



LIBOR EXPLAINED

Understanding the LIBOR Scandal

LIBOR, which stands for London Interbank Offered Rate, is one of the most widely-used benchmarks or reference index rates for determining short-term interest rates globally. It is used to set the base reference rate for a wide variety of financial products including mortgages and consumer loans, as well as rates for commercial lending, municipal bonds, floating rate notes, interest rate swaps and a host of other financial products. By one estimate, more than \$800 trillion in securities products – more than 50 times U.S. GDP – are linked to LIBOR.

In addition, LIBOR is also used as a key proxy for measuring the stress in the global credit markets. Escalating LIBOR rates suggest that banks are requiring higher rates in order to compensate for higher perceived risk.

LIBOR rates are set by the British Bankers' Association (BBA) and Thomson Reuters on a daily basis by surveying a panel of banks. The contributing banks submitted their quotes based on their estimate of at what interest rate they could borrow funds in the interbank market for a number of different maturities ranging from overnight to twelve months.

History of LIBOR

In 1984 the British Bankers Association (BBA) was asked by member banks to devise a benchmark to be used for a relatively new class of financial instruments which were being increasingly traded in the marketplace, yet had no uniform underlying rate. Notable among these new instruments were interest rate swaps,

forward rate agreements and foreign currency options. As a result of the need for a uniform reference rate, the BBA developed BBAIRS (BBA Interest Rate Settlement Rates) which eventually became BBA LIBOR. The first BBA LIBOR rates were initially published in January 1986 in three currencies: the US Dollar, Japanese Yen and British Sterling. Over the years LIBOR has expanded to include 10 currencies with 15 different maturities for each currency ranging from overnight to 12 months.

How is LIBOR Determined?

LIBOR is determined on a daily basis through a process in which panels of contributor banks submit quotes for 10 different currencies and 15 different maturities to Thomson Reuters just after the “fix” time of 11 am (BST). Thomson Reuters then takes all the submitted quotes for the various currencies and maturities and calculates the LIBOR rate by ranking the quotes, discarding the highest and lowest 25% of submissions and using the average of the remaining quotes in a process known as a “trimmed mean”.

Depending on the currency, the number of banks submitting quotes can range from 6 to 18 banks. For US Dollar or Euro Dollar submissions, there are currently 18 contributor panel banks (see Table 1) up from 16 in mid-2008.¹ Thomson Reuters calculates USD LIBOR by removing the highest four and lowest four quotes and averaging the middle 10.

Originally, contributor banks submitted quotes to BBA based on the survey question, “At what rate

Table 1

US Dollar (USD) Contributor Panel Banks

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

do you think interbank term deposits will be offered by one prime bank to another prime bank for a reasonable market size today at 11 am?” In 1998 as the definition of a prime bank became more difficult to delineate, the question the BBA asked banks was changed to “*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?”² [emphasis added]*

One of the common misperceptions regarding LIBOR is that it is an actual rate that banks borrow at in the interbank market. This is not necessarily the case, as it is unlikely that the various banks will be borrowing funds in up to 10 different currencies and 15 different maturities each day. Rather it is merely a benchmark based on a bank’s “*perception of its cost of unsecured funds in the interbank market.*”³

In other words, based on the question posed to contributing banks, LIBOR is determined by what a bank believes that it *could* borrow funds at, not necessarily based on actual market transactions. In addition, banks are asked to submit their quotes based on expectations of a reasonable market. This requirement of basing submissions on a *reasonable market* was a challenge during the credit crisis of 2007 and 2008, when liquidity at certain times was thin in the interbank marketplace.

What is the Size of the LIBOR Market?

LIBOR is the most widely used reference interest rate in the world and impacts the rates on everything from corporate and municipal bonds, mortgages, student loans and credit card rates, to interest rate swaps, futures contracts, FX swaps and other derivatives. According to the Bank for International Settlements (BIS), the notional value of OTC interest rate and foreign currency derivatives totaled \$567 trillion at the end of 2011.⁴ In addition, there are an estimated \$10 trillion in corporate and municipal bonds, floating rate notes, mortgages, and other consumer loans which are benchmarked to LIBOR. By one estimate, 45% of prime adjustable-rate mortgages and more than 70% of subprime mortgages were “Libor Plus”.⁵ In total, the U.S. Commodity Futures Trading Commission (CFTC) estimates that more than \$800 trillion in financial products are linked to LIBOR.

The LIBOR Scandal

The first public inklings of a potential scandal related to alleged LIBOR manipulation was in an April 16, 2008 Wall Street Journal article entitled “*Libor Fog: Bankers Cast Doubt on Key Rate Amid Crisis.*” In the article, the WSJ speculated that amid the depth of the credit crisis in late 2007 and early 2008, banks were submitting artificially low rate quotes to BBA in order to mask the perception of higher funding costs and a weakened financial position.

Another WSJ article on May 29, 2008 suggested that banks in the first four months of 2008 reported lower rates for LIBOR calculations than what other market measures indicated they should be.⁶ The analysis was based on a divergence between LIBOR quotes the banks were submitting and hypothetical borrowing costs suggested by credit default swaps (CDS).

Rumors and allegations of LIBOR manipulation continued through the next few years, attracting the attention of regulators in the U.S. and the U.K., with Barclay’s being a key focus for

Table 2

| <u>Some Financial Instruments Linked to LIBOR</u> | |
|--|-----------------------------------|
| Consumers | Investors |
| - Mortgages | - Money-market funds |
| - Home equity loans | - Short-term bond funds |
| - Auto loans | - Floating-rate notes |
| - Student loans | - Municipal bonds |
| - Credit card debt | - Mortgage-backed securities |
| - Bank loans | - Asset-backed securities |
| | - Collateralized-debt obligations |
| | - Interest rate swaps |
| | - Forward rate agreements |
| | - Currency derivatives |

regulators. After an extensive investigation, authorities recently reached a settlement with Barclay's under which Barclay's was fined \$451 million and agreed to cooperate with authorities into investigations with other institutions.⁷ Regulators found that Barclay's had attempted to manipulate LIBOR numerous times from 2005-2007 and sporadically after that through at least 2009.⁸

Currently, regulators in more than seven countries have launched LIBOR investigations, and more than twenty banks have been named in lawsuits or investigations. A U.S. Congressional Investigation is on-going as well.

Assessing Damages

In the wake of the LIBOR scandal, there has been considerable discussion focused on the potential damages of any alleged LIBOR manipulation. However, determining damages – if any – could be quite complex.

First, there are numerous factors that could determine a bank's LIBOR rate submission including domestic interest rates (panel banks are from Asia, Europe and North America), expectations of future interest rate movements, and market liquidity on a given day at a specific time (11 am BST).

Second, due to the methodology of calculated LIBOR, any artificially low submitted quote from a contributor bank could likely be an outlier on the low side and thus discarded as part of the lowest quartile of submissions. Similarly, submitted quotes on the high side could also be

discarded. If the quote was included with the other nine quotes (in the case of USD LIBOR) and used as part of the trimmed mean, the potential skew could be quite minimal.

In addition, the submitted quotes are based primarily on a qualitative assessment of hypothetical borrowing costs, not quantitative. As the question put to the various institutions by the BBA makes clear, it is an assessment of what borrowing costs *could be in a reasonable market (size)*. The BBA has also provided no guidance on what a reasonable market size is, leading to much ambiguity.

Third, if a bank were to have submitted quotes which were found to have been manipulated, the potential impact would depend on whether rates were manipulated upwards or downwards.

If LIBOR was set artificially high, this could potentially negatively impact consumers. Many loans and other types of consumer debt including adjustable-rate mortgages would carry an artificially high interest rate. For investors, the impact could be positive due to higher returns on various securities and other financial investments linked to LIBOR.

If the rate were artificially low, the converse would hold true. Consumers could benefit from lower rates on mortgages, student loans and credit cards, to name a few. Investors could be negatively impacted by artificially lower returns on securities benchmarked to LIBOR.

Further, it could be problematic to prove that LIBOR rates were artificially set higher or lower than the "actual" rate on the very day that the rate for a particular financial instrument is periodically set.

Another issue adding complexity in assessing damages is determining what the net effect could be for a consumer or institution. For example, if it was determined that a particular LIBOR rate was artificially set lower than what the “actual” rate should be, then consumers could be negatively impacted by lower returns on their 401(k), pension funds or other investments. However, they could benefit from lower mortgage payments, credit card interest, and other debt payments.

¹ As of June 2008, the 16 banks were Bank of America, Bank of Tokyo – Mitsubishi, Barclays Bank plc, Citibank NA, Credit Suisse, Deutsche Bank AG, HBOS, HSBC, JPMorgan Chase, Lloyds TSB Bank plc, Rabobank, Royal Bank of Canada, The Norinchukin Bank, The Royal Bank of Scotland, UBS AG, and West LB AG.

² <http://www.bbalibor.com/bbalibor-explained/historical-perspective>

³ <http://www.bbalibor.com/bbalibor-explained/definitions>

⁴ “Statistical release: OTC derivatives statistics at end-December 2011”, *Bank for International Settlements*, p. 2, Masy 2012.

⁵ “How Many U.S. Mortgages Are Linked to Libor?”, *Federal Reserve Bank of Cleveland*, July 10, 2012.

⁶ “Study casts doubt on key rate; WSJ analysis suggests banks may have reported flawed interest data for Libor”, *The Wall Street Journal*, May 29, 2008.

⁷ “Barclays Fined by U.K., U.S. for Falsifying Libor Rates”, *Bloomberg*, June 27, 2012.

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<http://www.justice.gov/iso/opa/resources/9312012710173426365941.pdf>

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