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Rosa M. Abrantes-Metz
Global Economics Group
NYU Stern School of Business
&
David S. Evans
Global Economics Group
University of Chicago Law School

www.competitionpolicyinternational.com

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Rosa M. Abrantes-Metz & David S. Evans[1]

I. INTRODUCTION

The London Interbank Offering Rate ("LIBOR") has been called "the world's most important number."[2] It is the primary benchmark for global short-term interest rates. LIBOR is used as the basis for settlement of interest rate contracts on many of the world's major futures and options exchanges as well as most over-the-counter and lending transactions. The notional value of contracts, instruments, and transactions referencing it significantly exceeds U.S. $300 trillion.[3]

LIBOR is supposed to measure the rate at which large banks can borrow unsecured funds from other banks at various short-term maturities, and for a variety of currencies. Unfortunately, there is growing evidence that the banks have manipulated LIBOR both individually and through coordinated behavior.[4] As a result, the U.K. Chancellor of the Exchequer asked Martin Wheatley to review the LIBOR process and make recommendations for reform ("The Wheatley Review"). The Wheatley Review presented its initial review in August 2012, soliciting comments at that time. The Wheatley Review then presented its final recommendations for LIBOR reform in September 2012.

In this article we summarize the main problems with the current LIBOR setting, describe our proposal on how to reform LIBOR through a committed quote system ("CLIBOR"),[5] and

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[1] Rosa M. Abrantes-Metz is a Principal in the Antitrust, Financial Regulation, and Securities practices of Global Economics Group and an Adjunct Associate Professor of Economics at Leonard N. Stern School of Business, New York University (RAbrantes-Metz@globaleconomicsgroup.com). David S. Evans is the Chairman of Global Economics Group; Executive Director of the Jevons Center for Competition Law and Economics and Visiting Professor, University College London; and Lecturer, University of Chicago Law School.

[2] http://www.moneyweek.com/personal-finance/libor-the-worlds-most-important-number-13816.

[3] The Wheatley Review of LIBOR: Final Report, September 2012, page 3.

[4] Barclay's Settlement with the Commodities Futures Trading Commission, June 27, 2012, *available at* http://www.cftc.gov/ucm/groups/public/@lrenforcementactions/documents/legalpleading/enfbarclaysorder062712.pdf; The Wheatley Review of LIBOR, First and Second Reports *available at* http://www.fsa.gov.uk/doing/events/wheatley-review-libor; *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; *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

[5] We submitted our proposal to the Wheatley Review during the comment process. *See Replacing LIBOR with a Transparent and Reliable Index of Interbank Borrowing: Comments on the Wheatley Review of LIBOR Initial Discussion Paper* (September 6, 2012) *available at* http://papers.ssrn.com/sol3/papers.cfm?abstract_id=2142878 ("Abrantes-Metz & Evans, 2012").

explain why the final Wheatley Review proposal on how to reform LIBOR, and its reasons for stopping short of our proposals, are not satisfactory for putting LIBOR on solid ground.

II. THE VALUE OF LIBOR

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.

During normal economic times, the counterparty risk of the participating banks is quite low (by construction) and the interbank market depth is adequate. That means that during normal times LIBOR is highly correlated with other low risk/high liquidity rates such as Treasury bill rates of equal tenor. It may seem that a separate interbank index would be unnecessary. 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 premiums demanded by interbank lenders are likely to rise.[6] Additionally, during those times, the market segmentation between short-term borrowing and lending to which LIBOR pertains, and longer tenor borrowing and lending as typically represented in corporate bonds and credit default swaps, are 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. As discussed in the Wheatley Review, the Treasury bill rate, the Overnight Indexed Swap, and other existing market-based benchmarks may be close to representing the same information as LIBOR. But, depending on the circumstances, these can also differ significantly from each other due to the different types of premia that each incorporates.

This is not just a theoretical argument. Market participants have chosen to use LIBOR for transactions having a notional value of more than U.S. $300 trillion and possibly much more. Putting aside the defects in LIBOR, these market participants, most of which were not the banks that set LIBOR, presumably have believed that LIBOR was conceptually the best rate to rely on and that it was superior to other readily available benchmarks such as the Treasury bill rate or the Overnight Indexed Swap.

In considering reform proposals it is important to recognize that the interbank lending rate is not a "risk free rate" but an interbank lending rate. 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.

[6] The spread of 3-month LIBOR over 3-month Treasury rates becomes larger and more volatile during crises.

Therefore, the information on the interbank lending rate is valuable to market participants and should continue to be compiled into a benchmark—but significant changes will have to be implemented to make it reliable and robust, and to restore its credibility.

III. THE PROBLEMS WITH THE LIBOR PROCESS

The current LIBOR setting process is based on a fundamentally and predictably flawed design. Each day a handful of banks—up to 18 depending on the currency—are asked "[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 central party that calculates LIBOR disregards the top and bottom quartile of the submissions and then takes a simple average of the remainder. They publish the resulting rate. Later in the day the central party reports the quotes submitted by each bank so every bank, and anyone else, can see how each answered the question.

It is clear from this description that the process provides incentives and opportunities for banks to manipulate the rate, as well as a means for tacit or explicit collusion by the participating banks. Specifically:

1. The contributing banks 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. There are no efforts to verify the rates *ex post* or provide any deterrence and punishment against the submission of unreliable data.
2. 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 not only for tacit collusion, but also for explicit collusion whereby banks can both determine whether other banks have followed agreements to fix rates and also punish any deviations from such agreements.
3. 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 of course that it is easier to coordinate, either tacitly or explicitly, when there are a small number of market participants.
4. The process for calculating LIBOR makes it particularly easy for banks to submit quotes that, with a high degree of confidence, could cause a material movement in LIBOR. In fact, there is a high probability that any bank can move LIBOR in a predictable direction by manipulating the rate it submits. But then, on top of that issue, 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.
5. Moving Libor even by just a few basis points can earn traders material amounts of money. So nudging LIBOR to the second decimal point can matter a lot.
6. Several of the contributing banks were part of the same British Banking Association that oversaw LIBOR. Hence, they oversaw themselves.

There seems to be widespread agreement that the LIBOR process was flawed. Unfortunately, changing LIBOR is a challenging task that faces two main problems. The first is that with such a large volume of contracts tied to 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 there is no obvious substitute for a market-based benchmark that is also guaranteed to provide useful information and is comparable to an untainted LIBOR during a financial crisis. 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.

IV. COMMITTED LIBOR

We have developed an alternative process of providing and disseminating reliable information on interbank lending and borrowing that we call "Committed LIBOR" or "CLIBOR."[7] We submitted this to the Wheatley Review for its consideration. The new process would stand on three pillars: Commitment, Transparency, and Governance.

1. **Always Committed**: CLIBOR requires participating banks to submit committed bids 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 that occurs outside the submitted bid-ask range, unless such transaction can be justified by the bank.
2. **Transaction-Based:** Where possible, banks above a certain size are required to report their interbank borrowing and lending transactions to a data-clearing house similar to the TRACE system that has been established for corporate bonds in the United States. 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.
3. **Independent Governance:** It is necessary to 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 LIBOR, and perhaps academics or other independent parties. Through a public bid, this CLIBOR governance body would select an organization to manage the data clearing house and CLIBOR rate setting process and dissemination. This selected organization would publish the daily interbank lending rates for relevant maturities and currencies, verify that each bank transacts consistently with its own quoted asks and bids, determine and collect penalties as needed, and address any banks that had an excessive frequency of penalties. It would also 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.

Our CLIBOR process would cost somewhat more than the current LIBOR process. But it would result in an interbank borrowing rate that would be more accurate than LIBOR, restore

[7] *See* Abrantes-Metz & Evans, 2012, *supra* note 5.

the credibility of the process for setting an interbank borrowing rate, and reduce the incentives and opportunities for manipulating the rate by individual banks or through collusion. Importantly, it would ensure continuity with the existing LIBOR and minimize the transaction costs of replacing the index altogether.

V. THE WHEATLEY REVIEW RECOMMENDATIONS

On September 28, 2012, Martin Wheatley, the incoming chief executive of the Financial Conduct Authority, issued his final recommendations[8] on how to fix the LIBOR. Many of the recommendations are in line with what we had proposed in our submission to the Wheatley Review. Wheatley's key recommended changes are as follows:[9]

- LIBOR will be cured rather than killed because eliminating it would create too much upheaval, uncertainty, and litigation given that LIBOR is embedded in contracts with hundreds of trillions of dollars of notional value.
- Administration of LIBOR will be moved to a private entity selected through tender by a committee consisting of many stakeholders and reporting to a regulator.
- Moving forward, LIBOR quotes will have to relate to actual transactions rather than be mere representations by submitting banks as it has been.
- Efforts will be made to expand the number of banks submitting data on rates, thereby increasing the accuracy of LIBOR and reducing the possibility of manipulation and collusion.
- Information identifying the rates submitted by banks won't be released for three months to reduce the ability to use LIBOR as a facilitating device.
- The number of LIBOR denominations will be significantly reduced.

Unfortunately, while an improvement over the current process, the Wheatley Review recommendations result in an overly regulated process that is not likely to yield an index that markets can have great confidence in.

The Wheatley recommendations turn the daily determination of the submitted rates into a cumbersome and heavy process, supervised by lawyers and compliance officers worried about satisfying the regulations and covering their rears, rather than one designed to do what LIBOR is needed for—establishing accurate rates that market participants can rely on. The risk aversion that will clearly, and understandably, dominate the minds of compliance officers and corporate lawyers who will be involved in LIBOR setting for their banks will reduce the power of LIBOR to adjust to predicted changes in the cost of today's borrowing which were not present when the previous transactions took place. As a consequence, this will not only reduce LIBOR's ability to vary over time in response to new and predicted market changes, but also affect its reliability as the prime indicator of the day's expected interbank lending cost.

[8] The Wheatley Review of LIBOR: Final Report, September 27 2012.
[9] *Id. at* 7-9.

The Wheatley Review seems to agree that our proposal for a committed LIBOR should be explored in the longer term, but raises two shorter-term concerns.[10] The principal concern over our recommendation for committed quotes is that banks will not want to participate in this process. That may be true, but the Wheatley Review has already indicated that banks might not want to participate in the proposed revised LIBOR either, and may need to be compelled to do so by regulation. Unfortunately, given the litigation exposure the banks have created for themselves, and the resulting proposal for criminal sanctions, the only way to preserve LIBOR and avoid market disruption may be to compel banks to contribute.

The other concern raised by the Wheatley Review about the committed LIBOR approach relates to potentially undesirable increases in balance sheets by the banks. If they are forced to submit quotes for all currencies at all maturities and have to commit to transactions based on these quotes, they face the risks of actually finding counterparties for all of these submitted quotes. Though it is true that this would be a possibility, these transactions would represent a very small and almost insignificant amount of the banks' total balance sheets, as their numeraire refers to very small amounts.

In any case, some means to remediate the problem are to: 1) have a larger number of banks in the panels as recommended; 2) reduce the number of currencies and maturities for which LIBOR is calculated (as Wheatley recommends); and/or 3) not require every bank to submit daily committed quotes to all of the remaining LIBOR. As long as there is a large enough group of banks, one may always expect that bids and asks will exist, particularly since we would be focusing only on currencies and maturities for which a large enough number of transactions tend to exist anyway.

VI. CONCLUDING REMARKS

The first two pillars of our recommendation concerning commitment and transparency would lead to a more accurate, reliable, and transparent LIBOR than what the Wheatley Review has proposed.

First, by forcing banks to commit to their quotes—actually trade at them when given the opportunity—banks need only make an honest market determination. They only need their army of lawyers when, for some reason on a given day, they decide they want to make a trade outside of the range they've quoted. This is a parsimonious method for ensuring accurate and reliable quotes.

Second, by having a data-clearing house, the market will learn about anonymous transactions quickly. That will provide an almost immediate way to detect anomalies in LIBOR and provide the source for alternative benchmarks—albeit not ones based on daily data. Adopting a TRACE-like system that compels the submission of interbank lending and borrowing transactions by a large number of banks is the surest road to transparency.

The key difference between our proposal and Wheatley's is that our proposal relies on setting up incentives for the banks to freely submit quotes which are representative of their actual borrowing costs, while Wheatley's recommendations will force banks to provide quotes

[10] The Wheatley Review on LIBOR: Final Report, pages 66-67.

according to particular guidelines set out by regulators. At the end of the day, this process may well reduce the incentive to provide the most accurate quotes, replacing them with "the least risky quotes."