



**ICE BENCHMARK ADMINISTRATION
LIMITED**

**SECOND POSITION PAPER
ON THE
EVOLUTION OF ICE LIBOR**

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1. INTRODUCTION

1.1 Background

In October 2014, ICE Benchmark Administration Limited (IBA) published a Position Paper setting out proposed enhancements to elements of ICE LIBOR (LIBOR). The Position Paper, which was distributed to all LIBOR Licence holders as well as other major stakeholders (in total more than 600 recipients) is available at:

https://www.theice.com/publicdocs/ICE_LIBOR_Position_Paper.pdf.

Feedback on the Position Paper was published by IBA on 1 May 2015 and can be found at:

https://www.theice.com/publicdocs/futures/IBA_LIBOR_Feedback_Evolution_Statement.pdf

We are now publishing this Second Position Paper to describe in more detail our approach for the evolution of LIBOR, to set out for consultation a number of parameters for a more unified and prescriptive transaction-based methodology and to outline the evolution timetable.

1.2 Key aspects of the evolution of LIBOR

The key aspects of IBA's proposals for the evolution of LIBOR remain unchanged. They are to base LIBOR on transactions where there is adequate activity, and having a waterfall of methodologies for submissions so that LIBOR rates can be published in all market circumstances.

To anchor LIBOR to the greatest extent possible in transactions, IBA is proposing to expand the range of counterparties to include large wholesale counterparties, to expand the range of eligible transactions, to standardise the parameters for transactions and the techniques for interpolation and extrapolation, and to frame Expert Judgement appropriately for market conditions when it remains necessary.

As set out in our previous papers, users need to understand LIBOR and over-complexity would not enhance the benchmark's credibility. Also, there is currently no definition as such of LIBOR, which may lead to some ambiguity that needs to be addressed.

1.3 Evolution timeline

Appendix 5 to this Second Position Paper shows the evolution timeline for LIBOR.

The benchmark changed little over a long period until the Wheatley Review¹ in 2012 which prompted the appointment of a new administrator and a programme of rapid change including the cessation of several LIBOR currencies and tenors.

¹ Available at:

https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/191762/wheatley_review_libor_finalreport_280912.pdf.

The following safeguards have now been put in place:

- The introduction by the UK authorities of statutory regulation for the administration of, and submission to, LIBOR, including an Approved Persons regime, to provide the assurance of credible independent supervision, oversight and enforcement, both civil and criminal
- The appointment of IBA as an independent administrator with dedicated resources
- IBA's robust governance structure which includes a Board with a majority of Independent Non-Executive Directors and a LIBOR Oversight Committee
- Implementation by IBA of a bespoke surveillance system, with a dedicated team that assesses the credibility of submissions and seeks to identify breaches of submission standards and tolerances through a combination of alerts and pattern-matching
- Governance and control mechanisms established within the panel banks
- The FCA requirement for each panel bank to have an individual who is personally accountable for the bank's LIBOR submission activity, and
- External auditing of the administrator and submitters.

All of the above changes have contributed to very significant improvements in LIBOR.

As a result, LIBOR is now harder to manipulate, making it more likely that any attempt to manipulate it will be discovered, and there are appropriate legal punishments associated with any attempts at manipulation.

The immediate next steps are now:

Autumn 2015	Central banks to host roundtable meetings on IBA's proposed reforms of LIBOR.
16 October 2015	The consultation period closes on IBA's Second Position Paper on proposed reforms of LIBOR.
Q4 2015	IOSCO will complete its second review of IBOR benchmarks.
Q4 2015	The European Regulation on financial benchmarks is likely to be agreed.
December 2015	IBA will publish the reforms of LIBOR to be implemented.
2016	IBA's proposed reforms of LIBOR will be implemented.
2017	The European Regulation on financial benchmarks is likely to come into effect.

2. WATERFALL OF METHODOLOGIES

IBA is committed to evolving LIBOR as quickly as possible to a rate that is:

- Generated from observable market transactions to the greatest extent possible, and
- Calculated from submissions derived from transactions executed by banks in the wholesale unsecured market,

where each Benchmark Submitter will continue to be accorded the same weight in the LIBOR calculation.

In order to ensure the rate is always available, even in times of market stress, we will implement a waterfall of calculation methodologies:

Waterfall Level	Waterfall type	Waterfall features
1	Transactions	<ul style="list-style-type: none">• The Volume Weighted Average Price (VWAP) of the bank's eligible transactions
2	Data derived from transactions	<ul style="list-style-type: none">• Historical transactions• Interpolation• Extrapolation or Parallel Shift
3	Expert Judgement, appropriately framed	<ul style="list-style-type: none">• Formula• Framework

3. LEVEL 1 INPUTS - TRANSACTIONS

3.1 Introduction

The interbank unsecured lending market reduced significantly during the global financial crisis of 2007/2009 and the level of activity remains too low in some tenors to support an entirely transaction based rate.

The stress on the unsecured interbank markets for term borrowing has been driven by several factors:

- A significant increase in perceived risk of bank counterparty default (credit risk)
- Regulatory capital charges
- The introduction of liquidity coverage ratios which have modified the demand and supply of wholesale funding, as banks transition to longer maturity funding and more funding sources (such as capturing funding from corporates), and
- A significant increase in liquidity available to banks through the exceptional measures taken by major central banks in response to the financial crisis, with some banks now having excess deposits.

The focus of this section of IBA's Second Position Paper is on setting the parameters for transactions, with a view to anchoring LIBOR to the greatest extent possible in eligible transactions.

3.2 Counterparty types

LIBOR was created to be a gauge of unsecured funding for banks which was, to a very great extent, driven by interbank activity prior to the financial crisis. Since, as described above, activity in that market has decreased markedly, banks have had to expand their sources of unsecured funding to other professional counterparties.

Consistent with the original purpose of LIBOR and to reflect the changes in bank funding in recent years, all wholesale and professional entities should be regarded as eligible counterparty types.

The proposed eligible counterparty types are therefore:

- Banks including Central Banks
- Sovereign Wealth Funds
- Governmental entities

- Non-Bank Financial Institutions, including Money Market Managers and Insurers
- Supranational corporations, including local /quasi-governmental organisations, and
- Corporates as counterparties to a bank's funding transactions.

Although it was not the majority opinion during the consultation on IBA's first Position Paper, a number of respondents voiced a concern that including corporates as counterparties could lead to a change in the economics of LIBOR, for two reasons. First, corporates' transaction sizes may be smaller than interbank trades have traditionally been and, second, the pricing may differ from interbank dealings.

IBA's response is that having a minimum transaction size for eligible transactions will of itself ensure that only major financial institutions and corporates may be included. Indeed, we believe that, where such entities have transactions of the required size, it could be distorting to LIBOR if they were not taken into account as they are intrinsic to banks' funding rates.

Fulfilling the strategic direction set by the Financial Stability Board (FSB) and other official sector bodies for anchoring LIBOR in transactions requires an increase in the trade data on which to base LIBOR submissions. Accordingly, transactions with corporates should also be regarded as Level 1 transactions provided that they satisfy the relevant trade thresholds. IBA estimates that the inclusion of corporates could increase the transaction volume by up to 15%, depending on the relevant currency and tenor.

Transactions with any of the above counterparty types will be used with no premium or discount to adjust the transacted prices to reflect interbank levels.

Questions

Q1 *Do you agree in principle with using corporates as counterparty types?* YES/NO

If NO, please explain your rationale.

Q2 *Do you think that transactions with corporates as counterparty should be included with no premium or discount to adjust the transacted prices?* YES/NO

Please explain your rationale.

Q3 *Do you think that the minimum size threshold should be increased for transactions with corporates?* YES/NO

If YES, please explain your rationale and state what you think the increase in the threshold should be.

3.3 Funding centres

LIBOR is a global benchmark and transactions in other centres may be as pertinent as those in London. IBA's first Position Paper referred to ways of expanding the range and volume of transactions by including in banks' submissions the transactions from all primary funding centres in which the bank operates (and so including on-shore as well as off-shore trades).

Each of the Benchmark Submitters has its own organisational and geographical profile – with some being subsidiaries and some branches. Because of their corporate organisations, the banks have differing access to transactions in other geographical locations. In some cases, banks have no visibility or influence over the controls applied in other locations and it would be imprudent to use such business in determining LIBOR submissions.

Some Benchmark Submitters voiced concern that using funding centres outside London would further increase the complexity, cost and operational risk associated with submitting to LIBOR, potentially requiring approval from local regulators for transactions to be used.

Recognising also that rates can differ according to location and that the nature of LIBOR might be adversely affected if the funding locations were widened significantly, IBA will maintain an Approved List of Funding Locations. The list will be kept under review through the LIBOR Oversight Committee and will be published by IBA.

Within that overall list, IBA will agree with each Benchmark Submitter the most appropriate funding centres to be used for that bank's submissions, with a view to including representative transactions to the greatest extent possible without introducing potential distortions to submissions.

No weighting is proposed to adjust the transacted prices from different funding locations.

Questions

*Q4 Do you agree with IBA's proposal to maintain an Approved List of Funding Locations?
YES/NO*

If NO, please explain your rationale.

*Q5 Do you agree that no weighting should be applied to adjust the transacted prices from different funding locations?
YES/NO*

Please explain your rationale.

3.4 Transaction timing

As stated above, fulfilling the direction set by the FSB and other official sector bodies for anchoring LIBOR in transactions requires an increase in the trade data on which to base LIBOR submissions.

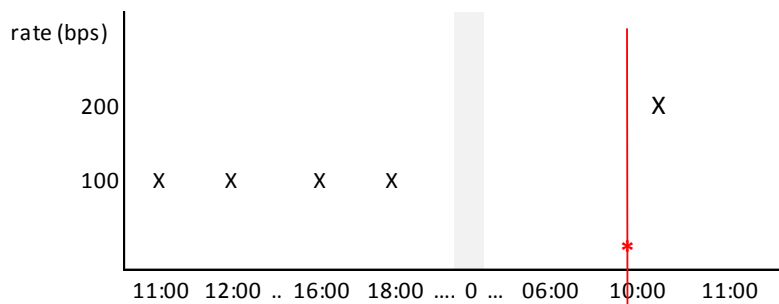
LIBOR is currently set as of 11.00 and is published at approximately 11.45 (London time). The first Position Paper proposed that submitters should include all of their eligible transactions since their LIBOR submission on the previous day.

Using transactions over a period of time, which is already accommodated in some banks' current methodologies, should lead to the capture of a greater volume of trades from different time zones.

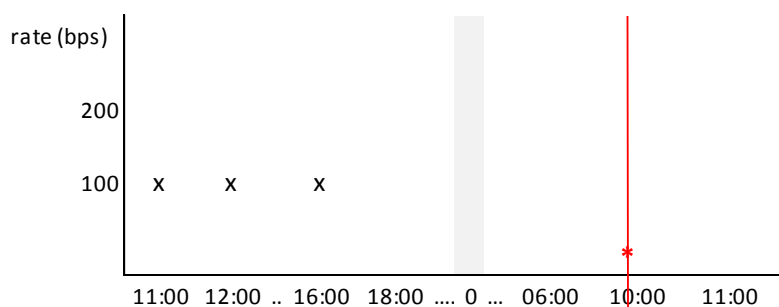
The following scenarios illustrate, with a deliberately extreme example, the impact of determining LIBOR at a point in time (e.g. as of 11.00 London time) or by taking transactional data over a period of time (e.g. a 24 hour transaction window).

Common to each scenario below is an unexpected increase of 100 bps in the policy base rate at 10.00 London time. Four banks have a different transaction profile, as follows (with the assumption that all of the transactions are of equal size and for the same currency and tenor):

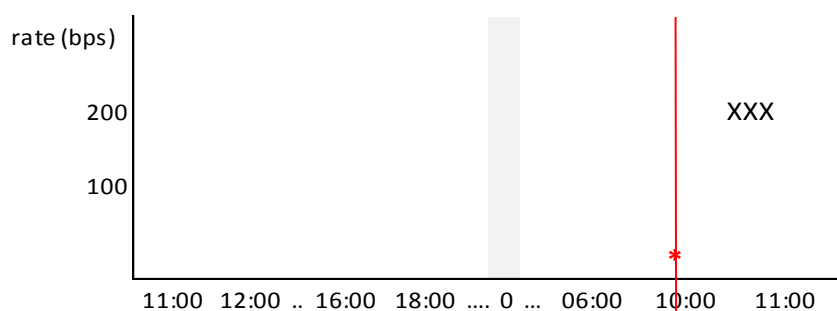
Bank A – since the start of the transaction window, Bank A booked 4 trades at 100 bps and one trade at 200 bps just before the close of the window. Its submission is 120 bps (based on a Level 1 VWAP methodology):



Bank B – during the 24 hours since its last LIBOR submission, Bank B booked 3 trades (for a specific currency and tenor), all for 100 bps. Its submission is 100 bps:

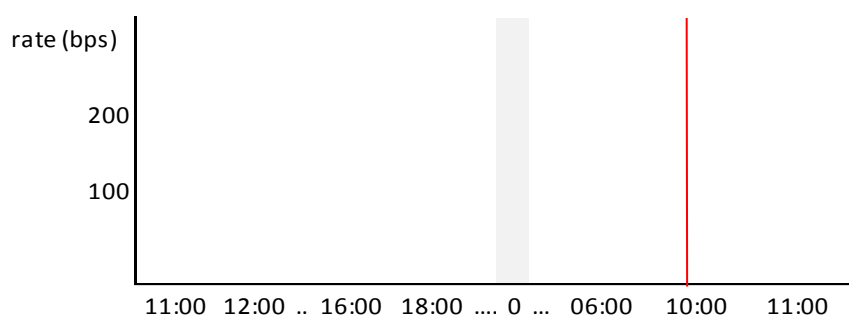


Bank C – during the 24 hours since its last LIBOR submission, Bank C booked 3 trades at 10.30 and all at 200 bps. Its submission is 200 bps:



Bank D – during the 24 hours since its last LIBOR submission, Bank D did not book any trade. Its submission is 200 bps if the submission is by reference to a point of time (i.e. 11.00) and based on Expert Judgement.

If the submission is intended to reflect a collection window (e.g. 24 hours), IBA would set times at which the bank should determine its submission, with a view to submitting a VWAP of the bank's view of the rates at the times set by IBA.



A number of factors need to be balanced:

- Time zones and locations in which banks fund themselves will be increasingly important
- Markets can move quickly, making transactions from the previous day less relevant
- Volatility of submissions could be increased
- Moving the LIBOR setting time by a short period (e.g. to 13.30) would allow more USD trades to be included, and
- Market events during a transaction window may require the exercise of Expert Judgement/ Adjustment (see section 5.2 below).

Implementation options

Further expansion of the trade data is necessary for some tenors / currencies. Collecting transactions over a period of time would help to satisfy this need. It may be appropriate then to apply weightings according to when transactions were executed.

Four possible implementation options, and their respective implications, are as follows:

1. VWAP from previous submission:

Using transactions from the time of the bank's previous LIBOR submission (i.e. 11.00 – 11.00) and continuing to publish LIBOR at approximately 11.45 (London time):

- It increases the availability of transaction data points
- It is more in line with a formulaic approach, reducing the need to exercise Expert Judgement
- A single submission might be based on transactional data points with different value dates
- Submissions may become 'stale', particularly over weekends and bank holidays and thus the rate may not be representative of the market at publication time

2. Rate based on previous day's data:

Using transactions from the whole of the previous business day (24 hours) and publishing LIBOR on the following business day:

- It increases the availability of transaction data points without crossing value dates
- It allows Benchmark Submitters more time in which to validate their submissions
- The rate may not be representative of the market at publication time. This could have an impact on related products (e.g. options and derivatives)

3. Expanded same-day transaction window:

Having an expanded 'same day' transaction window from, for example, 06.00 to 13.30 and publishing LIBOR at approximately 14.15:

- It increases the availability of transactional data points, but possibly to a lesser extent than options 1 or 2 above
- There would be operational impacts for LIBOR users, especially for GBP same day payments

- Submissions could become 'stale' and unrepresentative of the market at publication time but possibly to a lesser extent than options 1 or 2 above.

4. Rate as of 11.00 with collection window from previous submission:

Expanding the collection window to 24 hours from the previous LIBOR submission and calculating a VWAP with a view to submitting a rate as of 11.00, if necessary by using Expert Adjustment in accordance with section 5.2 of this Paper, and continuing to publish LIBOR at approximately 11.45:

- It increases the availability of transactional data points
- The rate would be current at publication time
- LIBOR submissions would be less likely to be determined through Level 1 transactions. To the extent that submissions were more reliant on Expert Judgement, they would be less readily verifiable than submissions based purely on transaction data
- A single submission might be based on transactional data points with different value dates
- Since Benchmark Submitters would continue to make their submissions reflect the market as at a point in time, even though the period for collecting transactions may be 24 hours or longer, the regulatory risk inherent in exercising Expert Judgement would remain.

Questions

Q6 Which of the four implementation options do you think is best?
1 / 2 / 3 / 4 / other (please specify)

Please explain your rationale.

Q7 Would you find any of the implementation options problematic? YES/NO

Please explain your rationale.

Q8 Do you think that LIBOR should be determined by reference to a point in time (e.g. as of 11.00 London time) or by reference to a period of time (e.g. a 24 hour window)?

Please explain your rationale.

Q9 *If you think that LIBOR should be determined by reference to a point in time, what time would be optimal in your view?*

Please state your preferred timing and explain your rationale.

Q10 *If you think LIBOR should be determined by reference to a point in time, would you be in favour of weighting transactions during the preceding data collection period so that transactions closer to publication time are given relatively greater weight? YES/NO*

Please explain your rationale.

Q11 *If you think that LIBOR should be determined by reference to a period of time, what period would be optimal in your view?*

Please state your preferred timing and explain your rationale if you have not done so in response to the questions above.

Q12 *What do you think would be the impact of moving to a period of time for different product types (e.g. derivatives, options, loans)?*

Q13 *Do you think that there would be merit in treating the Overnight tenors differently because of the different value date? YES/NO*

Please explain the rationale for your response.

3.5 Eligible transaction types

As stated in the first Position Paper, Benchmark Submitters already use a wide range of transactions to anchor their LIBOR submissions within the existing waterfall of methodologies in Box 4.B of the Wheatley Review. Each Benchmark Submitter has developed its own methodology for establishing LIBOR submissions and a variety of approaches now exists.

We propose to standardise the acceptable Level 1 (Transactions) as the Volume Weighted Average Price of transactions in the following:

- Unsecured Deposits
- Commercial Paper (CP) - primary issuances only, and
- Certificates of Deposit (CD) - primary issuances only.

If the above Level 1 transactions are not sufficient, Floating Rate Notes (FRN) or Floating Rate Certificates of Deposit (FCD) may additionally be included, provided that they:

- are 'plain vanilla'
- are a primary issuance, and
- have a maturity of less than two years.

Questions

Q14 *Do you agree with using FRNs / FCDs to supplement the Level 1 transaction types if necessary?* YES/NO

If NO, please explain your rationale.

Q15 *Are there any other transaction types that you think could be used to supplement the Level I transaction types?* YES/NO

If YES, please specify the transaction type(s) and explain your rationale.

3.6 Volume weighted average price (VWAP) with no premiums or discounts

In 1998, the British Bankers' Association (BBA) changed the question around which the banks determined their LIBOR rates. With this change, LIBOR became a hypothetically transacted rate at that time.

IBA proposes that the Volume Weighted Average Price of transactions be included with no premiums or discounts to adjust the transacted price. This means, for example, that transactions at unrepresentative prices that might be carried out by a bank for various reasons would be included without adjustment – they were after all transactions.

To mitigate a risk of manipulation of prices through non-representative prices, IBA would require explicit details and reasons for any such transaction, together with an attestation by the Benchmark Submitter at senior level that the transaction was bona fide.

Question

Q16 *Do you agree with using the counterparty types with no premium or discount to adjust the transacted prices?* YES/NO

Please explain your rationale.

3.7 Minimum transaction sizes

The FSB’s desire for LIBOR to be transaction-based as far as possible means a more formulaic approach for banks and an appropriate trade size threshold needs to be set. This involves balancing, on the one hand, a threshold size that mitigates potential manipulation and, on the other hand, a threshold that does not unduly exclude transactions and is representative of the wholesale market that LIBOR is intended to represent.

Benchmark submitters currently use a range of market sizes as yardsticks for deciding whether transactions are of eligible size to be included in determining their LIBOR submissions.

As stated in the Feedback Statement, one suggestion was that the eligible transaction size for each panel bank should be agreed bilaterally between the banks and IBA, and that IBA should then publish the median of the eligible transaction sizes for each currency.

Accordingly, IBA proposes that each Benchmark Submitter should agree the applicable Level 1 trade thresholds bilaterally with IBA to ensure that the thresholds are appropriate for the size and business profile of the bank, subject to the overall thresholds being agreed from time to time by the LIBOR Oversight Committee.

The thresholds for each bank will be kept under regular review by IBA.

Based on IBA’s data of trading by Benchmark Submitters, the charts below give an indication of possible thresholds and the effect they may have on the respective input ratios related to Level 1 (Transactions), Level 2 (Transaction-derived) and Level 3 (Expert Judgement) submissions. The charts, which relate to USD LIBOR, are provided as an example.

Chart 1:

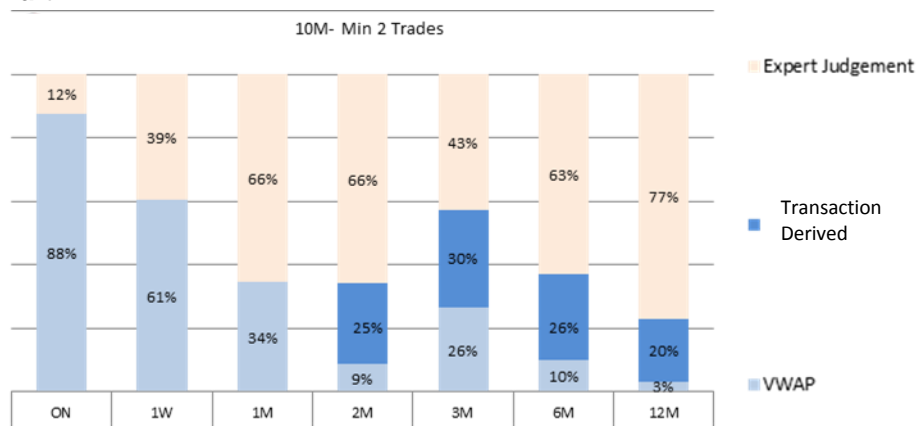


Chart 2:

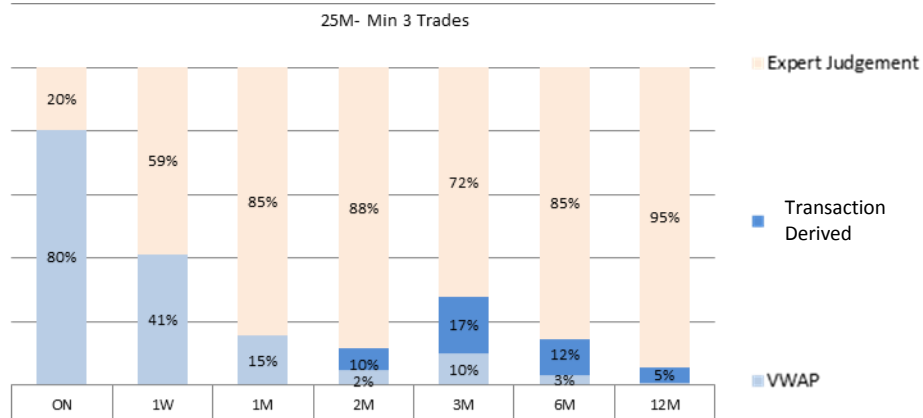


Chart 1 sets a minimum threshold of USD 10 million per transaction and two trades for each tenor. This indicates that 88% of the Overnight (ON) tenor would be based on inputs from Level 1 (Transactions) and 12% from Level 3 (Expert Judgement).

By contrast, Chart 2 raises the threshold to USD 25 million and three trades. The ON benchmark would then be based 80% and 20% on Level 1 and Level 3 inputs, respectively. The 3M tenor shows the widest difference, with 43% Expert Judgement in Chart 1 and 72% in Chart 2, and with the Level 2 input of transaction-derived data moving from 30% to 17%.

Questions

Q17 Where do you see the balance between, on the one hand, a threshold size that mitigates potential manipulation and, on the other hand, a threshold that does not unduly exclude transactions and is representative of the wholesale market?

Please explain your rationale.

Q18 Which of the thresholds do you think is more appropriate?

10m + 2 trades / 25m + 3 trades

Please explain your rationale.

Q19 Would you prefer a different minimum size and / or minimum number of transactions?

YES/ NO

Please describe the scenario and explain your rationale.

Q20 Do you think that a uniform threshold size should be applied across all currencies or that different thresholds should apply to different currencies / tenors? YES/ NO

Please explain your rationale.

3.8 Transactions with non-standard tenors (tenor bucketing)

Transactions with maturities falling between required submission tenors are important data points to incorporate in the formulation of LIBOR. Benchmark Submitters currently use expert judgement or their own formula to determine in which tenor such transactions should be reported. For example, a 2.5 month transaction might naturally populate the 2 or 3 month category, or indeed both.

To ensure a consistent methodology and remove the requirement for judgement we propose the following standard methodology for the treatment of transactions of eligible sizes:

Tenor	Range of days (inc)	
	From	To
ON/SN	01	05
1W	06	15
1M	16	45
2M	46	75
3M	76	110
6M	160	200
12M	300	370

It will be seen that trades of between 111 and 159 days inclusive and 201 to 299 days do not fall into any tenor bucket. Such trades should not be used as Level 1 inputs but can be used for Level 2 (Transaction-derived) and in framing Expert Judgement for Level 3 inputs.

Currently, in some currencies and tenors, higher volatility is observed over month / quarter / year ends. Such volatility may be caused by regulatory obligations, reporting cut-offs and many other reasons.

Questions

Q21 Do you agree with tenor bucketing in principle? YES/NO

Please explain your rationale.

Q22 Do you agree with the proposed tenor bucketing? YES/NO

Please explain your rationale.

Q23 Do you think that different considerations should apply over month / quarter / year ends (when there is typically higher volatility in some currencies)?

YES/NO

Please explain your rationale.

4. LEVEL 2 INPUTS - TRANSACTION-DERIVED

4.1 Introduction

Level 2 inputs may be used only if the submitting bank has insufficient Level 1 transactional data. The proposed elements for the cascade of Level 2 inputs are:

1. Historical transactions
2. Interpolation, and
3. Extrapolation / Parallel Shift.

4.2 Historical transactions

The use of historical transactions involves the bank taking its transactions from previous day(s) and adjusting them by the day-on-day change of a correlated rate (e.g. OIS, short-dated government bonds, Repos, Central bank rates).

Level 2 trades should be linearly weighted (depending on their proximity to the time of the submission).

A maximum number of days for which historical transactions can be used will be set by the LIBOR Oversight Committee taking into account the activity in the underlying market. Such number will be kept under close review by the Committee.

The proposed number of days for each currency and tenor is as follows:

	USD	EUR	GBP	CHF	JPY
1M	3	3	3	5	5
2M	3	3	3	5	5
3M	3	3	3	10	10
6M	5	5	5	10	10
12M	10	10	10	15	15

Questions

Q24 Do you agree with using transactions from previous day(s)? YES/NO

Please explain your rationale.

Q25 Do you agree with adjusting transactions from previous day(s)? YES/NO

Please explain your rationale.

Q26 Do you agree with the box of days for which historical transactions can have an effect on submissions (assuming that the bank was not able to revert to Level 1 inputs in that time)? YES/NO

Please explain your rationale.

4.3 Interpolation and extrapolation

Where transactions are not available for a currency and tenor, or are below the minimum transaction size, interpolation and extrapolation techniques should be utilised to fill gaps in the curve. This also assumes the time period since the last available trade for a tenor has exceeded the historical rolling periods in the table above.

4.3.1 Interpolation

Ways to interpolate include the following:

- applying a straight line interpolation between tenors based on the day-on-day changes of the two available rates, or
- calculating the change by decomposing the available rates into a 'risk-free rate' and a credit/liquidity component. To calculate a submission where there are no available trades, we use an average of the day-on-day change in the credit/liquidity risk premiums of the adjacent tenors.

An example of the methodology can be seen in Appendix 2.

The correlated rate and credit/liquidity calculation is likely to be the most accurate method, but this has limitations in terms of calculation time and complexity, the time for a bank's internal review before submission, the implementation timing and the implementation costs.

The very short term of the curve (ON, SN and 1W) has different dynamics to the rest of the LIBOR curve. Factors such as regulatory obligations (e.g. LCR etc) and credit and liquidity premiums have a different impact on those shorter tenors. In addition, the market conventions (same day, T+2 etc.) are usually specific to the overnight tenor.

Questions

Q27 Do you agree with IBA's proposed decomposition formula for interpolation? YES/NO

Please explain your rationale.

Q28 Would you prefer linear interpolation? YES/NO

Please explain your rationale.

Q29 Do you agree that interpolation should not be applied to ON or 1W tenors? YES/NO

If NO, please explain your rationale.

Q30 Do you think that interpolation with more than one tenor gap is acceptable? (e.g. if a bank has transactions for the 1M and 6M tenors, can the 2M and 3M tenors be interpolated?) YES/NO

Please explain your rationale.

Q31 What are your views, in the absence of anchor points in the relevant currency, on interpolation from transactions in other currencies (e.g. EUR and USD for CHF and JPY) using FX swaps?

4.3.2 Extrapolation (Parallel Shift)

Where a tenor has no transactions and only one neighbouring tenor has a transaction, banks can parallel shift rates based on the day-on-day change in value of the neighbouring tenor's transaction.

IBA proposes that historical trades can be used in extrapolation and parallel shifts if they have been adjusted.

Again the methodologies for this can either be a straight line extrapolation using available transactions on the curve or calculating the corresponding change from decomposed risk-free rate and credit/liquidity components.

As with interpolation, the very short term of the curve (ON, SN and 1W) has different dynamics to the rest of the LIBOR curve. Factors such as regulatory obligations (e.g. LCR etc.) and credit and liquidity premiums, have a different impact on those shorter tenors. In addition, the market conventions (same day, T+2 etc.) are usually specific to the Overnight tenor.

In the same way as for interpolation, IBA proposes the decomposition of trades into their risk-free rate and credit/liquidity components. To calculate a submission where there are no available trades, we use an average of the day-on-day change in the credit/liquidity risk premium of the adjacent tenor.

Please see the example in Appendix 2.

Questions

Q32 Do you agree with the application of linear extrapolation or the decomposition formula?

Please explain your rationale.

Q33 Do you agree that extrapolation should not be applied to the ON or 1W tenors (because they are shorter, more liquid and more volatile)? YES/NO

If NO, please explain your rationale.

Q34 Do you agree that a bank having more than two points on the curve should use interpolation and then parallel shifts? YES/NO

If NO, please explain your rationale.

Q35 What are your views on whether extrapolation should only be used to inform shorter tenors as they may not reflect the credit element and liquidity of longer one (e.g. a 3M trade can be used to extrapolate a 2M tenor but not 6M)?

Please explain your rationale.

4.3.3 Non-standard tenors

As stated in section 3.8, there are gaps in the proposed standard LIBOR tenor buckets between 3 and 12 month tenors. In order to utilise trades with maturities that fall into these gaps, IBA proposes that additional tenor buckets be defined for 4, 5, 7, 8, 9, 10 and 11 month trades and that these be used as additional interpolation points for standard LIBOR tenors where one of the above transaction-derived methodologies has not been possible.

5. LEVEL 3 INPUTS – EXPERT ADJUSTMENTS AND EXPERT JUDGEMENT

5.1 Introduction

During the consultation on IBA's first Position Paper, several respondents acknowledged that only allowing Expert Judgement when there are insufficient transactions could increase volatility and potentially result in distortion to the rate when a significant volume of transactions has occurred at what the submitting bank would consider an unrepresentative price.

IBA's Feedback Statement reported that, "some respondents considered that an overlay of Expert Judgement is almost inevitable to ensure appropriate submissions, citing occasions where even an ample sufficiency of transactions would not yield a good submission if there had been strong market move or political happenings in the period between the collection by a bank of its transactional data and the submission of its LIBOR rates to IBA".

In the Wheatley Review, the submission guidelines in Box 4.B include the following statement:

"Submissions may also include adjustments in consideration of other variables, to ensure the submission is representative of and consistent with the market for inter-bank deposits. In particular, the information obtained above may be adjusted by application of the following considerations:

- Proximity of transactions to time of submission and the impact of market events between transactions and submission time
- Techniques for interpolation or extrapolation from available data
- Changes relative [to the] credit standing of the contributor banks and other market participants and
- Non-representative transactions".

5.2 Expert Adjustments

IBA has considered further whether any adjustments should be permitted in determining LIBOR submissions based on inputs at Level 1 (Transactions) and / or Level 2 (Transaction-derived inputs). We have concluded that the following circumstances may necessitate some non-transactional input:

- A. If a market event means that the transaction-based submission rate (based on Level 1 and perhaps Level 2) is clearly unrepresentative of the market (e.g. a change in the policy rate or other exogenous event)
- B. If the Benchmark Submitter considers that the transaction-based submission rate is clearly unrepresentative of the bank's funding cost (e.g. following a change in the credit standing of the Benchmark Submitter).

In the above Scenarios, banks would have the ability to review, and in certain cases alter, their calculated rate if they felt that it did not reflect the market.

This use of Expert Adjustments could be effected in one of the following ways:

- Changing the inputs by removing unrepresentative trades only, and / or
- Adjusting the rates through the application of expert judgement (being the knowledge, experience and expertise of the Benchmark Submitter) subject to appropriate governance and controls against biased or manipulative behaviour.

In addition to internal controls within the Benchmark Submitter organisation, the banks will be required to notify IBA when a calculated transaction-based rate is altered and to provide the full reasoning. IBA's expectation is that such adjustments would be used infrequently and would be an area of significant focus for a bank's internal and external auditors.

If a bank makes use of Expert Adjustments, the submission will be regarded by IBA as being based on an Expert Judgement Framework, as described in section 5.5 below.

Questions

Q36 Do you agree with using Expert Adjustments in the Scenarios? YES/NO

Please explain your rationale.

Q37 Do you agree with the ways in which Expert Adjustments could be applied, i.e. by changing the inputs or utilising expert judgement? YES/NO

Please explain your rationale.

5.3 Expert Judgement

Qualitative criteria are currently used to a greater or lesser extent when banks have insufficient transactions to support a reliable submission based on pure quantitative data. In these instances, a submitter can use expert judgement to derive a submission from related transactions. If no transactions are available, the use of more subjective expert judgement is necessary.

When a Benchmark Submitter has insufficient transactional data on which to anchor its submission, it must move to Level 3 of the Waterfall (Expert Judgement).

IBA proposes that Level 3 (Expert Judgement) has two elements:

1. a Formula devised by each bank, agreed with IBA and incorporated by the bank within a submission-generating system for use when the bank has insufficient inputs at Level 1 (Transactions) or Level 2 (Transaction-derived data), and
2. a Framework that a bank may use if a system-generated submission would be clearly unrepresentative of the market and / or if the Benchmark Submitter considers that the transaction-based submission rate is clearly unrepresentative of the bank's funding cost).

IBA's expectation is that a bank's Formula and Framework will both attract significant focus from the bank's external auditors.

5.4 Expert Judgement Formula

An Expert Judgement Formula should be devised by each bank (rather than each bank following a formula prescribed by IBA). The reason for this approach is that, if IBA were to set the formula and respective weightings, LIBOR rates might be predicted by market users with some certainty, raising the risk of manipulation.

The Expert Judgement Formula would have the following key characteristics:

- It must be capable of being coded into an algorithm to make it as verifiable as possible
- It must be approved within a bank's governance structure
- It would be subject to review and challenge by IBA, the FCA and the bank's internal and external audit functions, and
- It would be kept under periodic review by the bank and subject to a formal change management process.

5.5 Expert Judgement Framework

The proposed second element of Expert Judgement is a Framework that a bank may use if a market event means that the transaction-based submission rate is clearly unrepresentative of the market or if the Benchmark Submitter considers that the transaction-based submission rate is clearly unrepresentative of the bank's funding cost.

The Expert Judgement Framework element is by nature not capable of being driven by an automated system but is based on the submitter exercising expert judgement within the bank's governance and control environment.

5.6 Acceptable inputs

For both elements, IBA will prescribe the acceptable inputs and those which must not be used. The inputs can be categorised as follows:

- Related market instruments
- Market observations
- Macro-economic factors
- Credit-standing related
- The bank's LIBOR submission on the previous day
- Trades that have exceeded historical rolling periods, and
- Other evidential factors.

Within the above categories, a bank's Formula and / or Framework should be based on the following (in no particular order):

	Allowable inputs	Disallowed inputs
Related market instruments	Interest Rate Futures	FRNs with a maturity of more than 2 years
	FRAs	
	Interest Rate Swaps	
	FX (Forwards, swaps)	
	OIS curves	
	Repo	
Market observations	Observed third party transactions	
	Broker quotes	
Macro-economic factors	Policy rate changes	
	Significant economic data	
Credit standing	A published and verifiable change in the credit standing of the bank	
Other	Other factors that can be evidenced and verified, if agreed with IBA	Any factors that cannot be evidenced and verified Any factors that might present the bank with a conflict of interest

Question

Q38 Do you agree with the ways in which Expert Judgement should be framed?

YES/NO

Please explain your rationale.

6. COMPOSITION OF LIBOR CURRENCY PANELS

IBA is of the view that widening the currency panels is a crucial element of evolving LIBOR.

Expanded panels would have the following clear benefits:

- An increased number of available transactions would make the transition to a trade-driven benchmark more attainable and ensure that the rate is as representative of the underlying market as possible
- The lessened impact of any single submitter would further reduce both the opportunity and motive for manipulation
- There is a current unfairness in that 20 banks have the cost, effort and risk of being submitters to LIBOR whilst a very large community of banks benefits from availability every day of the rate, and
- Increasing the panel sizes would reinforce the sustainability of the rate.

As will be clear from this Second Position Paper, IBA is committed to basing LIBOR on transactions to the greatest extent possible. To do this effectively requires an expansion in the volume of transactions on which to anchor LIBOR. Accordingly, IBA proposes to widen a number of parameters: the funding centres from which transactions should be eligible for inclusion; the transaction types; the minimum transaction sizes; the submission window for collecting transactions; and the counterparty types. Perhaps the most obvious element to expand is the number of Benchmark Submitters.

IBA initially proposed an approach under which perhaps 50 banks would contribute their transactions on a daily basis and the actual panels would be determined periodically based on the banks' activity in the preceding period. However, IBA does not have access to transactional data from non-LIBOR banks.

As an alternative structure that IBA thought should be capable of more simple implementation, IBA proposed to introduce tiers of LIBOR submitters. The existing banks would remain Type A submitters, required as at present to make LIBOR submissions every day even where a paucity of transactions means that they have to determine their rates by the use of Expert Judgement with its attendant risk. In addition, IBA would introduce a Type B submitter which would only provide a rate if it had sufficient transactional data points to make a Level 1 (Transactions) or Level 2 (Transaction-derived) submission. Type B banks would not submit a rate based on Level 3 (Expert Judgement). However, the approach was not without its drawbacks.

Question

Q39 What conditions do you think would need to exist to attract banks to become Benchmark Submitters?

Please outline your thoughts on such conditions.

7. DEFINITION, CALCULATION AND PUBLICATION

7.1 Introduction

Embedding LIBOR to the greatest extent possible in transactions provides the opportunity to review other aspects of the benchmark:

- The 'definition', insofar as one exists, and whether it should be updated in line with the changes in banks' funding activity
- Whether a change in the calculation of LIBOR would be desirable, and
- Whether the current embargo on publishing submissions remains appropriate.

These considerations are explored below.

7.1.1 Definition of LIBOR

Currently there is no single definition of LIBOR, rather different participants refer to LIBOR based on varying combinations of:

- Its acronym LIBOR (from London Interbank Offered Rate)
- The question asked of submitters, referred to as the "Administrator's Question", which is currently "*At what rate could you borrow funds, were you to do so by asking for and then accepting inter-bank offers in a reasonable market size just prior to 11 am?*", and
- Market practice for bank unsecured funding activity.

Some contracts refer to LIBOR based simply on its location on a specific data distributor's screen, while others continue to refer to it as BBA LIBOR.

The British Bankers' Association (which, through BBA LIBOR Limited, was the previous administrator of LIBOR) changed the LIBOR question in 1998 from a rate at which the submitter believed a prime bank would be offered deposits in the market to a rate at which the panel bank itself could borrow funds. This was the last occasion when the definition was re-examined and changed.

Up until the BBA's review in 1998, submissions were based on the following question: "*At what rate do you think interbank term deposits will be offered by one prime bank to another prime bank for a reasonable market size today at 11am?*"

The alteration of the definition in 1998 changed LIBOR from being a hypothetically offered rate to a hypothetically transacted rate. The acronym was retained although LIBOR was no longer an offered rate.

IBA considers that, in fulfilling the strategic direction set by the FSB to make LIBOR based on transactions to the greatest extent possible, the need for the Administrator's Question falls away and it would be more appropriate to have a concise description of LIBOR for users of the benchmark.

Accordingly, we propose:

“ICE LIBOR is the benchmark calculated by ICE Benchmark Administration (IBA) on London business days, based on the rate at which submitting banks could fund themselves using eligible unsecured wholesale transactions.

The basis of the calculation is defined by IBA and is published at www.theice.com/IBA. IBA, the benchmark administrator of ICE LIBOR, is authorised and regulated by the Financial Conduct Authority.”

Questions

Q40 Do you think that the need for the Administrator’s Question falls away? YES/NO

Please explain your rationale.

Q41 Do you agree in principle with having a concise description of LIBOR for users of the benchmark? YES/NO

If NO, please explain your rationale.

Q42 Do you have any comments on IBA’s proposed description of LIBOR for users of the benchmark? YES/NO

If YES, please propose comments.

7.3 Calculation of LIBOR

LIBOR is currently calculated using a trimmed arithmetic mean. Once all submissions are received, they are ranked in descending order and then the highest and lowest 25% of submissions are excluded. A mean is calculated from the remaining 50%.

This trimming of the top and bottom quartiles allows for the exclusion of outliers from the final calculation.

Several respondents to the first Position Paper commented on the calculation methodology and, as mentioned in the Feedback Statement, we present some different calculation scenarios. Appendix 3 presents four calculation methodologies applied to historical submissions data.

It should be noted that there is a balance to be struck between, on the one hand, lower trimming (e.g.12.5%) which allows more submission values to be reflected in the calculated LIBOR value and, on the other hand, protection from outliers.

Questions

Q43 *Do you think that the methodology to calculate LIBOR should be changed? YES/NO*

Please explain your rationale.

Q44 *What would you see as the implications of changing the calculation methodology?*

Q45 *Which of the possible other calculation methodologies do you prefer?*

Please explain your rationale.

Q46 *Is there an alternative calculation methodology that you would prefer?*

Please describe the methodology and explain your rationale.

7.4 Publication of levels (IOSCO Principle 9)

Under IOSCO Principle 9, a benchmark administrator should publish with each Benchmark a concise explanation of how the Benchmark determination was developed.

IBA proposes to publish on a daily basis the proportion of inputs from Level 1 (Transactions), Level 2 (Transaction-based) and Level 3 (Expert Judgement) for each LIBOR currency.

7.5 Delayed publication of individual submissions

Up until April 2013, benchmark submitters' individual LIBOR submissions were published daily alongside the final LIBOR rate. Such publication was intended as a mechanism to promote transparency and public accountability for the accuracy of submissions.

However, this increased the benchmark's susceptibility to manipulation since benchmark submitters could estimate the likely impact of their submission on the overall rate. Real-time publication of submissions also were interpreted as signals (often erroneously) of a change in the creditworthiness of a submitter. These considerations led the Wheatley Review to recommend publication of individual submissions after an embargo of at least three months.

IBA currently publishes a daily file containing the individual submissions made three months prior to that day and, on the first business day of each month, a monthly file containing all of the submissions that became unembargoed in the previous month. This ensures that there is a delay of at least three calendar months before the submissions are published. In the first Position Paper, we invited comments from stakeholders on whether this process should remain the same going forward.

With the evolution of LIBOR to a rate based as far as possible on transactions, there is a concern that publishing submissions even after 3 months could give an unduly volatile view of banks' cost of funding if their transactions were predominantly interbank on some days and with corporates on other days.

To address this concern and to maintain transparency as far as possible, IBA proposes to publish anonymous rather than attributed submissions three months after the relevant publication of LIBOR. Individual submissions would be available to IBA, the FCA and as appropriate the LIBOR Oversight Committee.

Question

Q47 Do you agree that individual submissions should be published after three months on a non-attributed rather than on an attributed basis? YES/NO

If NO, please explain your rationale.

8. EVOLUTION TIMELINE AND NEXT STEPS

The evolutionary path for LIBOR is set out in Appendix 5, with implementation of the uniform methodology planned to take place incrementally in 2016.

IBA warmly invites you to provide your feedback on or before **Friday 16 October 2015** to:

IBA@theice.com

Or by post to:

ICE Benchmark Administration Limited
Milton Gate
60 Chiswell Street
London
EC1Y 4SA.

Please also feel free to raise any other considerations that you think should be included to further enhance the LIBOR reforms.

We very much welcome feedback and would be pleased to meet with respondents where this would be helpful.

After analysing responses in conjunction with our LIBOR Oversight Committee, we will publish a feedback statement with stakeholders' comments summarised anonymously and IBA's response to those comments.

9. APPENDICES

- 1 Glossary
- 2 Interpolation and extrapolation examples
- 3 Calculation methodologies
- 4 FAQ
- 5 Evolution timeline

GLOSSARY

In the Second Position Paper, the following terms have the meanings shown next to them in the following table:

Term	Meaning
Benchmark Submitter	An organisation that provides LIBOR submissions to IBA
Box 4.B	The part of the Wheatley Review setting out the LIBOR submission guidelines (https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/191763/condoc_wheatley_review.pdf)
British Bankers' Association (BBA)	The UK's trade association for the banking sector and the previous administrator of LIBOR
Broker quotes	Prices provided to a Benchmark Submitter by a third party; such prices may be specific to the Benchmark Submitter or a general indication of the market
Certificate of Deposit (CD)	A promissory note issued by a bank entitling the bearer to receive interest. A CD bears a maturity date, a specified fixed interest rate and can be issued in any denomination
Commercial Paper (CP)	An unsecured promissory note with a fixed maturity, , usually sold at a discount rate from face value
Corporate	A non-financial business organisation usually, but not always, being a company (US: corporation)
Credit risk premium	A premium that investors will demand in order to compensate the credit (counterparty) risk they undertake. This premium is firm specific
Decomposed risk-free rate	Used in order to illustrate that an unsecured funding transaction is comprised of a risk-free part and an additional credit and liquidity premium part
Discount	A weighting subtracted from a LIBOR submission to seek to make it representative on the underlying interest
Expert Judgement	Part of the hierarchy of transactions in Box 4.B of the Wheatley Review. Proposed by IBA as Level 3 of the waterfall of methodologies with 2 sub-levels, Formula and Framework

Expert Judgement Formula	Proposed by IBA as the first sub-level of Level 3 of the waterfall of methodologies, the Formula would be designed by each bank to produce a system-generated submission when the bank has insufficient inputs at Level 1 (Transactions) and Level 2 (Transaction-derived)
Expert Judgement Framework	Proposed by IBA as the second sub-level of Level 3 of the waterfall of methodologies, the Framework would rely on the expert judgement of the submitter using the acceptable inputs prescribed by IBA
Financial Stability Board	An international body that monitors and makes recommendations about the global financial system
Floating Rate Certificates of Deposit (FCD)	Funding instrument issued by a bank that pays a monthly, quarterly, semi-annual or annual coupon based on a floating interest rate
Floating Rate Notes (FRN)	Funding instrument issued by a bank / corporation that has a variable coupon, equal to a money market reference rate, like LIBOR, plus a spread
Forward Rate Agreement (FRA)	An over-the-counter contract between parties that determines the rate of interest, or the currency exchange rate, to be paid or received on an obligation
FRA	(see Forward Rate Agreement)
FSB	(see Financial Stability Board)
Funding centres / locations	The global markets from which IBA proposes that Benchmark Submitters should capture trades on which to anchor LIBOR submissions. IBA proposes to maintain an Approved List of Funding Locations, from which IBA will agree with each Benchmark Submitter the most appropriate funding centres to be used for that bank's submissions
Foreign Exchange (FX) markets	Markets in which currencies pairs are traded in instruments such as FX forwards, FX swaps etc. (FX forward contracts are transactions in which 2 parties agree to exchange a specified amount of different currencies at some future date, with the exchange rate being set at the time the contract is entered into. An FX swap is a simultaneous purchase and sale of identical amounts of one currency for another with two different value dates)
Historical transactions	Trades taken into account by a Benchmark Submitter to inform its LIBOR submissions as the first sub-level of Level 2 (Transaction-derived); such trades have been executed between 3 and 15 days previously, depending on the currency and tenor
IBA	(See ICE Benchmark Administration Limited)

ICE	Intercontinental Exchange Inc., the global group that includes regulated exchanges, clearing houses, post-trade / data services and ICE Benchmark Administration Limited
ICE Benchmark Administration Limited	The Benchmark Administrator for ICE LIBOR, ICE Swap Rate and the LBMA Gold Price
ICE LIBOR	The world's most widely used benchmark for short term bank borrowing rates, produced each London business day by IBA for five currencies with seven maturities ranging from overnight to 12 months (35 rates)
IOSCO	The International Organization of Securities Commissions, which published "Principles for Financial Benchmarks" in July 2013
LIBOR	(see ICE LIBOR)
LIBOR Oversight Committee	IBA's Oversight Committee that oversees LIBOR, including the industry-led LIBOR Code of Conduct. The Oversight Committee is comprised of benchmark submitters, benchmark users, Independent Non-Executive Directors and other relevant experts. The composition and terms of reference of the committee are available at https://www.theice.com/iba/libor and https://www.theice.com/publicdocs/Oversight_Committee_Terms_of_Reference_20140424.pdf respectively
LIBOR submissions	The rates provided to IBA by the Benchmark Submitters at which they could obtain funding in reasonable market size, for a given maturity and currency. The currency panels vary in size from 11 to 18 Benchmark Submitters. Each bank's LIBOR submission carries equal weight
Liquidity coverage ratio (LCR)	Liquidity ratio introduced by Basel III regulatory framework defining the amount of liquid assets that have to be held by a financial institution
Liquidity risk premium	A premium (minimum amount of money) that investors will demand when any given security cannot be easily converted into cash, and converted at the fair market value
Methodology	The way in which each Benchmark Submitter determines its LIBOR submissions, as agreed within the bank's internal governance and currently based on Box 4.B of the Wheatley Review
Non-Bank Financial Institution	An organisation that does not have a banking licence and is not supervised by any banking regulator
Non-standard tenor	The maturity of a transaction that has a duration which differs from the current LIBOR tenors

Overnight Indexed Swap	An interest rate swap where the periodic floating payment is generally based on a return calculated from a daily compound interest investment
Off-shore trade	A transaction executed outside the relevant jurisdiction for that currency (e.g. a transaction in Swiss Francs in London)
On-shore trade	A transaction executed within the relevant jurisdiction for that currency (e.g. a transaction in Swiss Francs in Switzerland)
Plain vanilla	A non-complex variety of a financial instrument (i.e. non structured)
Premium	A weighting added to a LIBOR submission to seek to make it representative on the underlying interest
Primary issuance	The process through which companies, governments or public sector institutions can obtain funds through the sale of debt or equity
Repo	A repurchase agreement, which is the sale of securities together with an agreement for the seller to buy back the securities at a later date
Risk-free rate	A rate with a minimal credit element (e.g. OIS, TOIS, short-dated government bonds, Repos, Central bank rates).
Risk premium	The minimum amount of money by which the expected return on a risky asset must exceed the known return on a risk-free asset, or the expected return on a less risky asset, in order to induce an individual to hold the risky asset rather than the risk-free asset
Sovereign Wealth Fund	A state-owned investment fund
Submission	(see LIBOR submissions)
Supranational corporation	An international organisation spanning a number of national jurisdictions
Interest Rate Swap	Agreement between two counterparties to exchange cash flows based on a pre-defined notional amount, usually from floating to fixed interest rate or vice versa
Tenor	The maturities in which IBA produces ICE LIBOR in each of 5 currencies. The seven tenors are currently Overnight/ Spot Next, 1 Week, 1 Month, 2 Months, 3 Months, 6 Months and 12 Months
Trade Threshold	The minimum volume of a Benchmark Submitter's Level 1 transactions
Trimmed arithmetic mean	The calculation method for LIBOR, by which: Benchmark Submissions are ranked by IBA in descending order; the highest and lowest 25% of submissions are excluded; and IBA calculates the mean of the remaining Benchmark Submissions

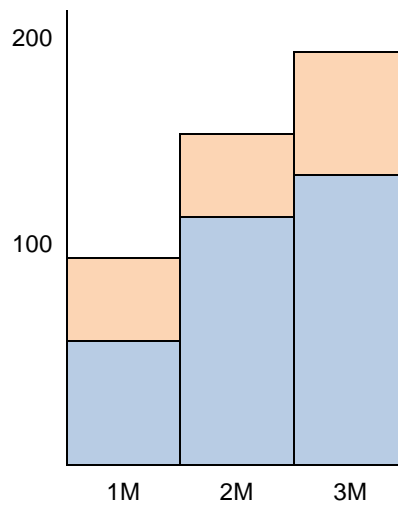
Unsecured Deposit	A deposit that is not protected by a guarantor, or collateralised by a specific asset
Vanilla	(see Plain vanilla)
Volatility	A statistical measure of the variation of a rate (LIBOR) over time
VWAP	Volume Weighted Average Price, it is the average of the volume-weighted ratio of the value traded to the total volume of all trades over a particular time horizon
Wholesale funding	The means by which banks seek financing from professional counterparties (not retail)

INTERPOLATION AND EXTRAPOLATION EXAMPLES

Interpolation

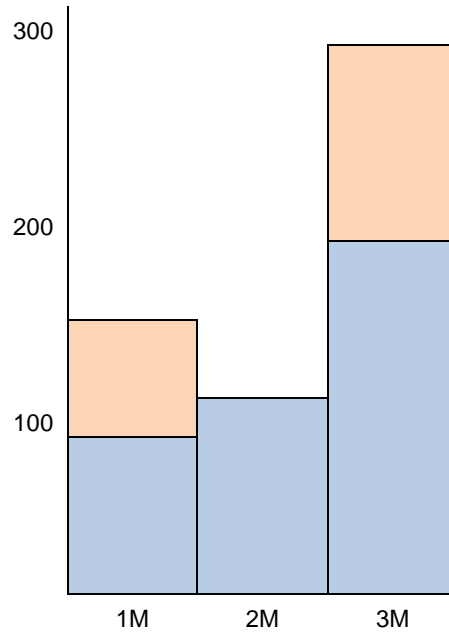
IBA proposes a formula that decomposes trades into the risk-free rate and bank credit/liquidity premium. This is performed by subtracting the risk-free rate at time of trade execution from the transacted rate to leave the risk premium. See example below for three trades booked at 1, 2 and 3 month tenors.

Tenor	1M	2M	3M
Transacted Rate (bp)	100	150	200
Risk-free rate	60	100	140
Risk Premium	40	50	60



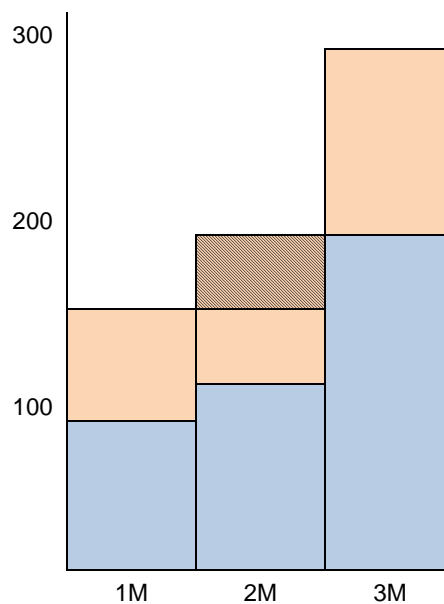
The example assumes that, at a future date (e.g. after the historical rolling period for the above trades has expired), there are 2 trades booked at 1 month and 3 months but no trade at 2 months. The risk-free rate for 2 months can still be sourced at submission time, e.g. = 120 bps in the example below.

Tenor	1M	2M	3M
Transacted Rate (bp)	160	/	300
Risk-free rate	100	120	200
Risk Premium	60	?	100



To calculate the day-on-day credit/liquidity risk premium change for 2 months, you take the risk premium from the previous day's submission (e.g. 50 bps) and add the average of the changes of the two tenors either side e.g. 20 (for 1 month) + 40 (for 3 months) = $(60/2) = 30$, then add to previous day's risk premium for 2 months = $30 + 50 = 80$.

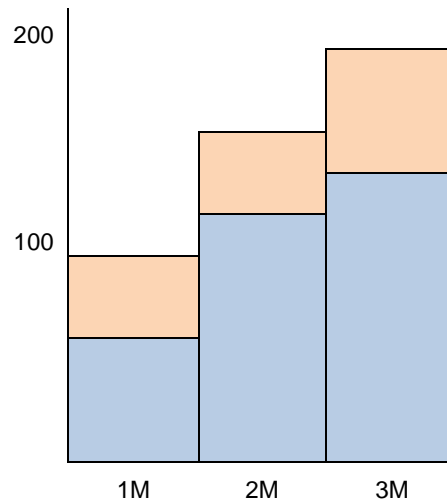
Finally add this to today's 2 month risk-free rate to generate the submission, i.e. $80 + 120 = 200$.



Extrapolation

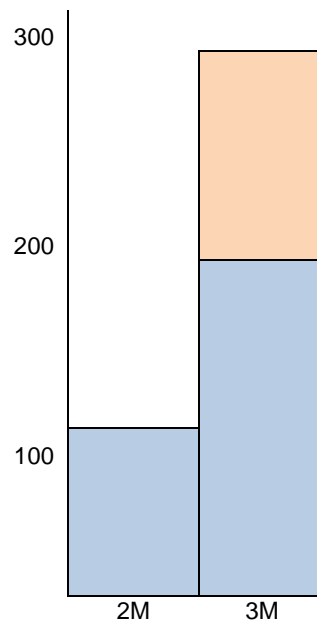
As per the methodology above for interpolation, first decompose trades into risk-free rate and bank credit/liquidity premium. This is performed by subtracting the risk-free rate at time of trade execution from the transacted rate to leave the risk premium. See example below for 3 trades booked at 1, 2 and 3 months.

Tenor	1M	2M	3M
Transacted Rate (bp)	100	150	200
Risk-free rate	60	100	140
Risk Premium	40	50	60



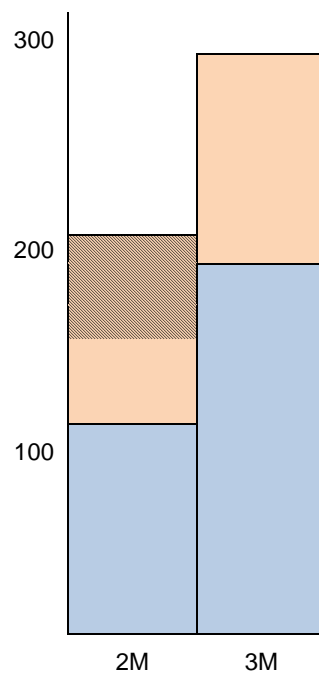
In this example, on a future date a trade is only available at 3 months and no trade is available at 1 or 2 months (and assuming that the last trades at these tenors have exceeded their historical rolling period).

Tenor	2M	3M
Transacted Rate (bp)	/	300
Risk-free rate	120	200
Risk Premium	?	100



The day-on-day risk premium change can then be calculated for the 2 month tenor by simply shifting the previous day's submission risk premium by the same amount as today's 3 month. i.e. if the 3 month risk premium shifted from 60 to 100 then 40 is added to previous day's 2 month risk premium (50) and this 90 risk premium amount added to today's 2 month risk-free rate = 90 + 120 = a submission of 210.

Tenor	2M	3M
Transacted Rate (bp)	/	300
Risk-free rate	120	200
Risk Premium	90	100



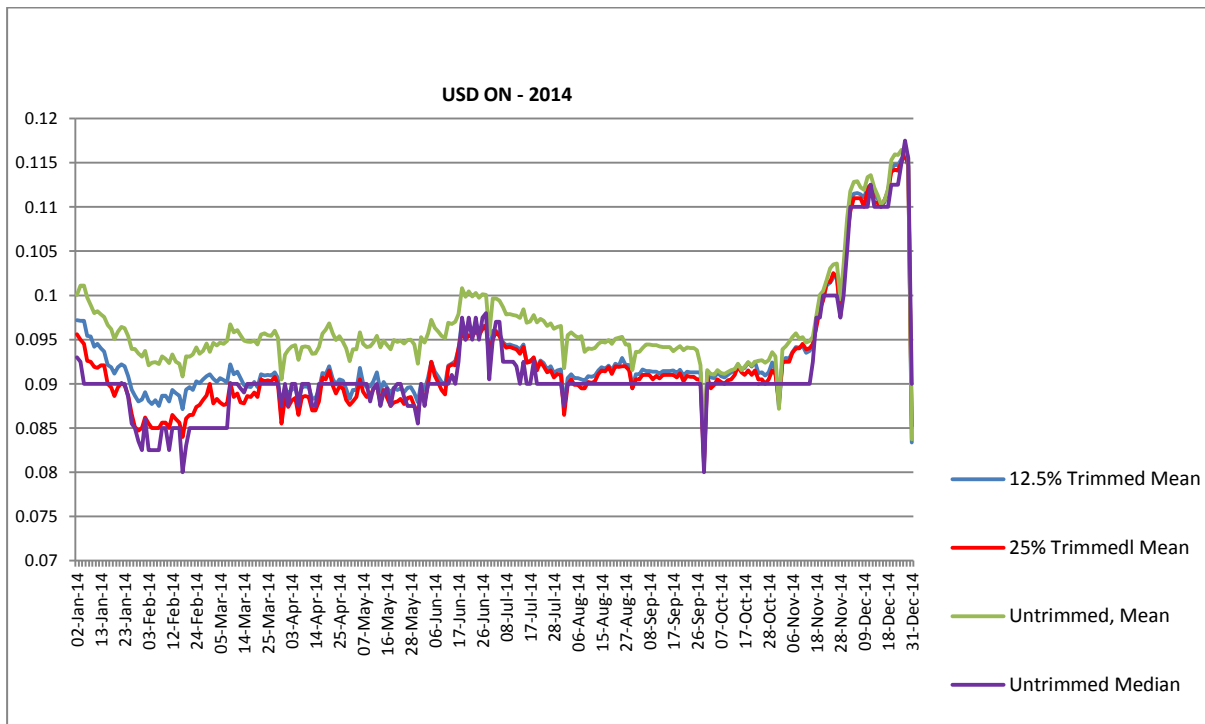
CALCULATION METHODOLOGIES

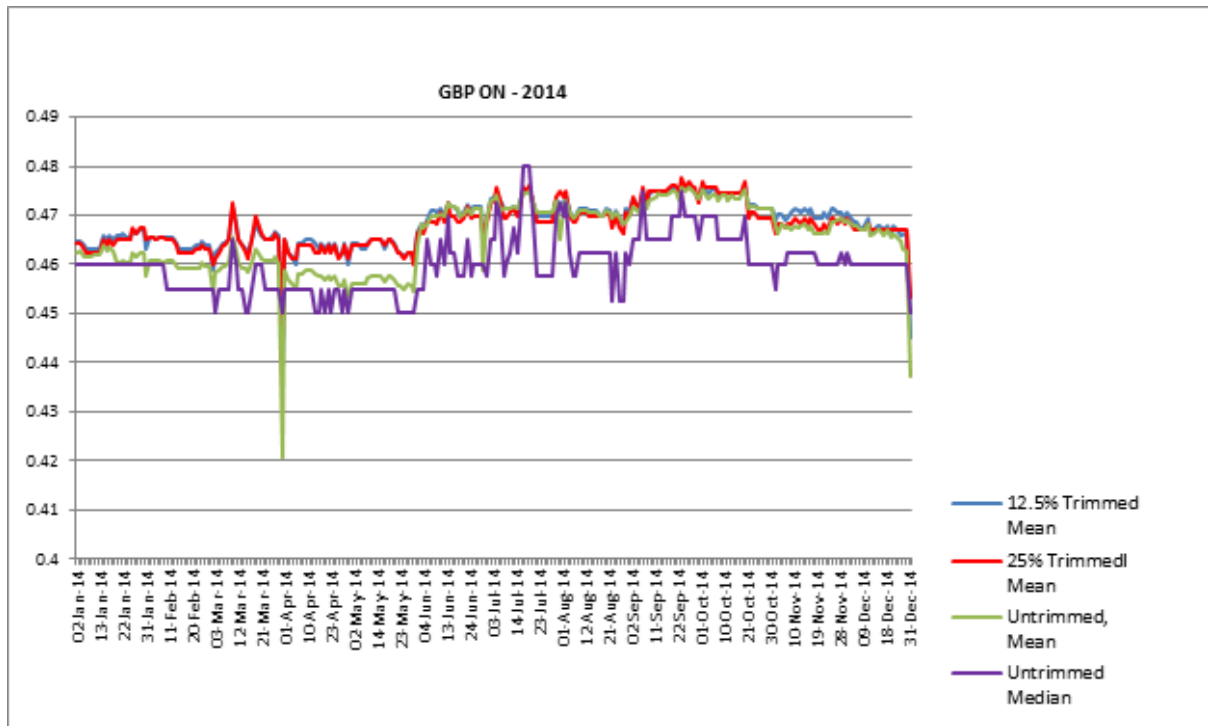
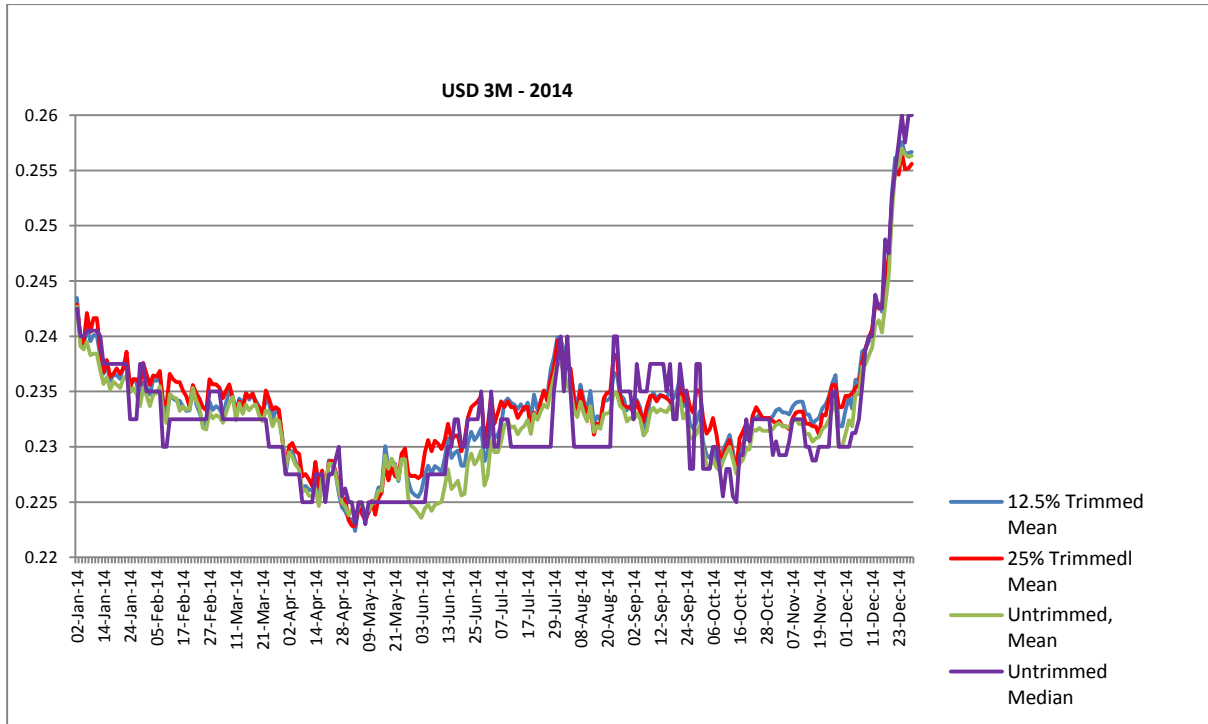
IBA presents below four calculation methodologies.

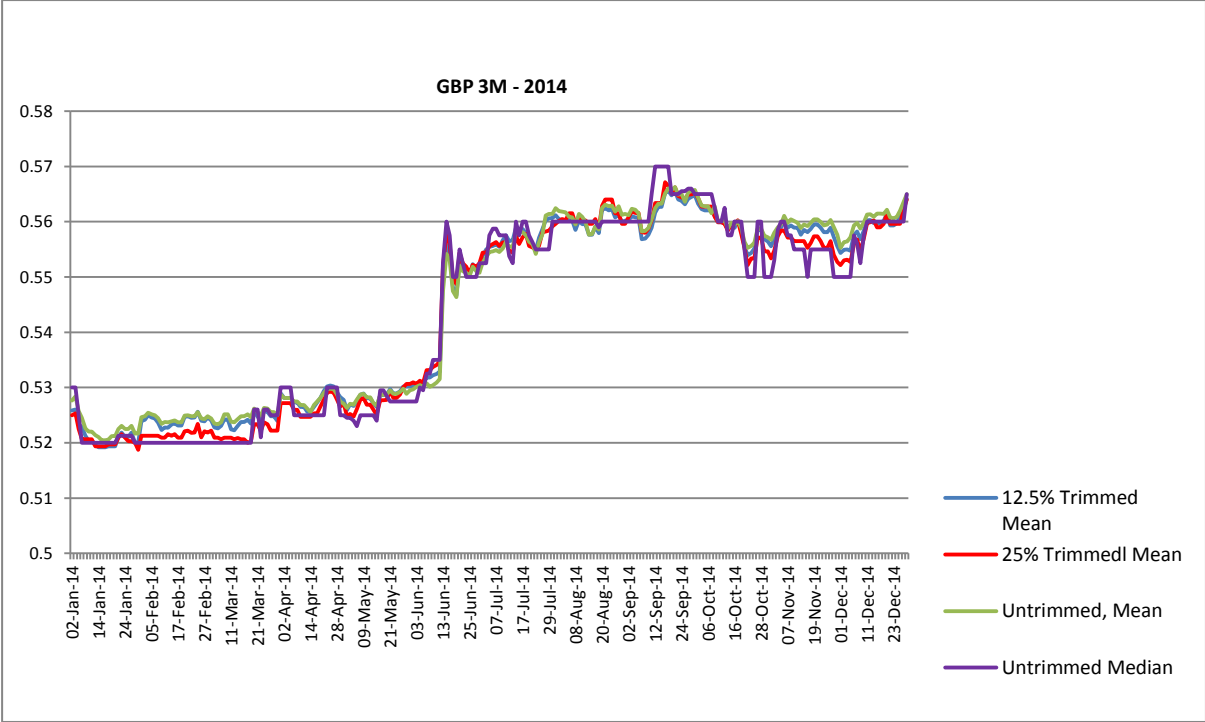
It should be noted that there is a balance to be struck between, on the one hand, lower trimming (e.g.12.5%) which allows more submission values to be reflected in the calculated LIBOR value and, on the other hand, protection from outliers.

The charts below illustrate the overnight and 3 month USD and GBP LIBOR rates calculated for 2014 using historical submissions data. The calculation methodologies compared are;

1. 25% Trimmed Mean (current LIBOR methodology)
2. 12.5% Trimmed Mean (i.e. leaving 75% of submissions in mean calculation)
3. Untrimmed Mean
4. Median.







LIBOR FAQ

The rationale for change

FAQ1 How much has LIBOR changed already?

A1 Restoring the integrity of such an important and widely used benchmark as LIBOR has required a combined effort from many organisations, including the FCA, the panel banks, IBA and other stakeholders:

- The UK authorities introduced statutory regulation for the administration of, and submission to, LIBOR, including an Approved Persons regime, to provide the assurance of credible independent supervision, oversight and enforcement with both civil and criminal sanctions
- The FCA has extensive regulatory powers over panel banks and can bring criminal prosecutions for benchmark-related misconduct
- The FCA has rules for benchmark submitters (i.e. panel banks) and benchmark administrators (e.g. IBA) and a dedicated benchmark supervision team
- The FCA requires external auditing of Benchmark Submitters
- The banks that are Benchmark Submitters have invested significant resources and capital to improve their LIBOR processes and their internal governance, in line with the regulatory requirements
- IBA was appointed as independent administrator
- IBA's sole focus is the administrator of benchmarks to the highest standards
- IBA has a dedicated surveillance team using sophisticated tools and statistical analysis techniques to scrutinise submissions, comparing the data provided by the panel banks with related markets, their own submission history and that of other panel banks. These checks and controls are designed to enable us to identify potential errors, manipulation and collusion
- IBA has an oversight and governance structure that emphasises independence, accountability and transparency, including an independent Board of Directors with a majority of experienced non-executive directors
- IBA's LIBOR Oversight Committee brings together key LIBOR stakeholders including associations to represent users of LIBOR, Benchmark Submitters and independent industry experts

- IBA's LIBOR Code of Conduct is approved by the FCA as industry guidance for the market, and will continue to evolve in order to reflect changes in the market and best practices, and
- Through its Principles for Financial Benchmarks, IOSCO has set global standards for benchmark administrators. IBA is one of only four administrators to have been formally assessed by IOSCO for compliance with the Principles.

All of the above changes have contributed to very significant improvements in LIBOR.

As a result, LIBOR is now harder to manipulate, making it more likely that any attempt to manipulate will be discovered, and there are appropriate legal punishments associated with any attempts at manipulation.

FAQ2 What are the key differences between IBA's evolutionary steps for LIBOR compared with those of the Wheatley Review in 2012?

A2 IBA's proposals will implement a standardised methodology using transactions to the greatest extent possible and introduce more uniformity as to how banks determine their submissions when they have insufficient transactions.

As stated in the first Position Paper, Benchmark Submitters already use a wide range of transactions to anchor their LIBOR submissions within the existing waterfall of methodologies in Box 4.B of the Wheatley Review. Each Benchmark Submitter has developed its own methodology for establishing LIBOR submissions and a variety of approaches now exists. IBA will introduce a more standardised approach.

To be consistent with the original purpose of LIBOR and to reflect the changes in bank funding in recent years, IBA proposes that all wholesale and professional entities should be regarded as eligible counterparty types, including central banks and corporates. The majority feedback to IBA's first Position Paper was that this as a sensible and necessary measure for increasing the volume of transactions to underpin LIBOR submissions.

Even including all wholesale and professional entities as counterparties will not yield sufficient transactions and accordingly IBA is proposing to broaden the range of eligible trades. Feedback has been that this is a necessary part of the evolution of LIBOR.

FAQ3 To what extent has IBA taken into account the views of LIBOR users in mapping the evolution of LIBOR?

A3 In October 2014, IBA's first Position Paper invited feedback on the proposed evolutionary direction for enhancing LIBOR. The Position Paper was distributed widely, to all LIBOR Licence holders as well as other major stakeholders. In total there were more than 600 recipients. A media release was issued to launch the consultation and the Position Paper was published on IBA's website.

In addition, bilateral meetings were held with users on request and roundtable meetings were hosted by the Swiss National Bank, the Board of Governors of the Federal Reserve and the Federal Reserve Bank of New York, the Bank of Japan, the Bank of England and the Banque de France.

IBA published a Feedback Statement on 1 May 2015 on the consultation responses to the first Position Paper. This invited further feedback on the proposals and asked readers to raise any other considerations they thought should be included to further enhance the LIBOR reforms.

As expected, the proposals attracted considerable media interest.

IBA is confident that users have been, and through the Second Position Paper are continuing to be, fully informed of the proposals and given the opportunity to comment on the evolution of LIBOR.

FAQ4 Will IBA change the name of LIBOR?

A4 No, IBA's proposals are an evolution of LIBOR and are consistent with the original purpose of the benchmark, but updating it to reflect the changes in bank funding in recent years.

FAQ5 Will IBA change the definition of LIBOR?

A5 There is no single definition of LIBOR but it is referred to in varying combinations of:

- Its name - London Interbank Offered Rate
- The question asked of submitters, which is currently "At what rate could you borrow funds, were you to do so by asking for and then accepting inter-bank offers in a reasonable market size just prior to 11 am?", and
- Market practice for bank unsecured funding activity.

Some contracts refer to LIBOR based simply on its location on a specific data distributor's screen, while others continue to refer to it as BBA LIBOR.

The British Bankers' Association (which, through BBA LIBOR Limited, was the previous administrator of LIBOR) changed the LIBOR question in 1998 from a rate at which the submitter believed a prime bank would be offered deposits in the market to a rate at which the panel bank itself could borrow funds. This was the last occasion when the definition was re-examined and changed.

IBA considers that, in fulfilling the strategic direction set by the FSB to make LIBOR based on transactions to the greatest extent possible, the need for the Administrator's Question falls away and it would be more appropriate to have a concise description of LIBOR for users of the benchmark.

Accordingly, we propose:

“ICE LIBOR is the benchmark calculated by ICE Benchmark Administration (IBA) on London business days, based on the rate at which the banks could fund themselves using eligible unsecured wholesale transactions.

The basis of the calculation is defined by IBA and is published at www.theice.com/IBA. IBA, the benchmark administrator of ICE LIBOR, is authorised and regulated by the Financial Conduct Authority.”

FAQ6 Why does LIBOR need to change further?

A6 On 22 July 2014, the FSB published its proposed reforms for major interest rate benchmarks (available at http://www.financialstabilityboard.org/publications/r_140722.pdf).

The main areas of discussion in the FSB report revolved around a multiple-rate approach:

- (1) Strengthening the existing IBORs and other potential reference rates based on unsecured bank funding costs by underpinning them to the greatest extent possible with transactions data (“IBOR+”), and
- (2) Developing alternative, nearly risk-free reference rates (RFR) since FSB Members believe that certain financial transactions, including many derivatives transactions, are better suited to reference rates that are closer to risk-free.

The FSB Report further stated that one of the overarching objectives of the reforms should be that:

“Reference rates should be based exclusively in actual transactions. However, in many cases insufficient transactions will be available to do this and so the degree of dependence on transactions should vary by currency and will depend on market liquidity, depth and data sufficiency. When conditions in the local market do not allow pure transaction rates (ones derived mechanically from transacted data without use of expert judgement), authorities should work with and guide the private sector to promote rates which are derived on a waterfall of different data types: underlying market transactions first, then transactions in related markets, then committed quotes, and then indicative quotes.”

IOSCO’s Principle 7 states that a Benchmark must be anchored in an active market having observable, arms-length transactions.

In evolving LIBOR, IBA is fulfilling the strategic mandate set by the FSB and IOSCO.

Furthermore, each Benchmark Submitter has developed its own methodology for establishing LIBOR submissions, based in each case around Box 4.B of the Wheatley Review, and a variety of approaches now exists. IBA will introduce a more standardised approach.

FAQ7 Will LIBOR still be LIBOR?

A7 IBA's proposals are an evolution of LIBOR and not a fundamental alteration in the rate.

To be consistent with the original purpose of LIBOR and to reflect the changes in bank funding in recent years, all wholesale and professional entities should be regarded as eligible counterparty types, including central banks and corporates.

To fulfil the FSB's strategic direction for the IBORs, IBA is also proposing to broaden the range of eligible trades as a necessary part of the evolution of LIBOR.

FAQ8 Over what time period will IBA implement the evolutionary steps?

A8 Each Benchmark Submitter has developed its own methodology for establishing LIBOR submissions, based around Box 4.B of the Wheatley Review, and taking into account the bank's trading profile and funding needs.

A variety of approaches now exists, with some methodologies being closely aligned with IBA's more standardised approach and other methodologies needing more adjustment.

Evolution of LIBOR is an incremental process and IBA is not setting a date on which the changes in methodology should commence. IBA will expect each bank to have made material progress by the end of Q2 2016 in implementing the more standardised approach. IBA will of course be monitoring the progress of each bank.

FAQ9 How will IBA gauge whether these steps are successful?

A9 IBA will measure whether the evolutionary steps are successful by a combination of the following:

- Evolution is achieved as a seamless evolutionary path whilst remaining true to the purpose of LIBOR
- The waterfall of methodologies, extension of the range of counterparties, broadening of the range of eligible trades and other proposals mean that LIBOR is based on transactions to the greatest possible extent, recognising that there may nevertheless be insufficient transactions for a submission across all tenors
- Any susceptibility of LIBOR to manipulation is minimised and the scandals of the past are firmly recognised to be part of a former era
- Users of LIBOR have confidence in the benchmark and continue to value it as an essential part of the financial system
- LIBOR remains coherent across currencies and tenors, and
- Implementation of the changes enables IBA to be fully compliant with the IOSCO Principles in respect of design of benchmarks.

FAQ10 What action will IBA take if the steps are less than successful?

A10 IBA's evolutionary steps include the waterfall of methodologies, extension of the range of counterparties and broadening of the range of eligible trades to base LIBOR to the greatest extent possible on transactions. We recognise that there may nevertheless be insufficient transactions for a submission across all tenors. We will continue to monitor the evolution of LIBOR and add any further steps, after due consultation, as may be beneficial.

IBA will liaise closely with the official sector to assess the impact of any regulatory interventions that could affect LIBOR, noting the factors that have created stress in the unsecured interbank markets for term borrowing in recent years:

- A significant increase in perceived risk of bank counterparty default (credit risk)
- Regulatory capital charges
- The introduction of liquidity coverage ratios which have modified the demand and supply of interbank funding, as banks transition to longer maturity funding and more secured funding sources, and
- A significant increase in liquidity available to banks through the exceptional measures taken by major central banks in response to the financial crisis.

LIBOR has historically had an informal change mechanism operated by a committee of bank submitters and, as can be seen from the Timeline in Appendix 5, LIBOR had changed little over a long period. IBA, in conjunction with its LIBOR Oversight Committee, is committed to working proactively to ensure the continuing relevance of LIBOR.

FAQ11 Will IBA propose further changes to LIBOR or is this the final evolutionary path for the foreseeable future?

A11 As stated above, IBA:

- Is committed to working in conjunction with its LIBOR Oversight Committee proactively to ensure the continuing relevance of LIBOR
- Will liaise closely with the official sector to assess the impact to of any regulatory interventions that could affect LIBOR, and
- Will continue to monitor the evolution of LIBOR and add any further steps, after due consultation, as may be beneficial.

FAQ12 Will LIBOR still be needed when the RFRs being developed are available?

A12 The FSB initiated the development of 'nearly risk-free reference rates' (RFR) in the belief that certain financial transactions, including many derivatives transactions, are better suited to reference rates that are closer to risk-free than the IBORs.

IBA is convinced that unsecured reference rates with a credit element will remain globally important to the global financial industry and non-financial companies.

Most corporate debt and interest-rate thinking is IBOR-based and IBA therefore expects LIBOR to continue to be used as the floating rate for many financial contracts. In times of stress, RFRs may move in a different direction from IBORs.

FAQ13 How will the evolution of LIBOR affect the formulation of submissions immediately following a major market event since earlier transactions will not reflect the current state of the market?

A13 A market event (such as a change in the policy rate) could mean that the submission rate is clearly unrepresentative of then prevailing market.

IBA considers that banks should have ability in such a case to review, and in certain cases alter, their calculated rate if they felt that it did not reflect the market. This use of Expert Adjustments could be effected in the following ways:

- Changing the inputs by removing unrepresentative trades only, and /or
- Adjusting the rates through the application of expert judgement (being the knowledge, experience and expertise of the Benchmark Submitter) subject to appropriate governance and controls against biased or manipulative behaviour.

FAQ14 Why is IBA proposing that Expert Judgement could continue to have a place in determining LIBOR submissions? Isn't 'Expert Judgement' what caused the problems initially?

A14 As stated above, some circumstances necessitate some non-transactional input, such as when a market event means that the transaction-based submission rate is clearly unrepresentative of the market at the due time for making the submission. Under IBA's proposals, banks would have ability to review, and in certain cases alter, their calculated rate if they felt that it did not reflect the market.

In addition to internal controls within the Benchmark Submitter organisation, the banks will be required to notify IBA when a calculated transaction-based rate is altered and provide the full reasoning. IBA's expectation is that such adjustments would be used infrequently and would be an area of significant focus for a bank's internal and external auditors.

FAQ15 The interbank market is currently thin; does IBA expect this to change? If so, will this affect the current changes?

A15 The interbank market has been affected by a number of structural factors, including regulatory capital charges, liquidity coverage ratios and central bank interventions. IBA's evolution of LIBOR allows for such structural influences to continue in varying degrees over the near term.

FAQ16 How many written responses did IBA receive to the first Position Paper and the Usage Questionnaire?

A16 IBA received 114 written responses.

LIBOR currencies and publication

FAQ17 Why is LIBOR published in 5 currencies? Will IBA continue to publish all 35 LIBOR rates (i.e. 5 currencies each with 7 tenors)?

A17 IBA's questionnaire accompanying the first Position Paper sought to establish the frequency of use of each tenor and currency and the importance placed on each rate by a majority of market participants.

Responses indicated that all LIBOR currencies and tenors are currently utilised extensively for a variety of purposes – valuations, loan pricing, derivatives and swaps pricing, re-settling floating rate instruments and accounting. On this basis, IBA does not plan to discontinue any LIBOR currency or tenor.

Size of currency panels

FAQ18 Is the size of the currency panels sufficient?

A18 IBA is of the view that the currency panels are of adequate size at present but that expanding them would have the following clear benefits:

- An increased number of available transactions would make the transition to a trade-driven benchmark more attainable and ensure that the rate is as representative of the underlying market as possible
- The lessened impact of any single submitter would further reduce both the opportunity and motive for manipulation
- There is a current unfairness in that 20 banks have the cost, effort and risk of being submitters to LIBOR whilst a very large community of banks benefits from availability every day of the rate, and
- Increasing the panel sizes would reinforce the sustainability of the rate.

FAQ19 If a bank identifies an error in the booking of a transaction after submission, how will this be handled?

A19 IBA's existing Error Policy would apply. This is available at:

https://www.theice.com/publicdocs/futures/ICE_LIBOR_Error_Policy.pdf

FAQ20 How much will Benchmark Submitters need to change their current processes?

A20 Each Benchmark Submitter has developed its own methodology for establishing LIBOR submissions, based around Box 4.B of the Wheatley Review, and taking into account the bank's trading profile and funding needs.

A variety of approaches now exists, with some methodologies being closely aligned with IBA's more standardised approach and other methodologies needing more adjustment.

LIBOR TIMELINE

1980s	
October 1984	BBA IRS terms were introduced as the standard for Interest Swap rates. BBA IRS was the precursor of BBA LIBOR.
1985	BBA IRS terms became standard market practice.
January 1986	The British Bankers' Association (BBA) published BBA LIBOR - initially in US Dollars, Japanese Yen and Sterling (and later in 10 currencies with fifteen maturities calculated for each) – as the average of each submitting bank's estimate of the rate at which panel banks could borrow from each other.
1990s	
1998	The BBA changed LIBOR to the average of each submitting bank's estimate of where it could itself borrow from other banks.
2010s	
June 2012	The BBA's Foreign Exchange and Money Markets Committee (FX&MMC) carried out its last biannual review of the composition of the submitting banks for each currency.
September 2012	The FSA published the Wheatley Review of LIBOR with a ten-point plan for the reform of LIBOR, including the appointment of a new administrator for LIBOR.
November 2012	The G20 appointed the Financial Stability Board (FSB) to review financial benchmarks.
December 2012	The FCA issued Consultation Paper CP 12/36, "The regulation and supervision of benchmarks".
February 2013	The Hogg Committee was appointed to recommend a new administrator for LIBOR.
	Last publication of New Zealand Dollar LIBOR rates.
March 2013	The FCA issued Policy Statement PS 13/6, "The regulation and supervision of benchmarks".
	Last publication of Swedish Kroner and Danish Krone LIBOR rates.
April 2013	Statutory regulation of administration of, and submission to, LIBOR commenced. MAR 8 (Benchmarks) came into force in the FCA's Handbook.
31 May 2013	Last publication of Canadian Dollar and Australian Dollar LIBOR rates. Last publication of 2W, 4M, 5M, 7M, 8M, 9M, 10M and 11M LIBOR tenors.

July 2013	Embargo of LIBOR submissions commenced.
	The Hogg Committee (appointed in February 2013) announced the new administrator for LIBOR.
	IOSCO published its Principles for Financial Benchmarks.
	Last publication of EURO "Same Day" LIBOR rates.
September 2013	NYSE Euronext Rate Administration Limited (now IBA) applied to FCA for Authorisation.
	The European Commission issued proposed legislation on financial benchmarks.
February 2014	IBA became the new administrator for LIBOR.
22 July 2014	The Financial Stability Board (FSB) published "Reforming Major Interest Rate Benchmarks" and the IOSCO review of the major IBORs, including LIBOR.
20 October 2014	IBA issued its first Position Paper on proposed reforms of LIBOR.
Q1 2015	Central banks hosted roundtable meetings on IBA's proposed reforms of LIBOR.
1 May 2015	IBA issued a Feedback Statement on the proposed reforms of LIBOR.
31 July 2015	IBA published the Second Position Paper on proposed reforms of LIBOR.
Future 2010s	
Q4 2015	Central banks to host roundtable meetings on IBA's proposed reforms of LIBOR.
16 October 2015	The consultation period closes on IBA's Second Position Paper on proposed reforms of LIBOR.
Q4 2015	IOSCO will complete its second review of IBOR benchmarks.
Q4 2015	The European Regulation on financial benchmarks is likely to be agreed.
December 2015	IBA will publish the reforms of LIBOR to be implemented.
2016	IBA's proposed reforms of LIBOR will be implemented.
2017	The European Regulation on financial benchmarks is likely to come into effect.