




## OFFICE OF INSPECTOR GENERAL

Federal Housing Finance Agency

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400 7th Street, S.W., Washington DC 20024

To: Edward J. DeMarco, Acting Director  
From: Steve A. Linick, Inspector General   
Subject: Potential losses to Fannie Mae and Freddie Mac from LIBOR manipulation  
Date: November 2, 2012

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Please find attached a staff memorandum report detailing concerns about financial losses that Fannie Mae and Freddie Mac (the Enterprises) may have sustained due to manipulation of the London Interbank Offered Rate (LIBOR). As you know, the Department of Justice announced on June 27, 2012, an agreement with Barclays Bank Plc (Barclays) in which the bank admitted to manipulating LIBOR for its own advantage over a period of years. Federal, state, and foreign government investigations into possible LIBOR manipulation are ongoing, as are a number of high-profile civil suits predicated upon such manipulation.

FHFA-OIG's interest in the consequences of possible LIBOR manipulation upon the Enterprises stems directly from its core mission to prevent and detect fraud and abuse in FHFA's programs and operations. Members of my staff began their work on this topic within days of the Department of Justice's announcement of its agreement with Barclays. On September 6 and 11, they shared their preliminary analysis with members of your senior staff and, at about the same time, with both Enterprises.

The enclosed memorandum report outlines my staff's LIBOR loss estimates and offers recommendations for Agency action to recover any such losses on behalf of the Enterprises. In light of the fact that my staff has preliminarily estimated that the Enterprises may have suffered more than \$3 billion in such losses, I believe this matter warrants the Agency's attention. I would appreciate if the Agency could provide written comments to OIG's recommendations by November 16, 2012. Please do not hesitate to contact me if you have any questions about this matter.



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Federal Housing Finance Agency

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**To:** Steve A. Linick, Inspector General

**From:** Timothy Lee, Senior Policy Advisor, Office of Policy, Oversight and Review  
David P. Bloch, Director, Division of Mortgage, Investments and Risk Analysis,  
Office of Evaluations  
Simon Z. Wu, Chief Economist, Office of Policy, Oversight and Review

**Through:** Richard Parker, Director, Office of Policy, Oversight and Review, and  
George P. Grob, Deputy Inspector General, Office of Evaluations

**Subject:** Potential losses to Fannie Mae and Freddie Mac due to LIBOR manipulation

**Date:** October 26, 2012

The London Interbank Offered Rate (LIBOR) is a market-standard interest rate index used extensively by participants in the global financial markets.<sup>1</sup> It is used to calculate payments on over \$300 trillion of financial instruments and has been described as "the most important figure in finance."<sup>2</sup> LIBOR is determined by daily polls of 18 leading financial institutions (16 firms through 2010), which are asked to estimate their own short-term borrowing costs. The highest four and lowest four submissions are eliminated, and LIBOR is calculated by averaging the remaining ones.<sup>3</sup>

In a June 2012 settlement with British and U.S. authorities, including the Department of Justice (DOJ), Barclays Bank Plc (Barclays) admitted to submitting falsified borrowing cost data in an effort to manipulate LIBOR to its own advantage.<sup>4</sup> According to subsequent media reports, further LIBOR-related state and federal government investigations remain ongoing.<sup>5</sup> Additionally, several parties have filed civil damage claims seeking compensation for financial losses related to LIBOR manipulation.<sup>6</sup> These civil suits incorporate allegations that banks contributing to the determination of LIBOR strove to depress the published rates.<sup>7</sup>

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<sup>1</sup> Market participants deem lower borrowing costs to reflect better creditworthiness. Thus, publicly disclosed borrowing costs became a closely watched indicator of the industry's stability during the financial crisis. As one academic observer noted, "Especially in 2008, the biggest problem was that all the banks wanted to claim they were able to borrow more cheaply than was in fact the case, so as not to heighten concerns about their creditworthiness." University of Pennsylvania, "The LIBOR Mess: How Did It Happen – And What Lies Ahead?" July 18, 2012.

Fannie Mac and Freddie Mac (collectively, the Enterprises) rely upon LIBOR in the determination of interest payments on their sizable investments in floating-rate financial instruments, such as mortgage-backed securities and interest rate swaps. Many of the banks that contribute to the LIBOR calculation also have existing commitments to pay the Enterprises hundreds of millions of dollars in such LIBOR-based interest payments. As detailed under the “Analysis” portion of this document, our preliminary review of the Enterprises’ published financial statements and publicly available historical interest rate data indicates that, during conservatorship, the Enterprises may have suffered \$3 billion in cumulative losses from any such manipulation. Those losses would ultimately have been borne by the Department of the Treasury (Treasury), through its Senior Preferred Stock Purchase Agreements (PSPAs) with the Enterprises.

Because of the seriousness of these allegations and the possibility that Treasury and the Enterprises may have suffered significant losses due to LIBOR manipulation, we recommend that FHFA take three steps, outlined in further detail below:

- Require the Enterprises to conduct or commission detailed analyses of the potential financial losses due to LIBOR manipulation;
- Promptly consider options for appropriate legal action, if warranted; and
- Coordinate efforts and share information with other federal and state regulatory agencies.

## **Background**

Since September 6, 2008, the Enterprises have operated under FHFA conservatorship.<sup>7</sup> Under the terms of the conservatorship, Treasury has ensured the Enterprises’ ability to remain viable entities through PSPAs with each. Under the terms of the PSPAs, Treasury provides capital funding directly to the Enterprises in amounts necessary to ensure their continued solvency.<sup>8</sup> To date, the federal government has provided the Enterprises over \$187 billion.<sup>9</sup>

As part of their business, the Enterprises have always held substantial quantities of floating-rate assets on which interest is recalculated and paid each month or quarter based on currently prevailing short-term rates. Such investments are popular because, as compared to assets that pay a fixed interest rate throughout their terms, floating-rate assets greatly reduce bondholders’ market risk that their investments’ value may decline due to adverse interest rate movements. The Enterprises’ two primary categories of floating-rate investments include:

- Floating rate bonds. Many securities are structured in this fashion. For example, according to its public financial statements, Freddie Mac alone held approximately \$299 billion of floating rate securities upon entering conservatorship.<sup>10</sup>
- Interest rate swaps. Because American homeowners tend to prefer predictable mortgage payments, the Enterprises’ mortgage portfolios generally contain more fixed-rate loans

than floating-rate loans. As a result, the value of those portfolios may vary as interest rates fluctuate. However, the Enterprises also invest in interest-rate swaps, contracting with large financial institutions for the obligation to pay them fixed-rate interest streams in exchange for the right to receive corresponding floating-rate ones.<sup>b</sup> These swaps effectively offset the mortgage loans' fluctuations in value, resulting in stable combined portfolio valuations even if interest rates rise or fall. We estimate that the Enterprises received floating-rate interest payments on a net total of \$373 billion in face, or "notional" amount of interest rate swaps upon entering conservatorship.

The interest due for such floating rate obligations is recalculated for each payment period by reference to the current value of LIBOR.

### Analysis

As a first step in our analysis, we compared the historical data on two floating rate indices:

- 1-month<sup>11</sup> LIBOR rates; and
- The Federal Reserve's published Eurodollar deposit rates (Fed ED) for 1-month<sup>12</sup> obligations. Like LIBOR, this data series is designed to measure short-term bank borrowing costs via polling of financial institutions. However, the Federal Reserve measure polls a broader range of institutions and is rarely referenced in floating rate financial obligations.

Our examination of daily records for 1-month Fed ED and 1-month LIBOR indicates that the two rates remained very close from the earliest point we reviewed, the beginning of 2000, until mid-2007. During that period, the largest divergence between the two indexes appeared shortly after September 11, 2001, when LIBOR *exceeded* Fed ED by as much as 0.41%. Indeed, on average the two measures remained within 0.06% of each other during that period, with LIBOR falling below Fed ED on less than one business day of each nine. The close correspondence of these two measures conformed to the expectations of market observers. As a former Federal Reserve economist said, "Effectively, these two rates should be the same as they are the same instrument."<sup>13</sup>

However, beginning in early 2007 emerging declines in home prices had begun to place strains on the financial system. New Century Financial, a leading home loan originator, filed for bankruptcy in April.<sup>14</sup> Adding to the stress were media reports of precipitous decay in two high-profile mortgage-backed securities hedge funds sponsored by Bear Stearns, a leading U.S.

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<sup>b</sup> While the Enterprises may enter into both pay-floating rate and receive-floating rate swaps, in order to offset the risk of their (principally fixed-rate) mortgage assets, historically their overall net investment in interest rate swaps has been to receive floating-rate payments.

investment bank. These began to emerge in mid-June,<sup>15</sup> followed promptly by the funds' bankruptcy filings at the end of July.<sup>16</sup>

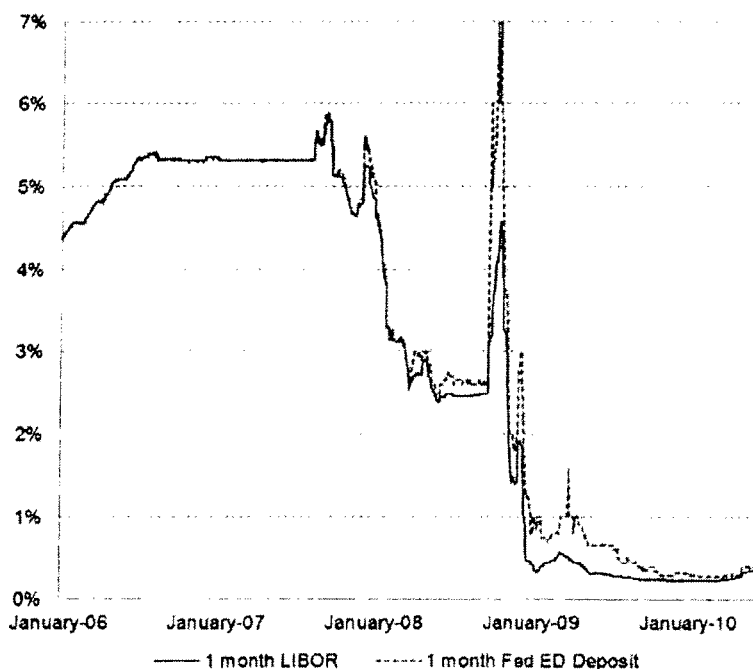
As the financial crisis began to metastasize, LIBOR and Fed ED began to diverge substantially, eventually by as much as three percentage points at the end of September 2008. Moreover, in a marked contrast with previous behavior, LIBOR began to fall below Fed ED consistently. Figure 1 illustrates the recent divergence of these two measures, beginning in mid-2007.

This anomaly has been cited in civil complaints as evidence of financial institutions' LIBOR manipulation.<sup>17</sup> Moreover, it is consistent with DOJ's statement of facts regarding Barclays' admitted LIBOR manipulation, which reads in part:

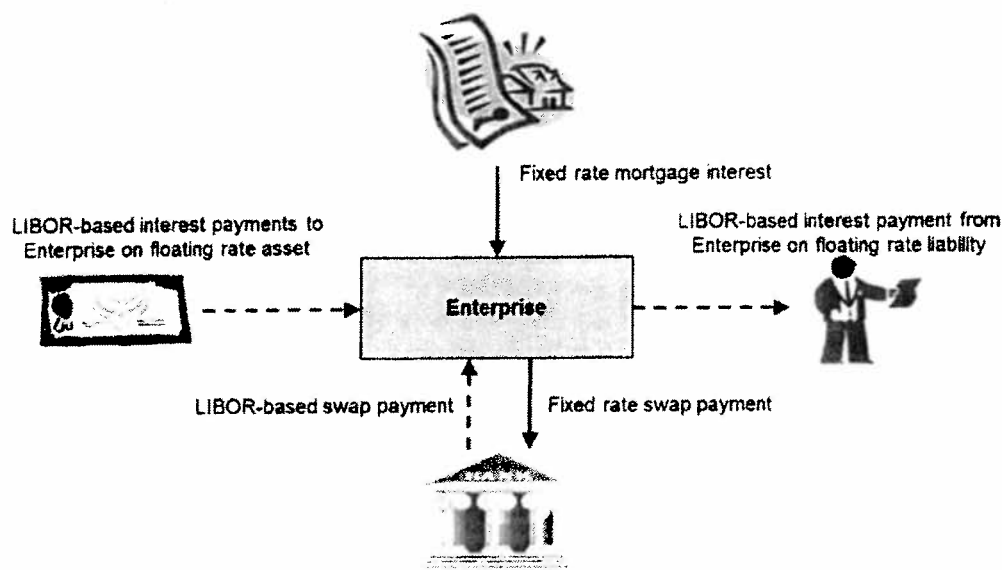
... between approximately August 2007 and January 2009, in response to initial and ongoing press speculation that Barclays's high U.S. Dollar LIBOR submissions at the time might reflect liquidity problems at Barclays, members of Barclays management directed that Barclays's Dollar LIBOR submissions be lowered. This management instruction often resulted in Barclays's submission of false rates that did not reflect its perceived cost of obtaining interbank funds.<sup>18</sup>

Because the Enterprises receive LIBOR-based floating rate payments on their floating rate bonds and interest rate swaps, the principal effect on them of any downward manipulation of LIBOR would be reduced interest payments with respect to their holdings of floating rate securities and interest rate swaps. (This is partially offset by lower borrowing costs on the Enterprises' own floating-rate liabilities, a factor we have considered in our estimation of Enterprise losses.)

**Figure 1. Federal Reserve Eurodollar Deposit Rate vs LIBOR, 1Q06-2Q10**



**Figure 2. LIBOR-Based Payments to and From the Enterprises**



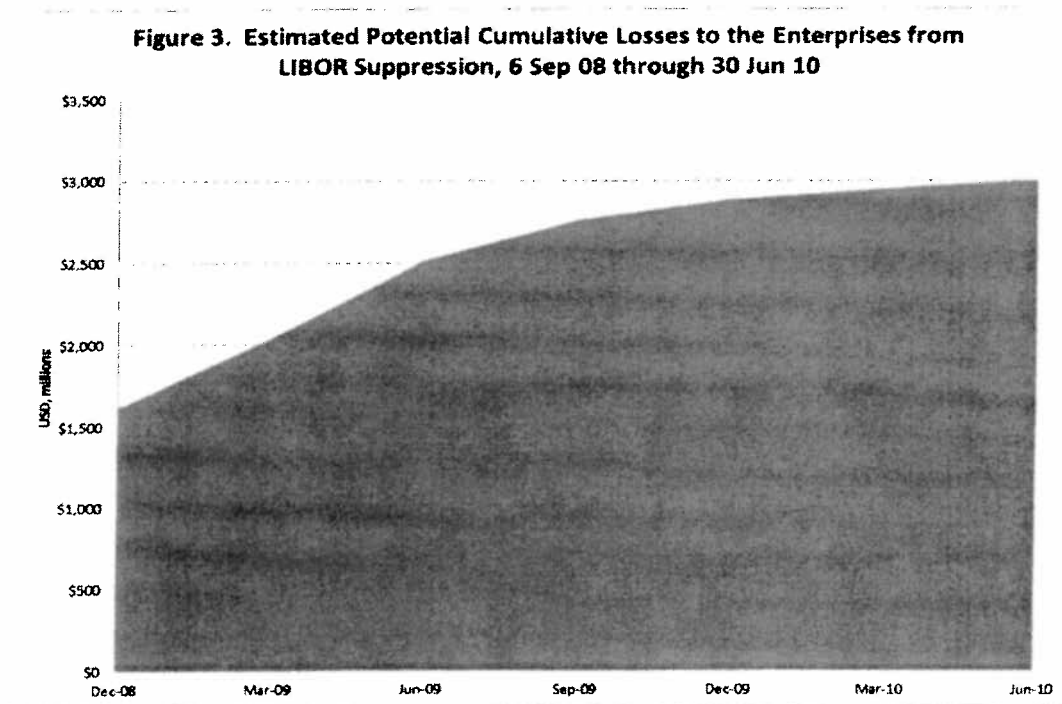
To the extent that the Enterprises suffered such “short-changing” of LIBOR-related interest payments after September 6, 2008, these practices contributed to the operating losses made whole by Treasury’s investments under the PSPAs. Therefore, it stands to reason that any manipulation of LIBOR may have inflicted meaningful losses on Treasury and the taxpayers.

To gauge the effect of possible LIBOR manipulation on the Enterprises, we undertook a three-step analytical process:

- First, we measured the daily divergence between 1-month LIBOR and the corresponding Fed ED rate (essentially treating the latter as the correct benchmark rate), and calculated its average value for each calendar quarter since the Enterprises entered conservatorship.<sup>c</sup>
- Second, we reviewed the Enterprises’ publicly available financial statements to develop rough estimates of their holdings of variable rate securities, interest rate swaps, and variable rate liabilities for each quarter.
- Finally, using these figures, we calculated an estimate for the additional quarterly net interest payments that the Enterprises would have received if LIBOR had matched the corresponding Fed ED rate since conservatorship.<sup>d</sup>

<sup>c</sup> To simplify our calculations, we assumed that all Enterprise floating rate assets referenced 1-month LIBOR. In practice, mortgage-related bonds and interest rate swaps typically reference either 1-month or 3-month LIBOR.

<sup>d</sup> Further details on our methodology are available in the Appendix.



Using this methodology, we estimate that, from the beginning of the Enterprises' conservatorship in 2008 through the second quarter of 2010,<sup>19</sup> net Enterprise losses on their holdings of floating rate bonds and interest rate swaps may have exceeded \$3 billion. Over half of those potential losses appear to have taken place in the fourth quarter of 2008 alone.<sup>e</sup>

With respect to the Enterprises' interest rate swaps, it is notable that the leading providers of these instruments are many of the same institutions that contribute to the determination of U.S. dollar LIBOR. Figure 4 presents a table of banks recently identified by the Federal Reserve Bank of New York as major derivatives dealers.<sup>20</sup> Ten of these fourteen major derivatives dealers also contribute to the poll used to determine LIBOR. Collectively, these dealers both participate in setting LIBOR and make LIBOR-based payments to their transaction partners, or counterparties, under the terms of their interest rate swaps. If the Enterprises conduct most of their derivatives business with these institutions, the potential for conflicts of interest is readily apparent.

<sup>e</sup> We also estimate that the Enterprises may have suffered approximately \$750 million of net LIBOR-related losses after market turmoil began in mid-2007, but prior to entering conservatorship.

A comparable situation exists in the market for floating-rate securities. For example, of 2007's ten leading underwriters of "private label" mortgage-backed securities,<sup>21</sup> four contributed to the determination of LIBOR. The Enterprises purchased significant quantities of such securities from these underwriters.<sup>22</sup>

However, our review of a small sample of offering documents for the Enterprises' floating-rate

investments in this category failed to uncover any disclosure of risks that the underwriters could manipulate LIBOR for their own advantage, to the detriment of bondholders.

In addition to the Barclays settlement, each LIBOR poll contributor among these dealers has been contacted by federal or state authorities with respect to ongoing investigations and/or is a named defendant in existing civil actions.<sup>23</sup>

## Recommendations

In the context of active federal and state investigations into possible LIBOR manipulation, as well as the results of our own preliminary analysis of publicly available information, we believe that further investigation of the potential harm to Fannie Mae and Freddie Mac – and therefore to Treasury and, ultimately, the American taxpayer – of any LIBOR manipulation is firmly warranted. While FHFA-OIG should remain ready to offer advice and assistance, FHFA and the Enterprises themselves possess the detailed information needed to develop precise loss calculations and take any legal action that may prove appropriate. Therefore, we recommend that FHFA:

- **Require the Enterprises to conduct or commission detailed analyses of the potential financial losses due to LIBOR manipulation.** The Enterprises should possess detailed records of individual LIBOR-based assets and liabilities. An itemized analysis of these records would produce a better-founded estimate of their losses than is possible from reviewing only the Enterprises' public 10-K and 10-Q filings.

Figure 4.

Major Derivatives Dealers		Top Private Label MBS Underwriters 2007	
	LIBOR Contributor		LIBOR Contributor
Bank of America	✓	Lehman Brothers	
Barclays	✓	Bear Stearns	
BNP Paribas		Deutsche Bank	✓
Citibank	✓	Countrywide	
Credit Suisse	✓	RBS	✓
Deutsche Bank	✓	Credit Suisse	✓
Goldman Sachs		JPMorganChase	✓
HSBC Group	✓	Morgan Stanley	
JPMorganChase	✓	Washington Mutual	
Morgan Stanley		Merrill Lynch	
RBS	✓		
Societe Generale	✓		
UBS	✓		
Wachovia			



- **Promptly consider options for appropriate legal action, if warranted.** If the existing accusations of LIBOR manipulation prove well founded then, in light of its obligations as their conservator, FHFA should have in place a plan by which to affect full recovery of any Enterprise funds lost and deter further malfeasance of this type. Due to the possibility that the Enterprises' legal options may soon be narrowed by statute of limitations considerations, FHFA should develop this plan promptly.
- **Coordinate efforts and share information with other federal and state regulatory agencies.** FHFA and FHFA-OIG can be valuable and effective partners with other federal and state agencies in their efforts on behalf of the public to recover losses and obtain justice for any wrongdoing that may ultimately be proven.

## **Appendix**

### **Notes on Analytical Methodology**

To estimate the Enterprises' potential losses due to LIBOR manipulation, we drew on two principal sources of information.

#### **LIBOR Benchmarks**

First, we referenced Federal Reserve Bank of St. Louis repositories of daily historical data for the following data series:

- 1-Month London Interbank Offered Rate (LIBOR), based on U.S. Dollar (USD1MTD156N). According to the Federal Reserve, this information is provided by the British Bankers' Association. The Federal Reserve describes LIBOR as "the most widely used 'benchmark' or reference rate for short term interest rates."
- 1-Month Eurodollar Deposit Rate (London)(DED1). This information is compiled by the Federal Reserve itself, working with Bloomberg and ICAP Plc, a bond brokerage firm.

We also compiled similar samples for 3-month rates in each case. Comparisons of both the 1-month and 3-month indices revealed significant rate discrepancies between LIBOR and the Federal Reserve index, beginning in 2007. The Bloomberg story cited in the body of the report includes the former Federal Reserve economist's quote that "effectively, these two rates should be the same as they are the same instrument." Several civil lawsuits, including those brought by Charles Schwab and the City of Baltimore, cite the emergence of these discrepancies as evidence of malfeasance.

Notably, other commentators have also cited additional market indicators as evidence of potential LIBOR manipulation. For example, in a recent speech to the European Parliament's Economic and Monetary Affairs Committee, Gary Gensler, head of the U.S. Commodity Futures Trading Commission, cited persistent anomalies compared to other short-term interest rate indexes, such as Euribor and non-dollar indexes, along with pricing in derivatives such as interest rate options and credit default swaps in questioning the recent behavior of LIBOR.

However, because of differences in currency or maturity of the other indicators compared to the Federal Reserve Eurodollar deposit rate, we chose the Federal Reserve index as the simplest and best benchmark for comparison. For the purposes of this analysis, it served as a proxy for the appropriate LIBOR setting. Thus, we assumed that observed differences between LIBOR and the Federal Reserve Eurodollar deposit rate could indicate the timing and extent of potential manipulation by LIBOR poll participants.

### Calculation of Enterprise Losses

Second, we assembled Fannie Mae and Freddie Mac balance sheet data for the relevant period from the Enterprises' published financial statements. For example, Freddie Mac data for 4Q08 are drawn from the 2008 10-K, including:

- Data on derivatives investments from Table 38, page 109. We calculated Freddie Mac's net receive-LIBOR interest rate swap investment as:
  - Pay-fixed (i.e. Freddie Mac receives LIBOR), *plus*
  - Basis (i.e. Freddie Mac and its counterparty exchange different sets of floating rate interest payments. Generally, these involve the Enterprise's payments of frequently used ARM indices, such as the Cost of Funds Index or the 12-month Constant Maturity Treasury rate, in exchange for LIBOR-based payments); *less*
  - Receive-fixed (i.e. Freddie Mac pays LIBOR).
- Data on Freddie Mac's variable-rate mortgage-related securities from information on the Enterprise's Mortgage-Related Investments Portfolio, Table 24, page 93.
  - We assumed that essentially all variable-rate MBS holdings calculated interest payments by reference to LIBOR.
  - Fannie Mae did not publish explicit information on its variable rate MBS, but did provide figures for all MBS held by its Capital Markets Group. To estimate Fannie Mae's variable-rate MBS investment holdings, we assumed that Fannie Mae's Capital Markets Group held the same proportion of variable rate securities held by Freddie Mac in its Mortgage-Related Investments Portfolio.
- Data on Freddie Mac's long-term debt liabilities, including variable-rate liabilities, in Table 8.3, page 224.
  - We assumed that essentially all long-term floating-rate debt obligations of the Enterprises calculated interest payments by reference to LIBOR.
  - Fannie Mae explicitly discloses floating-rate obligations in its financial statements.
  - Freddie Mac's reporting of floating-rate obligations for the time period under review is intermittent. Long-term variable-rate debt obligations are totaled as of December 31, 2009, and subsequently, but not for the 10Qs as of 1Q09, 2Q09, and 3Q09. Within the time period examined, the highest proportion of long-term variable-rate obligations to other long-term debt (i.e., direct obligations not brought onto the balance sheet by the requirements of SFAS 167) was 24.7%, reported as of 2Q10. We used that proportion to estimate Freddie Mac's variable-rate debt obligations when no other information was available.

- Except where explicitly disclosed, short-term variable rate obligations of the Enterprises were excluded from the analysis as a relatively minor component.

We calculated cash flow shortfalls to the Enterprises as equivalent to (a) the difference between 1-month LIBOR and the 1-month Federal Reserve Eurodollar deposit rate, multiplied by (b) (i) the notional amount of net receive-LIBOR swaps investments held by the Enterprises, plus (ii) the face value of Enterprise variable-rate mortgage-related securities net of their variable-rate liabilities. Cash flow shortfalls were calculated on a quarterly basis. We assumed reported figures remained constant within each quarter. We included a portion of the indicated cash flow shortfalls for 3Q08, prorated for the final 24 days of September.

We believe that direct cash flow shortfalls, due to reduced interest and swap payments on LIBOR-based investments held by the Enterprises, are likely to constitute the great majority of Enterprise financial losses resulting from any LIBOR manipulation. However, additional secondary effects of LIBOR manipulation may also affect the amount of such losses. These include, but are not limited to:

- Distortions in the volatility measures used to benchmark pricing of the Enterprises' interest rate options
- Effects on the interest rate futures market used to value interest rate swaps
- Effects on prepayment valuation models used to value MBS, which rely on short-term interest rate data as an input

However, we did not incorporate such factors into this analysis.

### **Limitations of Our Analysis**

The goal of this report is not to provide a definitive accounting of the Enterprises' losses, nor to demonstrate conclusively the culpability of specific organizations or individuals. We acknowledge the limitations inherent in any corporate financial analysis developed exclusively from public reports. However, this analysis does indicate that the numerous accusations of LIBOR manipulation raise legitimate concerns about their impact on the Enterprises. Accordingly, they warrant closer examination by FHFA and the Enterprises, which have access to the detailed asset-level records and information needed to generate a more accurate and precise figure for potential losses and provide guidance for any future action that may be required to protect the taxpayers.

For more details about this analysis, please contact Timothy Lee, Senior Policy Advisor, at [REDACTED] or [REDACTED].

## Endnotes

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- <sup>1</sup> British Bankers' Association, "BBA LIBOR Explained."
- <sup>2</sup> The Telegraph, "LIBOR Scandal: Martin Wheatley's Speech," September 28, 2012.
- <sup>3</sup> Thomson Reuters, "Thomson Reuters Role in the Calculation and Distribution of BBA LIBOR™," July 4, 2012. The number of poll contributors is cited in the Department of Justice's settlement documentation, "Appendix A: Statement of Facts."
- <sup>4</sup> U.S. Department of Justice, "Barclays Bank PLC Admits Misconduct Related to Submissions for the London Interbank Offered Rate and the Euro Interbank Offered Rate and Agrees to Pay \$160 Million Penalty," June 27, 2012.
- <sup>5</sup> See, inter alia, The New York Times, "State Regulators Widen LIBOR Investigation," August 15, 2012, and BusinessWeek, "US LIBOR Probers Said to Seek London Trader Interviews," September 27, 2012.
- <sup>6</sup> The Wall Street Journal, "Suits Mount in Rate Scandal," August 26, 2012.
- <sup>7</sup> Federal Housing Finance Agency, "Statement of Director James A. Lockhart," September 7, 2008, p.6.
- <sup>8</sup> Federal Housing Finance Agency, "Mortgage Market Note 10-1," January 20, 2010.
- <sup>9</sup> Federal Housing Finance Agency, "Data as of August 8, 2012 on Treasury and Federal Reserve Purchase Programs for GSE and Mortgage-Related Securities."
- <sup>10</sup> Current and historical financial statement data for Freddie Mac can be found at [http://www.freddiemac.com/investors/sec\\_filings/?intcmp=AFIRSF](http://www.freddiemac.com/investors/sec_filings/?intcmp=AFIRSF). Data for Fannie Mae can be found at <http://www.fanniemae.com/portal/about-us/investor-relations/sec-filings.html>.
- <sup>11</sup> Federal Reserve Bank of St. Louis, "1-Month London Interbank Offered Rate (LIBOR), based on U.S. Dollar (USD1MTD156N)". Data obtained October 1, 2012.
- <sup>12</sup> Federal Reserve Bank of St. Louis, "1-Month Eurodollar Deposit Rate (London) (DED)". Data obtained October 1, 2012.
- <sup>13</sup> Bloomberg News, "Fed's Eurodollar Rates Suggest Dollar LIBOR May Stabilize", April 28, 2008.
- <sup>14</sup> See, for example, the *Report of the Financial Crisis Inquiry Commission*. Facts noted here are taken from Chapter 12 of that document, page 233.
- <sup>15</sup> BusinessWeek, "Bear Stearns' Subprime Bath", June 12, 2007.
- <sup>16</sup> *Report of the Financial Crisis Inquiry Commission*, Chapter 12, page 240.
- <sup>17</sup> See, for example, Thomson Reuters, "In re LIBOR-Based Financial Instruments Antitrust Litigation," April 30, 2012, pp. 23-31.
- <sup>18</sup> U.S. Department of Justice, "Barclays Bank PLC Admits Misconduct Related to Submissions for the London Interbank Offered Rate and the Euro Interbank Offered Rate and Agrees to Pay \$160 Million Penalty," June 27, 2012.

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<sup>19</sup> Media reports cite allegations that LIBOR manipulation continued through at least mid-2010. See, e.g., Washington Post, "Trickle of LIBOR Lawsuits From Rate-Fixing Scandal Likely to Become Deluge", July 30, 2012.

<sup>20</sup> Federal Reserve Bank of New York, "An Analysis of OTC Interest Rate Derivatives Transactions: Implications for Public Reporting," March 2012, p.2

<sup>21</sup> "Private label" MBS are those not brought to market and guaranteed through the Enterprises. See U.S. Securities and Exchange Commission, "Mortgage-Backed Securities," League table data provided by Inside Mortgage Finance, "Mortgage Market Statistical Annual."

<sup>22</sup> See, for example, Federal Housing Finance Agency, "FHFA Sues 17 Firms to Recover Losses to Fannie Mae and Freddie Mac."

<sup>23</sup> At least two complaints, those of Berkshire Bank and the City of Baltimore, name all 16 contributors to U.S. dollar LIBOR. Wall Street Journal, "New York Lender Files LIBOR Lawsuit", July 30, 2012, and Thomson Reuters, "In re LIBOR-Based Financial Instruments Antitrust Litigation," April 30, 2012. Also see with respect to federal and state investigations, inter alia, The New York Times, "State Regulators Widen LIBOR Investigation," August 15, 2012, and BusinessWeek, "US LIBOR Probers Said to Seek London Trader Interviews," September 27, 2012.