hierarchy: (1) transactions in the underlying market which includes wholesale market funding transactions; (2) data derived from correlated market transactions; and (3) expert judgement. More recently, on 27 July 2017, Andrew Bailey, Chief Executive of the UK Financial Conduct Authority (**"UK FCA"**), announced that after end-2021, the UK FCA would cease to persuade or compel banks to submit to LIBOR. The future of LIBOR after 2021 would hence depend on the willingness of ICE BA and the panel banks to continue producing the benchmark.

- In Europe, the European Money Market Institute (**"EMMI"**) concluded after a six-month verification program, that a fully transaction-based methodology[5] would not

---

[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] Major IBORs refer to LIBOR, EURIBOR and TIBOR.

[4] 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.

[5] Where benchmark determinations may be made without the need for panel banks to express expert judgement.

be feasible for EURIBOR, due to a lack of aggregate volume in the underlying unsecured money market.[6] A task force has been set up to explore the development of a hybrid methodology, where the benchmark would be supported by transactions where available, and rely on other pricing sources when necessary.

- In Japan, the Japan Bankers Association TIBOR Administration (**"JBATA"**), which administers TIBOR, implemented a reformed TIBOR on 24 July 2017.[7] The new TIBOR is based on a waterfall methodology with the following hierarchy: (1) transactions and brokers' quotes in the observable unsecured call market; (2) data in the observable offshore funding market and interbank negotiable certificates of deposits; (3) data in other wholesale funding markets and correlated markets; and (4) expert judgement.

## 1.2 2013 Benchmark Reforms in Singapore

1.2.1 In July 2013, in tandem with MAS' proposal to establish a new regulatory framework for financial benchmarks, the Association of Banks in Singapore (**"ABS"**) and the Singapore Foreign Exchange Market Committee (**"SFEMC"**) implemented several key initiatives to enhance the financial benchmark setting processes in Singapore. In particular, ABS and SFEMC undertook the following measures:

(a) Discontinued benchmarks that were not widely used;[8]
(b) Transitioned Singapore Dollar Swap Offer Rate (**"SOR"**) and other FX benchmarks to a fully transaction-based methodology;[9] and
(c) Developed industry good practice on benchmark rate setting activities in the Blue Book[10], which strengthened the governance around the rate submission process.

---

[6] See EMMI report, "Pre-Live Verification Program – Outcome and Way Forward", 4 May 2017, <https://www.emmi-benchmarks.eu/assets/files/D0246B-017_PLVP%20%public%20report%20and%20way%20forward_FINAL.pdf>.

[7] See JBATA report, "Revision to the 'JBA TIBOR Code of Conduct' Reflecting the Result of the 3rd Public Consultation, and Implementation Date of JBA TIBOR Reform, etc.", 20 February 2017, <http://www.jbatibor.or.jp/english/news/Revision_of_CoC.html>.

[8] The 2-month and 9-month SIBOR, the 1-week, 2-month, 9-month, 12-month SGD SOR, VND and MYR spot FX rates, SGD interest rate swap rates, THB and IDR SOR, and USD SIBOR were discontinued.

[9] SGD SOR, SGD spot FX and THB spot FX

[10] The Blue Book is formally known as the "Singapore Guide to Conduct & Market Practices for Treasury Activities". It is a set of industry good practices, which seeks to foster a high standard of business conduct for the wholesale treasury market. The Blue Book can be found here: www.sfemc.org/blue.asp. Guidance related to the setting of financial benchmarks can be found in Chapter XII of the Blue Book.

SIBOR remained on a survey-based methodology, in line with the IBOR benchmarks in other jurisdictions.

1.2.2 SIBOR is administered by ABS Benchmarks Administration Co Pte Ltd ("**ABS Co.**") [11], with Thomson Reuters as the calculation agent. Under the survey-based methodology, on every business day in Singapore, panel banks submit the rate at which it could borrow SGD funds, were it to do so by asking for and accepting the interbank offers in reasonable market size, just prior to 11.00 am Singapore time. The panel banks' submissions are ranked in order, the top and bottom quartiles are trimmed, and an arithmetic mean of the remaining rates is computed. This arithmetic mean is published as the SIBOR rate for that business day at 11.30 am.[12]

## 1.3 Working Group on SIBOR Evolution

1.3.1 Following FSB OSSG's recommendations, ABS Co. and SFEMC ("**ABS-SFEMC**") formed a working group[13] in 2015 to collect data and analyse the profile of the underlying SGD funding markets, with a view to develop proposals to enhance SIBOR in line with international standards. This took into consideration that SIBOR is a key financial benchmark in Singapore that is referenced in housing, commercial and syndicated loans, trade financing, and working capital financing. SIBOR is not widely used in SGD derivatives, which mainly reference the SOR.

1.3.2 Arising from this work, a key proposal is to implement a waterfall-type methodology for SIBOR, similar to developments in the key IBORs globally. The main change from the current approach is the proposal to reference a broader set of banks' borrowing transactions beyond those in the interbank market. This recognises the evolution in banks' key funding sources over the years, and is necessary to strengthen SIBOR's reliance on transaction data. The implementation of a waterfall methodology would also provide more explicit guidance to panel banks, to ensure consistency in practices across the panel banks. Together with the

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

[12] The publication page for SIBOR is: Thomson Reuters - ABSIRFIX01; Bloomberg - ABSI.

[13] The working group comprises representatives from DBS Bank Ltd, Oversea-Chinese Banking Corporation Limited, United Overseas Bank Limited, Citibank N.A., The Hong Kong Shanghai Banking Corporation Limited, Standard Chartered Bank, and ABS Co., and is supported by MAS.

upcoming regulatory requirements for financial benchmarks under the Securities and Futures Act[14], these proposals will enhance the robustness and integrity of SIBOR.

1.3.3 In addition, ABS Co. and SFEMC will continue to explore longer-term alternatives to SIBOR. These would involve studying opportunities to further develop the breadth and depth of SGD money markets. In the meantime, ABS-SFEMC considers it important to strengthen the robustness of SIBOR to the extent possible.

1.3.4 The sections below outline ABS-SFEMC's proposals to enhance SIBOR.

[14] MAS' new regulatory framework for financial benchmarks in Singapore has two key thrusts – (a) the manipulation of any financial benchmark in Singapore will be subject to criminal and civil sanctions; and (b) the administrators and submitters of key financial benchmarks designated by MAS will be subject to regulation. MAS intends to designate SIBOR and SOR as key financial benchmarks.

# 2 Proposals for Enhancing SIBOR

## 2.1 Tenor Review

2.1.1 SIBOR is currently computed and published in four tenors: 1, 3, 6 and 12-month. ABS-SFEMC notes that the use of SIBOR is concentrated in the 1-month and 3-month tenors. Specifically, over 90% of contracts by outstanding value that use SIBOR reference the 1-month and 3-month benchmarks.[15] The 6-month and 12-month SIBORs are significantly less widely used in comparison. In addition, the number and volume of transactions in the underlying unsecured SGD funding markets that underpin the SIBOR benchmark are also concentrated in the shorter tenors and generally decline with an increase in tenor.

2.1.2 ABS-SFEMC proposes the following.

(a) For ABS Co. to discontinue the publication of the 12-month SIBOR after providing for a reasonable transition period. This takes into account the lower market usage and lack of underlying transactions to support the production of the 12-month SIBOR.
(b) ABS Co. to retain the publication of the 6-month SIBOR. This takes into consideration that the 6-month SIBOR is used in the methodological fallback for the 6-month SOR, which is widely referenced in SGD derivative contracts. Retaining the 6-month SIBOR could also provide flexibility to cater to a possible increase in demand for contracts that reference longer benchmark tenors in a rising interest rate environment.

**Question 1: We seek feedback on the proposal to discontinue the publication of the 12-month SIBOR? Please outline specific implications, if any.**

**Question 2: We seek feedback on the continued relevance of the 6-month SIBOR.**

**Question 3: What would be an appropriate transition period relating to the proposal to discontinue the 12-month SIBOR?**

## 2.2 Enhanced Waterfall Methodology

2.2.1 Panel banks currently provide SIBOR submissions taking into account the industry guidance on the appropriate hierarchy of evidence as set out in the Blue Book. ABS-SFEMC proposes to enhance the SIBOR submission approach by adopting the following waterfall

[15] Based on a survey conducted by ABS Co. in 2015

methodology.  This methodology will provide greater clarity and additional guidance on the type of transactions in underlying markets that can be included, and how related market transactions can be used to anchor submissions.

| Waterfall Level | Data Type | Features |
|---|---|---|
| Level 1 *(highest priority)* | Transactions in underlying market | The Volume Weighted Average Price (**"VWAP"**) of a panel bank's unsecured interbank and wholesale funding transactions. |
| Level 2 | Transactions in related markets | Adjustment of previous level 1 or 2 submissions with related transaction data. |
| Level 3 *(lowest priority)* | Expert Judgement | Internally documented methodology for deriving rate submissions, subject to appropriate governance and accountability controls. |

## Level 1 Inputs

### *Counterparty/Transaction Types*

2.2.2 ABS-SFEMC proposes that under level 1, a panel bank should include its wholesale funding transactions from the following counterparty types.

- Banks
- Central banks
- General government/public sector entities/non-financial international organisations[16]
- Non-bank financial institutions[17]
- Non-financial corporates[18]

2.2.3 SIBOR is intended to reflect banks' unsecured funding costs.  Against this and taking into account the structural changes in banks' sources of funding after the Global Financial Crisis, the underlying market for SIBOR has extended from the interbank unsecured market to include

[16] This includes statutory boards, town councils but excludes central banks, other official monetary authorities and government-linked companies. International organisations include those whose members are either national states, or other international organisations whose members are national states.

[17] This includes private or public financial institutions, other than banks, engaged primarily in the provision of financial services and activities auxiliary to financial intermediation.  For example, insurers, securities dealers, and fund managers. This also includes public financial institutions such as development banks, export credit agencies and sovereign wealth funds.

[18] Privately and publicly-owned non-financial corporations

other wholesale funding transactions. In particular, banks have increasingly relied on non-bank wholesale funding sources in recent years in lieu of interbank unsecured funding, driven in part by regulatory changes. Hence, level 1 inputs would include deposits from central banks, non-bank financial institutions, general government/public sector entities/non-financial international organisations, and non-financial corporates, as well as a panel bank's primary issuances of certificates of deposits/commercial papers. Specifically, where a panel bank has the above underlying transactions, its level 1 input is proposed to be a VWAP of such transactions. The inclusion of such additional wholesale funding transactions is expected to significantly increase the pool of eligible transactions, based on 2014/2015 data collected from panel banks. This would also be in line with the evolution of the major IBORs.

2.2.4 In line with the intent to reflect wholesale funding costs, the minimum eligible transaction size is proposed to be at least S$10 million for corporate deposits[19] and S$1 million for all other transaction types. This takes into consideration that smaller-sized corporate deposits could be less reflective of typical wholesale funding transactions.

**Question 4: We seek feedback on the proposal for panel banks to include wholesale funding transactions from the above counterparty types as their level 1 input. Are there counterparty types that should be added to or removed from the proposed list of eligible counterparty types? Do you agree with the proposed minimum eligible transaction size thresholds? Please provide your rationale.**

**Question 5: What enhancements would panel banks need to put in place to facilitate the inclusion of the proposed wholesale funding transactions? What would be an appropriate transition time needed for panel banks to put in place such enhancements?**

### *Tenor Bucketing*

2.2.5 Eligible transactions falling near the required submission tenors reflect important information which should be incorporated in the computation of SIBOR. Currently, benchmark submitters would apply expert judgement in assessing if non-standard tenor transactions should be referenced in their submission – for example, if a 33-day or 40-day transaction should be a reference for its 1-month SIBOR submission. As part of the waterfall methodology, ABS-SFEMC proposes to adopt the following tenor bucketing matrix to ensure consistency across panel banks.

[19] Deposits from non-financial corporates

| SIBOR Tenor | Lower and Upper Limit in Calendar Days (inclusive) | |
|---|---|---|
| 1-month | 25 | 35 |
| 3-month | 80 | 100 |
| 6-month | 150 | 210 |

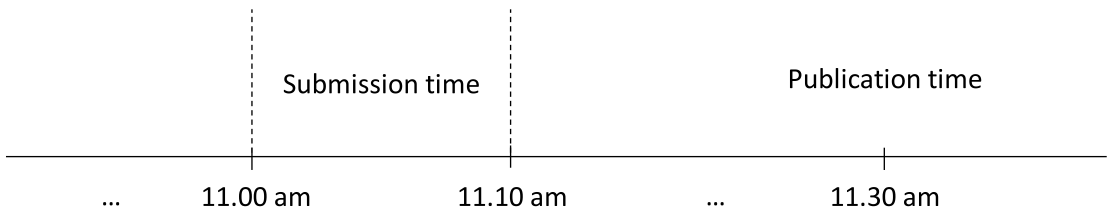
2.2.6 Transactions that fall within the above proposed tenor bucket can be used as level 1 inputs. Transactions that fall outside the above buckets may be used as part of interpolation/extrapolation under expert judgement in level 3 (see paragraph 2.2.19 below).

**Question 6: We seek feedback on the proposed width of the tenor buckets.**

*Transaction Window and Publication Time*

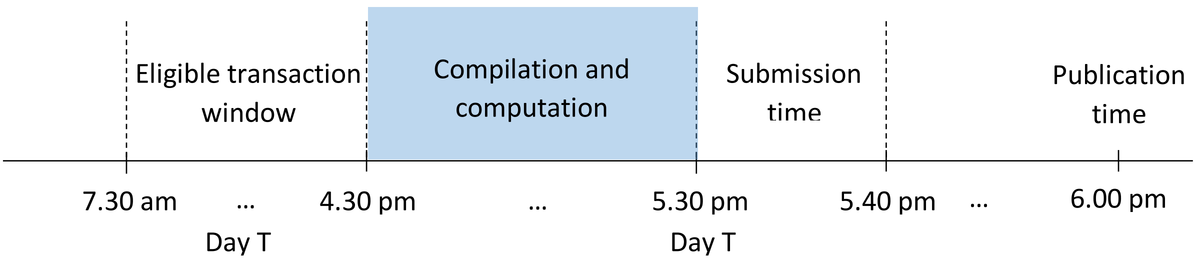
2.2.7 SIBOR currently reflects a 'point-in-time' measure of market conditions just prior to 11.00 am Singapore time.

*Current arrangements (timings provided are Singapore time):*

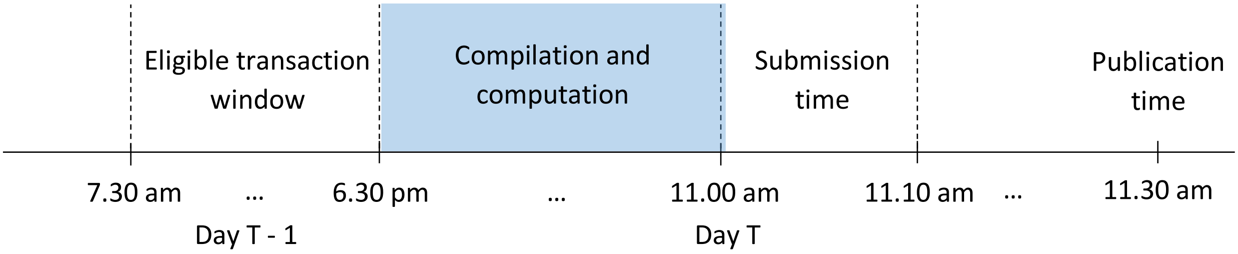



2.2.8 As the waterfall methodology is to incorporate actual transactions where available, this would necessitate the specification of an eligible transaction window. Taking into account factors such as the time of day when most transactions take place, the impact on users of SIBOR, and the panel banks' operational feasibility of obtaining transaction data in a timely manner, ABS-SFEMC sets out two possible options for consideration:

(1) <u>Option 1: Using transactions from the same day</u>



(2) Option 2: Using transactions from the previous day




2.2.9 The eligible transaction window for Option 1 is aligned to the qualifying window for the SOR benchmarks from 7.30 am to 4.30 pm, reflecting the period when most SGD money market transactions are conducted. The submission time is set 45 minutes after the publication of the SGD forward points by ABS Co. at 4.45 pm. The latter could provide a useful reference for benchmark submitters in instances when they have no level 1 transactions to refer to. SIBOR under Option 1 would reflect market conditions on the publication day. However, the relatively short period between the end of the transaction window and the submission time would be more operationally demanding for panel banks. On the other hand, Option 2 is likely to be less operationally demanding, while the publication timing for SIBOR is unchanged from current, and the rate published would reflect market conditions on the previous working day instead. Both options mean SIBOR would hence evolve from a 'point-in-time' measure to one that measures average funding rates over a period of time (similar to SOR).

**Question 7: Which of the above proposed options is preferred? Please outline your rationale and any specific implications.**

**Question 8: Are there other options for the transaction windows and publication times that ABS-SFEMC should consider? Please describe your proposal and explain the benefits.**

## Level 2 Inputs

2.2.10 Under the proposed waterfall methodology, level 2 inputs would be based on transactions in related markets, specifically transactions in other wholesale SGD funding markets (e.g. FX swaps, repos). These inputs would be relied on if a panel bank does not have any eligible transactions as level 1 inputs on that day.

2.2.11 A panel bank's submission based on level 2 inputs would involve adjusting its previous day's submission with changes in a related market rate. Level 2 input may only be used by a panel bank if its previous day's submission was based on either a level 1 or level 2 input.

*Adjustment based on submitter's own transactions in related markets*

2.2.12 A panel bank should first refer to its own transactions, if it has consecutive-day transactions in a related market.[20] For avoidance of doubt, the proposed eligible transaction window, tenor bucket and minimum transaction size threshold would be the same as that proposed for level 1 inputs.

*Adjustment based on related transaction-based benchmarks*

2.2.13 In the absence of own transactions, panel banks can reference related transaction-based benchmark movements. Panel banks can take their previous rate submission (if based on level 1 or 2 inputs), and adjust with the recent market movements in related transaction-based benchmarks.

2.2.14 Taking the example of SOR, ABS-SFEMC considers that the change in the 5-day moving average could be used for the adjustments, instead of the daily change given that day-on-day SOR changes could often be volatile. This would also reflect the underlying change in the SGD funding conditions more accurately.

2.2.15 Level 2 inputs based on such adjustments may only be used for a specified maximum number of days consecutively.

| SIBOR Tenor | Maximum number of days inputs from related transaction-based benchmarks are allowed |
|---|---|
| 1-month | 5 days |
| 3-month | 10 days |
| 6-month | 10 days |

2.2.16 In proposing these limits, ABS-SFEMC took into account the underlying liquidity in our funding markets, practices in other jurisdictions, and has tried to strike a balance between the reliance on related markets and the use of expert judgement.

**Question 9: We seek feedback on the proposal for panel banks to reference their own transactions in related markets before considering related benchmark rates.**

[20] Example: A panel bank relied on level 1 inputs and submitted 1.00% yesterday, but has no level 1 inputs today. However, the bank has eligible USDSGD FX swap transactions of the same tenor in the eligible transaction window for yesterday and today, at the VWAP FX implied rates of 0.90% and 0.95% respectively. Hence the bank can submit, as a level 2 input:

$$1.00\% + (0.95\% - 0.90\%) = 1.05\%.$$

**Question 10: We seek feedback on the proposed approach of allowing panel banks to use related transaction-based benchmarks, such as SOR, to adjust their previous rate submission.**

**Question 11: Do you agree with the proposed limits on the maximum consecutive number of days that level 2 inputs can be submitted? Please provide your rationale.**

## Level 3 Inputs

2.2.17 To ensure that SIBOR can be published under all circumstances, panel banks may rely on expert judgment if they do not have eligible transactions to underpin level 1 inputs and the maximum consecutive number of days that level 2 inputs is allowed has been reached. Panel banks may also use expert judgement if it has assessed that there are certain significant market or bank-specific events that occurred which would render a level 1 or level 2 input less-reflective of market conditions (e.g. a change in policy rate, or a bank-specific credit downgrade).

2.2.18 Instead of mandating a 'one-size-fits all' expert judgement approach for all panel banks, which could impose additional costs and potentially more volatility during periods of market stress, ABS-SFEMC proposes to allow panel banks flexibility to determine its own approach. Panel banks should ensure that its expert judgement approach is properly documented and subject to appropriate internal governance processes.

2.2.19 Acceptable inputs that may be considered under this level include:

- Transactions that are outside the tenor buckets
- Interpolation/extrapolation (from the markets underlying level 1 and level 2 inputs)
- Other market instruments: Interest rate swaps, MAS money market operation rates, forward rate agreement/single period swaps, overnight-indexed swaps, MAS bills
- Market observations
    - Observed third party transactions
    - Broker quotes
- Macro-economic factors
    - MAS monetary policy change
    - Policy rate change in major economies
    - Significant economic data
- Credit standing
    - A published and verifiable change in the credit standing of the bank
- Other factors

- Those that can be evidenced and verified, as agreed with a panel bank's internal compliance and risk

**Question 12: Do you agree with the list of inputs that can be relied upon to support expert judgement under level 3? Are there other types of inputs that should be included?**

# 3 Other Issues

## 3.1 Trimming Methodology

3.1.1 Under the existing SIBOR methodology, the panel banks' submissions are ranked in order and the top and bottom quartiles are trimmed to remove outliers, with the remaining rates averaged arithmetically to compute SIBOR. As SIBOR evolves towards increased reliance on wholesale transactions, the variance of daily benchmark submissions is expected to increase. To control for volatility in SIBOR, ABS-SFEMC proposes to change the trimming methodology to the average of the median group of panel banks' submissions (3 – 4 submissions).[21]

**Question 13: We seek feedback on the proposed methodology for averaging of benchmark submissions.**

## 3.2 Enhancing Disclosure – Publishing Submission Levels

3.2.1 Principle 9 of the IOSCO Principles recommends that the benchmark administrator publishes a concise explanation of how the benchmark was determined. To better meet this principle and to enhance transparency, ABS-SFEMC proposes to publish the proportion of submission inputs (i.e. level 1, level 2, and level 3) for each benchmark tenor periodically.

**Question 14: How useful would it be to publish the breakdown of the submission inputs into the various levels? We seek feedback on the frequency of publication (e.g. monthly, quarterly, semi-annually). Please provide your rationale.**

## 3.3 Transition Path and Evolution of SIBOR Definition

3.3.1 ABS-SFEMC's intent is to undertake a seamless transition path for SIBOR.[22] The name of the benchmark would remain as "SIBOR" and the rate would continue to be published on

---

[21] Based on transactional data from 2014/2015, the proposed trimming methodology relative to the current one would result in a less volatile SIBOR.

[22] See MPG report "Final Report of the Market Participants Group on Reforming Interest Rate Benchmarks", 22 July 2014,
<http://www.fsb.org/wp-content/uploads/r_140722b.pdf>

the same data vendor pages. Nevertheless, the definition of SIBOR should evolve with the proposed changes in the SIBOR methodology.

3.3.2 The current definition of SIBOR is as follows:

> "*SIBOR stands for Singapore Interbank Offered Rates. An individual Contributor Bank contributes the rate at which it could borrow funds, were it to do so by asking for and accepting the interbank offers in reasonable market size, just prior to 11.00 a.m. Singapore time.*"

3.3.3 With the proposed changes in methodology, ABS-SFEMC proposes the following definition for SIBOR going forward:

> "*SIBOR is the benchmark administered by the ABS Benchmarks Administration Co Pte Ltd (ABS Co.). An individual Contributor Bank contributes the rate at which it could borrow funds from the wholesale market, in a reasonable market size. The basis of the calculation is defined by ABS. Co. and published at [ABS Co.'s webpage].*"

**Question 15: We seek feedback on the proposed SIBOR definition to facilitate a seamless transition. Please highlight any potential legal implications that could pose challenges to a seamless transition.**

The FSB outlined a number of potential transition paths for the evolution of an existing benchmark or the replacement of an existing benchmark by a new benchmark.

# 4 SIBOR Timeline and Next Steps

4.1 A projected timeline for the evolution of SIBOR is set out below.

| | |
|---|---|
| 05 Feb 2018 | Consultation closes |
| Q2 2018 | Response to consultation paper |
| H2 2018 | Transitional testing |
| 2019 | Implementation of new SIBOR waterfall methodology |

4.2 ABS-SFEMC welcomes interested parties to provide their feedback on the proposals set out in this consultation paper by 05 February 2018. Electronic submissions are encouraged and written feedback may be submitted to:

ABS Benchmarks Administration Co Pte Ltd (ABS Co.)
#12-08, MAS Building
10 Shenton Way, Singapore 079117
Fax: 6224 1785
Email: absCo@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.