

LIBOR: Where do We Go from Here?

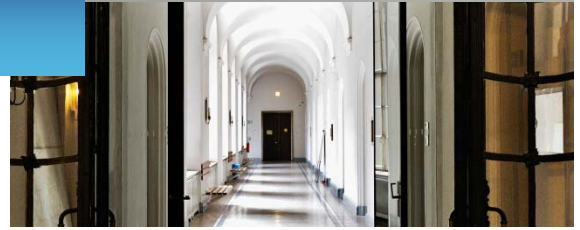
The recent issues surrounding LIBOR highlight two key, yet separate issues: alleged manipulation of LIBOR during the pre-crisis period, and the alleged underreporting of LIBOR due to the stigma issues at the height of the 2008 credit crisis. The conflation of these two distinct issues have cast doubt on the credibility of the LIBOR rate setting process. Lost in the noise is the importance of reforming this process to regain the confidence of market participants. The importance of doing so is underscored by the prevalence of LIBOR historically for use in interest rate swaps, commercial and consumer loans. Over the next few months, policymakers in Europe and in the US are expected to address these issues. The US Commodity Futures Trading Commission (CFTC) and the European Commission have each embarked on LIBOR projects, and a major discussion of LIBOR is expected on September 9th at the European Central Bank (ECB) meeting in Basel, Switzerland.

This *ViewPoint* highlights the need for industry-wide benchmarks and makes specific suggestions for reforms of the LIBOR rate setting process to help it regain credibility. One of the most important conclusions is the need to reform LIBOR due to its use in legacy instruments. However, we recognize that once lost, credibility will be hard to restore. In its absence, we should encourage the natural evolution of benchmarks over time. While historically LIBOR fulfilled a critical need in the market, today several viable alternatives now exist and a one-size-fits-all rate may no longer be the optimal solution.

Background

What is LIBOR?

LIBOR, the London Interbank Offer Rate, represents a benchmark reference rate for floating rate interest rates reflecting the cost of funds to banks. The determination of LIBOR is based on a group of banks' responses to this question: "At what rate could you borrow funds, were you to do so by asking for and then accepting inter-bank offers in a reasonable market size just prior to 11 am?" The British Bankers' Association ("BBA") publishes LIBOR each business day across ten currencies in 15 maturities: overnight, one week, two weeks, and 1 month through 12 months. This combination of currency and maturity forms the LIBOR "matrix" of 150 LIBOR rates, as shown in Exhibit 1.



Barbara Novick, Vice Chairman, is head of Government Relations



Jeffrey Rosenberg, Managing Director, is Chief Investment Strategist for Fixed Income



Richard Prager, Managing Director, is head of Global Trading



Jack Hattem, CFA, Managing Director, manages global rates derivatives investing within Fundamental Fixed Income

Exhibit 1: USD LIBOR Matrix as of July 24, 2012 – British Bankers' Association Interest Settlement Rates

	USD	GBP	CAD	EUR	AUD	CHF	JPY	DKK	NZD	SEK
Overnight/ Spot Next	0.16250	0.52438	1.00000	0.02800	3.61200	0.01000	0.09871	-0.01250	2.58400	1.64000
1 Week	0.19710	0.54063	1.02700	0.05571	3.65200	0.01400	0.11300	-0.01500	2.63200	1.74750
2 Week	0.21775	0.55000	1.06700	0.07571	3.69600	0.02000	0.12371	0.00000	2.68000	1.79750
1 Month	0.24420	0.56850	1.09600	0.11429	3.76600	0.02700	0.14286	0.05750	2.69700	1.96750
2 Months	0.33575	0.62963	1.19100	0.18686	3.87000	0.04500	0.15929	0.18000	2.75200	2.10000
3 Months	0.44810	0.76900	1.29800	0.31393	3.98000	0.06800	0.19571	0.28000	2.85400	2.22750
4 Months	0.54810	0.86288	1.38600	0.41286	4.07600	0.11000	0.23800	0.39500	2.90400	2.32750
5 Months	0.63815	0.96238	1.47100	0.51857	4.16400	0.14200	0.29229	0.48750	2.99200	2.40250
6 Months	0.72640	1.04313	1.56600	0.61836	4.20200	0.17400	0.33443	0.54500	3.05400	2.45250
7 Months	0.79500	1.12613	1.65150	0.68557	4.24400	0.19600	0.38586	0.60250	3.10400	2.51000
8 Months	0.84570	1.20750	1.73700	0.74693	4.28400	0.22700	0.43086	0.68750	3.14200	2.55500
9 Months	0.90025	1.28825	1.80300	0.80193	4.32800	0.25840	0.47300	0.73250	3.19800	2.60250
10 Months	0.95325	1.37100	1.87300	0.85264	4.39200	0.29140	0.50300	0.77000	3.26000	2.64500
11 Months	1.00425	1.44350	1.96300	0.89971	4.45600	0.33040	0.52729	0.81250	3.36200	2.69250
12 Months	1.06150	1.52463	2.03650	0.95421	4.52800	0.37440	0.55229	0.85250	3.45800	2.71500

BBA selects contributors for the submission of LIBOR rates based on three principles: (i) scale of market activity, (ii) credit rating, and (iii) perceived expertise in the currency concerned. In the case of the US Dollar, the panel was expanded in 2009 in part to allow greater representation by US banks. This panel is currently comprised of 18 banks, including 11 based in Europe, 3 based in Japan, 3 based in the US and 1 based in Canada (see Exhibit 2).

Exhibit 2: USD LIBOR Panel Banks

Bank of America	JP Morgan Chase
Bank of Tokyo-Mitsubishi UFJ Ltd.	Lloyds Banking Group
Barclays Bank plc	Rabobank
BNP Paribas	Royal Bank of Canada
Citibank NA	Société Générale
Credit Agricole CIB	Sumitomo Mitsui Banking Corp.
Credit Suisse	The Norinchukin Bank
Deutsche Bank AG	The Royal Bank of Scotland Group
HSBC	UBS AG

As of May 2012

The calculated LIBOR rate represents the “trimmed mean”. That means that the top and bottom 25% of submissions are excluded and the average of the remaining submissions determine LIBOR. In the case of 18 contributors as in the USD panel, the top 4 and bottom 4 submissions are excluded and as a result, the BBA USD LIBOR rates are based on 10 constituent submissions.

History of LIBOR

Due to several factors, including the post-war role of the dollar in facilitating international trade and serving as a reserve currency as well as regulations limiting interest rates paid on deposits in US banks, a significant market in dollar-based interest rates developed outside of the US, centered principally in London. Interest rate liberalization of the 1980s increased the need for banks operating in these markets to actively manage their interest rate risks, as both assets and liabilities increasingly reflected market-determined interest rates. Specifically, banks needed tools to manage the risks associated with this liberalization, for example, in forward rate agreements on the liability side and syndicated loans on the asset side. During this time, internationally-active banks participating in the London financial markets asked the British Bankers' Association to devise a benchmark to act as a reference for these new instruments. And LIBOR was born.

The first LIBOR rates were published in January 1986 initially in US Dollars, Japanese Yen, and Sterling. Notably, with significance to today's conversation, one major change occurred in the design of LIBOR since its inception. Until 1998 banks' submissions reflected the answer to a slightly different question than used today: "At what rate do you think inter-bank term deposits will be offered by one prime bank to another prime bank for a reasonable market size today at 11am?" This prior definition reflected each submitter's estimate of "another prime bank" but critically, not their own bank funding rate. In 1998, this definition changed to reflect what each entity could borrow at rather than their views of a hypothetical bank.

This change was intended to give more accountability to the rate setting process. An unintended consequence, however, was that it created the potential for a stigma to be associated with each submitting bank. In an environment of a bank funding crisis, that stigma could – and it appears did – have an important impact on the rate setting process.

In the context of this discussion it is notable to add that the definition of EURIBOR (published by the European Banking Federation) continues to use a definition more akin to the original LIBOR definition¹.

¹ "The rate at which euro inter-bank term deposits are being offered within the EMU zone by one prime bank to another at 11:00am Brussels time".

Exhibit 3: Notional Amounts Outstanding**OTC Single Currency Interest Rate Derivatives by Instrument and Currency (\$US billions)**

	USD	EUR	JPY	GBP	CAD	Other**	Total
Forward Rate Agreements	21,034	17,387	77	4,574	304	7,200	50,576
Interest Rate Swaps	126,252	143,810	59,522	35,264	6,020	31,743	402,611
Options Bought*	11,280	19,680	6,099	2,821	48	1,263	41,191
Options Sold*	11,397	19,157	6,456	2,792	48	1,570	41,420
Total Contracts	161,864	184,702	66,819	43,367	6,397	40,949	504,098

As of December 2011

Source: BIS

* Separate data on options sold and options bought are recorded on a gross basis, i.e. not adjusted for interdealer double counting.

**Includes CHF, SKK, and Residual

Eurodollar Futures (\$US billions)

Eurodollar Futures	7,834
---------------------------	--------------

As of June 2012

Source: CME Group

How has LIBOR been used?

LIBOR remains a widely used benchmark throughout the financial markets. Because of its historical role in the establishment of interest rate risk management tools, LIBOR forms the foundation of the interest rate swaps and Eurodollar futures markets² (see Exhibit 3). These markets represent some of the most liquid and widely used tools for the management of interest rate risks across the economic spectrum. Futures and swaps trade with a wide range of expiries and are a common tool to manage long-dated interest rate risk.

Further, because of its role in setting floating rate benchmarks for loans offered historically through banks, LIBOR also remains a key reference rate for many forms of borrowing and lending in the economy. LIBOR is often used as a benchmark for many types of floating rate loans including student loans, credit cards, bank loans, floating rate corporate bonds, short-term floating rate commercial paper, municipal contracts, and mortgages. To put this in perspective, one estimate by staff of the Federal Reserve Bank of Cleveland found that 45% of prime adjustable rate mortgages use LIBOR as the benchmark. As such, many of these products impact not just banks and financial institutions but corporations, municipalities, and individuals through their mortgages or other consumer borrowing rates. Many of these loans have maturities in excess of five years.

Reforming LIBOR

As noted in the previous section, LIBOR is embedded in trillions of dollars of existing financial instruments and loans to corporations and individuals. These obligations have many years remaining to maturity creating a significant legacy issue requiring

the need to restore credibility to the LIBOR rate setting process. We recommend taking a number of steps to change how LIBOR is calculated to increase market confidence in the reliability of these benchmark rates.

First, we recommend focusing on the shorter tenor rates most representative of bank funding activity. Limiting the matrix of LIBOR rates to 3 or 6 months and shorter will lead to a more credible rate setting process both by focusing on where the most likely transactions exist and limiting the amount of data that needs to be reviewed. Since the establishment of the LIBOR rate setting process, the Eurodollar futures market has developed into a robust, deep and liquid market. Most importantly, this market is transparent and transactionally based. Today, LIBOR rates for longer maturities can be extracted from this market obviating the need for LIBOR “fixings” at these longer maturities.

Second, banks can be asked to report LIBOR based on actual interbank loans subject to volume metrics to ensure that LIBOR submissions are validated by actual transactions. The process for validating and auditing the submissions will be critical to restore market confidence in the LIBOR process. Transparency will help for example by providing (potentially with some lag) a record of actual transactions that supports the submission of LIBOR that can be publicly viewed.

Third, it is important to address the separate issue of reducing the incentives to misreport based on the avoidance of the stigma of reporting a high rate. The Federal Reserve Board of New York has proposed broadening the base of contributing banks on which LIBOR is based, and also randomizing the release of the underlying bank data. Such changes address some of the structural flaws arising out of today’s definition of LIBOR

² Eurodollar futures represent cash settled forwards of 3 month LIBOR, and serve as the building blocks for the swaps curve.

(reflecting the bank's own borrowing rate) that may help to reduce the incentive to misreport in times of financial market duress.

Alternative Benchmarks

There is nothing magical about LIBOR. And, in fact, various market benchmarks have come and gone over time as markets evolve to meet changing conditions and changing investor needs. LIBOR as a benchmark reflects this historical evolution—albeit the extent to which this particular benchmark forms the backbone of so much financial infrastructure stands unique. Nonetheless, despite the high degree of inertia associated with LIBOR, certain markets could move—or already have moved—to reliance on alternative benchmarks.

An alternate measure of short-term funding costs based off the Overnight Index Swap (“OIS”) market has grown dramatically since the financial crisis. In the interest rate swap market, OIS has been adopted as the discount curve by which to value interest rate swaps. As detailed in Exhibit 4, the OIS rate reflects a liquid market that takes into account the credit of the counterparty. This change has occurred because of a transition in acceptable collateral posted to fulfill margin requirements of swaps. This is reflective of the current environment of increased volatility and subsequently diminished reliance on the credit markets as reliable benchmark indicators. Further, LCH.Clearnet and the International Swaps and Derivatives Association (“ISDA”) have already adopted OIS for many standard swap contracts. As more market participants adopt OIS, the use of this benchmark becomes self-fulfilling as the accepted market benchmark for discounting cash flows collateralized by cash or Treasuries.

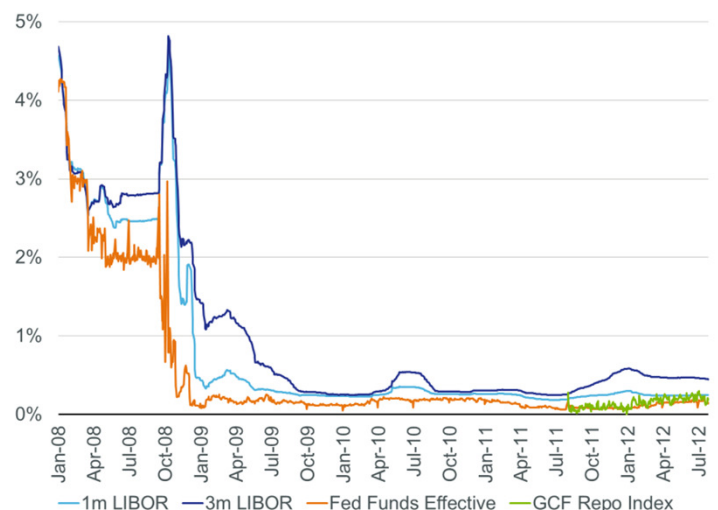
Exhibit 4

What is Overnight Index Swap?

Overnight Index Swap (“OIS”) represents the market expected level of Fed Funds over the term of the swap contract. Rather than being based on a survey approach as in the case of LIBOR, the OIS market is transactional based. Reasonable transaction volumes exist out to 2 years. These transactions give us confidence that the rate provides an accurate assessment of Fed Funds borrowing costs to the period in question. The use of this market in the interest rate swap market since the onset of the crisis reflects the important changes in the nature of credit risk taken in the interest rate swap market. Because cash flows exchanged in an interest rate swap are now collateralized by cash or Treasuries only, the credit risk of the cash flows should reflect the risk free rate rather than the rates derived from LIBOR. This shift increases the use of the OIS rate in the marketplace, growing its potential as an alternative short-term benchmark rate.

With respect to short-term funding markets, there is no perfect solution. However, we have already seen a move away from LIBOR to OIS where appropriate. Nonetheless, while the derivatives market is deep and liquid, the index that it is based off is less liquid and a lack of a high volume of bank to bank trading causes the effective rate to be understated. The DTCC GCF Repo Index (“GCF Repo Index”) is another alternative. The GCF Repo Index is the weighted average of the interest rates paid each day on General Collateral Finance Repurchase Agreements based on US Government securities. The GCF Repo Index has a high daily volume of interdealer trading of triparty repo and it mirrors bank to bank transactions. The downside is that futures on this index were only introduced in July 2012 and, thus, the derivative term structure is quite young. This index represents collateralized short-term lending as opposed to unsecured lending, complicating its use as a benchmark in broader credit market lending. Nonetheless, we do envision GCF becoming a viable short-term funding benchmark in the interest rate market in the future.

Exhibit 5: Short-term funding rates



Source: Bloomberg

For the broader credit markets, the need for a credible benchmark to determine floating short-term interest rates will likely take direction from the interest rate markets. Successful reforms will see market confidence follow and continued usage of LIBOR. Failure, however, will likely be met by a gradual move away from LIBOR towards these more transactional (and hence reliable, credible and transparent) alternatives. Any move away from the utilization of LIBOR as a benchmark would need to be a lengthy process as thousands of outstanding credit agreements would need to be renegotiated. In some markets such as bank loans this will be further complicated by the need for base rates for financing vehicles (i.e. CLOs) to follow suit. And other adjustments to lending agreements such as averaging may become necessary to deal with a potentially more volatile transactional based index. But these hurdles could certainly be overcome as the market adapts to new benchmarks.

Over time, we can expect to see new benchmarks created and transitions where new benchmarks better suit the needs of investors and borrowers. Some of this cannot be anticipated today. Any solutions on LIBOR today should also allow for market innovation and changes in the future.

One-Size Does Not Fit All

The markets will continue to search for benchmarks for use in various financial instruments. The key is to restore confidence and credibility in the LIBOR benchmark while encouraging the development of alternative benchmarks. Increasing the validation of the LIBOR rate setting process through actual transactions, greater transparency, and the auditing of this process will help. Limiting the range of LIBOR rates to areas most likely to reflect

actual transactions will also help increase the quality of the LIBOR rates. And increasing futures transactions at the shortest points of the LIBOR curve may further aid the reliability of LIBOR by decreasing the time period between resets. To the extent possible, transactional-based benchmark rates will likely garner the most market usage. But purely transactional-based rates have their own limitations leading to some continued reliance on survey based rates. In this case, reforms of the LIBOR rate setting process that ensure transparency and freedom from manipulation and the stigma effects that encourage that manipulation should be implemented. Finally, all participants need to recognize that different investors and different borrowers have different needs and preferences which are likely to lead to multiple market-driven solutions.

This paper is part of a series of BlackRock public policy *ViewPoints* and is not intended to be relied upon as a forecast, research or investment advice, and is not a recommendation, offer or solicitation to buy or sell any securities or to adopt any investment strategy. The opinions expressed are as of July 2012 and may change as subsequent conditions vary. The information and opinions contained in this paper are derived from proprietary and nonproprietary sources deemed by BlackRock to be reliable, are not necessarily all-inclusive and are not guaranteed as to accuracy. As such, no warranty of accuracy or reliability is given and no responsibility arising in any other way for errors and omissions (including responsibility to any person by reason of negligence) is accepted by BlackRock, its officers, employees or agents.

This paper may contain “forward-looking” information that is not purely historical in nature. Such information may include, among other things, projections and forecasts. There is no guarantee that any forecasts made will come to pass. Reliance upon information in this paper is at the sole discretion of the reader.

Issued in Australia and New Zealand by BlackRock Investment Management (Australia) Limited ABN 13 006165975. This document contains general information only and is not intended to represent general or specific investment or professional advice. The information does not take into account any individual’s financial circumstances or goals. An assessment should be made as to whether the information is appropriate in individual circumstances and consideration should be given to talking to a financial or other professional adviser before making an investment decision. In New Zealand, this information is provided for registered financial service providers only. To the extent the provision of this information represents the provision of a financial adviser service, it is provided for wholesale clients only. In Canada, this material is intended for permitted clients only. In Latin America this material is intended for Institutional and Professional Clients only. This material is solely for educational purposes and does not constitute an offer or a solicitation to sell or a solicitation of an offer to buy any shares of any fund (nor shall any such shares be offered or sold to any person) in any jurisdiction within Latin America in which an offer, solicitation, purchase or sale would be unlawful under the securities law of that jurisdiction. If any funds are mentioned or referred to in this material, it is possible that they have not been registered with the securities regulator of Brazil, Chile, Colombia, Mexico and Peru or any other securities regulator in any Latin American country and no such securities regulators have confirmed the accuracy of any information contained herein. No information discussed herein can be provided to the general public in Latin America.

The information provided here is neither tax nor legal advice. Investors should speak to their tax professional for specific information regarding their tax situation.

BLACKROCK is a registered trademark of BlackRock, Inc.
All other trademarks are the property of their respective owners.

© 2012 BlackRock, Inc. All rights reserved.

BLK-0331

BLACKROCK[®]