LIBOR

RVS response to the Wheatley Review of LIBOR

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Table of contents

1 Executive summary

We are pleased to submit this document as our interim response to the Wheatley Review of LIBOR.

RVS has been actively engaged with the financial services industry since its inception in 2009 to create a series of transparent, End of Day benchmarks on a daily basis for use in Risk, Capital, P&L and other calculations on a centre by centre basis "following the sun". The RVS philosophy has been based upon accuracy, transparency and independence. These principles have been broadly endorsed by the industry, Self-Regulatory Organisations and Authorities.

RVS endorses and agrees with the Reviews comments regarding LIBOR and is of the opinion that all benchmarks should be based upon a transparent methodology which makes best use of both evidential transaction data and other sources where no trades are in evidence. The process should be automated and based upon an agreed set of independently validated Rules. The Rules and approach should be governed by an advisory panel of eminent independent experts.

We further believe that while there are clear opportunities to strengthen LIBOR, it is apparent that LIBOR is currently being used in a way not originally envisaged. We strongly recommend that this opportunity is taken to set out a framework by which LIBOR and similar indices are created, validated, promulgated and governed.

RVS has broad experience in the construction of such benchmarks. A more detailed description of our services can be found in Appendix 1.

2 Response and commentary

RVS's perspective on Benchmarks used for valuation of financial market instruments using an MTM or fair value approach, is that they should be globally consistent, independently governed and wherever possible validated by evidential data to substantiate them.

The establishment of such benchmarks was the reason that RVS was created. This perspective and background leads us to make the following informed observations.

2.1 Specific Question responses

2.1.1 Chapter 2: Issues and failings with LIBOR

Do you agree with our analysis of the issues and failings of LIBOR?

Yes. RVS broadly agrees with the findings.

Specifically issues which we attempt to describe in the following Q&A section include;

- lack of transparency and insufficient independence
- incentive and opportunity for manipulation
- reliance on judgement as opposed to an automated, standardised and scientific process
- governance and potential for conflict of interest issues to arise
- composition of the LIBOR panels
- lack of evidential data to substantiate the benchmark
- potential oversight issues inside banks
- power to detect and punish inappropriate behaviours

2.1.2 Chapter 3: Strengthening LIBOR

Can LIBOR be strengthened in such a way that it can remain a credible benchmark?

Whilst LIBOR could be retained as a mechanism for existing contracts it is currently not fit for all purposes it is currently being used for and so should be supplemented with newer and more appropriate, robustly constructed and governed benchmarks, having specific regard for factors such as liquidity and intended use.

It has become clear that the contribution, governance and oversight processes require significant updating and enhancement because Libor and its associated processes was created based upon an inter-bank lending market which no longer exists.

Oversight and governance would need to be considerably strengthened as would the construction method of the Benchmark. The following characteristics need to be re-engineered:

A. Benchmark Calculation

LIBOR is used as a derivatives settlement rate and a reference rate for commercial and retail lending and must be unquestionably 'fair and correct' both in the eyes of the financial market, its customers and any other affected parties.

Whilst current market conditions make the accurate quotation of Libor rates difficult, there seems little alternative, in order to ensure the daily availability of rates for all tenors, to the continuation of asking a question of the contributors, although we would suggest a more general "at what rate would you lend to top-quality borrowers?" request.

We would, however, propose an independent validation of a bank's quotations to ensure consistency and reasonableness of each rate-quote. This validation would take two forms, the comparison of the quotation to available transaction data, be those inter-departmental, corporate (the rate margin-adjusted) or interbank loans. The second validation would be to use a reasonableness test based upon forward rates available from a range of products such as foreign exchange forwards, futures and short dated derivatives.

B. Transparency

Transparency is a key element but should be balanced against the disclosure of confidential information which could have unintended and negative consequences. However, in a public forum the rate at which a bank lends is less sensitive than publishing its borrowing rate.

The governance and the methodology of the calculation and verification of the daily fixings should be open to public scrutiny and confidence in the measure would be substantially improved by the entire process and the organisation tasked with the daily operations undergoing a full external audit annually.

C. Privacy

The Benchmark construction should not be such that it can be reverse engineered in order for one market participant to gain an informational advantage over another.

Could a hybrid methodology for calculating LIBOR work effectively?

Yes, specifically, RVS believes that evidential trade data is the key determinant but in very illiquid markets price quotes, with no substantive trade activity, could be incorporated, but highlighted as such and then, applying the above process bring a robust overview and governance to those rates.

Could the number of maturities and currencies currently covered by the LIBOR benchmark be reduced?

It is unlikely that the number of maturities could be reduced; there are an immense number of contractual dependencies on Libor and it will be impossible to ascertain whether any tenors are obsolete. It may be possible to reduce the number of currencies quoted although it should be noted that this is not straightforward; there can be a significant difference between domestic and off-shore interest rates, either officially sanctioned/created or as a result of central bank activities and other factors. A move to replace Libor with a domestic rate may penalise offshore banks to the point of their refusal to accept the domestic benchmark.

An unintended consequence of 'domesticating' benchmark creation could be the significant reduction in competition between banks – global corporates and others could only borrow Danish Krone from Danish banks, Swiss Francs from Swiss ones etc. etc. as only the domestic banks could be profitable when lending at the domestic benchmark levels.

Other currencies and maturities, many of which are included in LIBOR today, will still require an appropriate benchmark and should be included in a similar mechanism to enable derivative settlement, risk, P&L and reference in retail transactions.

A clear example of this is Danish Kroner, where no Danish banks, who are the most active in that currency, contribute to LIBOR or are represented on the BBA-LIBOR submissions panel. The same applies for Swedish Kroner and other major currencies. It is evident that participation on these panels is neither representative nor appropriate.

"Every panel for the 10 bba libor currencies, each ranging from 6 to 18 contributors, is chosen by the independent Foreign Exchange and Money Markets Committee (FX&MM Committee) in order to provide the best representation of activity within the London money market. bbalibor submissions from panel members will be on average the lowest interbank unsecured borrowing rates in the London interbank market.

Twice yearly the FX&MM Committee undertakes an assessment of each bba libor panel, based on a review of the contributors by BBA LIBOR. The review evaluates each bank by ranking them according to their total cash and foreign exchange (FX) swap activity over two quarters and selecting the banks with the largest scale of activity, with due concern also given to criteria 2.) and 3.) above. The review is not limited to current contributors and any bank can submit themselves to the evaluation process for any currency by submitting the required market activity data." Source www.bbalibor.com

Our view is that, as funding costs vary significantly between jurisdictions and banks across the globe, each sector should have an equivalent of LIBOR relative to its currency/ies, contributed to by a more representative section of banks and that this should be further validated by evidential data acquired from more relevant sources. However, replacing Libor with a domestic 'IBOR' is not necessarily a like-for-like substitution.

Is an alternative governance body for LIBOR required in the short term?

Yes. However a framework setting out appropriate governance structures not only for LIBOR but for all such benchmarks should be created.

Should the setting of and/or the submission to LIBOR be regulated activities?

Ultimately all Benchmarks produced by any mechanism should fall under the definition of FMI (Financial Market Infrastructure principles as defined by the Committee on Payment and Settlement Systems) so should be subject to oversight by each jurisdiction corporate and banking regulators but the key determinants of the benchmark construction should be expert panels or committees drawn from the market participants, independent bodies and academia.

It is clear that regulators should be exercising their existing powers in a more robust manner and specifically governing banks input to public benchmarks. Moreover, regulators should, we believe, be involved in signing off and approving all supporting processes and methodologies that create a public benchmark including those carried out by the organisation publishing the benchmark.

Individuals and activities of the expert panels should be subject to regulatory scrutiny at a higher level than in the past.

Should the regulator be provided with specific powers of criminal investigation and prosecution in relation to attempted manipulation and manipulation of LIBOR?

Yes, please see above commentary about use of regulatory powers. Moreover, these powers should apply to the contribution and submissions processes for any published benchmark.

What role should authorities play in reforming the mechanism and governance of LIBOR?

As described above, it is clear that regulators should be exercising their existing powers in a more focussed approach to review and specifically governing banks input to public benchmarks. Their role in the reformation of LIBOR and similar mechanisms should be to effectively oversee and approve all the processes by which the benchmarks are created, validated, governed and distributed. This will ensure that the supporting processes for producing public benchmarks are robust, appropriate, transparent and sufficiently independent, thereby ameliorating the possibility of manipulation, collusion or abuse.

Which types of financial contract, if any, would be particularly affected by the risks of a transition from LIBOR?

Any existing financial contract which references LIBOR would by definition be affected by any form of transition process. However, this should not prevent new financial contracts being created referencing other benchmarks that meet the required quality standards

2.1.3 Chapter 4: Alternatives to LIBOR

Are there credible alternative benchmarks that could replace LIBOR's role in the financial markets?

Yes. There are already a number of alternative rates that are used in similar areas (such as the Fed Funds rate in the US for certain benchmark pricing as well as the X-IBOR's prevalent in other markets).

However, there would be significant transition risks were there to be the immediate replacement of LIBOR. It is our view that the creation of a new and robust framework for benchmark providers will allow new, more appropriate benchmarks to emerge and develop alongside an "improved LIBOR" in the short to medium term. All benchmarks and their providers should be subject to the highest standards prescribed in the framework.

RVS approach to this is described in Appendix 1.

Should an alternative benchmark fully replace LIBOR, or should it substitute for LIBOR in particular circumstances?

With the creation of a new framework new, credible, more appropriate alternative approaches could and should replace some aspects of LIBOR in the short to medium term. In the short term LIBOR should become more specific in its objectives to support manner in which it is currently used.

Should particular benchmarks be mandated for specific activities?

Each benchmark should be fit for the purpose it is being used for. Specifically, as new products are launched that are linked in some way to a benchmark, the appropriateness and legitimacy of the benchmark should be taken into consideration when obtaining regulatory approval. Additionally as previously described the regulators should engage more deeply in the activities of relevant benchmark producing bodies. This notwithstanding, RVS does not have a view on mandatory use of specific benchmarks.

Over what time period could an alternative to LIBOR be introduced?

As described above, significant aspects of LIBOR could be replaced and / or improved in the short to medium term. There could well be significant operational and legal challenges which would mean that a complete replacement of LIBOR could take many years.

What role should authorities play in developing and promoting alternatives to LIBOR?

Authorities should create a robust and consistent framework for the entire process. Furthermore the Authorities should ensure that, subject to the highest quality standards and compliance to a consistently applied framework, new benchmarks can be brought into being alongside LIBOR

As previously discussed, we believe that regulators should be involved in the removal of any unreasonable barriers such that benchmarks can continue to evolve along with market practice and current needs. Unlike the existing LIBOR framework which has failed to keep pace with market needs as they have developed over the past two decades.

2.1.4 Chapter 5: Potential implications on other benchmarks

Are there other important markets or benchmarks that could face similar issues to those identified relating to LIBOR?

Yes – any consensus pricing benchmark which is not evidenced by transaction data will have similar issues.

Any benchmark that has not been created using representative data contributions and supported, enhanced by evidential data and a rigorous process will face similar issues to those faced by LIBOR.

Should there be an overarching framework for key international reference rates?

The best practices in oversight as referenced above are those which should be followed by regulatory authorities worldwide.

2.2 Current state considerations

The key issues as we see them are:

- Human element of setting the LIBOR rates
- The small number of banks providing data
- Local banks who are often the main players are frequently not involved in the LIBOR panels for which they are the major liquidity providers and price setters. Denmark and Sweden are amongst the obvious examples
- LIBOR has morphed to support two distinct areas – Wholesale and Retail. Both have significantly different requirements and outputs. They need to be separated
- Closed group concept for rate setting
- Limited transparency with few Rules to follow
- The change in the underlying credit of the contributors

2.3 Future considerations

We suggest that the following attributes should be considered for inclusion in the new framework to be applied to LIBOR and other benchmarks:

- Direct connection from the benchmark provider to the relevant trading / deal capture system within each bank removing the human element and possibility of manipulation – automated computer controlled contribution, validation and index calculation
- Certainty index for less liquid rates
- Local and global banks within every centre where a fixing is required will be able to be part of the automated contribution and setting
- Transparent Rules, Conventions and Policies approved by the local centre/jurisdiction regulator
- Independent governing bodies in each centre with a global oversight body
- Two prices for each centre – Wholesale & Retail
- Process for independently validating and verifying contributions

3 Appendix 1 - RVS QED Benchmarks

3.1 Key characteristics

RVS has created a global industry benchmark service for independently and transparently validating End of Day (EoD) rates and curves – it was designed to be the single industry source for EoD rates for all time zones and centres. The service has been incubated in Australia prior to a global roll out in which started in 2012.

Rate Validation Services Qualitative Evidential Data (RVS QED) Benchmarks have the following key characteristics to ensure complete accuracy and transparency:

1. The daily Benchmarks are, as much as possible, based upon actual transaction or evidential data.
   a. RVS software pulls the economic elements of confirmed trade data directly from bank systems (i.e. fully automated thereby removing opportunities for manipulation) at various time points during the day.
   b. Each benchmark is created industry defined Rules, Conventions and Policies which are signed off by an independent panel
   c. The independent panel may be made up of industry experts, academics, regulators and other eminent individuals depending on the characteristics required by the jurisdiction.
   d. The service is independently audited on a regular basis to ensure that the construction of all benchmarks is in accordance with the agreed Rules, Conventions and Policies. The audit is made available to regulators and market participants to ensure complete transparency.

2. If transactions are not available for the particular market segment on any given day, previous transactions as well as indicative price quotes are included according to industry defined Rules. Non-evidential data is allocated into the Benchmarks at a lower confidence level.

3. Confidence and liquidity metrics are published on all benchmarks for analysis by both banks and regulators to establish the veracity of the underlying data and therefore the robustness of the resultant benchmark.

4. Benchmarks can be constructed at multiple levels according to the characteristics of a particular market.

5. The construction of the benchmarks based upon industry Rules and Conventions is completely transparent but individual bank contributions are currently only accessible to regulators in order to protect the Intellectual Property of any contributing bank.

6. Industry standard curves are created to assist with collateral settlement and OTC Central Clearing initiatives.

In summary, RVS QED uses evidential data pulled directly from bank systems, making any manipulation almost impossible. The Rules, Conventions and Policies governing each benchmark are set by the independent expert board and approved by a separate independent panel which may also include the local regulator.

We believe RVS QED ensures the accuracy required and provides the transparency of the collection, calculation and governance of each benchmark to allow for each countries specific requirement for calculating LIBOR or an equivalent benchmark.

RVS QED is currently undergoing a proof of concept (PoC) with 18 of the world's largest banks in the UK in September and it should be relatively straight forward to extend the PoC to include the creation of a daily LIBOR benchmark as part of the overall PoC.

3.2 Transparency

RVS activity is governed by the participants in the market. In each key jurisdiction a panel, which may include the local Self-Regulatory Organisation (SRO) or an industry body (such as BBA, AFME etc.) is engaged, not in the context of a lobby group, but in order to convene and run a series of specialist committees who are responsible for setting the Rules, Conventions and Policies under which a benchmark is constructed. Each local regulator will have access to the Rules, Conventions and Policies to ensure the transparency and accuracy of the data is being maintained.

Examples of Rules include:

1. Number and type of contributions required to calculate a QED consensus benchmark
    a. Transaction data from both banks, brokers and other market participants
    b. Indicative quote data
    c. Other data sources
    d. Transactions to be excluded – to stop any manipulation by small trades near EoD
    e. Statistical and other calculations (such as correlation analysis) that leads to the greatest accuracy
2. Confidence Index – principally for derivative products but not for LIBOR
    a. Analysis of the transaction data by time, volume & statistics to transparently provide a
    b. Liquidity Index – as part of Rules for calculation of the confidence index
3. Reporting of suspect transactions
    a. Transactions of certain characteristics are to be reported to the governing body and individual bank auditor for investigation based upon the Policies set
4. Method for calculation of Benchmark
    a. Removal of outliers
    b. Average, exponentially moving weighted average (for example in illiquid markets where trades over a number of days are included)
    c. Statistical and other calculation methods i.e. for volatility surfaces (i.e. SABR etc.)
5. Histories
    a. All raw and benchmark data is retained, providing accurate hindsight review
    b. Data is collected at multiple times during a 24 hour period
    c. Full audit across raw and benchmark data
    d. Complete set of meta data that fully describes the underlying data is captured with each rate point

3.3 Capital, operational costs and EOD rates

Basel III regulations will see a significant rise in capital requirements (BCBS estimate a doubling of overall capital and have released additional capital requirements for G-SIFI banks).

EoD rate collection and validation is carried out by every individual bank each day. Each bank is collecting essentially the same data set as every other bank, meaning that they are all performing the same task but with different business processes. The cost of these duplicated processes in each bank is substantial.

Different data inevitably leads to inconsistent valuation practices and reporting. Practical issues such as different collateral valuations lead to disputes which require more capital to be allocated as well as time and money to resolve. From a regulatory viewpoint there is no consistency of reporting meaning that a unit of risk reported by one bank cannot be compared to the same unit of risk reported by another bank.

New regulations require greater arm's length independence and transparency, without which it will be harder to substantiate results in a manner which satisfies regulators, auditors and analysts. New banking and accounting standards are targeting the data, not models, with the implications of significant capital increases above current levels.

RVS QED solves the problems of independence, evidence, transparency and consistency from both the regulatory and market participants' perspective meaning that risk, P&L and other metrics can be based upon the same measures across all firms.

3.4 Firm resolution

Firm resolution (or wind up) is an important issue and banks are required to have plans that would allow them to be wound up in a controlled manner in the event of a failure. Recent firm failures have highlighted the difficulty of arriving at agreed valuations for portfolios and individual transactions meaning that the time for resolution is potentially significantly extended (*e.g.*, the Lehman resolution is expected to continue for a considerable length of time).

An industry benchmark is not a panacea to all potential problems and issues in the resolution of a large, complex institution, but would provide a reference point against which many transaction valuations could be agreed. An industry standard and approved set of valuation adjustments will further clarify and enhance the ability to arrive at a speedy resolution.

3.5 Governance model

A key design principle of the RVS service is the governance model that allows the industry to clearly demonstrate independence and transparency to each centre's regulators.

This self-governance model is one aspect which separates RVS from any existing consensus based quote vendor services. There are a number of aspects to this self-governance:

- Local independent expert engagement in each country ensuring all local Rules and market nuances are captured in the service
- Further independence with buy side, broker, audit firms, academia and other eminent independents engaged in the process
- A global Advisory Board which will provide RVS and local industry bodies with guidance on the global interpretation/implementation of Rules and governance requirements ensuring robustness of the industry self-governance.
- As an example, AFMA, the Australian industry association, has been engaged to run industry committees and working groups who have defined the Conventions, Rules, Policies and Governance Processes for each asset class or instrument group for trading activity in the Australian jurisdiction. The Board of AFMA is made up of representatives from banks, brokers, semi-government operations and fund managers.

The Rules are available to all other jurisdictions so that it will not be necessary to start with a blank sheet of paper in each country. Each jurisdiction can define its own changes to the Rules allowing quicker adoption of the RVS service. Key groups in major trading centres are engaged in this process.

The outcome is that the EoD benchmark rate will be as accurate as possible reflecting the true price from each centre and time zone at their end of day. RVS is the ultimate "trusted source".

3.6 IFRS 13 categorisation, fair value and valuation adjustments

Whilst not directly related to the issues of LIBOR, RVS QED benchmarks employ a number of Rules based and statistically based techniques for allocating prices into the appropriate accounting category – again to ensure that the processes utilised for bank reporting are as accurate as possible.

Statistical approaches are used to support the determination of IFRS 13 categories, fair values and valuation adjustments (confidence intervals).

Detailed, technical descriptions of the techniques employed in the RVS Statistical Analysis Module (SAM) are described in “RVS statistical techniques application to valuation adjustments” and further mathematical background is available in the paper “Multivariate Approaches to Breach Detection for the RAVA Service”.

Ultimately, the precise specification as to which techniques apply to which asset is determined by industry expert panels as previously described.

4 Document control

If you have any queries regarding the information in this document, please contact:

Contact	John Crowley-Clough | Director | COO Rate Validation Services Pty. Ltd. 69 Old Broad Street, London EC2M1QS [redacted]

4.1 Distribution

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The Wheatley Review of LIBOR

Response to: Initial Discussion Paper dated 10 August 2012

Prepared by: The Royal Bank of Scotland Group, 6 September 2012

Contents

Introduction

The Royal Bank of Scotland Group ("RBS") has been asked by HM Treasury through The Wheatley Review of LIBOR: Initial Discussion Paper (the "Wheatley Review") dated 10 August 2012 to comment on the need for reform of LIBOR. RBS appreciates the opportunity to respond. The Wheatley Review recognises the importance of LIBOR as the most frequently utilised benchmark for interest rates globally, but also concludes that due to "*significant weaknesses that have eroded LIBOR's credibility*… [r]*etaining LIBOR unchanged in its current state is not a viable option, given the scale of identified weaknesses and the loss of credibility that it has suffered.*"[1] First highlighted to the UK financial industry on 3 August, the Wheatley Review requires a rapid turnaround time and requests responses by no later than 7 September.

Recognizing that the Wheatley Review is seeking comment on 16 different questions presented in five separate sections, RBS has responded to those issues where RBS believes it can add the most value. Our response focuses on:

- strengthening LIBOR submission mechanics and governance;
- corroboration and transparency of process and verification; and
- risks with replacing LIBOR, product usage and commercial acceptance.

Strengthening LIBOR

Should LIBOR continue and be strengthened as a benchmark?

Since its inception in the 1980s, the use of LIBOR has grown from a relatively straightforward but important benchmark for lenders and borrowers of syndicated loans to the primary referenced interest rate for financial contracts with an estimated market value of $300tn.[2] Indeed, LIBOR as a market tool is now embedded so deeply into the fabric of the financial markets that any wholesale change or introduction of an alternative benchmark would signal a historic departure from 30 years of financial market and contractual precedent.

The market and operational risks associated with a significant departure from LIBOR must inform any consideration of amendment but they should not inhibit an open and frank debate on the continuing role of LIBOR in the global financial markets.

We believe LIBOR can be strengthened and must remain a credible benchmark given its wide-spread use and reference within the existing financial contractual framework. In our opinion, we do not believe that any of the proposed alternatives considered by the Wheatley Review offer any

[1] Wheatley Review (page 3)
[2] Wheatley Review (paragraph 2.7)

more robust or improved alternative over or to the current LIBOR reference rate[3]. Rather, the existing system can and should be improved by: (i) establishing a more robust and transparent LIBOR governance framework with an agreed code of conduct; (ii) increasing the number of participants contributing to the setting of LIBOR rates; (iii) broadening the definition of LIBOR; (iv) refining the mechanism for submission, timing/transparency and scope; and (v) increasing engagement from relevant regulators.

It is widely recognised that while the market driver that underpins the definition of LIBOR (unsecured lending between participant banks) has become less relevant due to heightened credit concerns, changes in global and UK liquidity rules and the growth of secured funding markets (e.g., repurchase agreements, securitisation, covered bonds), the importance of a transparent and independent base lending rate remains. In particular, strong demand for a credible unsecured rate still exists, to underpin the pricing of corporate loans, loan-related swaps and hedges of future funding costs.

There is general agreement and recognition that technical and governance challenges continue to present significant concerns to market participants. These challenges will need to be considered within the context of a longer term market outlook, the Eurozone banking crisis, the gradual removal of unprecedented central bank liquidity and regulatory changes, particularly Basel III.

Governance and code of conduct

RBS believes that a robust governance structure around LIBOR submissions, endorsed by the relevant regulator (such as the FCA), is essential to the integrity of LIBOR or any other benchmark. Both internal and external governance processes must set a consistent, market-wide standard for participant banks to corroborate their rate submissions.

In addition, to ensure the continued existence of an independent, term unsecured rate, certain industry practices and principles governing the setting and submission of LIBOR rates must be agreed and embedded within each participant bank.

These key principles include a process under which:

- LIBOR rates are set independently by a designated LIBOR submission team at each participant bank which operates completely independently from any other trading function, in order to ensure that rate submissions are independent;
- participant banks maintain sufficient internal processes, including appropriate record keeping, to ensure timely internal and external escalation (as appropriate) of any control issues;
- regular audits of bank internal governance relating to rates submissions occur; and

[3] That said, we do see an opportunity for further consideration of involvement of central banks in a data gathering and observation role in their respective markets.

- adherence to code of conduct is maintained on any prescribed LIBOR submission process.

The establishment of a code of conduct would make the LIBOR submission process more independent and transparent, as suggested by the Wheatley Review. We agree that in order to be sufficiently robust, any such code should cover those items identified in the Wheatley Review (paragraph 3.31).

Existence of a code of conduct would:

- help to establish an auditable process, particularly in connection with the use of judgment-based submissions by participant banks, and operate to re-build trust and confidence in the market;
- create a standardised process for the calculation of rates and clear guidelines for participant banks, including a requirement to maintain a daily record of the rationale for rate submissions;
- ensure a uniform expectation across participant banks, the relevant regulatory body, and across the wider market, thus reducing opportunities for manipulation and improving consistency of submissions; and
- provide guidance on agreed market behaviour in times of illiquidity and market stress. See below for a proposed interpolation protocol.

LIBOR participation and compulsion

We believe LIBOR submissions should be compulsory from participant banks and this requirement should be embedded in relevant law and/or regulation. A requirement for daily rate submissions would ensure continuity of data points to be evaluated in any independent verification process (see below). If participant banks are able to choose when they post a rate, the failure to submit a rate (for example when a bank believes that the trend of the composite rate is moving in the 'wrong' direction) could have a larger, unexpected impact on the overall composite rate. If submissions are not compulsory, banks may be disincentivised to contribute a rate for any number of reasons.

In addition to making LIBOR submissions compulsory, in our view the number of participants contributing LIBOR submissions should be increased. We believe each submission panel should have a minimum number of participants based on a prescribed set of factors, the constitution of which should be determined by the regulatory body appointed to oversee LIBOR. In particular, banks who participate in the relevant financial markets above a given market activity threshold, regardless of legal structure or financial/regulatory status, should be required to participate. Sufficient consideration should also be given to appropriate participation based upon geographic location of participants where geography is considered dispositive for access to and knowledge of relevant markets.

Broadening the definition of LIBOR

In many respects, LIBOR has been resilient through recent market stress and the demand for this benchmark has shown little indication of decline. However, given the structural shift in the wholesale funding markets away from interbank lending, RBS agrees with the Wheatley Review (paragraph 3.12) that there is a need to broaden LIBOR to encompass bank borrowing from other commercial sources (such as commercial paper and certificates of deposit etc.) and that transactions from this wider pool of liquidity should influence a participant bank's LIBOR submissions.

In addition, the following prescribed set of standards should be factored into LIBOR submissions:

- the bank's need for liquidity in each currency and tenor;
- the bank's perception of what the market's appetite is for the bank's funding in those tenors;
- the bank's perception of where the market sees its credit risk relative to other names in the market; and
- movement(s) in related markets that are used to hedge its funding risk (e.g., exchange traded and OTC derivatives).

Introducing a prescribed set of standards would: (i) improve consistency of such submissions; (ii) decrease, but not eliminate, the risk of manipulation; and (iii) address credit signalling risks. RBS does not believe that the introduction of submission standards would on its own resolve all issues and challenges of LIBOR, but operating in conjunction with corroborative processes (discussed below) and enhanced governance, would serve to substantially enhance the integrity of LIBOR submissions.

RBS also notes that the Wheatley Review (paragraph 3.22) suggests that changing the question to the one that participant banks were asked in the pre-1998 LIBOR definition could alleviate risks associated with credit signalling. Our view is that the use of hypothetical questions such as those in the pre-1998 definition *(pre-1998 definition: 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?)* would not best address this risk but we agree this approach warrants further exploration/discussion. Furthermore, exploration of returning to a true offer rate based approach; that is a rate at which banks are prepared to lend to other prime banks of specified credit rating (either based on executable offer or an auditable model) – not dissimilar to the current definition – but within the context of a robust regulatory framework and code of conduct is worthy of discussion.

Mechanism - Submission

Each of the LIBOR submission mechanisms considered by the Wheatley Review (paragraphs 4.19 to 4.22) have both merit and challenge. For reasons expressed below, the current LIBOR mechanism, described as *uncommitted submissions* by the Wheatley Review remains the best option. Addressing each mechanic in turn:

- *Uncommitted submissions*: The mechanism currently used for LIBOR setting and in our view, the most versatile in all market scenarios. We agree with the Wheatley Review that improvements to the governance structure of LIBOR setting, additional regulatory oversight and a reliable, corroborative trade-based index would improve the credibility of uncommitted submissions.
- *Average transaction prices:* A mechanism where all or a subset of participants in a particular market are required to report transactions of a specified instrument to a central repository also has merit. Assuming high liquidity, this mechanic is viable. In addition, any market data should be relevant and correlate to the relevant benchmark. However, we see potential areas of concern with the consistency and resilience of this method, as well as a heavy reliance on trade volume and liquidity.
- *Committed quote-based trading platforms:* A platform that offers an alternative price discovery method and one similar in mechanic to the current LIBOR setting where prices submitted are executable and consequently less susceptible to manipulation due to the legal *bona fides* of the price. However, this approach could lead to credit signalling and balance sheet expansion. Furthermore, this method ignores scenarios where transactions are executed to support long term client franchises, related lending or structured transactions.

Mechanism - Timing and transparency

We see credence in the suggestion in the Wheatley Review (paragraph 3.21) that the publication of LIBOR submissions should be aggregated, ceased or delayed to the wider market to reduce risks associated with credit signalling. Specifically, publishing the index without reference to individual submissions would mitigate concerns around funding stress of any particular institution and provide for a more robust and resilient rate setting process.

Anonymity of rate submissions may negatively impact market and public confidence in the LIBOR process if not subject to rigorous regulatory guidance and controls. Concerns of lack of transparency could be alleviated by subsequent, regular publication of LIBOR submission and other relevant data by the designated regulatory body.

We see the creation of a process, supported and run by a designated regulatory body, as playing an important role in ensuring continuity and consistency of rate submissions. The regulator would support banks in managing market mis-perception based upon LIBOR submissions while safeguarding the market and public need for access to accurate and historic LIBOR rate data.

Mechanism - Scope

In our view the number of maturities and currencies covered by the LIBOR benchmark could be reduced. In particular, LIBOR coverage could cease where a sufficient number of participant banks cannot reasonably contribute uncorroborated rates, for example where maturities and currencies are not supported in the market or within a bank's trading books (see Wheatley Review (Chart 3.A)). However, the decision to cease coverage of certain maturities and currencies should not be solely driven by a lack of actual market data, as some maturities and currencies rarely trade in the market but are still heavily relied upon. In our view, the key maturities which need to be covered are 1, 3 and 6 months and any reference rate with a longer maturity could potentially be discontinued due to lack of liquidity. Reducing the number of quoted maturities would not necessarily adversely impact markets as a relevant unquoted rate for a particular maturity could be derived from the liquid, published maturities in those currencies.

If the Wheatley Review were to conclude or a relevant regulatory body were to determine that LIBOR coverage should still continue in thinly traded currencies or maturities due to commercial or market imperative, specific and detailed regulatory guidance would be necessary in order to provide both the participant bank and the responsible staff with comfort as to where and how it was appropriate to exercise discretion.

Role of the regulator and oversight of submissions

A designated regulator (most likely the FCA) should assume a greater role in the oversight and regulation of LIBOR or its successor benchmark. An industry supported governance structure, with appropriate regulatory guidance and oversight, is also critical.

In our view the focus of such a regulator should include:

- facilitating industry debate and the formulation of best practices;
- identifying learning points from the LIBOR investigation;
- participating in the production of clear guidelines and standards in relation to LIBOR submissions as discussed above; and
- ensuring that participants comply with required standards and taking appropriate action in the event of breaches.

Corroboration, Assurance and Incentives

Use of market data as a corroborative benchmark

We believe the use of expert judgement to set LIBOR is not on its face problematic and agree with the position expressed in the Wheatley Review (paragraph 3.3 to 3.8) that in order for confidence to be restored, market data should, where available, be used to corroborate such judgement within a robust governance framework.

However, we do not believe market data (even where available) can be used to the exclusion of or as an absolute alternative to expert judgement to establish the LIBOR submission. In certain illiquid markets where LIBOR is a referenced rate:

- market data may not be available;
- sole reliance on market data could incentivise manipulation in the execution of the trades themselves to achieve the desired LIBOR rate; and/or
- sole reliance on market data could also result in significant volatility in times of market stress.

Strengthening the robustness of corroborative market data

Even given these challenges, we believe it is worth exploring a process for establishing a transaction database either within each bank or within a central database for corroboration of executed trades across participant banks. Such a database should capture trades based on our proposed expanded definition of LIBOR and could serve a number of uses including:

- a verification source for an aberrant or unusual rate submission, *ex post* as suggested by the Wheatley Review to ensure integrity of submissions; and/or
- as a basis for an IPV or independent price verification control, again *ex post* but nevertheless a source of information which could provide useful data and support to the methodology behind the expert judgement submissions.

Although discussed within the context of an alternative reference rate for LIBOR (with which approach we do not agree), different market instruments identified by the Wheatley Review (paragraphs 4.10 to 4.16) could be used for corroboration of LIBOR submissions. We see merit in exploring further uses of market data from related funding and hedging markets.

Interpolation and data gaps

An interpolation protocol, established by a group of industry participants under the guidance of a relevant regulatory body (independently or as part of an agreed code of conduct as discussed above) could offer a solution to the problem of “data gaps” caused by the illiquidity or aberrant market events. A verifiable protocol could look at a number of quantitative and qualitative factors. For example:

- Quantitative factors may include but are not limited to:
    - the bank's funding gap or need for liquidity to maintain regulatory ratios;
    - internal funding risk limits; and/or
    - movements in related markets where a bank's funding gap can be hedged.
- Qualitative factors may include but are not limited to:
    - perceptions of market (counterparty) credit appetite for lending to the participant bank;
    - perceptions of market's view of the bank's credit quality versus peers;
    - macro views influenced by monetary or fiscal policy expectations;
    - geopolitical events, political events, etc will contribute to the yield curve; and/or
    - idiosyncratic factors driving real or perceived movements in the participant bank's own credit rating or standing.

A further consideration for a solution of data gaps may include extrapolation. That is, in the absence of high trade volume or data points, a rate setter could take into account the various quantitative and qualitative factors to adjust a rate that may have been previously set. If there are no transactions on which to base a setting, it would be reasonable for a rate setter to view markets that provide hedging capability for the funding gap, measure the movement in those markets and adjust the rates accordingly.

Identified risks of alternative reference rates and/or wholesale changes to LIBOR

Size of LIBOR-market and financial contractual reliance

As the Wheatley Review highlights, the global market for financial products using LIBOR carries a notional value of at least $300tn (Wheatley Review Table 2A). The use of LIBOR as a reference rate stretches relatively evenly across Syndicated Loans, Floating Rate Notes, Interest Rate Swaps, Exchange-traded Interest Rate futures and options and Forward Rate Agreements. The Wheatley Review recognises that these figures are a best guess and some estimates range from $300tn to $800tn. While it is not fair to say the breadth of the use of LIBOR is unknowable, it is not an exaggeration to state that the market disruption and uncertainty that may be unleashed by materially changing LIBOR and the amount of work involved in dealing with such a monumental task are unpredictable.

Effects on OTC Rates Transaction and the ISDA Framework – an example

The contractual framework underpinning all documented ISDA OTC transactions has as a standard fallback to the absence of the contractual interest rate polling of a specified number of "Reference Banks" to arrive at an agreed rate themselves. This mechanism could in theory provide a backstop for manageable adjustments to LIBOR in isolation but for changes that affect a large portion of the market (particularly the interbank market where prices are often reached through a joint calculation agent approach) the process could involve literally thousands of interbank polls or large scale ISDA protocol(s) with thousands of participants. Worse yet, material changes to LIBOR or a complete disengagement from the previous definition could give rise to one or both contractual parties making claims under doctrines of contractual frustration or impossibility, thereby throwing the OTC rates market into turmoil.

Effects on Forward Rate Notes and other LIBOR based debt securities – an example

Bond contracts are bi-lateral contracts between issuers and investors where the identity and legal jurisdiction of the end investor are often masked or made non-transparent through a central clearing system (e.g., Euroclear or DTCC). Like the ISDA framework, back up provisions in most bond agreements will look to alternative pricing/rate setting sources and in this case, the interbank participants are themselves contributors to the LIBOR setting/submission process. Where alternate rate references are still not available, it is common that floating rate – or LIBOR referenced – bonds will lock into a historic LIBOR rate setting. It is difficult if not impossible to estimate the wider market disruption that may occur if this back up process engaged across a large or multiple large markets. Conversely, fixed rate notes are also reliant on matched OTC rate based derivatives.

These two are examples are provided for illustration and do not represent the only negative market outcomes we see from a wholesale change or replacement of LIBOR by an alternative rate.

Additional risks of introducing an alternative LIBOR

In addition to the illustrative contractual and market risks noted above, we have further concerns that any new, alternative LIBOR index which is established may not be taken up by market participants, or the application of any such index may prove to be unintentionally flawed or unworkable. Regulatory direction to use a certain index or pricing mechanism comes with considerable risk of conflict between the regulatory imperative to an alternative benchmark with an unanticipated market or economic outcome.

Ultimately, market forces should drive what sectors end up adapting to a new index. In recent years, various new indices and products (e.g., futures products) have been introduced to the market but without sufficient liquidity and support from market participants, these indices and products have not been successful.

Time period for introduction of an alternative to LIBOR

If an alternative benchmark were introduced, opinions vary greatly as to the length of time that would be required to responsibly transfer from LIBOR to an alternative benchmark. We would suggest a period no shorter than one year and no longer than five years, but this would depend on the alternative being introduced and the legal issues associated with it. Though now less prevalent in the market than previously, we note that many OTC derivatives rates contracts have maturities some up to 10, 20 or 30 years. Any alternative rate to LIBOR would need to run alongside the existing LIBOR framework for many years unless a contractual/market solution were to be found in the interim. These parallel reference rates would not only be administratively burdensome in our view but the risk of waxing/waning liquidity in the alternative from traditional LIBOR could create market risk and would need to be monitored closely.

In addition, it is our view that a transition period may also be required if the existing LIBOR were to be significantly amended, however, any such period would likely be much shorter than a transition from LIBOR to an alternative benchmark.

Conclusion

RBS appreciates the opportunity to contribute to the important work the Wheatley Review is undertaking and we thank the Wheatley Review for their focus and energy on the topic of LIBOR strengthening and improvement. Appropriate members of our staff would be very pleased to have the further opportunity to meet with the Wheatley Review team to discuss our comments and proposals to the questions posed as part of the Wheatley Review consultation process.

7 August 2012

The Wheatley Review
HM Treasury
1 Horse Guards Road
London
SW1A 2HQ

Dear Sir / Madam

The Wheatley Review of LIBOR: initial discussion paper

Royal Bank of Canada ("RBC") is a contributing bank on four currency panels maintained by the British Bankers' Association ("BBA"): CAD, EUR, GBP and USD. The response below is structured in the order of the questions raised in the discussion paper.

Do you agree with our analysis of the issues and failings of LIBOR?

On the basis of our review of the documentation that has been published by regulators in connection with the LIBOR setting process, it appears that there were failings.

Can LIBOR be strengthened in such a way that it can remain a credible benchmark?

In order for LIBOR to remain a credible benchmark, a number of measures should be taken to strengthen the mechanisms for obtaining LIBOR rates. We have set out our thoughts in response to the questions below in relation to moving to a transaction-based approach and potentially limiting the scope of the coverage of LIBOR. In addition, a widening of the definition of BBA LIBOR to allow submitting banks to consider in the rate-setting process global wholesale funding trades (*i.e.*, not just interbank transactions) transacted over the previous 24 hours would provide a wider data set for banks to consider when setting rates. With respect to strengthening the governance and oversight of LIBOR, we also agree with suggestions to improve the transparency of the relevant body responsible for LIBOR by publishing:

- the membership of the relevant oversight and governance functions within the body responsible for LIBOR;
- the minutes of important meetings of the body responsible for LIBOR; and
- any sanctions imposed.

Further, in order to promote consistency of approach as regards the governance and oversight of LIBOR, we are supportive of the implementation of a code of conduct. The body responsible for governing LIBOR should have strong and credible sanctions at its disposal, otherwise this will detract from the effectiveness of the oversight of LIBOR.

Further, as discussed in more detail below, there is scope to amend the regulatory and legal framework, which should assist with enhancing the credibility of LIBOR.

Could a hybrid methodology for calculating LIBOR work effectively?

RBC believes that it could be possible for a hybrid methodology for calculating LIBOR to work. Given the lack of actual transaction data for certain maturities and currencies, there is value in further exploring the feasibility of extending the timing of the fix to cover the previous 24 hours, although this may present its own problems where there are, for example, significant market moves. In addition, consideration should be given to extending the number of banks on the panels, widening the definition of funding to include all wholesale deposits (using the median as opposed to the mean of the individual bank submissions) and narrowing the tenor and currency coverage of LIBOR.

We also support the creation of a central repository for relevant transactions and the transparency that this would provide to the body overseeing this data.

Further, given the limited transaction data, it is difficult to envisage how a model could be constructed without the application of expert judgement. As such, perhaps consideration could be given to whether the body that would act as the central repository of the transaction data could be responsible for overseeing the reasonableness of the expert judgement when required.

Could the number of maturities and currencies currently covered by the LIBOR benchmark be reduced?

In terms of the number of maturities currently covered by the LIBOR benchmark, the large majority of financial contracts primarily reference the three and six month rates. However, we consider it important also to maintain the 1 month rate, and to a lesser extent the 2 and 12 month rates, in certain currencies. Any decision to discontinue tenors or currencies should be subject to an appropriate consultation process to ensure that there is an orderly market transition.

Is an alternative governance body for LIBOR required in the short term?

With respect to the body that has responsibility for governing the LIBOR process, RBC supports the suggestion in the discussion paper that this body has sufficiently broad representation across the industry and that there is an increased level of transparency. In addition, it will be important to ensure that the relevant body has a range of credible sanctions to address non-compliance and that this should be supplemented by a clear code of conduct.

Should the setting of and/or the submission to LIBOR be regulated activities?

The setting of and the submission to LIBOR should be regulated activities. With respect to whether and how the FSA's approved persons regime could be applied to LIBOR related activities, option three (bringing those individuals responsible for a firm's LIBOR submissions within the approved persons regime) may not be a significant a departure from the current regime, given that many of the relevant individuals at contributing banks may already be approved persons.

In addition to the LIBOR submitting individuals being approved persons, we agree with the suggestion in the discussion paper to review the Statement of Principles applicable to senior management to ensure it adequately covers behaviour expected from the relevant senior executive(s) in relation to LIBOR.

Should the regulator be provided with specific powers of criminal investigation and prosecution in relation to attempted manipulation of LIBOR?

As set out in the discussion paper, LIBOR is the most frequently utilised benchmark for interest rates globally. Given the importance attached to this rate, it is imperative that an appropriate sanctions regime is available and that attempted manipulation of LIBOR is considered alongside other types of similar abusive behaviour.

In terms of potentially broadening the scope of Section 397, in order to bring LIBOR under the criminal sanctions regime of the Financial Services and Markets Act 2000, there is merit in attempting to extend an existing offence, as opposed to creating completely new legislation.

Further, given that the European Commission has recently published its amendments to the proposed CSMAD, which will prohibit and criminalise the manipulation of benchmarks, this could provide a more efficient route to address the current legal gap in the UK. This would also assist with promoting a harmonised sanctions regime across Europe and reduce the extent of super equivalence.

What role should authorities play in reforming the mechanism and governance of LIBOR?

In order to promote confidence in LIBOR, the relevant regulatory authorities should play a central role in reforming the framework for setting and governing LIBOR. The nature of this engagement should include recommendations on technical adjustments to the mechanism for calculating LIBOR, consideration of what is the appropriate regulatory framework to govern the setting and submission of LIBOR, as well as changes to the governance processes, including the implementation of a clear code of conduct. The implementation of a clear code of conduct would assist in driving consistency across panel banks, including the monitoring activity that should be performed of LIBOR submissions, although the form that this should take will be driven by the calculation methodology that is ultimately adopted. In addition, the relevant regulatory authorities should play a key role in working alongside the contributing panel banks to assist with ensuring a smooth transition to implementing the revised framework.

Which types of financial contract, if any, would be particularly affected by the risks of a transition from LIBOR?

The following types of financial contracts would be likely to be particularly affected by the risks of a transition from LIBOR:

- Interest Rate Futures and Swaps;
- Forward Rate Agreements;
- Basis Swaps;
- Floating Rate Notes;
- Repurchase Agreements;
- Overnight Index Swaps (secondary effects); and
- Loan Agreements.

Are there credible alternative benchmarks that could replace LIBOR's role in the financial markets?

Numerous global interbank benchmarks exist, including a few possible credible alternatives to LIBOR, although few credible alternatives to LIBOR currently exist with respect to CHF, GBP, JPY and USD.

Should an alternative benchmark fully replace LIBOR, or should it substitute for LIBOR in particular circumstances?

Rather than replace LIBOR, a more efficient solution may be to strengthen the existing process, *i.e.*, the mechanism for calculating LIBOR, the governance of the process for setting LIBOR, including the implementation of a clear code of conduct, as well as ensuring the appropriate regulatory framework is in place.

Should particular benchmarks be mandated for specific activities?

Market participants are likely to determine what benchmarks they consider to be useful or appropriate for the activity that they are undertaking, rather than adhere to any mandated benchmark. The overriding issue is to ensure that the governance framework for a particular benchmark is robust.

Over what time period could an alternative to LIBOR be introduced?

It is difficult to specify a precise time table as to when an alternative to LIBOR could be introduced. A key issue is to allow sufficient time for the necessary enhancements to be adequately implemented to ensure that the new framework is effective and credible and to enable an appropriate transition period.

What role should authorities play in developing and promoting alternatives to LIBOR?

The relevant regulatory authorities should play a central role in reforming the framework for setting and governing LIBOR and any alternatives, as well as in determining a clear set of principles that could potentially be applied to other relevant benchmarks.

Are there other important markets or benchmarks that could face similar issues to those identified relating to LIBOR?

Any benchmark that relies to any degree on the application of expert judgement on the part of the contributor could face similar issues to those identified relating to LIBOR.

Should there be an overarching framework for key international reference rates?

Any overarching framework that may be developed for key international reference rates should involve the appropriate regulatory bodies in the relevant jurisdictions, which would assist in promoting confidence in the international financial system and consistency across the different regulatory jurisdictions.

If you have any questions regarding the above, please do not hesitate to contact me on 0207 029 7009.

Yours sincerely,

H Samuel

Harry Samuel
RBCCM CEO, Europe

6 September 2012

Sent via e-mail: wheatleyreview@hmtreasury.gsi.gov.uk

To be treated as confidential.

Re: Wheatley Review of LIBOR: initial discussion paper

Dear Sir or Madam,

RSJ appreciates this opportunity to provide comments to the initial discussion paper of the Wheatley Review of LIBOR.

By way of background, RSJ is one of the world's largest market makers trading in futures currently trading mainly in London (NYSE Liffe), Chicago (CME), and Frankfurt (Eurex). RSJ is among the largest traders at NYSE Liffe, and also a large trader at Chicago Mercantile Exchange and Eurex. Among its most traded instruments, RSJ trades futures with prices largely determined by LIBOR, such as Eurodollar futures and short term interest trade futures.

RSJ, being a firm which trades instruments with a price determined by LIBOR is potentially in a position whereby it could fall victim to this kind of manipulation.

Please find below the replies to the consultation questions of Chapters 3-5 of the discussion paper:

Chapter 3: Strengthening LIBOR

Can LIBOR be strengthened is such a way that it can remain a credible benchmark?

Yes. In the current situation it is necessary to ensure a fair setting process and rebuild trust and regain investor confidence again.

As long as the relevant national authorities maintain adequate controls as described below, we believe that trust can very quickly be rebuilt in what is a vital market pricing tool.

Regulators at all levels must be extremely wary of wholesale changes. Market liquidity to a degree depends on stable and predictable benchmarks. We believe that the use of LIBOR/EURIBOR is a worthy and vital component of price discovery mechanism inherent to the economic functioning of the free market system. Continuity of the benchmark itself is essential for market stability.

As described below, it is governance and regulation that needs to be strengthened. In the current situation, an arrangement that will serve best and is quickly available to regain trust of global investors is to empower existing regulators with tools to effectively monitor the rate setting process and intervene if necessary. This is a solution that is flexible and not complicated.

Could a hybrid methodology for calculating LIBOR work effectively?

No. Due to the current low level of trust between banks and the subsequent lack of relevant trades, using traded rates may not prove feasible. Proper oversight and control could resolve the current issues without the need to revert to risky wholesale change.

Could the number of maturities and currencies currently covered by the LIBOR benchmark be reduced?

Yes. Keeping main maturities such as 1M, 3M, 6M, 12M is essential. In case of maturities that are used marginally in practice, reduction is possible, though not necessary.

Is an alternative governance body for LIBOR required in the short term?

No. We do not perceive this as necessary. However, a close oversight by a regulator such as FSA/FCA needs to be introduced to rebuilt trust of the investors and market participants.

Should the setting of and/or the submission to LIBOR be regulated activities?

Yes. See explanations above and below.

Should the regulator be provided with specific powers of criminal investigation and prosecution in relation to attempted manipulation and manipulation of LIBOR?

Yes. See explanations above and below, specifically, in the reply to the next question.

What role should authorities play in reforming the mechanism and governance of LIBOR?

In our opinion, authorities can significantly assist in the solution of the current situation by (1) introducing measures listed below and (2) assuming a closer supervisory role in the setting process of LIBOR.

The following measures should be considered by authorities in order to strengthen LIBOR and help to regain trust in the rate:

a) As proposed by the European Commission , we also suggest that panel bank, and its employees, should have a legal duty to exercise professional care when taking part in the process of setting the benchmark (this should include provision of accurate data and other inputs), under explicit threat of criminal sanction. Also other persons who in some way corrupt the process should be under explicit threat of criminal sanction.

b) Oversight: The entire rate setting mechanism should be placed under close supervision by a regulator such as FSA/FCA. This body should be equipped with satisfactory supervisory tools for this function. The oversight should focus on the measures stated in reply to this question, i.e. if rules are kept, how involved persons communicate, etc., not on changes of the methodology of the process, which should remain consistent.

c) Regular auditing and rules on audit trail: Regular auditing and the introduction of strict rules on the audit trail of the LIBOR setting process is essential in restoring public *confidence. All communication regarding the setting of the benchmark must be subject of an audit trail. Phone calls and meetings must be recorded and written communication stored for at least five years in accordance with the provision in FSA Handbook. Any relevant communication on this subject by involved persons not covered by these recording measures should be banned under a sanction. All the records should be frequently audited.*

d) *A reasonable and strictly enforced segregation between authorised traders by the institution of any product referencing such a rate and persons involved in the rate setting process must be introduced. Any legitimate channels of information flow from the trading departments to the persons approved by the institution involved in the rate setting process (such as background market data) must be covered by clear rules (including authorised persons, etc.) and thoroughly monitored (see points b and d).*

e) *The panel of reference bank should be widened to a greater number.*

f) *Introducing a rotation of representatives of a particular bank in the panel would mitigate the risk of manipulation, avoiding a "close circle mentality". E.g. a bank could be obliged to replace its member in panel for another employee after certain period of time.*

The burden created by the measures outlined above is, in our opinion, outweighed by the need to restore confidence and achieve a trustworthy and transparent mechanism of setting LIBOR. We believe these measures facilitate the opportunity to set a credible benchmark, and are in the interest of the users of instruments with a price derived from LIBOR, including the financial markets and panel banks.

Which types of financial contract, if any, would be particularly affected by the risks of a transition from LIBOR?

There is a great variety of financial instruments and contracts dependent or effected by LIBOR, including interest rate swaps, syndicated loans, floating rate notes, LIBOR futures, etc.

Chapter 4: Alternatives to LIBOR

Are there credible alternative benchmarks that could replace LIBOR's role in the financial markets?

No. There is no other benchmark that can fulfil the role of LIBOR for unsecured transactions. Any alternative will face similar issues that LIBOR does – the lack of relevant trades.

We consider the benchmark itself useful, valuable and beneficial for the real economy; it is the governance and regulation that needs to be strengthened, i.e. the procedural side of the issue.

Should an alternative benchmark fully replace LIBOR, or should it substitute for LIBOR in particular circumstances?

No. This is potentially a very dangerous threat to market stability. It is not feasible to create a room for transfer of wealth because of a benchmark change. No one should suddenly pay a different rate because of a change in methodology.

Should particular benchmarks be mandated for specific activities?

No. We do not see substantial benefits in this approach. Maintaining stability is important.

Over what time period could an alternative to LIBOR be introduced?

Not applicable due to replies to question above. Introducing an alternative to LIBOR is potentially very dangerous and tricky issue.

What role should authorities play in developing and promoting alternatives to LIBOR?

Not applicable, see reply to the question above.

Chapter 5: Potential implications on other benchmarks

Are there other important markets or benchmarks that could face similar issues to those identified relating to LIBOR?

We are aware of no other manipulation of this kind in other instruments such as EURIBOR and TIBOR and we do not know how widespread this problem is.

Should there be an overarching framework for key international reference rates?

No. This might be inflexible and complicated. The credibility and supervisory powers of an overseeing body (such as FSA/FCA) should be a guarantee for the global investors that there is a body that has tools to supervise and intervene if necessary.

See also reply to the first question of Chapter 3.

Should you have any further questions or queries, you are welcome to contact us using the contact information provided below.

Yours faithfully,

Jan Dezort
Lawyer – Regulatory Affairs

RSJ a.s.
[redacted]
www.rsj.com

SANTANDER UK SUBMISSION TO THE WHEATLEY REVIEW OF LIBOR: INITIAL DISCUSSION PAPER

6 SEPTEMBER 2012

1. Santander UK welcomes the opportunity to respond to this initial discussion paper.

Do you agree with our analysis of the issues and failings of LIBOR?

2. Santander UK is in broad agreement with the analysis and the conclusion that retaining LIBOR in its current state is not an option. The illiquidity in all but the shorter tenors in most markets makes a setting based on actual inter-bank transactions impractical at the present time and our view is that, with suitably strengthened governance and oversight, expert judgement will be necessary in some kind of hybrid, reformed LIBOR.

3. We are supportive of a trade reporting system as long as contributions are anonymous. We believe anonymity is key for participating banks and would avoid manipulation on grounds of credit signalling/stigma and also limit the scope for private economic manipulation. It may also encourage other banks to participate in the setting though we agree compulsion may be a necessity for regulated entities.

4. The safeguarding of confidential information may argue for the oversight of the co-ordination and publication of a reformed LIBOR based on a mix of actual trades from a depository and "expert judgements" from contributing banks to be in an entity in public ownership which is immune from prosecution but respected for its own "expert judgement". There is always scope to improve internal governance and a Code of Conduct within a regime with powers of regulatory enforcement and criminal sanction must go a long way to improve the credibility of LIBOR.

Can LIBOR be strengthened in such a way that it can remain a credible benchmark?

5. Santander UK believes that, at least in the short term, this is achievable and is probably the only way forward if the systemic disruption of markets is to be avoided were an alternative benchmark to be determined. To avoid transitional problems, LIBOR has to remain and must be strengthened.

Could a hybrid methodology for calculating LIBOR work effectively?

6. Santander UK believes that in the short term, and if tenors and currencies are to be retained, a hybrid based on actual trades and "expert judgement" is the only methodology and we support the idea of greater clarity around the determination process.

7. We are firmly of the opinion that contributions by individual banks must be anonymous. However, if this is possible, we believe the arguments for a wider population of banks not joining can only rest on their lack of confidence in their own internal governance, oversight and compliance arrangements and their ability to prevent manipulation for economic gain. This may require regulatory compulsion.

Could the number of maturities and currencies currently covered by the LIBOR benchmark be reduced?

8. Santander UK sees no reason why, in co-operation with other regulatory authorities, a reasonable notice should not be served to restrict LIBOR currencies. The notice period should be reasonable to allow the country time to create an alternative and to allow as many contracts as practical to expire during the period. Restricting the tenors on the remaining settings should be possible as it is not clear how extensive use of the tenors is (with the exception of 1, 3 and 6 months). Again a reasonable notice period should be given to minimise market disruption.

Is an alternative governance body for LIBOR required in the short term?

9. Improvement in the overall governance of LIBOR needs to be accompanied by Legislation where necessary to bring LIBOR into regulation. Simply rearranging the current governance arrangements to exclude banks which set and use LIBOR and expand independent members may detract from the attempt to give LIBOR more credibility. The LIBOR governing body may need to be in the Public Sector, be immune from prosecution and any independent members of the governance group should possess the necessary technical knowledge and the full confidence of regulators and the market, especially the setting bank contributors.

Should the setting of and/or the submission to LIBOR be regulated activities?

10. Yes. However, if the governance body and the co-ordinator of LIBOR are in the public sector, as Santander UK believes they should be, and contributions from banks are anonymous as we recommend, then regulation should mainly be targeted at the prevention of manipulation for economic gain and on the adequacy of individual bank's internal governance, systems and controls. This can be regulated through a Code of Conduct setting out requirements and through the approved persons regime as suggested.

Should the regulator be provided with specific powers of criminal investigation and prosecution in relation to attempted manipulation and manipulation of LIBOR?

11. If LIBOR is to become a regulated activity and legislation to bring this into the remit of the FSA is to be enacted, rather than have a specific power related to LIBOR, the legislative changes should be made in such a way as to give the FSA sufficient powers of investigation and prosecution under the Financial Services Act. Only if this is not possible should specific legislation be contemplated and Santander UK would support this.

What role should authorities play in reforming the mechanism and governance of LIBOR?

12. Santander UK believes the UK Tripartite Authorities should play a leadership role in respect to the reform of LIBOR; not only because the credibility of LIBOR reflects on London as a financial centre and its contribution to the UK economy, but also because a failure to move forward on LIBOR will discourage participation in the setting process by other banks and the departure of current banks from a voluntary arrangement.

13. This would further undermine credibility, increase potential litigation and potentially lead to financial instability were LIBOR to become meaningless and lead to the termination of LIBOR linked contracts. The paper indicates that self-regulation has not been successful at preventing manipulation and consequently the alternative must be regulation.

14. Santander UK would support a public body taking charge of LIBOR, a clarification of the process for contributors in a regulatory code enforced by FSA and accompanied by appropriate sanctions at the bank and individual level to serve as a strong deterrent to manipulation. Santander UK also suggests that users of LIBOR in derivative contracts should be educated to word their documentation in such a way that links them to an average of LIBOR over, say a month, rather than to one particular day's setting.

Which type of financial contract, if any, would be particularly affected by the risks of a transition from LIBOR?

15. We would consider that this is dependent upon what the transition was to, however this detail in unclear. If the transition was to a completely different benchmark, we believe that table 2A on page 10 could provide the answer.

Are there credible alternative benchmarks that could replace LIBOR's role in financial markets?

16. Santander UK does not believe that a credible alternative exists in the short term that could replace LIBOR's role. Today, the main components of LIBOR have become interest rate, liquidity and credit spread sensitivity which do not currently co-exist in a single alternative benchmark capable of replacing LIBOR. Moreover, there is currently no efficient combination of alternate benchmarks that could be combined to replicate LIBOR's role on a synthetic basis. If LIBOR is being used to determine market views of forward interest rates, SONIA may be an alternative but this would not be a universal replacement for LIBOR in other uses to which LIBOR is being put and to which investors have become familiar.

Should an alternative benchmark fully replace LIBOR, or should it substitute for LIBOR in particular circumstances?

17. Santander UK is of the view that, if an alternative benchmark to LIBOR is identified or created, it should fully replace LIBOR assuming a suitable transition period. To do otherwise or to substitute in limited or particular circumstances would likely have material implications for liquidity in associated products.

Should particular benchmarks be mandated for specific activities?

18. No. Santander UK is of the view that mandating particular benchmarks for use in relation to specific activities potentially has negative implications for liquidity. Furthermore, Santander UK believes that this approach could have unintended consequences through blanket exclusion if benchmarks are only mandated for specific activities.

19. An alternative approach could be by specific exclusion. In other words, LIBOR based products or derivatives could be excluded for use with specific category of investors or customers.

Over what time period could an alternative to LIBOR be introduced?

20. If an alternative to LIBOR is found, history suggests that, as with most new products or benchmarks, a significant transition or lead time is required for a new product or market to become established. This would probably require a transition or parallel period in the order of 2 years from inception.

What role should the authorities play in developing and promoting alternatives to LIBOR?

21. As previously stated, Santander UK believes the Tri-partite Authorities should play a leadership role in respect of LIBOR, the reform of LIBOR or the development of an alternative. For governance, regulation and enforcement with appropriate sanctions, Santander UK is supportive of an independent public body taking charge of LIBOR.

SOCIETE GENERALE
Corporate & Investment Banking

The Wheatley Review
HM Treasury
1 Horse Guards Road
London
SW1A 2HQ

7 September 2012

Dear Sirs

The Wheatley Review of LIBOR: initial discussion paper

As a BBA LIBOR panel bank, Société Générale has carefully considered "The Wheatley Review of LIBOR: initial discussion paper" (the "Paper"), released on 10 August 2012; in particular each of the consultation questions set out in the Paper.

In this regard we have engaged with the British Bankers' Association, ("BBA"), and have provided them with Société Générale's position in relation to the points raised. In light of these discussions we believe that the BBA, in drafting its response to the Paper, has taken our views into account.

In light of the above Société Générale does not intend to submit its own individual response to the Paper, but rather will rely on the BBA to represent its position at this time.

Yours faithfully

Ian Fisher

UK Chief Country Officer
Société Générale

Société Générale
SG House
41 Tower Hill
London
EC3N 4SG
United Kingdom

[redacted]
www.sgcib.com

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THOMSON REUTERS

The Thomson Reuters Building
30 South Colonnade
Canary Wharf
London E14 5EP

5 September 2012

The Wheatley Review
HM Treasury
1 Horse Guards Road
London
SW1A 2HQ

Dear Mr Wheatley

Thomson Reuters welcomes the opportunity to respond to this review. LIBOR and other similar interbank rates are a fundamental part of the global financial system. Market participants around the world must be able to have faith that these rates are calculated accurately and reliably, and that there is a governance and scrutiny regime for contributors that ensures inputs are always truly reflective of market conditions.

Thomson Reuters and its predecessor companies that now form part of Thomson Reuters have been involved in the calculation and distribution of benchmarks such as LIBOR, Euribor, plus many other similar third party sponsored rates since their inception. For each of these rates, the sponsoring association provides the specification for the rate and Thomson Reuters acts as an agent to collect, calculate and disseminate information to the market. We currently do not have any formal role in the governance or scrutiny of the legitimacy of inputs or outputs, which is the responsibility of the sponsoring association or benchmark owner. Our contractual role is to provide reports on the data to the sponsor association, where requested. Thomson Reuters is well-known as a neutral and independent source of information; our interests lie in ensuring markets are transparent and trusted. Improving LIBOR is critical to that purpose.

Given our role in the financial markets and the importance of benchmarks to the industry, we are keen to continue our involvement with LIBOR, other rates and their potential successors, and so we look forward to engaging constructively with the Wheatley Review. Thomson Reuters has many years of experience in calculating hundreds of leading benchmarks around the world and we hope that our views, as expressed in this response will be of use to the Wheatley Review and the wider global efforts to reform market benchmarks.

Should you have any queries on our response, or wish to discuss the wider issues around the provision of market data, we would be very happy to discuss further at your convenience.

Below we address the questions posed by the consultation:

1.0 Do you agree with our analysis of the issues and failings of LIBOR?

1.1 Yes. Some of these are inherent in the current framework for operating LIBOR. Others are an effect of changes in the underlying market since the inception of the rate. Those inherent in the current framework are easier to address. Structural changes to the underlying market – unsecured interbank lending - for which LIBOR was designed to provide a metric are more difficult to resolve.

1.2 It is certainly the case that under the current definition it is difficult for a contributor to know what rate to post in longer tenors, or minor currencies due to a lack of liquidity. This also increases the risk to the contributor, as it will be harder for them to justify the rates they are posting. One effect of this might be to make the rates overly "sticky". It is easier for a contributor to supply a rate very close to the previous day's contribution or setting rather than to have to justify a move. This effect would be accentuated by the immediate transparency of the submission process, and the awareness amongst submitters that the market will attempt to draw wider conclusions from any movement. This is particularly acute when the movement is up, which has in the past been interpreted as a signal of weakness during times of market stress – ie the "stigma effect" referred to in para 2.21[1].

1.3 We agree that "it could be argued that in the current environment interbank lending rates are dominated by credit risk and there is a large dispersion in the perceived creditworthiness of banks" as stated in para 2.17. We would also add that in addition to credit risk there is still a noticeable liquidity premium present in LIBOR rates. However, users (or at least certain constituencies of users) would state that this is a strength of the rates. They reflect the credit and liquidity premia inherent in unsecured lending to term in a way that a rate based on secured lending (such as Repo or RONIA) or a compounded overnight rate (such as SONIA or EONIA) can not.

1.4 It may be true that "the concept of an average inter-bank rate derived from a panel of diverse banks has less meaning as a measure of bank funding". However, following this argument to its logical conclusion would mean using ever fewer banks to provide data as a basis of bank funding. This is undesirable as it would mean, firstly, that there was even less underlying trading data for banks to base their rates on, and, secondly, that individual banks would have increased ability to influence the final rates.

1.5 We agree that there must be robust and universally applied internal procedures at LIBOR contributing banks. As noted, LIBOR contributing banks are global entities, subject to various and varying regulatory regimes. We believe that for the LIBOR process to work, regulators must agree on a common framework and ensure this is imposed equally.

[1] References to a para or Table in this submission are to the relevant numbered paragraph or Table in the "Wheatley Review of LIBOR: initial discussion paper". Otherwise, cross-references are to the contents of this submission.

1.6 With regard to potential alternatives to LIBOR that have not appeared to find favour with the markets (for example NYFR, RONIA, USD Euribor) it is not clear why these have failed to attract users in significant numbers. It may be because potential users do not favour their design, or because the costs involved in changing benchmarks is prohibitive. LIBOR is widely accepted across to the financial system and is an easy choice to use, as there are so many products in different markets and asset classes linked to it

1.7 There is no reason why benchmarks used globally should not be calculated in London. As noted in the consultation paper, London's time zone and position in between the major financial centres in Asia and the Americas, as well as its standing as a major European and global financial hub make it a logical place in which to produce global benchmarks. Using one globally used standard, rather than fragmented local products, drives liquidity and efficiency or markets However, this only holds true so long as the global regulatory community and users world-wide can have faith that these benchmarks are calculated to internationally accepted standards

1.8 With regard to the above, we note Timothy Geithner's reported testimony to the Senate Banking Commission on July 26:

"We have to take a careful look at other parts of the financial system where the markets rely on private organizations composed of private firms like the BBA that have some quasi- regulatory or self-regulatory role...as you've seen in this case we've got to be careful to make sure the system is not relying on associations of private firms that leave us vulnerable to the kind of things we've seen".

Any global benchmark must have a governance framework that is utterly impartial and has sophisticated scrutiny mechanisms with the ability to identify manipulation and the teeth to impose appropriate sanctions. As a first step, those involved in the governance must be free from conflict of interest, and the structures and decision making process must be transparent and auditable. The governance, scrutiny and enforcement regimes for a global benchmark must satisfy regulators globally. As stated before, we suggest that this is best achieved by encouraging regulators involvement.

1.9 We agree that changes to all three aspects of the framework, that is the calculation methodology, independent governance, and regulatory oversight and sanctions - can and should be implemented. We also agree that retaining the status quo is an unacceptable option that may well lead to market participants (including contributors) abandoning LIBOR in an unstructured way that would lead to increased uncertainty and risk for all concerned.

1.10 We agree that the priority should be to rapidly strengthen all aspects of LIBOR, whilst simultaneously considering the development of alternatives to LIBOR. The markets in products linked to LIBOR evolved incrementally over time and so market participants should ensure that the consequences of moving en masse to alternatives are fully thought through. This is the case whether a move to new alternatives is though the choice of users or through regulatory fiat.

2.0 Can LIBOR be strengthened in such a way that it can remain a credible benchmark?

2.1 We believe so if the three pillars of LIBOR as identified in para 3.1 - the calculation methodology, the governance and scrutiny regime and the sanctions available to the body governing - are all improved.

2.2 As the current calculator, Thomson Reuters has in place the infrastructure to collect trade data securely and implement a wholly automated calculation. We also have in place the necessary infrastructure to allow contributors to improve the manner in which they submit the data (see 2.5, below). Thomson Reuters is a neutral and independent body that takes no position in the markets. Our interests are in ensuring markets are transparent and trustworthy and we believe we are a trusted source for data. For example, the Depository Trust and Clearing Corporation has recently asked Thomson Reuters to support it with its trade reporting requirements under the US Dodd-Frank Act. This involves Thomson Reuters collecting large quantities of extremely sensitive data in near real-time and then publishing it within the mandated 30 minute window.

We believe that mandated transaction reporting of all deals that fall within the scope of LIBOR (however defined in future) would be a positive step, provided there was independent verification of these transactions. This verification could be carried out either by regulators or an independent body as envisaged in para 3.37. An independent body requires support from regulators and would need to be staffed with highly experienced people that enjoy the trust of the markets to spot potentially abusive behaviour. This is particularly the case if these people are comparing interbank funding activity against activity in other derivative instruments. They will also need to be empowered to act upon instances of such behaviour.

2.3 Regarding the submissions, we believe that contributors should move to a wider definition. There is precedent for definition changes to LIBOR (prior to 1998 the definition was very similar to the current Euribor definition). And it is worth noting that the change in definition did not cause any problems to users at the time.

We also suggest that consideration is given to including trading in other major financial centres in an explicit manner. This would make it much easier to attract additional contributors, particularly if LIBOR moves to a definition more closely aligned to actual trades. There are many banks that are not currently contributors are active in the wholesale unsecured markets, but not necessarily via London, as required by the current definition. This will present challenges to the future definition as regards the timing of rate calculation and publication, and the window in which trades can be considered as within scope for a contributor to base their rate, but these are not insurmountable, given the benefits.

There is no obvious way of increasing interbank activity in longer tenors and in minor currencies, certainly in the short term. We would therefore suggest that LIBOR rates for tenors longer than six months are discontinued, as suggested in para 3.14. We do not believe that four and five month tenors are widely used, so these could be discontinued as well. Six month rates are used for forward rate agreements and some fixed income securities, so these should be retained if possible. We are not aware of wide usage of any tenors in CAD, AUD, NZD, SEK or DKK LIBORs, and there are local equivalents for all of these. Following appropriate market consultation, including local market participants and authorities, serious consideration should be given to discontinuing these rates after a notice period.

Thomson Reuters systems could easily support a movement in the timing of the fix and/or LIBOR moving to a weighted average of trades over a window. As a neutral provider of services and market data to the financial services industry we have in principle no view on whether moving to purely transaction-based methodology for LIBOR and other similar products is good or bad.

3.0 Could a hybrid methodology for calculating LIBOR work effectively?

3.1 Notwithstanding the comments in 2.3 above, in practice we have concerns about the effects of moving to a purely trade-based methodology. One of the primary aims of this review, as we understand it, is to ensure that LIBOR is fit for purpose for the future, whatever that may hold. As noted in the second bullet point of para 3.6, it is not possible to construct a purely trade-based rate that will be accurate through periods of acute illiquidity, for example in the wake of an event such as the collapse of Bear Stearns or Lehman Brothers. In such circumstances markets in general are likely to show extremes of volatility, and a purely trade-based rate cannot reflect this if there is no underlying activity.

3.2 We agree with the point raised in the third bullet point of para 3.6. We understand that independent research has shown that it would take very few transactions in relatively small size to materially influence LIBOR rates. We also agree that this would be very difficult for a third party governing body to monitor. A contributor bank should, however, recognise this type of activity, and under an appropriate governance framework, be able to flag these transactions and discount them from its calculation of its LIBOR submission.

3.3 We support the proposals raised in paras 3.9 – 3.11. The order from the CFTC in the case of Barclays provides an excellent model for a code of conduct that would allow a hybrid methodology for banks contributing to LIBOR or other similar rates. Thomson Reuters can provide solutions that would aid contributors in meeting the requirements they set out in the following sections: 2. (iv) Firewalls etc.; section 2. (v) Documentation; and section 2. (vi) Monitoring and auditing.

3.4 We agree that all interested parties should co-operate to establish workable corroboration mechanisms for rate submitters. As noted in 2.2 above, Thomson Reuters carries large amounts of data that could be used to corroborate submitters' inputs. This corroboration could be done either by the contributors themselves and supplied in reports to the governing body, or supplied to the governing body for independent corroboration.

3.5 In principle we have no view on the definition, but in practice, we agree with the concerns raised in para 3.22 about this move. Under the current definition it would be more straightforward to sanction a contributor for manipulating rates than under a definition based on a "prime" bank. We would also question how a "prime" bank could be defined, particularly in an environment where in general, bank credit ratings are being lowered. The current definition is the most transparent.

3.6 We would be supportive of moves to widen LIBOR contributor panels, and we believe this would be supported by users and contributors alike. We note that widening the panels may trigger the concerns raised in paragraph 2.17 of the consultation ("arguably...the concept of an average inter-bank rate derived from a panel of diverse banks has less meaning as a measure of bank funding costs), but we do not view this as an issue.

3.7 We would suggest that if an outcome of the Wheatley Review leads to the creation of a code of conduct for contributor banks to follow that lays out clearly the actions a contributor should take to ensure it is held safe from regulatory action, more banks would be prepared to contribute to LIBOR, even if this incurred a significant operational burden. This would, however, only be the case if the security from regulatory action applied to action from all regulators globally. However, there will still be a "free rider" problem whereby non-contributing banks are able to benefit from usage of the rates without incurring the risk or operational burden of contributing. We would therefore encourage consideration of a mechanism to compel appropriate institutions to contribute. If there is to be a mechanism that compels contribution, it must be enforceable internationally, and therefore adopted and enforced by authorities worldwide.

4.0 Is an alternative governance body for LIBOR required in the short term?

4.1 We believe so. It is clear from media commentary and statements by regulators that the current arrangements do not meet the required standards for stakeholders. A completely independent body should control all aspects of LIBOR – the selection of contributors, the design of the product (with input from all stakeholders), the governance and scrutiny arrangements - and also wield the power to sanction contributors.

4.2 We believe that any governing body must be able to satisfy, at a minimum, the following conditions:

i) Freedom from conflicts of interest. Contributing banks are legitimate members of a governing body as they are uniquely well placed to comment on the levels at which banks are actually funding, as well as provide insight on prevailing market conditions, but there must be a mechanism that enables members from contributing banks to demonstrate that they are acting solely in the best interests of the rates and its users. Publishing minutes would help with this. Additionally, as recommended by the consultation paper, the membership of the committee should be balanced by a wide spectrum of non-contributing stakeholders, including regulators and central banks.

ii) Transparency. As suggested in paragraphs 3.34 and 3.35 of the consultation, the governance body must publish the names of members, agendas and minutes of all meetings, terms of reference documents – to include the selection process for members. If necessary to sanction contributors it should also publish the evidence the led to the sanction.

iii) Demonstrable expertise in rapidly and accurately collecting and analysing the large amounts of data necessary to assess the accuracy of a banks' submissions to the rate fixing process.

iv) Effective power of sanction. As the consultation notes in para 3.33, current powers to sanction are insufficient. A governing body will only have the required power of sanction to reassure users if regulators and central banks are involved, preferably as voting members. This should apply to regulators and central banks globally, but particularly for those in territories for which a LIBOR rate is calculated. If it is judged inappropriate for regulators to join the governing body, there must be explicit support for its framework.

5.0 Should the setting of and/or the submission to LIBOR be regulated activities?

5.1 The submission of rates to LIBOR should certainly be a regulated activity. It is difficult to see how market confidence in LIBOR and other rates can be restored without regulation of contributors for this purpose. Given the importance of LIBOR to the global financial system, it is appropriate that submissions to this rate are regulated. We also believe that there must be regulatory co-ordination in this. As the consultation notes, the European Commission has already proposed in July moves to make benchmark manipulation a criminal offence.

5.2 Setting of LIBOR does not need to be a regulated activity, provided it is carried out in a transparent manner that makes all inputs and outputs public and publishes full details of the calculation methodology. This will allow all market participants to verify the calculation.

5.3 The governance of the LIBOR process needs to be either regulated or explicitly supported by the global regulatory community, in order that the market can have faith that it is able to carry out the activities listed in 4.2 above.

6.0 Should the regulator be provided with specific powers of criminal investigation and prosecution in relation to attempted manipulation and manipulation of LIBOR?

6.1 While criminal investigation and prosecution powers would send a powerful signal from regulators on the importance they attached to the integrity of LIBOR, there are drawbacks to be considered as well. If future instances of abuse arise but criminal prosecution is judged to be too difficult to pursue (for instance due to the difficulty of proving individual responsibilty to the higher level of evidence required), the authorities could be criticised for failing to make use of all available sanctions. At the same time, it may be that particularly egregious behaviour already meets the standards of existing criminal laws including fraud and racketeering.

Put differently, criminal prosecution may already be an available option and creating new, more specific laws may be counterproductive if not used.

Regulators should first consider whether existing regulations already address manipulation or abuse of LIBOR before making the decision to create new rules to specifically address this activity. We believe it is likely the case that existing regulations are satisfactory in this regard.

However, there is a compelling case for specifically identifying LIBOR participation as a covered activity under the existing framework, in order to provide the necessary authority to compel contributors and other relevant parties to emplace effective controls specific to LIBOR activity, to require the production of information and data relevant to oversight of LIBOR, and to enforce the regulatory regime when breaches occur.

7.0 What role should authorities play in reforming the mechanism and governance of LIBOR?

7.1 In that it is our view that authorities should be involved in the governance and scrutiny of LIBOR and other benchmarks in future and that they should be involved in all stages of the reform process. We do however believe that the design – including the governance and scrutiny mechanisms – for LIBOR and other rates should be market-driven.

8.0 What degree of change to LIBOR can be accommodated before the existing volume of transactions referencing LIBOR is put at risk?

8.1 We do not feel qualified to comment on this. However, we would observe that if there is a "correct" way to calculate LIBOR that results in change to the level of the benchmark, or its behaviour, this should not be discounted on the grounds that it will affect outstanding deals. However, as noted in para 4.2, if a solution is found that does materially affect the level or behaviour of the rate, great care must be taken in the transition period to ensure that no market participants are disadvantaged. Any transition period would need to be lengthy, and the effects of the change very clearly communicated to market participants.

8.2 We strongly agree that any decision to migrate towards alternative benchmarks should be coordinated at an international level by relevant bodies. The UK authorities should take a leading role in these reforms.

9.0 Are there credible alternative benchmarks that could replace LIBOR's role in the financial markets?

9.1 There are none at the moment. This is demonstrable, because amid the sustained criticism of LIBOR since 2008, market participants would have moved to a credible alternative if it existed. It may be that the cost and risk of moving benchmarks may have deterred users from switching, but nevertheless we still do not believe there are currently any workable alternatives.

9.2 We are not aware of any alternative to LIBOR that satisfy the criteria as laid out in para 4.9 and para 4.18. Any new product, by definition, can not satisfy the last criteria – a pre-existing long data series.

9.3 All the alternatives we are aware of are unsuitable as a direct replacement for LIBOR. As mentioned above in 1.3 rates such as OIS, SONIA and EONIA do not include the credit and liquidity premia found in LIBOR as they are compounded overnight rates. They also fail the test laid out in the first bullet of para 4.9.

Rates based purely on secured transactions have the same limitations as replacements for LIBOR, and additionally dilute the rate as they also reflect the markets view of the underlying collateral, as noted in para 4.16.

Using a metric such as CDS or credit rating would mean that in future the benchmark would move in a very different manner, making it difficult to hedge as well as disadvantaging those who have taken out long term products based on a rate that behaves very differently. CDS also fail the liquidity test laid out in the third bullet of para 4.9

There are (currently) liquid derivative instruments that could be used as a basis for an alternative, but as LIBOR is now largely used as a reference rate for derivatives this would inevitably introduce circularity into the rates.

It may be possible to create an alternative based on central bank policy rates plus a spread (however determined) but central banks might see a conflict of interest if they are asked to set policy rates which are also at a short remove market rates, as noted in para 4.11.

9.4 Notwithstanding the above, Thomson Reuters is eager to join a debate on the possible design of an alternative benchmark, and we believe this should be pursued. At the very least, indices based on the instruments described in paras 4.11 – 4.16 or combinations of these instruments should be created and made available to allow users and authorities to corroborate the existing LIBOR rates.

10.0 Should an alternative benchmark fully replace LIBOR, or should it substitute for LIBOR in particular circumstances?

10.1 We believe that, wherever possible, market participants should choose the benchmarks that they judge the most appropriate.

10.2 Whether an alternate benchmark replaces LIBOR or acts as a substitute, we agree that the criteria as laid out in para 4.9 captures the criteria for an ideal model of such a rate.

10.3 Regarding the profile of potential mechanisms that could be used to calculate a successor benchmark or benchmarks to LIBOR, as listed in paras 4.19 – 4.23, we have expressed our views on the advantages and drawbacks of systems based on uncommitted quotes and pure trading elsewhere in this response. We do not see how a committed quote-based system could be made workable for precisely the reasons listed in para 4.22. Because of this, we believe that bank participation in such a process would have to be on the basis of regulatory mandate.

11.0 Should particular benchmarks be mandated for specific activities?

11.1 We believe that, in general, the market should choose the benchmarks that it finds appropriate. However it may be that LIBOR cannot effectively serve as the benchmark for the wide set of markets and applications for which it currently provides the reference rate. Thomson Reuters would be very happy to support and provide input and analysis for a review of this.

12.0 Over what time period could an alternative to LIBOR be introduced?

12.1 This would depend entirely on how different the alternative is to the existing benchmark, in terms of the level at which it sets and its behaviour.

12.2 A newly created alternative, or an alternative that is a radical departure from the current methodology, would need an extended shadow run to generate an acceptable history for users. This would probably need to cover more than one year end.

12.3 We agree with the analysis in paras 4.31 – 4.36. Unless there is co-ordinated regulatory will to move users away from LIBOR - it seems that uncertainty, potential cost and potential risk of change will likely mean that users will continue with LIBOR. An enforced transition may carry systemic risk, as well as leading to a debilitating amount of litigation globally. This argues that the correct course of action is to thoroughly reform the current LIBOR processes whilst consulting on user appetite for alternatives.

13.0 What role should authorities play in developing and promoting alternatives to LIBOR?

13.1 We would strongly endorse an international authority taking a proactive role in coordinating the approach to the use of benchmarks in financial markets. We agree that appropriate authorities are IOSCO and the Financial Stability Board. We would also note that a new governing body for LIBOR could fulfil this role if it had sufficient representation from global authorities who were prepared to give it this mandate. This might prove a more streamlined solution to these important and acute issues.

14.0 Are there other important markets or benchmarks that could face similar issues to those identified relating to LIBOR?

14.1 Yes. Any benchmark that is based on panels of contributors will likely face the same issues. LIBOR is the first benchmark to be scrutinised as it is so widely used. However, stakeholders will eventually look in turn to all similar rates. As noted in para 5.2, we have already seen reports of scrutiny of other rates akin to LIBOR. As discussed in the review document, even rates based on committed quotes or actual trades are not immune to manipulation.

15.0 Should there be an overarching framework for key international reference rates?

15.1 Yes. We believe that when LIBOR is reformed or replaced the structures and processes put in place will represent market best practice, and therefore act as a template for the reform of other market benchmarks. We believe that this is wholly positive for all market participants and is to be encouraged by authorities globally.

15.2 We agree with all the characteristics of a credible benchmark as set out in para 5.20. We are keen to work with the Wheatley Review and all stakeholders to flesh these out to form a detailed framework for LIBOR and other benchmarks.

15.3 Thomson Reuters is involved with many of the international benchmarks listed in Table 5.A, either as calculator or publisher. We would be very keen to discuss the results of the Wheatley Review with our partners in these benchmarks and work with them to introduce them in their local markets. We have a great deal of knowledge and experience of the diverse markets for which these benchmarks provide metrics. Given our longstanding involvement with LIBOR, we are well placed to assist stakeholders in these markets in their transition to an internationally agreed framework for benchmarks, whilst being mindful of the diversity of individual markets.

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The accuracy and trustworthiness of benchmarks is vital to the global financial system, and we therefore appreciate the valuable contribution made to the debate by the Wheatley Review. We feel that the Wheatley Review has shown market leadership with this consultation process, which has captured the issues and engages with them thoughtfully and constructively.

We will follow developments in the debate around LIBOR and other similar benchmarks, and we remain at your disposal to discuss these with you or members of your team.

Yours faithfully,

David Craig
President, Financial and Risk

UBS

UBS Investment Bank
1 Finsbury Avenue
London, EC2M 2PP
[redacted]
www.ubs.com

Martin Wheatley
The Wheatley Review
HM Treasury
1 Horse Guards Road
London SW1A 2HG
United Kingdom

7 September, 2012

The Wheatley Review of LIBOR

Dear Martin,

We set forth below UBS AG's response to the discussion paper published by The Wheatley Review on 10 August 2012. UBS is responding in its capacity as an "involved party" on the basis that UBS is a member of the US Dollar, Pound Sterling, Swiss Franc, Euro and Japanese Yen LIBOR panels[1].

Our response below adopts the framework of the initial discussion paper and its abbreviations. We answer only those consultation questions where we consider we may have something useful to contribute. Paragraph references are to those used in the paper.

UBS AG's Response to Initial Discussion Paper

Chapter 3: Strengthening LIBOR

Can LIBOR be strengthened is such a way that it can remain a credible benchmark?

UBS believes that LIBOR can be strengthened to remain credible through increased focus on transaction data and moving away from the perception-based subjectivity on which the benchmark is currently premised. How this might be achieved is addressed in the response below.

Could a hybrid methodology for calculating LIBOR work effectively?

Rather than focus on a discussion of creating a hybrid methodology which still relies on any element of perception in the rates submitted by panel banks we think it highly desirable to investigate the viability of setting up a mechanism whereby LIBOR could be calculated from

[1] UBS was previously a member of the Australian Dollar, Canadian Dollar (from January 2009), Danish Krone and Swedish Krona (from January 2006) LIBOR panels. In November 2011, UBS decided to withdraw from these panels because its funding activity was lower in those currencies and it was not, therefore, consistently accessing the market.

tradable quotes only. UBS believes the incentives should be in place for all stakeholders to find a workable framework based off actionable quotes where reference banks (and possibly a broader set of market participants) would borrow and lend cash in the CD market for the most important reference tenors in the LIBOR poll.

We would like to set out a strawman of a potential mechanism whereby a robust and transparent unsecured market could operate forming the basis for a renovated LIBOR setting process. It is important to emphasise that what is required is that the reference rates should be based off a set of TRADABLE quotes and that TRADED prices are not necessary in every tenor for all currencies each day for the mechanism to be robust. In this context, the tenors of 1m, 3m, 6m and 12m should be the main focus in all the major currencies given the concentration of contract exposures to these reference rates.

Suppose for each currency there are n+1 reference banks. Each reference bank (i) would quote a set of bid rates, B(t,i), where they would be willing to borrow money for term t in that currency in a notional quantity, QB(t,i), of at least [25][2] million for each of the 4 tenors. Each bank would also submit offer rates, O(t,i), where they would offer funds to a "super-prime" bank in the panel bank list. The maximum spread between the bid and offer rates for each tenor should be [12.5] basis points. Each bank would also provide a set of n offsets (zero or positive, with at least one being identically zero for each tenor t - there must be at least one designated "super-prime" bank) to their offered rates, C(t,i,j), representing any credit adjustment to the "super-prime" rate they would require to lend to bank j. The total notional amount on offer, QO(t,i), must be a minimum of [25] million in aggregate across all n banks for each tenor, with the understanding that in the limit a single bank could receive the entire allotment of Sum(all t,QO(t,i)), i.e. a total of 4*[25] million, in the matching process.

These rates would all be submitted electronically at 11.00am London time each day into a regulated matching engine platform. The matching process would, for each tenor t, identify any matches where B(t,j) exceeds { O(t,i) + C(t,i,j) } across all i and j, and rank these matches by the quantity B(t,j) - { O(t,i) + C(t,i,j) }, highest to lowest. It would then fill the first trade in the ordered list up to a maximum matched notional of minimum [QB(t,j) , QO(t,i)] at a price of the average of the matched B(t,j) and { O(t,i) + C(t,i,j) }. It would then proceed to the next match with the relevant QB(t,j) and QO(t,i) being reduced by the amount minimum [QB(t,j) , QO(t,i)]. Any equally ranked matches would be filled in order (lowest to highest) of the quantity minimum [QB(t,j), QO(t,i)] in order to diversify the bilateral credit risk as much as possible.

LIBOR could then be calculated by referencing the quoted tradable rates. The averaging methodology could be purely the arithmetic mean of the "super-prime" offered rates, O(t,i), with the topping and tailing of the highest and lowest x quotes. Alternatively, the rate could be based off some form of average of the credit-adjusted quotes, although it should be noted that at certain times the credit appetite of some reference banks for unsecured exposure to certain of their fellow contributing institutions could result in certain of the C(t,i,j) being skewed excessively high to avoid increasing exposure or breaching credit limits. The "super-prime" offered rates should still reflect the dispersion in credit quality of the reference banks to a certain extent as they are linked to each bank's bid rate (via the prescribed maximum

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[2] **Notional amounts and the maximum spread between bid and offer rates for each tenor are for example only. UBS does not express a view on the appropriate amounts in this paper.**

bid/offer spread). As an individual bank's liquidity/credit situation starts to become impaired its funding would be re-priced relative to the rest of the contributing banks as one would imagine that they would start to pay up more for funds and that they would be less inclined to lend funds even to a "super-prime" bank in the system.

UBS would propose that only the methodology for the calculation of the officially published LIBOR rate be made public and the details of any matches or the breakdown of the rates submitted by each bank are not published (unlike the bank level breakdowns distributed currently). The market should take comfort that the process is robust and the panel banks have protection against any stigma attached to their submission or others in regards to liquidity signaling vis-a-vis their institution in particular.

There would be a strong imperative for any such market to be appropriately regulated with, in all likelihood, the relevant regulator(s) cross-referencing any trading and quoting activity on the platform with other OTC bilateral trades done in the CP/CD market.

It might also be appropriate for regulators to monitor whether there is any persistent effort to avoid trading by a bank "gaming" the quotes, and there would need to be appropriate mechanisms for deciding who should be a panel bank and when a panel bank should be excluded.

This framework could be further extended to bring in other institutions who are not panel banks but who are participants in the CD market. A participating customer could come to the electronic platform via a panel bank acting as an introducing broker who would submit their offered rates for those institutions it would be willing to deposit cash with on an unsecured basis. These tradable quotes would be incorporated into the matching process. Clearly customers wishing to borrow unsecured would be more difficult to incorporate within the framework but for regular users there could be a facility for panel banks to also add credit adjustments and limits for a set of end-users.

Developing an organised trading platform as described could also have the added benefit of encouraging the unlocking of the interbank funding markets. However, it must be recognised that there are significant obstacles to resurrecting the interbank lending market, even in this limited form, not least the changes in capital ratios being enforced by global regulators on the banking sector. Indeed, the high hurdle rates to RoRWA (Return on Risk Weighted Assets) and RoA (Return on Assets) implied by these new leverage ratios in a Basel III framework mean that unsecured lending is one of the least economical ways a bank can deploy balance sheet and capital. Unless they have a real requirement to deposit excess cash at the best risk adjusted rate possible, banks will have very little desire to lend cash at anywhere near the bid rate at which they can source funds. Therefore it may be possible for regulators to address this issue by allowing banks to treat exposures they take on in this official mechanism more efficiently from a capital perspective.

Could the number of maturities and currencies currently covered by the LIBOR benchmark be reduced?

UBS has observed that the key tenors for the range of transactions, products and instruments based on LIBOR are one-month LIBOR, three-month LIBOR, six-month LIBOR and twelve-month LIBOR, with the overwhelming bulk of those referencing 3 month LIBOR or six month LIBOR depending on currency. While recognizing that there are transactions based on the other tenors (often in the context of corporate syndicated loan transactions), there are likely other means of achieving the same commercial objectives using the principal LIBOR tenors with an appropriate interpolation mechanism.. The OIS rate for the relevant currency could also be used in the interpolation of any rate shorter than 1 month.

In terms of currencies, there are a number of currencies for which LIBOR rates are submitted but which are more also commonly advanced on the basis of other (including regional) interest-rate benchmarks. For example, BBSW is, in term of volume and quantum, a more significant benchmark for Australian dollars than LIBOR. Other examples of alternative benchmarks which could substitute for LIBOR in the relevant currencies are EURIBOR, TIBOR and STIBOR. It would be necessary to engage in some form of consultation for each example to establish whether one rate should substitute for another and whether it is appropriate for a fixed spread (zero or otherwise) to be applied to the reference rate chosen when using it to substitute for the legacy index in order to adjust for the difference in credit quality of the different panel banks in each rate calculation with an aim to keep the economic terms of current contracts broadly unchanged.

It follows that it may be possible to reduce the number of currencies for which LIBOR rates are quoted. If such a reduction were to be implemented, UBS would observe that there would likely need to be a transition period during which LIBOR quotes would continue to be provided to allow for the term-out of those instruments, products and transactions based on those currencies. Further work would be required to identify, on a currency-by-currency basis, the likely volume of such contracts, the applicable maturity dates and whether a commercially viable means of substituting alternative benchmarks exists for long-dated transactions.

Should the setting and/or the submission to LIBOR be regulated activities?

Given that increased regulatory oversight will be necessary to ensure public confidence in the LIBOR benchmark, UBS believes that the publication of and contribution to LIBOR should be regulated activities.

What role should authorities play in reforming the mechanism and governance of LIBOR?

UBS expresses no particular view on this question but we acknowledge that detailed regulatory oversight will be necessary to ensure public confidence in the LIBOR benchmark going forward.

Which types of financial contract, if any, would be particularly affected by the risks of a transition from LIBOR?

The initial discussion paper correctly identifies LIBOR as a key international interest rate benchmark that is widely used in the international financial markets for a variety of different transactions, instruments and products. Any transition away from LIBOR will affect all such contracts based on LIBOR. Providing for a suitable transition period would allow new transactions to use an alternative interest rate mechanism (be it another benchmark or a different solution) and would allow for short-term contracts to mature without the need either to establish an alternative basis for interest during the life of the relevant transaction or to rely on the various non-uniform fallback interest-rate mechanisms contained in the relevant transaction documentation (which mechanisms may not always be sufficiently tried-and-tested in practice, given the historic constancy of the LIBOR benchmark). The problem becomes especially acute however in the context of long-dated transactions and in that respect it is UBS' view that these longer term contracts are most likely to be adversely affected by any transition from LIBOR. UBS has a substantial volume of contracts with a remaining life in excess of ten years and believes other market participants do as well. The duration risk on these long-dated contracts makes it important to ensure that the economics of the LIBOR sets are unchanged, otherwise there could be large resultant valuation changes on current contracts.

Chapter 4: Alternatives to LIBOR

Are there credible alternative benchmarks that could replace LIBOR's role in the financial markets?

It is conceivable that certain participants may increasingly prefer to trade derivative contracts referencing the OIS, FedFunds or other secured funding rates as a purer measure of official interest rates in an economy. Indeed derivatives of this nature have been in existence for some time, especially in the shorter maturities of the swaps market. However, the lower level of volume in relation to the LIBOR-referenced contracts, particularly for longer maturities, is perhaps an indication of end-user appetite for such a change.

UBS is of the view however that there is no other benchmark for unsecured rates that could readily replace LIBOR in the context of the wide range of transactions, instruments and products in respect of which LIBOR is applicable. We believe it is important to create a credible, liquid and broad market in unsecured funding to serve this purpose and also potentially to address some wider issues regarding financial stability.

Should an alternative benchmark fully replace LIBOR or should it substitute for LIBOR in particular circumstances?

See answer above.

Should particular benchmarks be mandated for specific activities?

Although LIBOR has wide application to a range of different transactions, instruments and products, certain benchmarks already exist for more limited purposes and specific transactions and products. However, UBS questions whether mandating certain benchmarks to a given product is reasonably practical, achievable or would be acceptable to the parties to those contracts.

Over what time period could an alternative to LIBOR be introduced?

See our responses above identifying to the challenges associated with replacing LIBOR for existing contracts, especially those having longer maturities. Any transition away from LIBOR would need to limit potential adverse consequences to the parties to the relevant contracts and the relevant markets in general. The relevant time period for transition would depend on the nature of the replacement / amended benchmark mechanic and therefore it is difficult to predict an implementation timescale in the abstract.

Chapter 5: Potential implications on other benchmarks

Are there other important markets or benchmarks that could face similar issues to those identified relating to LIBOR?

Conceivably yes.

Should there be an overarching framework for key international reference rates?

UBS does not express a view on this question, but observes that in light of the myriad different benchmarks that exist and the differing way and markets in which each operates, taken together with the international and multi-jurisdictional nature of the financial markets, designing and implementing such a framework could be challenging at best.

We look forward to discussing these responses with you at our meeting on 7 September, 2012. Please do not hesitate to contact me in the meantime should you have any further questions or if we can be of any further assistance.

Yours sincerely,

Carsten Kengeter
Co-CEO UBS Investment Bank

Andrea Orcel
Co-CEO UBS Investment Bank

Which?, 2 Marylebone Road, London, NW1 4DF
Date: 7th September 2012 **Response by:** Dominic Lindley

Consultation Response

The Wheatley review of LIBOR

Executive Summary

Which? are concerned that the impact on consumers of the LIBOR scandal has not been given a high enough priority. As part of its investigations the FSA should examine whether retail consumers have lost out as a result of the manipulation of LIBOR rates and to report publicly on this at the earliest opportunity. Where, or if consumer detriment is discovered, the banks must be required to immediately compensate consumers without the need for them to make individual claims.

The review should highlight that the lack of appropriate redress mechanisms weakens the incentive on banks to behave appropriately. Banks undertaking LIBOR manipulation or any other activity which benefits them at the expense of a large number of consumers are unlikely to face claims for compensation from consumers. There is no easy avenue for consumers to currently pursue to achieve compensation. The review should recommend new legislation to introduce stronger collective redress powers to ensure that collective action can be taken on behalf of consumers who have lost out from corrupt banking practices.

Which? believes that the review should also recommend:

- Immediately stripping the BBA of any involvement in the LIBOR governance process. The process should be brought within the FSA.
- Making the setting of and submitting to LIBOR regulated activities
- That the FSA should make it clear that it will impose significant fines on individuals and firms guilty of manipulation or attempted manipulation of LIBOR. It should also make it clear that it will fine firms and individuals responsible for the oversight of LIBOR submissions within firms if they fail to implement strong systems and controls to prevent manipulation or attempted manipulation.
- Criminal sanctions for individuals responsible for manipulation or attempted manipulation of LIBOR
- Examination of the rules surrounding energy, commodity and other proprietary benchmarks to ensure that independent governance processes are in place and criminal sanctions are available for manipulation.

Which?

Consultation questions

- Do you agree with our analysis of the issues and failings of LIBOR?

1. Yes, we broadly agree with the analysis of the issues and failings of LIBOR. We would like to highlight the following issues:

2. Inappropriate governance: It is clear that the BBA cannot be trusted to independently oversee the LIBOR setting process. The BBA is a trade association with a clear role in lobbying for and defending the interests of the banking sector. It has never taken any significant action against its membership and lacks the powers and culture to oversee what is a vital input into billions of transactions. It is lacking in transparency and takes decisions behind closed doors, without any external input.

3. Weak sanctions: The sanctions available to regulators, both at an individual level and a firm level were far too weak to ensure appropriate behaviour. Despite the widespread manipulation at Barclays, no individuals will face criminal or civil sanctions. The financial penalty imposed on the bank by the FSA is also a tiny fraction of Barclays' profits and is unlikely to provide a sufficient impetus for Boards or shareholders to ensure compliance within their bank. There is also a wider problem of identifying the individuals within the banks responsible for overseeing and monitoring the LIBOR process.

4. There is evidence from the enforcement of competition law which should be applied to the banking sector. A survey of companies by the OFT highlighted the importance of sanctions which operate at the individual, as opposed to corporate, level. In terms of the motivating compliance, criminal penalties were seen as most important, followed by the disqualification of directors, adverse publicity, fines and private damages actions. The OFT has noted that "Imprisonment is widely regarded as a very strong means of deterring anti-trust infringements and even a relatively low probability of facing a jail term may prove significantly deterrent relative to jurisdictions where this possibility is altogether absent."[1]

5. Lack of redress: By manipulating LIBOR, banks are effectively stealing money from customers and counterparties. The benefit to the bank from manipulating LIBOR may be substantial, but the detriment to consumers is spread amongst a significant number of people. Practices which will only lead to a small individual loss and typical consumer behaviour means that these issues remain largely unchallenged on an individual basis. Nevertheless, such practices can still present a significant incentive to 'bend the rules' or lower standards because where they affect large numbers of consumers, the collective benefit to the financial institution (and consequently, the total customer detriment) can be substantial. In these circumstances, there is no easy way for consumers to identify whether they have been affected and claim redress. Even if consumers were aware that they had been affected by LIBOR manipulation, they would not be able to complain to the bank responsible and would be unable to take their case to the Financial Ombudsman. This in itself weakens the incentives on the banks to behave appropriately.

[1] OFT, An assessment of discretionary penalties regimes, October 2009

- Can LIBOR be strengthened is such a way that it can remain a credible benchmark?
- Could a hybrid methodology for calculating LIBOR work effectively?
- Could the number of maturities and currencies currently covered by the LIBOR benchmark be reduced?
- Is an alternative governance body for LIBOR required in the short term?

6. We believe that an alternative governance body for LIBOR is required in the short-term. The BBA has lost all credibility and allowing them to remain in their role even in the short-term risks further damage to confidence. We would suggest that the governance of LIBOR is immediately brought within the FSA, whilst a longer term solution is developed.

- Should the setting of and/or the submission to LIBOR be regulated activities?
- Should the regulator be provided with specific powers of criminal investigation and prosecution in relation to attempted manipulation and manipulation of LIBOR?
- What role should authorities play in reforming the mechanism and governance of LIBOR?

7. Yes, we believe that both the setting and submission of LIBOR should be regulated activities. This would allow detailed rules to be developed covering the setting of LIBOR and the submission of rates. The rules on the submission of rates should cover factors relating to the banks own internal structures for submitting LIBOR rates including:

- Removing conflicts of interest by requiring the LIBOR submitting process to be clearly separate from any trading division.
- Requiring all correspondence with rate-setters and any attempts to influence their rates to be reported to the regulator.
- Ensuring that a named individual member of senior management was responsible for overseeing the LIBOR submission process.

8. In combination with these rules the regulator should make it clear that it will take serious action against the named individual member of senior management overseeing the process if they fail to prevent manipulation. The sanctions available should include fines and banning the individual from working in the industry. This will ensure that senior management has a strong reason for ensuring robust standards within their individual institutions.

9. The regulator should also set out more detail on the process by which it will calculate fines for LIBOR manipulation. To impose a credible deterrent against poor practice it should be made clear that in the future, the fines it will impose on both individuals and banks will be significantly higher.

10. Which? agrees that new criminal sanctions are necessary to provide a credible deterrent. The FSA should be given the power to prosecute individuals for attempting to manipulate LIBOR and other benchmarks. As we note above, in competition law, criminal sanctions are perceived by individuals to provide a stronger deterrent than fines or disqualification. When combined with an appropriate leniency regime, criminal sanctions can be particularly effective if they increase the probability of being betrayed by fellow participants in illegal activity.

11. Our research shows clear support for stronger criminal sanctions. 78% of people think that when the law is broken by a bank the individual(s) involved should be personally persecuted.

Which?

- Which types of financial contract, if any, would be particularly affected by the risks of a transition from LIBOR?

12. Any assessment of the financial contracts which would be affected needs to include the possible effect on consumers of the transition. The FSA should also ensure that firms do not unfairly exercise any variation terms in their contracts with consumers which lead to consumers being worse off.

- Are there any other important markets or benchmarks that could face similar issues to those identified relating to LIBOR?
- Should there be an overarching framework for key international reference rates?

13. We agree that an overarching framework for key international reference rates should be developed. This work should be initially taken forward by the Financial Stability Board.

14. Wholesale market benchmarks in energy and commodity markets could face similar issues to those identified in relation to LIBOR. The FSA should review the extent to which criminal sanctions are available for those manipulating or attempting to manipulate these benchmarks.

15. There are also risks to consumers from products which track proprietary benchmarks, created by firms. These products could include Exchange Traded Funds. Consumers would be vulnerable to any manipulation of these benchmarks or flaws in governance for the calculation of these benchmarks. There will be particular risks to consumers where the counterparty for any product or derivative based on the index and the index provider are within the same group. This may also have implications for amendments to the UCITS rules

<u>Additional comments</u>

Strengthening of collective redress powers

16. Which? believes that the implementation of an effective collective redress regime would plug an important gap in the current legal regime and provide a significant incentive for businesses to raise standards. Currently there is no general collective redress mechanism and primary legislation would be needed to change the status quo. Which? believes such a system should be based around three core principles:

a Only designated bodies should be able to bring a case. In order to avoid the development of American-style ‘class actions’, representative bodies should be limited to designated bodies that satisfy certain criteria. Legal firms should be excluded so as to avoid there being a vested interest in the cases being brought before a court.

b The system must be ‘opt out’. This will ensure any designated bodies can take effective action for all consumers who have suffered loss (as opposed to only those who sign up in advance to the claim – this is known as an ‘opt-in’ system) and are able to extract more, if not all, of the unlawful gains made by the miscreant firm or industry. It will also act as more meaningful deterrent to other potential transgressors.

c The system must include a 'cy pres' distribution of damages. ‘Cy pres’ means that any money left over from damages paid out to eligible consumers can be used in a way specifically related to the claim, for example to fund financial education or some other specific consumer-based project, rather than returned to the defendant.

WMBA and LEBA Response to the Wheatley Review of LIBOR: Initial discussion paper

Key Points

- We agree that LIBOR remains very important to the ongoing functioning of financial markets and therefore needs strengthened integrity.
- We believe that the answers lie mainly in the conduct of business requirements and supervision.
- LIBOR should not be a regulated product; rather regulation should apply to market participants through their authorisation and ongoing supervision.
- The Bank of England should be the supervisor to LIBOR but not the calculation agent since both roles are not complimentary.
- Given the voluntary basis of submissions, criminal sanctions are not appropriate given the stated objectives.
- Incentives encouraging more liquid use of unsecured lending markets, using Basle relief, are a more appropriate way towards repair.
- In the phrase "LIBOR contingent contracts" the key word is "*contracts*". Going forward, it is the responsibility of the industry to define more clearly what exactly constitutes the reference entity and the contingencies around that contract should that variable cease to function.
- We understand the imperative requirement for i) the need for a real funding benchmark that can be trusted and relevant to borrowers in all sections in the economy and which reflects the cost of funds to the lenders; and ii) a benchmark pricing and revaluation curve for all other derivative and off-balance sheet exposures.

- Aggregated and averaged daily series of traded rates such as OIS, compiled by the WMBA across all relevant venues can provide a tool to inform a benchmark curve to service market users.

WMBA and LEBA Response to the Wheatley Review of LIBOR: Initial discussion paper

Introduction

The Wholesale Markets Brokers' Association (WMBA) and the London Energy Brokers' Association (LEBA) (jointly referred to in this document as the 'WMBA') are the European industry associations for the wholesale intermediation of Over-the-Counter (OTC) markets in financial, energy, commodity and emissions markets and their traded derivatives. Our members are Limited Activity and Limited Licence firms that act solely as intermediaries in wholesale financial markets.

The WMBA considers it appropriate to reply as its members are active in arranging liquidity and executing the majority of trades across all the relevant markets including Cash Deposits, Money Market and Interest Rate Swaps (IRS). Additionally the WMBA collates and publishes a large set of indices daily in overnight index swaps (OIS), repo and energy related markets that for the settlement price to a significant part of the OTC markets and also as the basis for variation margin for a number of CCPs. These indices are based on actual bids/ offers and traded prices.

In short, we believe that LIBOR as a daily benchmark with a large outstanding notional amount of contracts which reference it, is of great importance and needs to be underpinned and imbued with greater integrity. Traded markets, may inform a benchmark curve taking reference from unsecured OIS, secured and collateralised repo markets, short term government securities and implied interest rates from FX forwards. Each of these has its own benefits and drawbacks such as sparse liquidity nodes, implied basis, selective market participation and credit risks. However, taken collectively within a framework of good governance they may inform and audit the daily LIBOR benchmarking process.

WMBA

LEBA

WMBA and LEBA Response to the Wheatley Review of LIBOR: Initial discussion paper

Issues and failings with LIBOR

- *Do you agree with our analysis of the issues and failings of LIBOR?*

i. The WMBA agrees with the issues identified in the discussion paper.

We agree that LIBOR has been and continues to be impacted by concerns around counterparty credit risk within the banking system. We note also that uncertainties as to both the definitions of the metric and objective for the fixing have been greatly magnified due to the widespread utilisation of LIBOR in respect of the great notional amount of contracts (c. ~ $300 Trn) that reference the set of published rates. WMBA member firms have indeed borne close witness to the absence of any meaningful flows, even in the major currency pairs with any maturities greater than one week. Therefore the premise of a purely transactions based set of submissions for inter-bank unsecured lending is impossible in times of market stress and dislocation and will necessarily need to be accommodated by expert judgement.

The breadth of users and the multiple contributors ought to lead towards a self-regulating tendency for such a product and consequently should induce a reputation resilience given the proven efficiency of peer review in many systems such as BBA-LIBOR. However, the very transparent exposure of implied credit status within the quantum of the submission has instead rather mitigated any such benefits. Indeed, increased anonymity with respect to the publication of individual quotes is widely considered a more efficient direction to move the process. That is, giving up on the concept of peer review entirely.

The WMBA is mindful that an incentive can be present amongst individuals holding positions with periodic LIBOR related resets and fixings such that they may seek to influence the LIBOR setters within either their own institution or indeed others. It is usual practice when discovering market liquidity and price for a market maker to request quotes from brokers, so we understand that the intermediary function plays a role in the price and volume discovery and transparency processes. This is why strong codes of conduct, notably the NIPS Code, are agreed and adhered to by the members of the association.

The ongoing credibility of LIBOR is of paramount importance and therefore we agree that changes need to be made relating to both the governance and controls both within the contributing banks and the organisation that oversees the framework. We further understand the legal implications that any fundamental changes may create in respect of the great amount of outstanding contracts. The WMBA does, however, encourage the continued use of Codes of Conduct and Conduct regulation and supervision in respect of those codes as opposed to a more legal recourse. This is primarily since the adherence to codes may cover all products and all jurisdictions so long as the key individuals are acting in the UK. We would reiterate that better supervision of authorised individuals and the strengthening of internal controls and procedures within permissioned and regulated firms is a far more efficient way to ensure good conduct.

Strengthening LIBOR

- *Can LIBOR be strengthened is such a way that it can remain a credible benchmark?*
- *Could a hybrid methodology for calculating LIBOR work effectively?*
- *Is an alternative governance body for LIBOR required in the short term?*
- *Should the setting of and/or the submission to LIBOR be regulated activities?*
- *Should the regulator be provided with specific powers of criminal investigation and prosecution in relation to attempted manipulation and manipulation of LIBOR?*
- *What role should authorities play in reforming the mechanism and governance of LIBOR?*
- *Which types of financial contract, if any, would be particularly affected by the risks of a transition from LIBOR?*

Can LIBOR be strengthened is such a way that it can remain a credible benchmark? Could a hybrid methodology for calculating LIBOR work effectively?

We believe that LIBOR can be strengthened by cutting down the number of publication maturities, cross referencing market traded prices and enhancing the governance regime.

The outstanding contracts demand at a minimum, the publication of a benchmark rate for the major currencies in overnight, tom/next, 1 week, 1 month, 3 month, and 6 month maturities. It may, however, be likely that in most liquid markets the overnight price of unsecured cash deposits will always be easily referenced by transactions, although holiday and calendar events may nevertheless still require a contributed benchmarking. The 12 month maturity is a transition point into the fixed income curve and may be referenced by way of the securities markets. It may well be the case, however, that both the corporate lending market and the derivatives floating references may still require a submitted 12 month lending rate.

A reframed LIBOR needs to supply these benchmark fixings in each of the ten currencies in order to service the financial products markets detailed in the review. As noted in the paper, since these 70 reference points do not all trade liquidly, the methodology of expert estimated submissions will not be able to be replaced in any utile way.

Therefore it remains paramount that these submissions are underpinned by a robust governance structure and by reference to market pricing.

The governance structure within the financial institutions may separate the submissions from any risk taking responsibilities and remove the context of inferring where that self same submitting institution may be able to raise funds. There may be a need to consider the potential feedback risks in contributors referencing their own funding costs. In this way the methodology may move closer to that employed by EBF-Euribor in citing a third party rate and the size of the reporting panels could be easily increased. Conduct should be closely tied with and referenced to the NIPs code and a further mutually agreed code of conduct if deemed necessary. The submitting institutions (and the collating process) should also be required to cross reference their submissions to the traded OIS curve applicable to ensure that a constant relationship to that traded rate remains. Where this is not the case and the relationship is changing, a narrative explanation should be submitted to in effect produce a “comply or explain” methodology.

One specific idea on using the OIS/SONIA spread as a benchmark would be for each contribution to make a submission and then sanitise against OIS/ SONIA Spread to ensure accuracy. Further, if the cleared OIS derivative is referenced then credit adjusted issues are removed.

In this way the submitted benchmark prices become a “hybrid” between expert assessment and market pricing.

Is an alternative governance body for LIBOR required in the short term?

We agree that the governance structure of LIBOR requires strengthening to deliver increased independence, and more transparency. However, the WMBA does not believe that a new, alternative body to BBA-LIBOR is required, nor that the Bank of England itself should take over the executive role as opposed to one of oversight.

The Financial Services Bill bestows on the Bank of England an enhanced prudential regulation role which will in itself confer a heightened degree of supervision by both the FX&MM and the prudential committee. The WMBA considers that a sub-committee of the FX&MM should be created with broader participation and a mandate to supervise and report on the quantum, integrity and efficiency of the benchmarking of LIBOR.

The role of a regulatory body is to provide oversight and supervision; this is better done from outside than inside and will therefore militate against the authorities taking over the governance role. Indeed the continuity of agency avoids any legal difficulties in the referencing of the benchmarks and also reinforces the notion of learning from mistakes and iterating process towards optimal structures.

Should the setting of and/or the submission to LIBOR be regulated activities?

The WMBA believes that given the importance of the benchmark produced, the values and quantum of the prices should be within the bounds of regulatory supervision, but not directly regulated as a product. LIBOR should not be a regulated product since it is a benchmark, essentially a conglomeration of opinions, and is not a product.

Conversely, we also closely understand that the efficiency and cross border applicability of a code of conduct regime far outweighs the clumsiness, costliness and misappropriation of legal frameworks. Further justification as to why LIBOR should not be a regulated product is that the regulation of products quickly becomes clumsy, national and rather difficult to adapt to bespoke negotiation and ongoing evolution. Rather, regulation should apply to market participants through their authorisation and ongoing supervision since such firms and individuals may be reached globally and over time periods.

Therefore we would endorse a code of conduct to be followed in making and collating submissions which would be supervised under the separate authorisation of individuals within investment firms. As firms which provide submissions to LIBOR are already regulated by the FSA, this should not require primary legislative changes, but rather to applying the approved persons regime to be brought to bear on LIBOR-related activities. We therefore recommend that it is appropriate to ensure that significant influence over how the firm carries on such activities becomes a “controlled function” for the purposes of the approved persons regime.

We see little benefit from bringing the LIBOR Manager or members of FX&MM within the scope of the approved persons regime for this specific purpose. Rather it is the contributors and governance committee who should be subject to the regulatory scrutiny.

We would concur that consideration needs to be given towards a specific power enabling the regulator to compel firms to participate in submissions should the view of the oversight committee be that at any point increased participation in the LIBOR panels is a desirable outcome. As an alternative to compelling firms to participate, it may be simpler to make contributions a condition of authorisation as a credit institution (providing all other required criteria are met such as credit rating, size of balance sheet etc).

On balance, however, we strongly recommend that incentives, such as Basle liquidity or capital relief, should be preferred to coercion since the latter may only serve to sample a tiered market on compliance lending or indeed to illustrate guesswork as to where a non-functioning market may be postulated to execute.

Should the regulator be provided with specific powers of criminal investigation and prosecution in relation to attempted manipulation and manipulation of LIBOR?

The WMBA does not believe that any specific powers beyond those currently available as criminal sanctions under the Prevention of Fraud Act. To do otherwise would further complicate the legal framework and strongly disincentivise the market to provide a utility benchmarking tool.

What role should authorities play in reforming the mechanism and governance of LIBOR?

The WMBA would encourage the authorities to play an active role in creating a supervisory framework and stipulating standards of governance. Relevant authorities should have a seat on the oversight committee.

Which types of financial contract, if any, would be particularly affected by the risks of a transition from LIBOR?

In the phrase "LIBOR contingent contracts" the key word is "contracts". In this case, LIBOR has always been a consensus concept which, even the best lawyers that the financial markets could afford we're happy to be written up as "*see Telerate page 3750 or Reuters page LIBO*". Now it needs to be defined more clearly. Going forward it is the responsibility of the industry to define more clearly what exactly the liability to be referenced is and the contingencies around that contract should the referenced entity cease to function. It is apparent to us that in the current instance the fact that the reference entity has ceased to trade due to economic reasons has been the underlying factor around many of the legal issues arising. This needs to be the responsibility of the contractual law going forward rather than the voluntary compilers and contributors to an index.

The WMBA has witnessed increased take up of OIS trading and the use of OIS curves in pricing and valuing Interest Rate Swaps. Therefore this category of derivatives has gained increased importance and profile which the WMBA and its members are keen to transmit for greater public and regulatory utility.

Some WMBA members are now using pure electronic bid/ offer prices to generate reference prices. Such examples include ***Trad-X***, ***BrokerTek*** and ***tpMATCH***. As the market moves towards utilising more electronic venues, continuous transparency around such firm bids and offers will become more prevalent. Although this pricing may not be based on actual trades, the fact that they are based on firm bids and offers meaning a banks submitting has to be ready to trade on it, means the mid is likely to be accurate.

<u>Alternatives to LIBOR</u>

- *Are there credible alternative benchmarks that could replace LIBOR's role in the financial markets?*
- *Should an alternative benchmark fully replace LIBOR, or should it substitute for LIBOR in particular circumstances?*
- *Should particular benchmarks be mandated for specific activities?*
- *Over what time period could an alternative to LIBOR be introduced?*
- *What role should authorities play in developing and promoting alternatives to LIBOR?*

Are there credible alternative benchmarks that could replace LIBOR's role in the financial markets?

The WMBA does not believe it to be the case that there are any credible existing benchmarks that could fulfil the role that LIBOR plays. That is a comprehensive set of benchmarks across the maturities and across the major currencies.

Rather, the emphasis should be on describing what exactly these benchmarks represent, the methodology, the transparency and the governance that sit behind them. This, therefore, should also caveat the degree of heterogeneity, that is the dispersion or risk that surrounds the printed benchmark.

Evidently the major part of the wholesale banking system, both in Europe and around the world, has migrated from being essentially a 'AA' rated set with only narrow dispersion around this mode; to a 'BB' set of firms with a much great degree of dispersion from 'C' to 'A'. Therefore the utility of a single rate and a contributors' ability to prescribe it is far more difficult than it has been prior to 2007. Nevertheless it should remain the functional objective of the LIBOR set to describe the rate at which an average bank operation in that wholesale market may attain funding with simultaneous publication and common method.

We say this despite acting as the collating agent and publisher of GBP and EUR OIS indices (SONIA and EURONIA), a government collateralised interest rate (RONIA) and a great deal of commodity rates (See annex 1). Whilst these are all indices derived from real trades, we understand that they can only inform and underpin a uniform and contemporary data set such as LIBOR rather than to replace them for widespread retail usage. We would, however, stress how referencing explicit spreads to the three principal traded curves (OIS, Repo, FX_Forward) may help contributors justify governance around submissions.

Should an alternative benchmark fully replace LIBOR, or should it substitute for LIBOR in particular circumstances?

As detailed in the answer above, the WMBA does not believe that any alternative benchmark should completely replace LIBOR. Such an outcome would be far too prescriptive a remedy for the UK authorities or any other to undertake and would evidently likely incur further and greater difficulties at a later date which could require ever greater degrees of state intervention into the marketplace.

Rather, the market users are free and very able to select the appropriate benchmarks for their individual requirements. These may often be traded benchmarks or a combination using interpolation and other statistical techniques from a bottom up standpoint.

Should particular benchmarks be mandated for specific activities?

The WMBA does not believe that any authority is in the position to mandate particular benchmarks for specific activities. This would raise questions as to whether authorities are acting in the best interests of any particular sector or the market as a whole and could not cope with evolution and innovation. It would also compromise the role of supervisor into that of participant.

Examples of where markets have voluntarily migrated to alternative benchmarks, without the need for regulatory intervention, include the Oil market's move from referencing WTI to Brent over the last decade and the professional Interest Rate Swap market moving from LIBOR discounting to OIS curves.

Over what time period could an alternative to LIBOR be introduced?

The WMBA currently publishes OIS and Repo indices already which can help to both underpin LIBOR and be used for specific roles including the discounting of cleared swaps novated into CCPs. We use collated trades from across the market place and employ volume weighted methodologies (VWAP) to publish at the immediate closing of the relevant window.

These indices do not form an alternative to the suite of LIBOR products but may provide specific solutions in individual markets. For instance, SONIA is relevant to banks as they fund every day, but it is not to a corporate. We would see an ongoing requirement for a LIBOR product set to service the corporate borrowing and general debt issuance markets, and therefore would not recommend an alternative to LIBOR be introduced.

What role should authorities play in developing and promoting alternatives to LIBOR?

The WMBA does not recommend an alternative to LIBOR be introduced.

We do not view the function of supervisory authorities as to carrying out a market innovation and promotion role, rather to ensure integrity to the stakeholders engaged in financial activities through supervision and the implementation of regulation.

Potential implications for other benchmarks

- o *Are there other important markets or benchmarks that could face similar issues to those identified relating to LIBOR?*
- o *Should there be an overarching framework for key international reference rates?*

Are there other important markets or benchmarks that could face similar issues to those identified relating to LIBOR?

The WMBA compiles and publishes an extensive list of interest rate and energy related datae daily using an aggregated population of trades executed across the market. These are detailed in annex 1.

We would simply point out that due to the methodology employed, neither our OIS, Repo nor energy indices, are likely to be vulnerable to any of the issues that undermined BBA-LIBOR. Indeed this immunity allows them to be incorporated in an audit or validating framework to underpin a new BBA-LIBOR framework.

Beyond such methods, we would note that all indices based upon estimated submissions face precisely the same risks that apply to LIBOR both in method, submissions and governance. Given the very large number of such, their importance and their deeply embedded position inside the fabric of the modern financial market infrastructure, it remains paramount for all stakeholders to work with that which exists, rather than attempting a radical paradigm change.

Should there be an overarching framework for key international reference rates?

The WMBA strongly supports the idea that IOSCO should set out minimum standards for an overarching framework for key international reference rates.

Annexes

Wholesale Markets Brokers' Association & London Energy Brokers' Association

The Wholesale Markets Brokers' Association (WMBA) and the London Energy Brokers' Association (LEBA) (co-referred to in this document as the 'WMBA') are the European industry associations for the wholesale intermediation of Over-the-Counter (OTC) markets in financial, energy, commodity and emissions markets and their traded derivatives. Our members are Limited Activity and Limited Licence firms that act solely as intermediaries in the said wholesale financial markets. As Interdealer Brokers (IDBs), the WMBA members' principal client base is made up of global banks and primary dealers. The replies below to the questions in the paper should be seen in the context of WMBA members acting exclusively as intermediaries and not as own account traders. (Please see www.wmba.org.uk and www.leba.org.uk for information about the associations, its members and products.) For this reason, some of the questions in the Consultation Paper are not entirely relevant to WMBA members' activities even though they are to most of their clients. Further, some answers take into account industry views and experience.

Operating as the hub of the global financial market infrastructure, IDBs are MiFID compliant and highly regulated intermediaries by virtue of their regulatory authorisation and from being subject to supervision under CAD. Our members are neutral, independent, and multi-lateral, and provide free, fair and open access to their trading venues for all suitably authorised and regulated market participants. IDBs do not take positions in the markets in which they operate and their collective service as the gateway to the global financial marketplace creates price discovery and significant liquidity. All transactions, whether executed via voice, hybrid or fully electronic means, are immediately captured at the point of trade, are subject to straight-through-processing and are made available for transparent and timely transaction reporting to the relevant regulators.

WMBA Members:

- BGC Partners
- EBS Group Ltd
- GFI Group Inc
- Gottex Brokers SA
- ICAP plc
- Martin Brokers (UK) Ltd
- Reuters Transaction Services Ltd
- Sterling International Brokers Ltd
- Tradition (UK) Ltd
- Tullett Prebon plc
- Vantage Capital Markets LLP

LEBA Members:

- Evolution Markets Ltd
- GFI Group, Inc
- ICAP Energy Ltd
- PVM Oil Associates Ltd
- Spectron Group Ltd
- Tradition Financial Services Ltd
- Tullett Prebon Energy Ltd

For further information please visit www.wmba.org.uk and www.leba.org.uk

WMBA Indices – SONIA, EURONIA, RONIA

Sterling Overnight Index Average ("SONIA")

Introduced in March 1997, SONIA is the Sterling Overnight Index Average ("SONIA"). The index tracks actual market overnight funding rates.

SONIA is the weighted average rate to four decimal places of all unsecured sterling overnight cash transactions brokered in London by contributing WMBA member firms between midnight and 4.15pm with all counterparties in a minimum deal size of £25 million.

The index is a weighted average overnight deposit rate for each business day. Each rate in the average is weighted by the principal amount of deposits which were taken on that day.

DATA VENDORS: SONIA is available to view by subscription and is also available on the following data vendor pages: Thomson Reuters, SONIA1; Bloomberg, WMBA.

Contributing Brokers: ICAP plc, Martin Brokers (UK) Ltd, Sterling International Brokers Ltd, Tradition (UK) Ltd, and Tullett Prebon plc.

Definition of an Overnight Indexed Swap (OIS): An OIS is a fixed rate interest rate swap against a floating rate index, e.g. SONIA. It replicates a mismatched deposit position through either: a short-term loan funded by an overnight deposit, or an overnight loan funded by a short-term deposit. In this way, OIS allow banks to manage their liquidity requirements more effectively.

Required documentation: OIS structures are completed using International Swaps and Derivatives Association (ISDA) documentation. Click here to view the ISDA SONIA definition.

Euro Overnight Index Average ("EURONIA")

Introduced in January 1999, EURONIA is the Euro Overnight Index Average ("EURONIA"). This index tracks actual market overnight funding rates.

EURONIA is the weighted average rate to four decimal places of all unsecured euro overnight cash transactions brokered in London by contributing WMBA member firms between midnight and 4.00pm with all counterparties in a minimum deal size of £25 million.

The index is a weighted average overnight deposit rate for each business day. Each rate in the average is weighted by the principal amount of deposits which were taken on that day.

DATA VENDORS: EURONIA is available to view by subscription and is also available on the following data vendor pages: Thomson Reuters, EURONIA1; Bloomberg, WMBA.

Contributing Brokers: ICAP plc, Martin Brokers (UK) Ltd, Sterling International Brokers Ltd, Tradition (UK) Ltd, and Tullett Prebon plc.

Definition of an Overnight Indexed Swap (OIS): An OIS is a fixed rate interest rate swap against a floating rate index, e.g. EURONIA. It replicates a mismatched deposit position through either: a short-term loan funded by an overnight deposit, or an overnight loan funded by a short-term deposit. In this way, OIS allow banks to manage their liquidity requirements more effectively.

Required documentation: OIS structures are completed using International Swaps and Derivatives Association (ISDA) documentation. Click here to view the ISDA EURONIA Definition.

Repurchase Overnight Index Average ("RONIA")

Introduced in 2011, RONIA is the Repurchase Overnight Index Average ("RONIA"). This index tracks actual market overnight funding rates.

RONIA is the weighted average rate to four decimal places of all secured sterling overnight cash transactions brokered in London by contributing WMBA member firms between midnight and 4.15pm with all counterparties with no minimum deal size.

RONIA eligible transactions are Delivery by Value (DBV) which is a mechanism whereby a CREST member who has borrowed money against overnight gilt collateral may have gilts on its account to the required value delivered automatically by the system to the CREST account of the money lender.

The index is a weighted average overnight deposit rate for each business day. Each rate in the average is weighted by the principal amount of deposits which were taken on that day.

DATA VENDORS: RONIA is available to view by subscription and is also available on the following data vendor pages: Thomson Reuters, RONIA1; Bloomberg, WMBA.

Contributing Brokers; BGC Partners, ICAP Plc, Martin Brokers (UK) Ltd, Sterling International Brokers Ltd, Tradition (UK) Ltd, Tullett Prebon plc.

Definition of a Secured Overnight Index Swap (SOIS): A Secured Overnight Index Swap (SOIS) is a repurchase agreement in which securities are sold provided that they will be repurchased on the following day. Financial institutions use overnight repos as a means of raising short-term money for financing inventories through either: a short-term loan funded by an overnight deposit, or an overnight loan funded by a short-term deposit. In this way, SOIS allow banks to manage their liquidity requirements more effectively.

Required documentation: SOIS structures are completed using International Swaps and Derivatives Association (ISDA) documentation. Click here to view the ISDA RONIA Definition.

LEBA Indices – Gas, Power, Carbon

LEBA Carbon Indices

The LEBA Carbon Indices were introduced in March 2005 covering European Union Allowances (EUA) and Certificates of Emission Reduction (CER). The Indices are the volume weighted averages of all transactions during a given period or during the whole of the day, dependent on the particular index. Closing prices are the averages of all indications obtained from all the contributing members. For full details of each index, please see the specifications below.

Contributing Brokers: Evolution Markets Limited, GFI Brokers Ltd, ICAP Energy, Marex Spectron Ltd, Tradition Financial Services Ltd, Tullett Prebon Energy

LEBA Carbon EUA Index; Price Calculation Methodology

LEBA Carbon EUA - Daily Index: The Index price will be calculated every trading day using the volume-weighted average of EUA trades transacted by LEBA firms for physical delivery on any relevant forward periods, and any associated Strip Prices.

LEBA Carbon EUA – 08:00 to 10:00 Index: The Index price will be calculated every trading day using the volume-weighted average of EUA trades transacted by LEBA firms for physical delivery on the first two nearby annual forward delivery periods between 08:00am and 10:00am.

LEBA Carbon EUA – Spot Index: The Index price will be calculated every trading day using the volume-weighted average of EUA trades transacted by LEBA firms for physical delivery on Spot.

LEBA Carbon EUA – Daily Closing Prices: Closing Prices will be calculated every trading day using price assessments collected directly from contributing member firms at around 17.00 London time. Additional prices may be collected from contributing members at regular intervals during the course of the trading day.

LEBA Carbon CER Index: Price Calculation Methodology

LEBA Carbon CER- Daily Index: The Index price will be calculated every trading day using the volume-weighted average of CER trades transacted by LEBA contributing member firms for spot physical delivery on any relevant forward periods, and any associated Strip Prices.

LEBA Carbon CER – Daily Closing Prices: Closing Prices will be calculated every trading day using price assessments collected directly from contributing member firms at around 17.00 London time. Additional prices may be collected from contributing members at regular intervals during the course of the trading day.

LEBA Power Indices

LEBA started compiling indices covering the European power markets in 2003. LEBA publish indices covering the prompt UK power market up to one month ahead. The LEBA UK Power Prompt Indices were introduced in July 2003 initially covering Day Ahead and Week Ahead UK Power. The indices are the volume weighted averages of all transactions during a given period or during the whole of the day, dependent on the particular index. A Month Ahead window index was added in 2010. For full details of each index, please see the specification below. LEBA will commence the publication of additional indices covering the UK and Continental European power markets in the near future.

Contributing Brokers: GFI Brokers Ltd, ICAP Energy, Marex Spectron Ltd, Tullett Prebon Energy

All LEBA UK Power Indices will be published daily at approximately 18.00hrs London time on the LEBA website (except where indicated *)

Baseload Indexes:

Day Ahead (7.30 - 9.00am): Calculated using a volume-based, weighted average of all day ahead baseload trades executed in London by contributing brokers between 07.30 hrs and 09.00 hrs London time each day. The Index values electricity trades for baseload delivery on the day following the deal date (Trade Day). The delivery day is the Index day. Weekends shall not be included in the Index. In the calculation of the Index, previous business day convention shall apply.

Day Ahead Weekend Index (7.30 - 9.00am): Calculated using a volume-based, weighted average of all weekend ahead baseload trades executed in London by contributing brokers between 07.30 hrs and 09.00 hrs London time each day. The Index values electricity trades for baseload delivery on the weekend following the deal date (Trade Day). The delivery days are the Index days. In the Index, weekends shall be calculated using a volume-based, weighted average of all weekend trades executed in London by contributing brokers between 07.30hrs and 09.00hrs London time on the previous business day. In the calculation of the Index, previous business day convention shall apply.

Working Days Index (7.30am – 5.00pm): Calculated using a volume-based, weighted average of all day ahead baseload trades executed in London by contributing brokers between 07.30hrs and

17.00hrs London time on Trade Day. The Index values electricity trades for baseload delivery on the working day following Trade Day. The delivery day is the Index day. Weekends shall not be included in the Index. In the calculation of the Index, previous business day convention shall apply.

Day Ahead Weekend Index (7.30am – 5.00pm): Calculated using a volume-based, weighted average of all weekend ahead baseload trades executed in London by contributing brokers between 07.30hrs and 17.00hrs London time each day. The Index values electricity trades for baseload delivery on the weekend following the deal date (Trade Day). The delivery days are the Index days. In the Index, weekends shall be calculated using a volume-based, weighted average of all weekend trades executed in London by contributing brokers between 07.30hrs and 17.00hrs London time on the previous business day. In the calculation of the Index, previous business day convention shall apply.

All Days Saturday Index (7.30am – 5.00pm): Calculated using a volume-based, weighted average of all Saturday baseload trades executed in London by contributing brokers between 07.30hrs and 17.00hrs London time each day. The Index values electricity trades for baseload delivery on Saturday following the deal date (Trade Day). The delivery days are the Index days. In the Index, Saturday shall be calculated using a volume-based, weighted average of all Saturday trades executed in London by contributing brokers between 07.30hrs and 17.00hrs London time on the previous business day. In the calculation of the Index, previous business day convention shall apply.

All Days Sunday Index (7.30am – 5.00pm): Calculated using a volume-based, weighted average of all Sunday baseload trades executed in London by contributing brokers between 07.30hrs and 17.00hrs London time each day. The Index values electricity trades for baseload delivery on Sunday following the deal date (Trade Day). The delivery days are the Index days. In the Index, Sunday shall be calculated using a volume-based, weighted average of all Sunday trades executed in London by contributing brokers between 07.30hrs and 17.00hrs London time on the previous business day. In the calculation of the Index, previous business day convention shall apply.

Month Ahead Window Index (4.00 – 4.15pm): Calculated using a volume-based, weighted average of all month-ahead baseload trades executed in London by contributing brokers between 16.00hrs and 16.15 hrs London time each trading day. The Month Ahead Window Index values baseload trades for delivery in the EFA month following the EFA month in which the deal is executed. The index month is the delivery month e.g. the index published on the 17 June 2009 is based on all the trades executed on the 17 June 2009 for delivery every day during the EFA month of July 2009.

Month Ahead Window Index Average: Calculated once a month on the last trading day of the EFA month e.g. in EFA month July 2009 the Month Ahead Index will refer to EFA August 2009. At the end of EFA July 2009 (Friday 24th July) LEBA will publish the Month Ahead Window Index Average for August 2009 as well as the Month Ahead Window Index for that day. It will be calculated by taking the average of all the individual daily Month Ahead Window indices for the relevant EFA month. The Index will also include a total volume figure for that month in addition to the Index. *

The Index will be published at approximately 18.00hrs London time on the last trading day of the EFA month on the LEBA website.

Block Indexes:

Monday – Friday Peak Blocks 3&4&5 Index (7.30am – 9.00am): Calculated using a volume-based, weighted average of all day ahead peak blocks 3&4&5trades executed in London by contributing brokers between 0730hrs and 0900hrs London time on Trade Day. The Index values electricity trades for peakload delivery on the working day following Trade Day. The delivery day is the Index day. In the calculation of the Index, previous business day convention shall apply.

Monday – Friday Blocks 1&2 Index (7.30am – 9.00am): Calculated using a volume-based, weighted average of all day ahead blocks 1&2 trades executed in London by contributing brokers between 0730hrs and 0900hrs London time on Trade Day. The Index values electricity trades for block delivery on the working day following Trade Day. The delivery day is the Index day. In the calculation of the Index, previous business day convention shall apply.

Monday – Friday Blocks 3&4 Index (7.30am – 9.00am): Calculated using a volume-based, weighted average of all day ahead blocks 3&4 trades executed in London by contributing brokers between 0730hrs and 0900hrs London time on Trade Day. The Index values electricity trades for block delivery on the working day following Trade Day. The delivery day is the Index day. In the calculation of the Index, previous business day convention shall apply.

Monday – Friday Block 5 Index (7.30am – 9.00am): Calculated using a volume-based, weighted average of all day ahead block 5 trades executed in London by contributing brokers between 0730hrs and 0900hrs London time on Trade Day. The Index values electricity trades for block delivery on the working day following Trade Day. The delivery day is the Index day. In the calculation of the Index, previous business day convention shall apply.

Monday – Friday Block 6 Index (7.30am – 9.00am): The Monday – Friday Block 6 Index (7.30am – 9.00am) is calculated using a volume-based, weighted average of all day ahead block 6 trades executed in London by contributing brokers between 0730hrs and 0900hrs London time on Trade Day. The Index values electricity trades for block delivery on the working day following Trade Day. The delivery day is the Index day. In the calculation of the Index, previous business day convention shall apply.

Monday – Friday Peak Blocks 3&4&5 Index (7.30am – 5.00pm): Calculated using a volume-based, weighted average of all day ahead peak blocks 3&4&5 trades executed in London by contributing brokers between 0730hrs and 1700hrs London time on Trade Day. The Index values electricity trades for peakload delivery on the working day following Trade Day. The delivery day is the Index day. In the calculation of the Index, previous business day convention shall apply.

Weekend Peak Blocks 3&4&5 Index (7.30am – 9.00am): Calculated using a volume-based, weighted average of all weekend peak blocks 3&4&5trades executed in London by contributing brokers between 0730hrs and 0900hrs London time on Trade Day. The Index values electricity trades for peak load delivery on the weekend following the deal date (Trade Day). The delivery days are the Index days. In the calculation of the Index, previous business day convention shall apply.

Weekend Blocks 1&2 Index (7.30am – 9.00am): Calculated using a volume-based, weighted average of all weekend blocks 1&2 trades executed in London by contributing brokers between 0730hrs and 0900hrs London time on Trade Day. The Index values electricity trades for blocks 1&2 delivery on the weekend following the deal date (Trade Day). The delivery days are the Index days. In the calculation of the Index, previous business day convention shall apply.

Weekend Blocks 3&4 Index (7.30am – 9.00am): Calculated using a volume-based, weighted average of all weekend blocks 3&4 trades executed in London by contributing brokers between 0730hrs and 0900hrs London time on Trade Day. The Index values electricity trades for blocks 3&4 delivery on the weekend following the deal date (Trade Day). The delivery days are the Index days. In the calculation of the Index, previous business day convention shall apply.

Weekend Block 5 Index (7.30am – 9.00am): Calculated using a volume-based, weighted average of all weekend block 5 trades executed in London by contributing brokers between 0730hrs and 0900hrs London time on Trade Day. The Index values electricity trades for block 5 delivery on the weekend following the deal date (Trade Day). The delivery days are the Index days. In the calculation of the Index, previous business day convention shall apply.

Weekend Block 6 Index (7.30am – 9.00am): Calculated using a volume-based, weighted average of all weekend block 5 trades executed in London by contributing brokers between 0730hrs and 0900hrs London time on Trade Day. The Index values electricity trades for block 6 delivery on the weekend following the deal date (Trade Day). The delivery days are the Index days. In the calculation of the Index, previous business day convention shall apply.

Weekend Block 6 Index (7.30am – 9.00am): Calculated using a volume-based, weighted average of all weekend block 5 trades executed in London by contributing brokers between 0730hrs and 0900hrs London time on Trade Day. The Index values electricity trades for block 6 delivery on the weekend following the deal date (Trade Day). The delivery days are the Index days. In the calculation of the Index, previous business day convention shall apply.

LEBA Coal Pricing Indices

The LEBA Coal Pricing Indices were introduced in September 2010 covering API 2 OTC Cleared CIF Rotterdam Coal Swap Contract and API 4 Cleared FOB Richards Bay Coal Swap Contract. The LEBA Coal pricing Indices are the averages of indications provided by all contributing member companies. For full details of each aspect of the index, please see the specification below.

Contributing Brokers: GFI Brokers Ltd, ICAP Energy, Marex Spectron Ltd, Tradition Financial Services Ltd, Tullett Prebon Energy

OTC Cleared CIF Rotterdam Coal Swap Contract: Description: CIF Rotterdam coal swap contract API 2 quality. Currency: US ($). Minimum Tick Size: Five cents per tonne, $0.05/tonne. Contract Series: Front 4 contract months, the front 4 to 7 quarter contracts (i.e. quarter contracts up to the end of the front calendar year), 5 season contracts and up to 4 calendar years. Expiry Day: Month contracts will cease trading at the close of business on the last Friday of the contract delivery period. Quarters, seasons and calendar years cease trading as a quarter/season/calendar year at the close of business on the last Friday of the first month contract in that quarter/season/calendar year.

OTC Cleared FOB Richards Bay Coal Swap Contract: Description: Cash settled FOB Richards Bay coal swap contract API 4 quality. Currency: US ($). Minimum Tick Size: Five cents per tonne, $0.05/tonne. Contract Series: Front 4 contract months, the front 4 to 7 quarter contracts (i.e. quarter contracts up to the end of the front calendar year), 5 season contracts and up to 4 calendar years. Expiry Day: Month contracts will cease trading at the close of business on the last Friday of the contract delivery period. Quarters, seasons and calendar years cease trading as a quarter/season/calendar year at the close of business on the last Friday of the first month contract in that quarter/season/calendar year.

OTC Cleared API 2 Coal Options Contract: Description: Cash settled Premium Paid Option on the underlying API 2 Forward contract for the corresponding expiry. Currency: US ($). Pricing: US ($) and cents per metric tonne. Minimum Tick Size: $0.01 per tonne. Option Type: Options are European style single expiry options. Last Trading Day: 17:00 hours UK time on the first working day of the month prior to commencement of the underlying forward swap contract. Contract Series: 3 to 7 quarter contracts and 3 whole tradable calendar contracts. All option contracts expire into the underlying contract of the corresponding contract series. Business Days: UK business days.

OTC Cleared API 4 Coal Options Contract: Description: Cash settled Premium Paid Option on the underlying API 4 Forward contract for the corresponding expiry. Currency: US ($). Pricing: US ($) and cents per metric tonne. Minimum Tick Size: $0.01 per tonne. Option Type: Options are European style single expiry options. Last Trading Day: 17:00 hours UK time on the first working day of the month prior to commencement of the underlying forward swap contract. Contract Series: Front 3 to 7 tradable quarter contracts and 3 whole tradable calendar contracts. All option contracts expire into the underlying contract of the corresponding month. Business Days: UK business days.

Index Publication: LEBA member firms will submit their marks for each current trading period to LEBA at the end of every trading day for calculation. The marks will then be averaged and an Index of that average published.

LEBA will endeavour to publish the Indexes at 18:30 London time on the London business day of the trading day, and may publish the Indexes on the LEBA website on or after that time. However, LEBA does not guarantee to be able to publish the data by this time. LEBA will not publish on days that are not trading days, but will publish the Index on the next London business day. Last Trading Day: 17:00 hours UK time on the first working day of the month prior to commencement of the underlying forward swap contract.

LEBA European Gas Pricing Indices

The LEBA European Gas Pricing Indices were introduced in June 2006 with the daily calculation of the TTF day ahead and weekend indices. CEGH, NCG, GPI, Peg North, PEG South, PSV and Zeebrugge were subsequently added. The LEBA European Gas Pricing Indices are the weighted average day ahead and weekend trades transacted through LEBA members. For full details of each aspect of the indices, please see the respective specifications below.

Contributing Brokers: GFI Brokers Ltd, ICAP Energy, Marex Spectron Ltd, Tradition Financial Services Ltd, Tullett Prebon Energy

LEBA Zeebrugge Pricing Index: Price Calculation Methodology

Day-ahead Index: The Day-ahead Index is calculated using a volume-based, weighted average of all Day-ahead trades executed in London by contributing brokers between 08:00 and 17:00 hours London time each day. The Index values gas trades for delivery on the day, or days in the case of weekends, following the deal date (Trade Day). The delivery day is the Index day. In the Index, weekends shall be calculated using a volume-based, weighted average of all weekend trades executed in London by contributing brokers between 08:00 and 17:00 hours London time on the previous business day. In the calculation of the Index, previous business day convention shall apply.

Day-ahead Window Index: The Day-ahead Index is calculated using a volume-based, weighted average of all Day-ahead trades executed in London by contributing brokers between 16:20:00 hours and 16:30:00 hours London time each day. The Index values gas trades for delivery on the day, or days in the case of weekends, following the deal date (Trade Day). The delivery day is the Index day. In the Index, weekends shall be calculated using a volume-based, weighted average of all weekend trades executed in London by contributing brokers between 16:20:00 hours and 16:30:00 hours London time on the previous business day. In the calculation of the Index, previous business day convention shall apply.

Month Ahead Index: The Month Ahead Index is calculated using a volume-based, weighted average of all Month- ahead trades executed in London by contributing brokers between 08:00 hours and 17:00 hours London time each day. The Index values gas trades for delivery within the month following the deal date (Trade Day). The delivery month is the Index month. In the calculation of the Index, previous business day convention shall apply.

Trades to be included in the Index: LEBA Zeebrugge Indexes: For a trade to be included in the Index it must occur on a trading day between 08:00 and 17:00 London time, on the trade date. If other delivery dates become liquid then these also will be calculated in addition to the dates above. For the purposes of these Indexes, trading days are every day except Saturday, Sunday, New Years Day, Good Friday, Easter Monday, Christmas Day and Boxing Day.

LEBA TTF Pricing Index: Price Calculation Methodology

Day-ahead Index: The Day-ahead Index is calculated using a volume-based, weighted average of all Day-ahead trades executed in London by contributing brokers between 08:00 and 17:00 hours London time each day. The Index values gas trades for delivery on the day, or days in the case of weekends, following the deal date (Trade Day). The delivery day is the Index day. In the Index, weekends shall be calculated using a volume-based, weighted average of all weekend trades executed in London by contributing brokers between 08:00 and 17:00 hours London time on the previous business day. In the calculation of the Index, previous business day convention shall apply.

Day-ahead Window Index: The Day-ahead Index is calculated using a volume-based, weighted average of all Day-ahead trades executed in London by contributing brokers between 16:20:00 hours and 16:30:00 hours London time each day. The Index values gas trades for delivery on the day, or days in the case of weekends, following the deal date (Trade Day). The delivery day is the Index day. In the Index, weekends shall be calculated using a volume-based, weighted average of all weekend trades executed in London by contributing brokers between 16:20:00 hours and 16:30:00 hours London time on the previous business day. In the calculation of the Index, previous business day convention shall apply.

Month Ahead Index: The Month Ahead Index is calculated using a volume-based, weighted average of all Month- ahead trades executed in London by contributing brokers between 08:00 hours and 17:00 hours London time each day. The Index values gas trades for delivery within the month following the deal date (Trade Day). The delivery month is the Index month. In the calculation of the Index, previous business day convention shall apply.

Trades to be included in the Index: LEBA TTF Indexes: For a trade to be included in the Index it must occur on a trading day between 08:00 and 17:00 London time, on the trade date. If other delivery dates become liquid then these also will be calculated in addition to the dates above. For the purposes of these Indexes, trading days are every day except Saturday, Sunday, New Years Day, Good Friday, Easter Monday, Christmas Day and Boxing Day.

LEBA NCG Pricing Index: Price Calculation Methodology

Day-ahead Index: The Day-ahead Index is calculated using a volume-based, weighted average of all Day-ahead trades executed in London by contributing brokers between 08:00 and 17:00 hours London time each day. The Index values gas trades for delivery on the business day, or days in the case of weekends, following the deal date (Trade Day). The delivery day is the Index day. In the Index, weekends shall be calculated using a volume-based, weighted average of all weekend trades executed in London by contributing brokers between 08:00 and 17:00 hours London time on the previous business day. In the calculation of the Index, previous business day convention shall apply.

Day-ahead Window Index: The Day-ahead Index is calculated using a volume-based, weighted average of all Day-ahead trades executed in London by contributing brokers between 16:10:00 hours and 16:20:00 hours London time each day. The Index values gas trades for delivery on the day, or days in the case of weekends, following the deal date (Trade Day). The delivery day is the Index day. In the Index, weekends shall be calculated using a volume-based, weighted average of all weekend trades executed in London by contributing brokers between 16:10:00 hours and 16:20:00 hours London time on the previous business day. In the calculation of the Index, previous business day convention shall apply.

Month Ahead Index: The Month Ahead Index is calculated using a volume-based, weighted average of all Month- ahead trades executed in London by contributing brokers between 08:00 hours and 17:00 hours London time each day. The Index values gas trades for delivery within the month following the deal date (Trade Day). The delivery month is the Index month. In the calculation of the Index, previous business day convention shall apply

Trades to be included in the Index: LEBA NCG Index: For a trade to be included in the Index it must occur on a trading day between 08:00 and 17:00 London time, on the trade date. All trades, including Private and Confidential Trades (P&C), will be included in the Index. If other delivery dates become liquid then these also will be calculated in addition to the dates above. For the purposes of these Indexes, trading days are every day except Saturday, Sunday, New Years Day, Good Friday, Easter Monday, Christmas Day and Boxing Day.

LEBA GPI Pricing Index: Price Calculation Methodology

Day-ahead Index: The Day-ahead Index is calculated using a volume-based, weighted average of all Day-ahead trades executed in London by contributing brokers between 08:00hrs and 17:00hrs London time each day. The Index values gas trades for delivery on the day, or days in the case of weekends, following the deal date (Trade Day). The delivery day is the Index day. In the Index, weekends shall be calculated using a volume-based, weighted average of all weekend trades executed in London by contributing brokers between 08:00hrs and 17:00hrs London time on the previous business day. In the calculation of the Index, previous business day convention shall apply.

Day-ahead Window Index: The Day-ahead Index is calculated using a volume-based, weighted average of all Day-ahead trades executed in London by contributing brokers between 16:00:00 hours and 16:10:00 hours London time each day. The Index values gas trades for delivery on the day, or days in the case of weekends, following the deal date (Trade Day). The delivery day is the Index day. In the Index, weekends shall be calculated using a volume-based, weighted average of all weekend trades executed in London by contributing brokers between 16:00:00 hours and 16:10:00 hours London time on the previous business day. In the calculation of the Index, previous business day convention shall apply.

Trades to be included in the Index: LEBA GPI Index: For a trade to be included in the Index it must occur on a trading day between 08:00 and 17:00 London time, on the trade date. All trades, including Private and Confidential Trades (P&C), will be included in the Index. If other delivery dates become liquid then these also will be calculated in addition to the dates above. For the purposes of these Indexes, trading days are every day except Saturday, Sunday, New Years Day, Good Friday, Easter Monday, Christmas Day and Boxing Day.

LEBA CEGH Pricing Index: Price Calculation Methodology

Day-ahead Index: The Day-ahead Index is calculated using a volume-based, weighted average of all Day-ahead trades executed in London by contributing brokers between 08:00hrs and 17:00hrs London time each day. The Index values gas trades for delivery on the day, or days in the case of weekends, following the deal date (Trade Day). The delivery day is the Index day. In the Index, weekends shall be calculated using a volume-based, weighted average of all weekend trades executed in London by contributing brokers between 08:00hrs and 17:00hrs London time on the previous business day. In the calculation of the Index, previous business day convention shall apply.

Day-ahead Window Index: The Day-ahead Index is calculated using a volume-based, weighted average of all Day-ahead trades executed in London by contributing brokers between 16:10:00 hours and 16:20:00 hours London time each day. The Index values gas trades for delivery on the day, or days in the case of weekends, following the deal date (Trade Day). The delivery day is the Index day. In the Index, weekends shall be calculated using a volume-based, weighted average of all weekend trades executed in London by contributing brokers between 16:10:00 hours and 16:20:00 hours London time on the previous business day. In the calculation of the Index, previous business day convention shall apply.

Trades to be included in the Index: LEBA CEGH Index: For a trade to be included in the Index it must occur on a trading day between 08:00 and 17:00 London time, on the trade date. All trades, including Private and Confidential Trades (P&C), will be included in the Index. If other delivery dates become liquid then these also will be calculated in addition to the dates above. For the purposes of these Indexes, trading days are every day except Saturday, Sunday, New Years Day, Good Friday, Easter Monday, Christmas Day and Boxing Day.

LEBA PEG North Pricing Index: Price Calculation Methodology

Day-ahead Index: The Day-ahead Index is calculated using a volume-based, weighted average of all Day-ahead trades executed in London by contributing brokers between 08:00hrs and 17:00hrs London time each day. The Index values gas trades for delivery on the day, or days in the case of weekends, following the deal date (Trade Day). The delivery day is the Index day. In the Index, weekends shall be calculated using a volume-based, weighted average of all weekend trades executed in London by contributing brokers between 08:00hrs and 17:00hrs London time on the previous business day. In the calculation of the Index, previous business day convention shall apply.

Day-ahead Window Index: The Day-ahead Index is calculated using a volume-based, weighted average of all Day-ahead trades executed in London by contributing brokers between 16:10:00 hours and 16:20:00 hours London time each day. The Index values gas trades for delivery on the day, or days in the case of weekends, following the deal date (Trade Day). The delivery day is the Index day. In the Index, weekends shall be calculated using a volume-based, weighted average of all weekend trades executed in London by contributing brokers between 16:10:00 hours and 16:20:00 hours London time on the previous business day. In the calculation of the Index, previous business day convention shall apply.

Trades to be included in the Index: LEBA PEG North Index: For a trade to be included in the Index it must occur on a trading day between 08:00 and 17:00 London time, on the trade date. All trades, including Private and Confidential Trades (P&C), will be included in the Index. If other delivery dates become liquid then these also will be calculated in addition to the dates above. For the purposes of these Indexes, trading days are every day except Saturday, Sunday, New Years Day, Good Friday, Easter Monday, Christmas Day and Boxing Day.

LEBA PEG South Pricing Index: Price Calculation Methodology

Day-ahead Index: The Day-ahead Index is calculated using a volume-based, weighted average of all Day-ahead trades executed in London by contributing brokers between 08:00hrs and 17:00hrs London time each day. The Index values gas trades for delivery on the day, or days in the case of weekends, following the deal date (Trade Day). The delivery day is the Index day. In the Index, weekends shall be calculated using a volume-based, weighted average of all weekend trades executed in London by contributing brokers between 08:00hrs and 17:00hrs London time on the previous business day. In the calculation of the Index, previous business day convention shall apply.

Day-ahead Window Index: The Day-ahead Index is calculated using a volume-based, weighted average of all Day-ahead trades executed in London by contributing brokers between 16:20:00 hours and 16:30:00 hours London time each day. The Index values gas trades for delivery on the day, or days in the case of weekends, following the deal date (Trade Day). The delivery day is the Index day. In the Index, weekends shall be calculated using a volume-based, weighted average of all weekend trades executed in London by contributing brokers between 16:20:00 hours and 16:30:00 hours London time on the previous business day. In the calculation of the Index, previous business day convention shall apply.

Month Ahead Index: The Month Ahead Index is calculated using a volume-based, weighted average of all Month- ahead trades executed in London by contributing brokers between 08:00 hours and

17:00 hours London time each day. The Index values gas trades for delivery within the month following the deal date (Trade Day). The delivery month is the Index month. In the calculation of the Index, previous business day convention shall apply.

Trades to be included in the Index: LEBA PEG South Index: For a trade to be included in the Index it must occur on a trading day between 08:00 and 17:00 London time, on the trade date. If other delivery dates become liquid then these also will be calculated in addition to the dates above. For the purposes of these Indexes, trading days are every day except Saturday, Sunday, New Years Day, Good Friday, Easter Monday, Christmas Day and Boxing Day.

LEBA PSV Pricing Index: Price Calculation Methodology

Day-ahead Index: The Day-ahead Index is calculated using a volume-based, weighted average of all Day-ahead trades executed in London by contributing brokers between 08:00 and 17:00 hours London time each day. The Index values gas trades for delivery on the day, or days in the case of weekends, following the deal date (Trade Day). The delivery day is the Index day. In the Index, weekends shall be calculated using a volume-based, weighted average of all weekend trades executed in London by contributing brokers between 08:00 and 17:00 hours London time on the previous business day. In the calculation of the Index, previous business day convention shall apply.

Day-ahead Window Index: The Day-ahead Index is calculated using a volume-based, weighted average of all Day-ahead trades executed in London by contributing brokers between 16:20:00 hours and 16:30:00 hours London time each day. The Index values gas trades for delivery on the day, or days in the case of weekends, following the deal date (Trade Day). The delivery day is the Index day. In the Index, weekends shall be calculated using a volume-based, weighted average of all weekend trades executed in London by contributing brokers between 16:20:00 hours and 16:30:00 hours London time on the previous business day. In the calculation of the Index, previous business day convention shall apply.

Month Ahead Index: The Month Ahead Index is calculated using a volume-based, weighted average of all Month- ahead trades executed in London by contributing brokers between 08:00 hours and 17:00 hours London time each day. The Index values gas trades for delivery within the month following the deal date (Trade Day). The delivery month is the Index month. In the calculation of the Index, previous business day convention shall apply.

Trades to be included in the Index: LEBA PSV Indexes: For a trade to be included in the Index it must occur on a trading day between 08:00 and 17:00 London time, on the trade date. If other delivery dates become liquid then these also will be calculated in addition to the dates above. For the purposes of these Indexes, trading days are every day except Saturday, Sunday, New Years Day, Good Friday, Easter Monday, Christmas Day and Boxing Day.

Contact

If you require any further information or clarification in respect of transaction reporting please do not hesitate to contact us.

Alex McDonald, CEO
[redacted]

or

Pamela Donnison, Compliance
[redacted]

Wholesale Markets Brokers' Association/
London Energy Brokers' Association
St Clements House
27-28 Clements Lane
London EC4N 7AE