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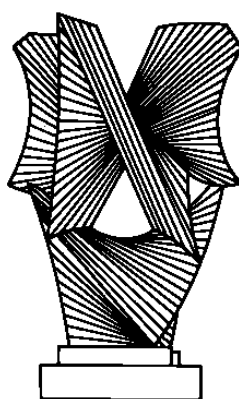
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**THE LAW SCHOOL
THE UNIVERSITY OF CHICAGO**

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**Replacing the LIBOR with a
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Comments on the Wheatley Review of LIBOR Initial Discussion Paper

6 September 2012

Rosa M. Abrantes-Metz and David S. Evans*

Abstract

We propose an alternative to the LIBOR based on three pillars. 1) Banks that participate in the rate setting process would have to submit bid and ask quotes for interbank lending and commit that they would conduct transactions within that range. If they traded outside of those ranges they would have to justify and face a penalty. This leads to the CLIBOR—for “committed” LIBOR. (2) All large banks would have to submit interbank transactions including rates to a data-clearing house. The data-clearing house would use the actual transactions to verify the commitment of the banks to the submitted rates. It would also report aggregate transaction data, keeping the actual identities of the trading parties anonymous, with a necessary time delay. (3) A governing body would be established from the CLIBOR participating banks, representatives of CLIBOR users, and other independent parties such as academics. That governing body would enter into a long-term contract, based on competitive solicitation, with a private sector entity to supervise the CLIBOR, operate the data-clearing house, and disseminate information.

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I. Summary

1. The Wheatley Review released its Initial Discussion Paper (the “Discussion Paper”) on August 10, 2012 and has sought comments on its preliminary findings and recommendations on how to reform the London Interbank Offered Rate (“LIBOR”).¹
2. This submission presents an alternative to the LIBOR that would in our view:
 - a. Eliminate or significantly reduce the severe defects in the LIBOR which lead the Discussion Paper to conclude that continuing with the current system is “not a viable option;”²
 - b. Provide a transparent and reliable measure of interbank lending rates during normal times as well as financial crises;
 - c. Minimize disruptions to the market; and,
 - d. Provide parties relying on the LIBOR with a standard that would maintain continuity with the LIBOR.
3. This alternative, which we call the “Committed” LIBOR (CLIBOR), would:
 - a. Require banks that participate in the CLIBOR to submit committed bid and ask quotes for interbank lending. Any transactions which occur after that submission (and before the next submission) must be at rates no higher than the submitted ask quote and no lower than the submitted bid quote. A penalty would be paid for any transaction which occurs outside the submitted bid-ask range, unless such transaction can be justified by the bank;
 - b. Require banks above a certain size to report their interbank borrowing and lending transactions to a data-clearing house similar to the TRACE system that was established for corporate bonds in the US. This would increase substantially the number of banks for which reliable transaction-based data are available and provide not only a source for verification of the committed bids and asks, but also a (one-day lagged) alternative benchmark of interbank borrowing rates;
 - c. Establish a governance body for the data clearing and interbank lending rate reporting operations that would consist of representatives of banks, private parties that have a stake in the LIBOR, and perhaps academics or other independent parties;
 - d. Have the CLIBOR governance body select through a public bid an organization to manage the data clearing house and CLIBOR rate setting process and dissemination;
 - e. Have the selected organization publish the daily interbank lending rates for relevant maturities and currencies, verify that each bank transacts consistently with its own quoted ask and bid, determine and collect penalties as needed, and address banks with an excessive frequency of penalties; and,

¹ The Wheatley Review of LIBOR: Initial Discussion Paper, August 2012.

² *Id.*, pp. 3, 9.

³ Ross P. Abantes-Metz, Michael Kraten, Albert Metz, & Gim Seow, 2012. “LIBOR Manipulation?” *Journal of Banking and Finance*, 36: 136-150, first draft dated August 2008 and available at

- f. Have the selected organization develop algorithms for calculating the CLIBOR in ways that would minimize the opportunity for abuse and regularly employ screening methods for detecting collusion and manipulation.
4. All of the recommendations we make here could be, and in our view should be, adapted for other benchmarks such as the EURIBOR, the TIBOR and other comparable rates.
5. We make a few brief remarks on our qualifications for presenting these recommendations and refer the Wheatley Review to our attached curriculum vitae.
 - a. Professor Rosa Abrantes-Metz is the co-author of a paper which identified, through econometric screening methods, possible problems with the LIBOR in 2008. Her paper addressed not only the possibility of manipulation but also collusion among the contributing banks.³ The U.K. House of Commons discussed Professor Abrantes-Metz's various papers on LIBOR during its preliminary findings on July 3 2012, and in the subsequent testimonies of Mr. Bob Diamond and Mr. Paul Tucker.⁴ The U.K. House of Commons Treasury Committee has also cited her work in its preliminary findings in August 18, and so have other governmental investigators.⁵ Professor Abrantes-Metz specializes on conspiracies and manipulations and on the development of empirical screens to detect cheating and defend against such allegations. Professor Abrantes-Metz has a Ph.D. in Economics from the University of Chicago.
 - b. Professor David S. Evans has written widely on the financial services industry and on its regulation. He was an adviser to the U.S. House Financial Services Committee during 2009 and has testified before the U.S. Congress on financial services matters on several occasions. He has also written widely on competition policy and has testified before the European General Court and many U.S. Federal Courts. He is the Executive Director of the Jevons Institute for Competition Law and Economics at University College London where he also serves as a Visiting Professor.⁶ Professor Evans has a Ph.D. in Economics from the

³ Rosa Abrantes-Metz, Michael Kraten, Albert Metz, & Gim Seow, 2012. "LIBOR Manipulation?" Journal of Banking and Finance, 36: 136-150, first draft dated August 2008 and available at http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1201389.

⁴ "Libor, Public Inquires & FSA Disciplinary Process," House of Commons, Business and Transportation Section, July 3 2012, available at www.parliament.uk/briefing-papers/SN06376.pdf; House of Commons Oral Evidence Taken before the Treasury Committee, Evidence from Bob Diamond, July 4 2012, to be published as HC 481-i, available at <http://www.publications.parliament.uk/pa/cm201213/cmselect/cmtreasy/uc481/uc48101.htm>; House of Commons Oral Evidence Taken before the Treasury Committee, Evidence from Paul Tucker, July 9 2012, to be published as HC 481-ii, available at <http://www.publications.parliament.uk/pa/cm201213/cmselect/cmtreasy/uc481-ii/uc48101.htm>;

⁵ "Fixing Libor: Some Preliminary Findings," Second Report of Session 2012-13, Volume I, House of Commons Treasury Committee, August 18, 2012, available at <http://www.publications.parliament.uk/pa/cm201213/cmselect/cmtreasy/481/48102.htm>.

⁶ As a statement of interest, Professor Abrantes-Metz has been retained by various plaintiffs that have filed or are considering filing lawsuits against the banks that participated in the setting of LIBOR and other

II. Why an Interbank Lending Rate is Necessary

6. The LIBOR is a benchmark for costs of unsecured borrowing in the London interbank market for a small group of highly rated banks (i.e. banks with minimal credit risk). These costs reflect compensation for the interest rate (the time value of money), credit premium (counterparty risk), and liquidity premium (market depth) that a bank with a similar credit risk profile should expect to be offered by another highly rated bank.
7. During normal economic times, the counterparty risk of the participating banks is quite low (by construction) and the interbank market depth is adequate, which means that during normal times the LIBOR is highly correlated with other low risk/high liquidity rates such as Treasury rates of equal tenor. It may seem that a separate interbank index would be unnecessary.
8. Unfortunately, the correlation between the interbank lending rate and other market rates breaks down during a financial crisis. During a crisis, a flight to quality may drive down the yields on “risk-free” instruments like Treasury-bills at precisely the same time that the liquidity and credit premium demanded by interbank lenders are likely to rise.⁷ Additionally, during those times the market segmentation between short term borrowing and lending to which the LIBOR pertains, and longer tenor borrowing and lending as typically represented in corporate bonds and credit default swaps, is likely to increase. Hence, during a financial crisis there is no obviously equivalent market-based benchmark to the true costs of short-term interbank lending. This, of course, is precisely when having such a benchmark is of the most interest.
9. As discussed in the Wheatley Review, the Treasury bill, the Overnight Indexed Swap and other existing market-based benchmarks may be close to representing the same information as the LIBOR. But, depending on the circumstances, these can also differ significantly from each other due to the different types of premia that each of these incorporate.
10. This is not just a theoretical argument. Market participants have chosen to use the LIBOR for contracts having a notional value of more than \$300 trillion and possibly much more. Putting aside the defects in the LIBOR, which we will turn to shortly, these market participants, most of which were not the banks that set the LIBOR, presumably believed that the LIBOR was conceptually the best rate to rely on and that it was superior to other readily available benchmarks such as the Treasury-bill or the Overnight Indexed Swap.
11. It must therefore be recognized that the interbank lending rate is distinct from a “risk free rate,” and it may be difficult to extrapolate from longer tenor borrowing

comparable benchmarks; Professor Evans has worked for numerous clients in the financial services industry including banks but is not currently working for any party on issues related directly or indirectly to LIBOR. Abrantes-Metz is a Principal of Global Economics Group, LLC and Evans is Chairman of Global Economics Group.

⁷ The TED spread of LIBOR over Treasury rates becomes larger and more volatile during crises.

- rates. It must furthermore be recognized that for many purposes, it is an interbank lending rate and not a “risk free rate” which is the most appropriate benchmark for banks and investors to use. Defining their retail lending costs as a spread over LIBOR allows average banks (of lesser credit quality) to pass on changes in their funding costs to borrowers throughout the duration of the loan. For example, if a bank wants to sell an adjustable rate mortgage, defining its cost as a spread over LIBOR allows it to minimize its basis risk between the rate it charges the consumer and the cost of the bank’s funds.
12. Therefore, we conclude that information on the interbank lending rate is valuable to market participants and should continue to be compiled into a benchmark though significant changes would have to be implemented to make it reliable, robust and to restore its credibility.

III. Why a Committed Quote System is Necessary

13. Having established the need for an interbank borrowing index, as distinct from some other available rates, the next question is whether a purely transactions-based index is possible. During normal economic times, it is likely that there would be a sufficient volume of transactions at the short end of the maturity scale and that a central data clearing house, which does not currently exist, could compile data on actual interbank exchanges, perhaps augmented by commercial paper rates for example, and publish a suitable index.⁸
14. Such a transactions-based index would of course operate on a delay, since it would be calculated ex-post of actual exchanges. That delay might be slight and arguably immaterial during normal economic times. But a transaction-based index may suffer drawbacks during periods of stress. First, it may become volatile as the composition of banks which actually execute interbank exchanges may change, and change significantly, on a daily basis. During a crisis, when liquidity is short and market depth is slight, a few large banks entering or exiting the interbank lending market may induce spurious volatility in a transactions-based index.
15. During a genuine and severe financial crisis, a transactions-based index may be undefined. There may not be any transactions in the appropriate currency at the appropriate tenor. A purely transactions-based index could, in the limit, break down altogether.
16. The only way to ensure continuity of the benchmark, even during the depths of a liquidity freeze or financial crisis, is to base the index on quotes provided by the banks as opposed to an ex-post calculation of actual transactions which could

⁸ Notice that a transactions-based index has previously been put forward by Abrantes-Metz, in “Why and How Should the Libor be Reformed?” Competition Policy International Chronicle, July (1) 2012; first draft available at http://papers.ssrn.com/sol3/papers.cfm?abstract_id=2094542. In this article, Abrantes-Metz recommends the LIBOR to be based on actual transactions from the previous day rates and an estimate of the change in borrowing cost for the current day, in order to avoid delay or early morning LIBOR publication. Such a proposal is, of course, conditional of transactions data availability. Increased oversight of the submissions and expansion of the number of contributing banks were also recommended.

potentially cease to exist. But such quotes need to represent a commitment by the banks to actually transact at those rates and be verifiable against actual transactions every time those occur.

IV. Defects in the Libor Rate Setting Process

17. The Discussion Paper provides an accurate summary of how the LIBOR was supposed to work and how it appears to have been manipulated based on information provided by Barclay's in the course of the investigation. We provide a brief summary and highlight several points that warrant consideration in devising an alternative.
18. Each day a handful of banks—up to 18 depending on the currency—are queried on how much they could borrow funds from other banks for loans in various currencies and maturities. The central party that calculates the LIBOR disregards the highest 25% and lowest 25% of the submissions and takes a simple average of the remainder. In the case of the USD LIBOR there were 16 banks participating during the period of the alleged manipulation. On a daily basis, the contributing banks are surveyed by the British Bankers Association and submit sealed quotes which answer “[a]t what rate could you borrow funds, were you to do so by asking for and then accepting interbank offers in a reasonable market size just prior to 11:00 a.m. London time?” The USD LIBOR is then computed by averaging over the middle eight quotes and disregarding the four highest and the four lowest.
19. In making these submissions to the central party, the banks are asked to provide estimates of their borrowing rates in the interbank market for that day. Importantly, they are not asked to report whether they used that rate for an actual transaction, neither do they commit that they will, nor is there any post-submission auditing process to determine whether the rate they submitted did in fact correspond or was close to what was actually charged and paid in any transaction.
20. From the Barclay's investigation and testimony before the Treasury Committee of the House of Commons it appears that its traders held sufficiently large positions so that a movement of the LIBOR by one basis point (that is the second decimal point of the rate) could be material to them. Some traders at Barclays apparently persuaded the individuals who submitted the quotes to modify those rates in ways beneficial to the traders. Barclays has provided information that indicates that its traders conspired with traders at other banks to manipulate the LIBOR. Additionally, it appears that in some cases Barclays refrained from submitting high borrowing rates because doing so would signal to the market that it faced significant risks.
21. Thus, the record suggests that at least some banks had incentives to manipulate the LIBOR, and that at least some banks had the means to do so. It is widely expected that more evidence from other banks will emerge from the many ongoing worldwide investigations.
22. The LIBOR rate setting process was apparently compromised. But in fact, in

many respects its structure was inherently flawed, providing incentives and opportunities for banks to manipulate the rate and providing a means for tacit or explicit collusion by the banks.

- a. The contributing banks are asked to report at what rate they could borrow money. They do not have to report real transaction prices when these exist and they have no obligation to transact at any rate close to their submitted quote. They have no incentive (beyond “goodwill”) to report an accurate rate, and they face no penalty for reporting an inaccurate one. It is well known in the survey design literature that such hypothetical questions typically do not elicit accurate answers.⁹
- b. There is no mechanism for auditing the accuracy of rates submitted by the banks. There are no penalties for submitting rates that appear wrong. There are no efforts to verify, in any way, the rates ex post or provide any deterrence against the submission of unreliable data.
- c. The rates submitted by the bank each day are made publicly available on the same day with the identity of each submitter disclosed. As a result it is possible for each bank to learn the others’ submissions in time to influence its own submission for the following day. This provides a facilitating device for tacit collusion, but also for explicit collusion in which banks can determine whether other banks have followed agreements to fix rates and punish any deviations from such agreements. It is well known in competition policy that such facilitating devices can aid and abet price fixing and bid rigging.¹⁰
- d. The rates are determined through the submission of a small number of banks—currently no more than 18 and as few as 6 depending on the currency. It is well known from the economic literature and antitrust work on cartels that it is easier to coordinate either tacitly or explicitly when there are a small number of market participants.¹¹
- e. The process for calculating the LIBOR makes it particularly easy for banks to submit quotes that with a high degree of confidence could cause a material movement in the LIBOR. The following calculation provides a rough approximation to the direct influence of a bank’s offer on the LIBOR. A priori, in 50 percent of the cases each bank’s quote will be included in the interquartile range. Index the bank that is trying to influence LIBOR by 1. Then the calculated rate is $x_1/8 + (x_2/8 + x_3/8 + x_4/8 + x_5/8 + x_6/8 + x_7/8 + x_8/8)$. Submitting a bid that is 8 basis points over the average would increase the average by 1 basis point if the bank’s submission is in the interquartile range and if such submission does not alter the composition and submissions of the remaining seven banks

⁹ See, for example, Glenn Harrison and E. Elisabet Rutstrom, 2008. “Experimental Evidence of Hypothetical Bias in Value Elicitation Methods,” *Handbook of Experimental Economics Results*, 1: 752-767.

¹⁰ See, for example, Margaret Levenstein and Valerie Suslow, 2006. “What Determines Cartel Success,” *Journal of Economic Literature*, 44(1): 43-95.

¹¹ *Id.* For a review of more factors influencing the susceptibility of a market to collusion, see *American Bar Association Editions*, 2010, “Proof of Conspiracy Under Federal Antitrust Laws,” Chapter VIII on Economic Expert Testimony.

- counting for the average.
- f. The bank cannot be certain that it will directly move the LIBOR because its submission could be discarded. However, the bank knows that even if its submission is discarded, it may well still have a material effect on the final value of LIBOR. Hence, if the bank benefits from a higher LIBOR rate it will have an incentive to submit a quote higher than what it believes the average rate is because there is a positive probability that by submitting a higher quote it directly increase the LIBOR.
 - g. Let's suppose a situation in which a bank's submission belongs to the set of "too high quotes" that do not directly count for the LIBOR computation. Even then its quote could move the rate. To illustrate our point, here is a very simple example. The 16 banks offer the following submissions to the LIBOR: {5.01; 5.02; 5.03; 5.04; 5.05; 5.06; 5.07; 5.08; 5.09; 5.10; 5.11; 5.12; 5.13; 5.14; 5.15; 5.16}, and suppose these are truthful submissions. Given this set, the quotes {5.01; 5.02; 5.03; 5.04; 5.13; 5.14; 5.15; 5.16} are discarded, and the 8 in the middle are averaged to yield a LIBOR of 5.085. Now suppose that the bank which in the example above submitted 5.08 has an interest in moving the rate upwards. Rather than submitting a quote of 5.08, it could submit a quote of, say, 5.22, which belongs to the four highest quotes for the day and will therefore be discarded. Now the quotes which will count are {5.05; 5.06; 5.07; 5.09; 5.10; 5.11; 5.12; 5.22}, yielding a LIBOR of 5.1025, an increase of 1.75 basis points with respect to the LIBOR under the truthful submission of 5.08.
 - h. In addition to being vulnerable to the actions of a single bank, the current LIBOR setting is also highly susceptible to coordination among multiple banks. When only 16 banks contribute to LIBOR, a coalition of just five banks can be *guaranteed* to be able to move the rate. Suppose that 5 banks are interested in moving the LIBOR downwards, and with that objective, they all submit low quotes. If these are all sufficiently low, they will be the five lowest of the 16 submissions; four will be discarded, but the fifth lowest will directly enter the LIBOR calculation for that day. And since it was artificially low, so will be the resulting LIBOR. Moreover, and just as with the example above of manipulation by one single bank, it is easy to illustrate situations in which a cartel of just 2 banks may effectively move the LIBOR even when their quotes are disregarded.
 - i. The governance of the LIBOR setting process rests with banks that have a financial interest in the outcome of the LIBOR, and this is a problem on its own.
23. The LIBOR setting process is based on a fundamentally and predictably flawed design. Given that the current setting provided the means, the motive and the opportunity to conspire and manipulate the rate, considering the recent evidence of apparently widespread manipulation, we agree with the Discussion Paper that the current process is "not a viable option."
24. Unfortunately, changing LIBOR is a challenging task. There are two main

- problems. The first is that there are more than \$300 trillion of contracts outstanding tied to the LIBOR. It is not possible to simply end it. Doing so would result in massive renegotiation costs, lawsuits and disrupted financial markets. The second is that though the information from interbank borrowing and lending is valuable and can increase market efficiency, there is no obvious substitute for a market-based benchmark that is also guaranteed to provide useful information during a financial crisis.
25. Of course it is possible that a poor proxy for the interbank lending rate is better than an unreliable and manipulated rate. But if the goal is an enhanced and more robust measure of interbank lending, then a new benchmark needs to be designed and implemented.

V. Replacing the LIBOR

26. Basic principles of antitrust, financial market regulation, survey design, and the design of governance systems support the adoption of several guiding principles in developing an alternative to the LIBOR:
- a. The rates provided to the market should be based on actual transactions where possible.¹²
 - b. The banks should have a financial stake in the accuracy of submitted rates not based on actual transactions.
 - c. The formula for establishing the index should be based on methods that minimize the ability of submitters singly or in combination to affect the rate.
 - d. The process should integrate basic screening methods for detecting the submission of false information or efforts to manipulate the rate.
 - e. The influence of parties who have a financial stake in the outcome of the rate setting process should be minimized.
 - f. The public release of banks' submissions should be delayed by at least one month so that coordination of submissions and manipulation due to signaling concerns can be minimized and the identity of the banks making each submission should not be disclosed.
27. Our proposal meets these criteria while we do not believe that any of the other proposals, including those alluded to in the Discussion Paper, do.
28. Our proposal involves three major and interdependent components:
- a. A process for determining the daily interbank lending and borrowing same-day rate where the bids are not necessarily based on actual transactions but are verified against actual transactions every time these take place. We call the resulting rate the "CLIBOR" for Committed LIBOR.
 - b. A data-clearing house for reporting interbank lending and borrowing transactions that would provide historical rate data and thereby provide both a check of the same-day rates and possibly an alternative benchmark that would be less current but potentially more accurate. We call the data-

¹² At the least, any submissions have to be verifiable against actual transactions whenever those take place.

clearing house the “Transaction Reporting for Interbank Borrowing Entity” or “TRIBE.”

- c. A system for ensuring the integrity of the data collection and reporting in which the regular involvement of self-interested participants is minimized. In our view TRIBE would be responsible for, and have a fiduciary duty in, the CLIBOR process as well as collecting and reporting historical transaction data.

A. Process for Determining Same-day Committed London Interbank Offered Rate

29. We propose the CLIBOR be based on committed bid and ask quotes submitted by contributing banks early in the day and verifiable by actual transactions whenever these exist. The committed ask for the 3 month tenor would answer the question, “what is the maximum rate at which you would be willing to borrow \$N for three months from one of the contributing banks?” The committed bid would answer the question, “what is the minimum rate at which you would be willing to lend \$N for three months to one of the contributing banks?”
30. The CLIBOR would be calculated as the midpoint of the inside spread (the midpoint between the lowest bid and the highest spread) across all contributing banks. We believe further work should attempt to develop algorithms for refining this measure so that it presents the most accurate figure for the market and minimizes possibilities of cheating. We note that other entities that must rely on indices that can be manipulated, such as search-engine platforms, have developed sophisticated procedures for minimizing and detecting manipulation.
31. Banks would have to agree that they would conduct transactions within their bid-ask ranges, hence the meaning of the commitment. A bank that submitted an artificially low ask quote would effectively lock itself out from borrowing that day, unless a penalty is paid. A bank that submitted an artificially high bid quote would effectively lock itself out from lending that day, unless a penalty is paid. Hence, actual transactions would usually take place between these extremes and the incentive to manipulate quotes would be significantly reduced given that these are not only committed but also verifiable when any transactions actually take place. Further work should ensure that this process does not impair the interbank lending market and modify the commitment parameters and penalties as need be.
32. TRIBE would evaluate submissions ex-post against actual transactions which take that place during the day. It would be expected that each bank would be borrowing at any rate below its quoted ask, but banks would not be completely barred from entering into transactions outside of the bid-ask ranges. If it happened that a bank borrowed above that value, it would be required to explain that transaction to the oversight agency. Similarly, each bank would be expected to lend at its bid quote or higher, and in case it lent below its bid it would be required to explain that decision. TRIBE would establish penalties for doing so where those penalties would increase for multiple transgressions. As a result banks that either made a mistake in their submission, or faced circumstances they didn’t anticipate when making their submission, would not be barred from

- entering into a transaction subject to the penalty.
33. TRIBE would match actual transactions to the bid-asks and impose the penalties. It would also obtain an explanation from the bank for the deviation, and it would have the power to forgive a penalty if the explanation provided by the bank was legitimate (i.e., principles to be set for this rule, but an example could be a last minute liquidity emergency unpredictable at the time of the submission). Transgressions and penalties would be monitored and a bank incurring more than a reservation number of penalties (to be determined) in the period of a month would have to be further monitored to justify the reason(s) for such a high frequency of transgressions.
34. It may be necessary for the government to require the banks that have been participating in the LIBOR rate setting, and all large banks, to participate in the CLIBOR process. Further consideration would need to be given as to the criteria for requiring banks to participate in the CLIBOR process and whether this requirement should be for a transitional period (five years for example) or permanent.

B. Transaction Reporting for Interbank Borrowing Entity (TRIBE)

35. Although one could debate whether providers of bespoke financial transactions should be required to make public disclosures, we believe that the serious doubts that have been raised about integrity of the LIBOR, the evidence concerning its manipulation and possible collusion, and the need for an auditing mechanism going forward tip the balance in favor of full transparency. Therefore we are proposing that banks be required to disclose to the data clearing house the bid and asks rates and other detailed terms on funds they have borrowed from or lent to another bank. To prevent the disclosure of proprietary information the data-clearing house would keep the identity of each bank confidential and only report aggregated information.
36. This data-clearing house is similar to the TRACE system for corporate bonds in the US. Most corporate bonds have been sold privately at least since the end of World War II,¹³ and little public information was available on the prices that corporate bonds were sold for until about a decade ago. At the beginning of 2001 the National Association of Securities Dealers required that dealers report detailed information including prices on the National Association of Securities Dealers' ¹⁴ transaction reporting and compliance engine (TRACE). Much of the TRACE data were then made publicly available and different types of bonds were phased in over time. Three major academic studies have examined the effect of the introduction of TRACE on the corporate bond market.¹⁵ All found that investor's

¹³ Bruno Biais and Richard Green, 2005. "The Microstructure of the Bond Market in the 20th Century," *GSIA Working Papers*, Carnegie Mellon University, Tepper School of Business (E57).

¹⁴ NASD is now FINRA.

¹⁵ Hendrik Bessembinder, William Maxwell, and Kumar Venkataraman, 2006. "Market Transparency, Liquidity Externalities, and Institutional Trading Costs in Corporate Bonds," *Journal of Financial Economics*, 82: 251-88; Amy Edwards, Lawrence Harris and Michael Piwowar, 2007. "Corporate Bond

- trading costs declined substantially and two estimated the savings at \$1 billion annually.¹⁶
37. Under our proposal, the requirement that banks submit information on interbank lending and borrowing transactions would be extended to all large banks including banks that are not currently participating in the LIBOR.
 38. The TRIBE transaction data could be used to develop an alternative benchmark based on actual transaction data. It would not be possible for this benchmark to be of same day rates. But the benchmark could possibly be based on the previous day's rates for maturities and currencies for which there were enough transactions and for longer periods for more thinly traded maturities and currencies. Alternative benchmarks would need to account for the fact that the risk profiles of these banks and therefore their likely borrowing rates could differ.

C. TRIBE Governance

39. We believe that the banks providing the information on interbank borrowing should have minimal involvement in running TRIBE which would be responsible for the CLIBOR as well as the TRIBE data reporting. These banks clearly have an interest in the CLIBOR result because of their trading positions, and with a small number of institutions they could engage in tacit or explicit collusion. In addition, given the liability and reputational damage they may have incurred from the LIBOR process to date they may wisely decide that they do not want to continue in a governing capacity.
40. One possibility is for the Bank of England or the Financial Conduct Authority or some other governmental entity to assume responsibility for TRIBE. However, given the importance of innovation in the collection and dissemination of these data to the financial markets, and the many other tasks that financial regulators have, we believe it would be better for TRIBE to be run by a private sector firm.
41. One model for TRIBE are the data collection and reporting providers which collect and report audience data. In most countries including the UK, media companies issue a request for proposals for collecting and reporting data on their audiences for the purpose of providing reliable data to advertisers. They typically issue a long-term contract of about 10 years. During this period the contract recipient can be fired only for failing to fulfill the terms of contract. Part of the negotiation concerns the price of the data.
42. In the case of TRIBE, we propose the establishment of a governance body that would be responsible for selecting and monitoring a vendor. The governance body should consist of representatives of all market participants including banks that are participating in CLIBOR, representatives of other institutions that rely on

Market Transparency and Transaction Costs," *Journal of Finance*, 62: 1421-1451; Michael Goldstein, Edith Hotchkiss and Erik Sirri, 2007. "Transparency and Liquidity: A Controlled Experiment on Corporate Bonds," *Review of Financial Studies*, 2(2): 235-273. For a summary, see William F. Maxwell and Hendrik Bessembinder, 2008. "Transparency and the Corporate Bond Market," *Journal of Economic Perspectives*, 22(2): 217-234.

¹⁶ Bessembinder, Maxwell, and Venkataraman (2006), *supra* note 15.

- the CLIBOR, and independent parties such as academic experts. The governance body would refine the proposal described above and hire a vendor to implement it.
43. A regulatory body would sit above the CLIBOR governance body and TRIBE. That body could require, receive, and audit reports and conduct examinations of the CLIBOR governance body and TRIBE. The regulatory body could be the Bank of England or the Financial Conduct Authority or consist of an interagency body created for this purpose. In the first instance, the regulatory body would select the CLIBOR governing body in consultation with the participating banks and other market participants.
 44. The operational costs associated with the CLIBOR could be significant, but in our view any serious alternative to the LIBOR will also require a high level of operational costs. In any event these costs would be small relative to the value of the LIBOR for financial markets.
 45. Finally, as suggested in the Wheatley review, it may be worth extending the types of funding transactions relevant for the CLIBOR to also incorporate wholesale deposits, and to consider reducing the number of currencies in which LIBOR is denominated, as well as maturities.

D. The Transition

46. The Discussion Paper expresses concern that making significant changes to the LIBOR would result in market disruption. The experience with the introduction of the euro suggests that these can be managed. By all means, the transition to the euro was extremely successful.
47. The European Commission provided the continuity in contractual relationships by establishing that national currency values be replaced by euro equivalent at the fixed conversion rate in any legal documents.¹⁷ In the United States, some states such as New York, California and Illinois enacted similar laws to address the conversion to the euro. There were no material disruptions in financial markets during that period.
48. The transition phase to the euro was well prepared and happened smoothly over the space of few years. The same could happen in transitioning to the CLIBOR which, in our proposal, provides continuity with the LIBOR as a benchmark for interbank lending.

¹⁷ European Commission, 1997. "Legal Framework for the Use of the Euro," II/088/97-EN, Brussels, available at http://ec.europa.eu/economy_finance/publications/publication_summary1056_en.htm.