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Food For Thought[1]

"Fiddle the LIBOR"?

Why would a major bank risk being accused of actions to "Fiddle the LIBOR"? At this point, it's too early to tell because all the facts are not yet fully known. However, we have a few thoughts. But first, some background on LIBOR.

Setting LIBOR

Since 1986, the London Interbank Offered Rate ("LIBOR") has been the benchmark reference rate used widely in the global short-term money markets. In addition to loans extended by banks to their customers, LIBOR is used as the benchmark reference rate for a large number of financial products such as forwards, futures, options and swaps. Because of the widespread[2] usage of this reference rate, it is important that the integrity of this benchmark be reliable at all times. The British Bankers' Association (BBA)[3] defines LIBOR as "*The rate at which an individual Contributor Panel bank could borrow funds, were it to do so by asking for and then accepting interbank offers in reasonable market size just prior to 11:00 London time*". In other words, this is the perceived reference rate at which global banks would borrow unsecured from each other in the London interbank money market. The point to note here is that this is the rate that the banks expect to borrow and not the rate at which they have actually borrowed. This gap between perception and reality will be discussed later in this article. LIBOR borrowings include ten[4] currencies, with fifteen[5] maturities ranging from overnight to the one year cost of borrowing in each of the ten currencies, which theoretically results in a combination of as many as 150 possible LIBOR quotes per bank that is a member of the Contributor Panel. Depending on the currency, the Contributor Panel has ranged from 6 to 18 banks, selected annually by the BBA with assistance from the

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[1] *Food For Thought* is a periodic publication of JP CONSULTING tailored to address specific issues of interest in the insurance and banking industries. The opinions expressed in this publication are those of its authors alone – Joseph Prakash, CFA and Professor Herb Jacobs, New York University – School of Continuing Education. If you wish to have your name removed from the distribution list, please respond to our e-mail with the word "Unsubscribe" on the subject line of the e-mail.

[2] While a precise count of all LIBOR referenced contracts is not readily available, BIS reports that Global OTC interest rate derivatives alone accounted for about $554 trillion during the first half of 2011 - http://www.bis.org/publ/otc_hy1111.pdf

[3] The BBA represents itself to be the leading trade association for the UK banking and financial services sector and indicates that it speaks for over 200 member banks from 60 countries on a full range of UK and international banking issues (http://www.bba.org.uk/about-us).

[4] The ten currencies are, Australian Dollar, British Pound Sterling, Canadian Dollar, Danish Krone, Euro, Japanese Yen, New Zealand Dollar, Swedish Krona, the Swiss Franc and the US Dollar.

[5] The fifteen maturities are overnight (1 day), 1 week, 2 weeks, 1 month, 2 months, 3 months, 4 months, 5 months, 6 months, 7 months, 8 months, 9 months, 10 months, 11 months, and 12 months.

Foreign Exchange and Money Markets Committee[6]. As of June 1, 2012, the Contributor Panel[7] for US Dollar LIBOR included 18 banks. Each of these 18 banks is required to submit quotes to Thomson Reuters daily, of which the four highest and four lowest quotes are ignored and an average (arithmetic mean) of the remaining ten quotes calculated to determine the appropriate benchmark for the day. Attachment – 1 is a table that shows US Dollar LIBOR for the month of April 2012.

Impact of the financial crisis of 2008

One of the immediate consequences of the financial crisis, especially in September 2008 and on, was widespread lack of liquidity in the global capital markets, which had the effect of raising the cost of funding for most financial market participants. Under those circumstances, it would not be unusual for a bank's actual cost of funds to be higher than its expected cost of borrowing in the London interbank market. However, to the extent that certain market participants tried to game the system by intentionally reporting a lower expected cost of borrowing than their actual cost of borrowing, it is possible that LIBOR benchmark rates could have been distorted until the markets reverted to normality. That being said, the fact that 25% of the highest and 25% of the lowest quotes are not countable, adds a good measure of robustness to the rate setting process. Put differently, more than 50% of the quotes from market participants would have to be tainted by collusion in order for the system to have been gamed.

Could one market participant singlehandedly have tainted the rate setting process?

One simplistic way of testing this theory is to construct an F statistic similar to the table shown in Attachment – 2, which compares the overnight Benchmark against the rate submitted by a single market participant. To the extent that the computed F statistic does not exceed the critical F statistic, as shown in the table, it would be possible to conclude at a certain statistical degree of confidence (95% in this case), that there has not been any market manipulation by the individual market participant. However, this analysis does not eliminate collusive behavior by several market participants acting in concert.

Why are these perceptions so important to regulators?

For a global financial institution that relies on the capital markets for a significant portion of its funding, these perceptions are important because an increased cost of funds can be interpreted by the markets as the bank's having financial difficulties and a consequent inability to meet its financial obligations as they come due. We have documented[8] cases where even unfounded concerns about liquidity could trigger a "run on the bank". It is primarily for this reason that regulators take any attempt at LIBOR manipulation very seriously and are willing to impose stiff penalties to discourage bad behavior. We watch the unfolding political drama playing out in the UK with interest.

[6] The BBA indicates that the Foreign Exchange & Money Markets Committee (http://bbalibor.com/governance/foreign-exchange-and-money-markets-committee) is independent of the BBA and any other organization and has the sole responsibility for all aspects of the functioning and development of bbalibor

[7] 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 and UBS AG.

[8] http://www.charlotteobserver.com/2008/10/11/246983/5-billion-withdrawn-in-one-day.html

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Attachment – 1

US Dollar LIBOR in April 2012

	12-Apr																		
	2-Apr	3-Apr	4-Apr	5-Apr	10-Apr	11-Apr	12-Apr	13-Apr	16-Apr	17-Apr	18-Apr	19-Apr	20-Apr	23-Apr	24-Apr	25-Apr	26-Apr	27-Apr	30-Apr
USD																			
s/n-o/n	0.15	0.151	0.151	0.151	0.151	0.151	0.15	0.15	0.15	0.15	0.148	0.149	0.148	0.147	0.145	0.144	0.146	0.146	0.147
1w	0.1902	0.1902	0.1902	0.1902	0.1892	0.1892	0.1892	0.1887	0.1887	0.1887	0.1887	0.1887	0.1907	0.1907	0.1906	0.1906	0.1906	0.1906	0.1906
2w	0.2125	0.2125	0.2125	0.2125	0.2115	0.2115	0.2115	0.2115	0.2115	0.2115	0.2115	0.2115	0.2115	0.2115	0.2115	0.2115	0.2115	0.2115	0.2115
1m	0.24125	0.24125	0.24125	0.24125	0.24025	0.24025	0.24025	0.23975	0.23975	0.23975	0.23975	0.23975	0.23975	0.23875	0.23875	0.23875	0.23875	0.23875	0.23875
2m	0.3488	0.3498	0.3498	0.3498	0.3498	0.34955	0.34755	0.34605	0.34655	0.34705	0.34705	0.34705	0.34755	0.34755	0.34675	0.34675	0.34675	0.34675	0.34675
3m	0.46815	0.46915	0.46915	0.46915	0.46915	0.46865	0.46665	0.46615	0.46565	0.46565	0.46565	0.46565	0.46565	0.46565	0.46585	0.46585	0.46585	0.46585	0.46585
4m	0.56685	0.56785	0.56785	0.56785	0.56785	0.5676	0.5661	0.5651	0.5651	0.5651	0.5651	0.5661	0.5651	0.5651	0.5651	0.5651	0.5651	0.5651	0.5651
5m	0.6484	0.6494	0.6494	0.6494	0.6494	0.6494	0.6474	0.6469	0.6469	0.6459	0.6459	0.6464	0.6459	0.6459	0.6459	0.6459	0.6459	0.6459	0.6459
6m	0.7334	0.7344	0.7344	0.7334	0.7334	0.7334	0.7324	0.7319	0.7319	0.7309	0.7309	0.7304	0.7304	0.7304	0.7304	0.7294	0.7284	0.7284	0.7284
7m	0.791	0.793	0.793	0.793	0.793	0.793	0.792	0.792	0.791	0.79	0.79	0.79	0.79	0.79	0.79	0.789	0.788	0.788	0.788
8m	0.8382	0.8402	0.8402	0.8402	0.8402	0.8402	0.8392	0.8392	0.8392	0.8392	0.8392	0.8392	0.8402	0.8392	0.8392	0.8392	0.8392	0.8392	0.8392
9m	0.8868	0.8868	0.8868	0.8878	0.8878	0.8878	0.8868	0.8868	0.8883	0.8863	0.8853	0.8853	0.8858	0.8858	0.8858	0.8858	0.8858	0.8858	0.8868
10m	0.9404	0.9404	0.9404	0.9414	0.9414	0.9414	0.9404	0.9404	0.9419	0.9399	0.9389	0.9389	0.9404	0.9394	0.9394	0.9389	0.9389	0.9389	0.9389
11m	0.9937	0.9937	0.9937	0.9947	0.9947	0.9947	0.9932	0.9927	0.9942	0.9922	0.9912	0.9912	0.9917	0.9917	0.9917	0.9912	0.9912	0.9912	0.9912
12m	1.0497	1.0497	1.0497	1.0507	1.0507	1.0507	1.0492	1.0487	1.0502	1.0482	1.0472	1.0472	1.0477	1.0477	1.0477	1.0472	1.0472	1.0472	1.0472

Source: BBA

Attachment – 2

Hypothetical Example of overnight LIBOR Rate Comparisons

Item	Benchmark	Bank X	Overall
2006 Average	5.015906448	5.022046332	
2007 Average	5.153845632	5.165241379	
2008 Average	2.320194656	2.362633588	
2009 Average	0.229720345	0.222528736	
2010 Average	0.233795364	0.215862069	
N	5	5	
Average	2.992243741	2.998052017	2.995147879
Betw een Group Sum of Squares	0.000042170	0.000042170	0.000084340
Between Group Degrees of Freedom			1
Numerator			0.000084340
Within Group Mean Sq. Value			6.137635764
Within Group Degrees of Freedom			8
Denominator			0.76720447
F Ratio			0.000109932
Critical Value			5.32

Source: Constructed by the writer as a hypothetical example