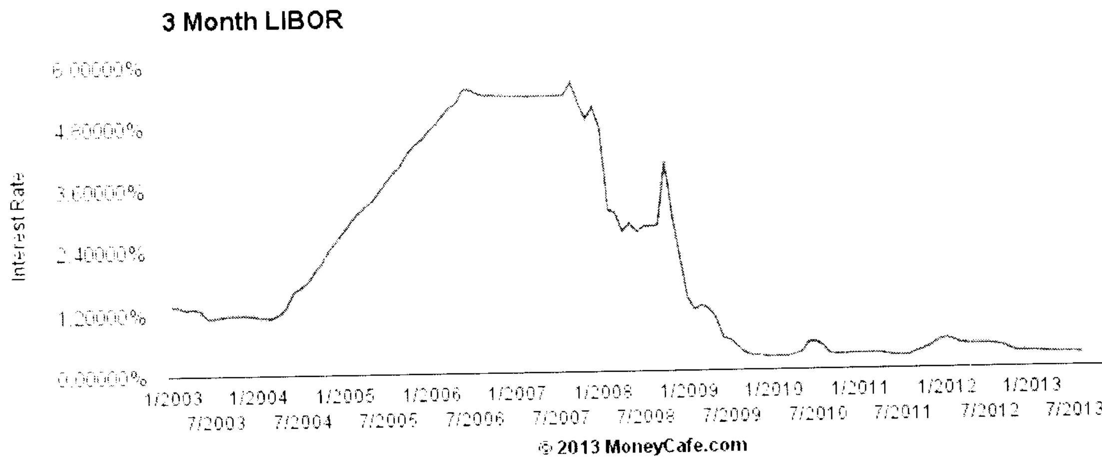
EXHIBIT G

Rate calculations are complex as they incorporate variables such as time, maturity and currency rates. There are hundreds of LIBOR rates reported each month in numerous currencies. We report the Three Month LIBOR on or after the first of the month. This is the LIBOR for a three month deposit in U.S. Dollars on the last business day of the previous month.

Note: Rates published prior to July 2007 reflect the Fannie Mae LIBOR rate which used a different calculation. Fannie Mae discontinued its use and publication of LIBOR rates at the end of June 2007 and suggested a replacement rate using our current methodology, which is similar to the Wall Street Journal LIBOR (WSJ LIBOR).



3 Month LIBOR

Month	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Jan	1.34800%	1.13200%	2.74390%	4.67950%	5.36010%	4.70250%	1.42500%	0.25063%	0.30281%	0.58100%	0.30600%
Feb	1.33600%	1.12010%	2.91010%	4.81920%	5.35980%	3.11188%	1.18438%	0.24906%	0.30438%	0.54235%	0.29800%
Mar	1.28800%	1.11070%	3.09950%	4.98980%	5.34790%	3.05750%	1.26438%	0.25169%	0.30950%	0.48425%	0.28710%
Apr	1.30800%	1.17640%	3.21070%	5.14790%	5.35550%	2.68813%	1.19188%	0.29150%	0.30300%	0.46815%	0.28260%
May	1.27820%	1.30820%	3.32920%	5.23350%	5.35950%	2.85000%	1.01625%	0.34656%	0.27300%	0.46585%	0.27310%
Jun	1.11640%	1.60390%	3.50450%	5.50850%	5.35930%	2.68063%	0.65625%	0.53625%	0.25288%	0.46685%	0.27525%
Jul	1.11760%	1.69450%	3.69480%	5.48890%	5.36000%	2.78313%	0.59500%	0.53394%	0.24575%	0.46060%	0.27310%
Aug	1.14200%	1.79010%	3.87200%	5.40140%	5.35866%	2.79125%	0.47938%	0.45375%	0.25550%	0.44260%	0.26560%
Sep	1.15980%	2.00540%	4.00550%	5.37250%	5.62125%	2.81063%	0.34750%	0.29563%	0.32722%	0.41825%	
Oct	1.16570%	2.15820%	4.25230%	5.37290%	5.22875%	4.05250%	0.28688%	0.29000%	0.37433%	0.35850%	
Nov	1.17010%	2.40260%	4.41390%	5.36850%	4.89375%	3.02625%	0.28063%	0.28594%	0.42944%	0.31275%	
Dec	1.15700%	2.55820%	4.52980%	5.36010%	5.13125%	2.21688%	0.25656%	0.30031%	0.52889%	0.31050%	

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Source: Fannie Mae, British Bankers' Association

Reasonable efforts are made to maintain accurate information. However, information could contain errors or inaccuracies and is presented without warranty. No liability is assumed for errors or omissions.

EXHIBIT H

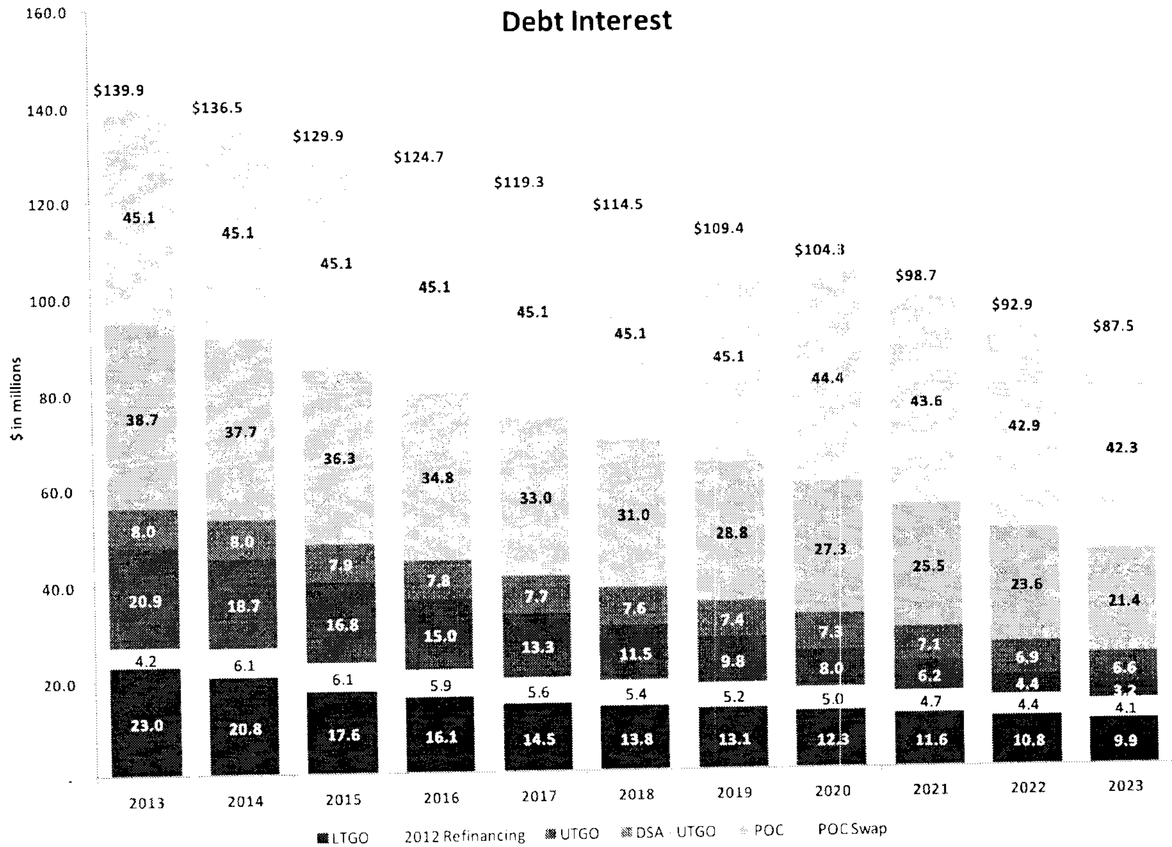
City of Detroit
Office of Emergency Manager
Kevyn D. Orr

Financial and Operating Plan
May 12, 2013

2 Woodward Avenue • Detroit, MI 48226
www.detroitmi.gov

Debt Service Payments (Interest)

POCs (including swaps) remain the largest component of interest payments. Approximately 80% of total POC payments are covered by the General Fund.



ii. Capital expenditure requirements

As discussed above, over the past decade, the City has made minimal capital investments in facilities, fleets, equipment and IT systems. As a result, the City's infrastructure and public safety fleet are aged and decrepit, which, in turn, increases the City's operating and repair costs and decreases its productivity. The City and its advisors are reviewing all capital assets to ascertain the obviously necessary capital investment necessary to bring facilities, fleets and IT systems up to minimum utility and functional standards.

Given the current state of its aging and outdated infrastructure, the City will need to make significant investments to upgrade capital assets so that it can provide necessary services to its citizens and residents. Moreover, the City will have to budget for increased annual capital expenditures in the future to properly maintain and renew its capital assets.

EXHIBIT I

Bloomberg

Only Wall Street Wins in Detroit Crisis Reaping $474 Million Fee

By Darrell Preston and Chris Christoff - Mar 13, 2013

The only winners in the financial crisis that brought Detroit (9845MF) to the brink of state takeover are Wall Street bankers who reaped more than $474 million from a city too poor to keep street lights working.

The city started borrowing to plug budget holes in 2005 under former Mayor Kwame Kilpatrick, who was convicted this week on corruption charges. That year, it issued $1.4 billion in securities to fund pension payments. Last year, it added $129.5 million in debt, 9.3 percent of its general-fund budget, in part to repay loans taken to service other bonds.

Detroit, which is trying to avoid becoming the largest U.S. municipal bankruptcy, struggles to serve residents after revenue declined when the auto industry collapsed and the city began to empty. Michigan (BEESMI)'s Republican governor, Rick Snyder, is preparing to name an emergency manager, who will have to address debt and derivatives taken on in the last eight years.

"We have no lights, no buses, poor streets and now we're paying millions of dollars a year on our debt," said David Sole, a retired municipal worker and advocate for Moratorium Now Coalition, a Detroit group that fights foreclosures and evictions. "The banks said they need to be paid first. But there is no money."

The city, which peaked at 1.85 million residents in 1950, has lost more than a quarter of its population since 2000. The 700,000 inhabitants who remain endure unreliable buses, inadequate police and fire protection and broken street lights that have darkened entire blocks.

Covering Shortfalls

Banks including UBS AG (UBS), Bank of America Corp.'s Merrill Lynch and JPMorgan Chase & Co (JPM). have enabled about $3.7 billion of bond issues to cover deficits, pension shortfalls and debt payments since 2005, according to data compiled by Bloomberg. Liabilities rose to almost $15 billion, including money owed retirees, according to a state treasurer's review.

The debt sales cost Detroit $474 million, including underwriting expenses, bond-insurance premiums and fees for wrong-way bets on swaps, according to data compiled by Bloomberg. That almost equals the city's 2013 budget for police and fire protection.

The largest part is $350 million owed for derivatives meant to lower borrowing costs on variable-rate debt.

Municipal borrowers from the Metropolitan Water District of Southern California to Harvard University in Cambridge, Massachusetts, have paid billions to banks to end interest-rate swaps that didn't protect them. In the bets, a municipal issuer and another party exchange payments tied to interest-rate indexes.

'Pay Later'

"The banks promise to get you the money and say you can pay later," said Greg Bowens, spokesman for Stand Up For Democracy, a Lansing group that campaigned last year to repeal the law allowing appointment of a financial manager. "They get their fees off the top, and you trust that they're doing what's in your taxpayers' best interest."

As banks were collecting fees from bonds, some targeted city homeowners with subprime loans that led to foreclosures, depressing real-estate values and tax revenue, Sole said. About one-quarter of Detroit's housing units are vacant, according to Detroit Future City, a 50-year blueprint for recovery. In some areas, entire blocks are deserted. Properties have been stripped of plumbing, wiring and whatever can be sold.

The home town of General Motors Co. (GM) has been running general-fund deficits of $155.4 million to $331.9 million since 2005, when Kilpatrick was mayor, and has been firing workers to save money.

Killing Fields

Last year, it cut police staffing by 11.6 percent to 2,836, according to budget documents. Killings spiked. Detroit had 411 homicides last year, up 9 percent from 2011.

On March 11, Kilpatrick, a Democrat, was convicted on corruption and fraud charges. He and co-conspirators executed a "wide-ranging racketeering conspiracy involving extortion, bribery and fraud," U.S. Attorney Barbara McQuade said in a statement.

Kilpatrick's attorney, James Thomas of Detroit, declined to comment.

While his client ran Detroit, the city embarked on two of its most expensive bond issues, first paying $46.4 million in fees to UBS and others to borrow $1.4 billion for pension obligations.

A year later, the city paid $61.8 million, including insurance costs, for UBS to sell $948.5 million in bonds, replacing two-thirds of the debt sold the previous year.

Some pension debt traded at about 65 cents on the dollar in the most recent trade Feb. 12, according to data compiled by Bloomberg.

Wrong-Way Bets

Detroit also entered into swaps contracts with UBS and SBS Financial Products Co., which serves as a counterparty on swaps transactions.

The arrangements are a bet on the direction of interest rates and can raise costs if they move unexpectedly.

Rates fell, leaving a liability of $439 million on June 30, 2012, according to a city report. That has fallen to about $350 million as rates went back up, said Jack Martin, Detroit's chief financial officer.

The borrowing "likely contributed to our current problems," said Martin, who took his job in May, 2012. "It was the way people did business back then. We are where we are now and working hard to right the ship."

The city makes periodic swap payments from money generated by casinos.

Public Interest

Wall Street firms could end the deals and call for full payment because Moody's Investors Service last March cut unlimited general-obligation bond ratings to B2, five levels below investment grade, according to the city's 2012 financial statement. In November, Moody's cut the rating again, sending it down two levels to Caa1.

The cuts mean there is "significant risk in connection with the city's ability to meet the cash demands" under the swap, according to Detroit's financial report.

The city has been talking with holders of its swaps, the report said. Martin said no negotiations are occurring.

"I don't think we're going to have any problems with the counterparties wanting to get those dollars any time in the near future," said Martin. "We believe, and they believe, it would not be in the city's best interest, and wouldn't be in their best interest either."

Banks have been reluctant to negotiate lower termination payments for many municipal governments. Last year, Detroit's water and sewer utility borrowed to pay more than $300 million to unwind swaps.

'Liquidity Problems'

Karina Byrne, a spokeswoman for Zurich-based UBS, declined to comment on the deals. Elizabeth Seymour, a spokeswoman for New York-based JPMorgan, also declined to comment on them, as did Thomas Butler, an SBS spokesman who works for New York-based Butler Associates LLC.

After the pension bonds, the city continued to issue general-obligation bonds and short-term debt totaling about $1.3 billion, according to data compiled by Bloomberg.

The city ran into "liquidity problems," according to the 2012 financial statement. Because of low ratings and deficits, it was unable to borrow and turned to the Michigan Finance Authority, which arranged a $129.5 million bond issue underwritten by a Bank of America unit.

Costing $1.6 million in fees, part of the proceeds went to repay the unit for an earlier $80 million loan -- and part of that loan had been used to service other debt, according to the financial statement.

William Halldin, a spokesman for Charlotte, North Carolina- based Bank of America, declined to comment on the deal.

Debt Hangover

An emergency financial manager will have to handle the legacy of Detroit's borrowing. Snyder said March 1 that the official would try to restructure long-term debt and renegotiate payments.

Striking new terms would be difficult, said Rick Frimmer, a corporate and municipal restructuring specialist with Schiff Hardin LLP in Chicago who represents some of the debt holders. Temporary changes may be possible, he said, such as waiving payments or default terms.

The city has advisers working on a plan to deal with the debt, in part by reducing retiree health-care liabilities, said Martin. He declined to comment on fees negotiated before he joined the administration.

"I'm sure the fees and interest rate are what most other local units or school districts would have to pay," Martin said.

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To contact the editor responsible for this story: Stephen Merelman at smerelman@bloomberg.net

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EXHIBIT J

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BUSINESS

19 December 2012 Last updated at 17:01 ET

UBS fined $1.5bn for Libor rigging

Swiss banking giant UBS has agreed to pay $1.5bn (£940m) to US, UK and Swiss regulators for attempting to manipulate the Libor inter-bank lending rate.

It becomes the second major bank to be fined over Libor after Barclays was ordered to pay $450m to UK and US authorities in the summer.

Regulators worldwide are investigating a number of banks for rigging Libor.

Libor tracks the average rate at which the major international banks based in London lend money to each other.

The bank also admitted to manipulating Euribor and Tibor - the equivalent interest rates set by lenders in the eurozone and in Tokyo.

UBS said it had agreed to pay fines to regulators in three different countries:

$1.2bn (£740m) in combined fines to the US Department of Justice (DoJ) and the Commodities Futures Trading Commission
£160m to the UK's Financial Services Authority (FSA)
59m Swiss francs (£40m) to the Swiss Financial Market Supervisory Authority

It is the second-largest set of fines imposed on a bank to date, after the $1.9bn that HSBC agreed to pay US authorities earlier this month to settle allegations of money-laundering.

US Assistant Attorney General Lanny Breuer described UBS's behaviour as "simply astonishing".

"Make no mistake, for UBS traders the manipulation of Libor was about getting rich," he added. "We cannot and will not tolerate misconduct on Wall Street as admitted by UBS."

Lanny Breuer also confirmed that the US would seek the extradition of two former UBS traders criminally charged over the rigging of the Libor rate, Tom Hayes and Roger Darin.

"We believe that one of them is in England. The other one is in Switzerland," said Mr Breuer.

The two traders are the first to face criminal charges over the Libor rate-fixing scandal.

Nick Matthews, a forensic accountant at consultancy Kinetic Partners, said the fine "demonstrates the co-ordinated approach regulators are now taking to serious conduct issues that affect jurisdictions internationally".

UBS has also agreed to admit to committing wire fraud through its Tokyo office in the case of manipulating Libor rates for loans denominated in Japanese yen, among others.

It said it would seek a non-prosecution agreement with the DoJ covering the rest of the bank's misbehaviour.

The fine is the latest blow for UBS, following the conviction of rogue trader Kweku Adoboli earlier this year for losing £1.4bn for the bank, a £500m settlement with US authorities for helping US citizens evade taxes.

UBS also suffered the worst losses of any bank from US sub-prime mortgages during the financial crisis, totalling 38bn, and necessitating a bailout from the Swiss authorities.

The bank still faces lawsuits in the US for mis-selling mortgage debt to other investors, including a $6.4bn claim by the US government-sponsored mortgage finance agencies Freddie Mac and Fannie Mae.

Trader collusion

UBS said the fines - along with other payouts for mis-selling mortgage debts in the US - were likely to result in the bank recording a loss of 2bn-2.5bn Swiss francs in its financial accounts for the last three months of the year, although it still expects to make a profit for the year as a whole.

The Swiss lender acknowledged its staff had manipulated the borrowing rates it submitted, which were then used to calculate the Libor rate - a benchmark interest rate that is used to calculate the payments on hundreds of trillions of dollars-worth of financial contracts - in order to make money on their trades.

According to the FSA, UBS had even gone so far as to give its traders formal responsibility for handling the bank's submissions to the Libor-setting committee at the British Bankers' Association - creating a direct conflict of interest, as the traders could profit depending on what they submitted.

Significantly, UBS also said its traders had colluded with their counterparts at other banks and brokerages.

The FSA said that UBS's Tokyo office had made corrupt payments to brokerages - which helped to bring borrowers and lenders together anonymously in the inter-bank lending market - in order to enlist their support in manipulating Libor.

Besides UBS and Barclays, about a dozen other major banks are involved in setting Libor rates each day across a range of currencies, and most of them are understood to be still under investigation.

UBS chairman Axel Weber said: "The authorities have recognized UBS for the thoroughness of our investigation and our exceptional co-operation."

According to the FSA, it would have fined UBS £200m, but gave the bank a 20% discount because it co-operated. Nonetheless, the £160m fine was still the largest ever imposed by the UK authority.

Barclays - which was the first bank to come clean over the scandal - has previously indicated that its fine of $450m would be overshadowed by the fines to be imposed on other culpable banks.

'Not pretty reading'

Like Barclays, UBS also accepted that management had also told staff to submit inappropriately low estimated borrowing costs for the bank during the financial crisis, in order to give a false impression of the bank's ability to borrow cheaply and maintain market confidence in the bank.

"We deeply regret this inappropriate and unethical behaviour," said UBS chief executive Sergio Ermotti.

"No amount of profit is more important than the reputation of this firm, and we are committed to doing business with integrity."

The FSA said that the misconduct at UBS was extensive and widespread and involved at least 45 individuals.

"At least 2,000 requests for inappropriate submissions were documented - an unquantifiable number of oral requests, which by their nature would not be documented, were also made," the FSA said.

"Manipulation was also discussed in internal open chat forums and group emails, and was widely known."

It was so common that the FSA said every single Libor submission by UBS during the period it examined, from 2005 to 2010, may have been tainted.

"The findings we have set out in our notice today do not make for pretty reading," said the FSA's head of enforcement, Tracy McDermott.

Despite this, five separate internal audits by the bank's compliance department failed to pick up on the misbehaviour.

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EXHIBIT K

SfC ASSOCIATES
Securities and Financial Consulting

Understanding the ISDAfix Controversy and Its Potential Impact

By Jack Chen
Ezra Zask
Jean-Baptiste Carelus

July 25, 2013

Introduction

Market participants experienced déjà vu at Bloomberg News' report in April of this year that the Commodity Futures Trading Commission ("CFTC") issued subpoenas to Wall Street banks and broker dealers regarding ISDAfix, a little known set of swap rates that affect the pricing of hundreds of trillion dollars in swaps. As with the LIBOR controversy, regulators are examining whether banks and brokers manipulated ISDAfix for their own gain. Despite its relative obscurity, reportedly some 6,000 banks, derivatives dealers, corporate treasurers, money managers, and other institutions monitor ISDAfix rates. Essentially anyone who uses swaps to hedge interest rate risk or who price fixed-rate assets and liabilities monitors these published rates. Because the payments under swaps are based on ISDAfix rates, any manipulation would impact large segments of the financial markets, beyond the $379 trillion swaps market.

We have received a number of inquiries from clients regarding the LIBOR controversy and the ISDAfix investigation and the relationship between the two developments. This report serves as a resource for the reader to understand what ISDAfix is, how it relates to LIBOR, why the ISDAfix rates matter and how they can assess any potential impact on their own portfolios and liabilities.

ISDAfix

The International Swaps Dealers Association ("ISDA"), in cooperation with Thomson Reuters and ICAP Plc ("ICAP"), established ISDAfix in 1998 to serve as a benchmark of swap rates for all trades using ISDA documentation. Each ISDAfix rate represents "a rate which is the mean of where that dealer would itself offer and bid a swap in the relevant maturity for a notional equivalent amount of US $50 million or whatever amount is deemed market size in that currency for that tenor to an acknowledged dealer of good credit in the swap market. The rate should not be where the dealer sees mid-market away from itself, but should be a function of its own bid/offer spread."[1]

Like LIBOR, ISDAfix is quoted in a number of currencies, a number of which overlap

LIBOR	Currency	ISDAfix
X	AUD	
X	DKK	
X	HKD	X
X	NZD	
X	CHF	X
X	USD	X

ISDAfix rates are calculated as average mid-market swap rates for six

[1] http://www2.isda.org/asset-classes/interest-rates-derivatives/isdafix/.

major currencies at selected maturities (starting at one year and extending out to 30 years) on a daily basis. ISDAfix rates are based on mid-day and, in some markets, end-of-day polling of mid-market rates. This formula also discards some of the outliers. Standard ISDA documentation incorporate by reference ISDAfix for settling interest-rate options and canceling swaps contracts.[2] Due in part to the ubiquitous nature of ISDA documentation in the derivatives world, ISDAfix has become the leading benchmark for annual swap rates for swap transactions worldwide.

ISDAfix rates are displayed and updated daily on Thomson Reuters, Bloomberg and Telekurs. The Thomson Reuters Screen Pages are ISDAFIX 1 through ISDAFIX 5. The rates provided by the contributing panel members are also correspondingly updated and can be found at Thomson Reuters Screens ISDA10 through ISDA61.

Composition of the contributor panels

According to ISDA, ICAP, Thomson Reuters and ISDA select contributing firms based on each applicant's: reputation among dealers, credit standing, scale of activity in the relevant market, and expertise in the currency concerned. ISDA may remove a contributor for various reasons, including failure to provide rates or submissions deemed to be off market.

Polling window

Contributors submit rates to Thomson Reuters for the full set of designated maturities of the given ISDAfix currency (or ICAP, with respect to USD rates) within a polling window. While the quotes may be submitted to five decimal places, the published rate will be to three decimal places. Contributing banks that do not provide submissions for the full set of maturities within their designated currency will have all of the other submissions for that currency disregarded for that day. During the polling window of approximately 15 minutes, panel members may update or amend a submission. Following the window, they may not amend or withdraw their contributed rates.

A number of banks and broker dealers contribute to the settings of both USD LIBOR and ISDAfix, while the exact composition of contributing banks may vary from time to time. For example, various media sources reported in April that HSBC and Mizuho have stopped contributing to ISDAfix

USD LIBOR	Bank	ISDAfix
X	Bank of America	X
	BNP Paribas	X
X	Credit Suisse	X
	Goldman Sachs	X
X	JPMorgan Chase	X
	Mizuho	X
	Nomura	X
X	Rabobank	
X	Royal Bank of Scotland	X
X	UBS	X
X	WestLB	

The polling window opens at 11 AM when contributors may—using a secure website—begin to submit the swap rates as defined by ISDA for each maturity of their respective currencies. To start the

[2] See, e.g., Supplement number 20 to the 2000 ISDA® Definitions and Annex to the 2000 ISDA Definitions (published on January 3, 2005).

process, with respect to USD swap rates, ICAP will, at 11:02 AM, indicate on the secure website a USD swap spread and USD swap rate to serve as a reference point for contributors. According to ISDA, ICAP generates the reference point using (i) "most recent swap spreads from completed trades and executable bids and offers in market size done/posted at ICAP" and displayed on Reuters page 19901 at 11:00 AM and (ii) "executed trades and executable bids and offers at 11 [AM] for US Treasury securities from ICAP's BrokerTec US Treasury electronic trading platform."[3] Contributors may submit their rates until 11:15 AM or they may accept the reference swap spread and/or rate provided by ICAP.

Publication

At the end of the polling window, ICAP or Thomson Reuters, depending on the currency, will review the submissions and publish the calculated rates based on the following process. For each currency and each maturity, the highest and lowest rates submitted are eliminated, and as long as the minimum number of contributions has been received, the remaining submissions are averaged, resulting in the ISDAfix rate, which is then published.

ICAP's dual roles

Readers following the developments in the LIBOR controversy will recognize the name ICAP, an inter-bank swaps broker whose traders have been mentioned in investigations regarding both LIBOR and ISDAfix. With respect to ISDAfix rates, ICAP plays two roles. First, it calculates the daily submissions for USD ISDAfix swap rates. As part of this fixing process, ICAP will offer reference points for the various maturities based on, among other things, its own trade data. Second, it also acts as a broker by matching swap dealers based on trades. As a broker, the firm is paid commissions based on the size of the trades it matches.

Confusion between Screens 19901 and ISDAFIX 1 through ISDAFIX 5

Perhaps partially due to ICAP's dual roles as a calculation agent and as a broker, a number of media sources and commentators have confused the various screens and the information published on each. ISDAfix rates are published on screens ISDAFIX 1 through ISDAFIX 5. Screen 19901, on the other hand, contains "the most recent swap spreads from completed trades and executable bids and offers in market size done/posted at ICAP."[4] In other words, swap spreads on Screen 19901 reflect only those trades executed or otherwise posted at ICAP and are not necessarily representative of the entire market. A distinguishing difference between the two screens is that, while ISDAfix rates are set daily after the end

[3] According to ISDA, "By their nature, because both sources of information reflect completed transactions and/or at-risk trading interest, ICAP considers them to be a useful and meaningful reference point for where the market may be at that point in time." http://www2.isda.org/asset-classes/interest-rates-derivatives/isdafix/
[4] http://www2.isda.org/asset-classes/interest-rates-derivatives/isdafix/.

of the polling window, swap spreads on Screen 19901 are updated periodically as ICAP enters trade information.

Markets and products that depend on ISDAfix

ISDAfix affects the costs of a large number of financial instruments, placing staggeringly large dollar amounts at risk. For example:

- The U.S. Federal Reserve uses ISDAfix as the source for USD swap rates in its H.15 Statistical Release.[5]
- ISDAfix is used to determine the exercise values for hundreds of billions, if not trillions, in notional of cash-settled swap options under standard ISDA documentation used around the world.[6] For example, the 2006 ISDA Definitions refer specifically to ISDAFIX rates as a means of settlement of over-the-counter derivatives transactions.
- Banks use ISDAfix rates to value their own portfolios, with the resulting unrealized gains or losses from those portfolios then incorporated into the banks' reported financial results.
- Counterparties in the global $379 trillion swaps market use ISDAfix as a reference rate for calculating the cash settlement for early termination.[7]
- ISDAfix swap rates may also be used in pricing some of the $550 billion of bonds backed by commercial real estate mortgages ("CMBS").
- Various exchange products also use ISDAfix rates as a rate or curve source.
    - LIFFE uses ISDAfix as the source of the swap curve in calculating the settlement price of its billion-dollar market for Swapnote futures contracts.

CMBS Ranking 2013 Q1 Issuance		Market Share (%)
1	Credit Suisse	21.6
3	Bank of America	14.0
5	Morgan Stanley	8.8
7	Wells Fargo	6.1
9	Deutsche Bank	2.4
11	Citigroup	1.8

Of the top twelve CMBS underwriters for 2013 Q1, seven contribute to both LIBOR and ISDAfix while four contribute to ISDAfix

[5] The currently reported swap rates are available on the Federal Reserve Board's website, [illegible].

[6] See, e.g., Supplement number 20 to the 2000 ISDA® Definitions and Annex to the 2000 ISDA Definitions (published on January 3, 2005).

[7] According to the Bank for International Settlements, the notional amounts outstanding for interest rate swaps were upwards of $364 trillion at the end of 2010. For the American market, the Depository Trust & Clearing Corp., which operates a central trade repository, reported $28.4 trillion of swap contracts outstanding as of April 4, 2013. http://www2.isda.org/asset-classes/interest-rates-derivatives/isdafix.

- Both the Chicago Mercantile Exchange and the Chicago Board of Trade use ISDAfix as the settlement price in their swap futures contracts.

- ISDAfix swap rates may also be used to set the payouts of some state pension annuities.[8]
- Interest rate swaps that use ISDAfix rates are also commonly embedded in hybrid securities known as structured notes that are popular with high net worth investors.

Possible impact of any ISDAfix manipulation on LIBOR damages

The LIBOR controversy has been thoroughly covered by various news media, academia and market observers. Here are the highlights of the latest legal and regulatory developments:

- Regulators around the globe are conducting multiple investigations into the alleged manipulation of LIBOR and Barclays, UBS and Royal Bank of Scotland have paid more than USD$2.5 billion in fines with more potential penalties to come from other banks.
- On March 29, Judge Naomi Reice Buchwald of the U.S. District Court of Southern District New York dismissed plaintiffs' federal antitrust and RICO claims.
- Partially in response to Judge Buchwald's dismissal, a number of financial institutions have filed individual lawsuits in both state and federal court, including—among others—Freddie Mac, the Charles Schwab entities, The Berkshire Bank, Regents of the University of California and Salix Capital, alleging various fraud and contractual claims.[9]

Fixed to floating swaps—ongoing payments

The following example of a simple interest rate swap demonstrates how the manipulation of LIBOR and ISDAfix can together affect the value of a swap.

Assume that there is a $500 million swap that matures in 20 years, where a bank (Party A) makes a floating payment based on the LIBOR rate (3-month USD LIBOR paid quarterly) and receives a fixed rate of 5.9% (which was determined using ISDAfix) paid quarterly by a pension fund (Party B). Party A,

[8] We do not know at this time whether ISDAfix rates are considered in determining the values and benefits of the annuities market generally, estimated to be nearly $2 trillion.
http://www.standardandpoors.com/ratings/articles/en/us/?articleType=HTML&assetID=1245337430189
[9] See, e.g., The Federal Home Loan Mortgage Corporation v. Bank of America Corporation et al. (filed March 14, 2013 in U.S. District Court for the Eastern District of Virginia); The Charles Schwab Corporation et al. v. Bank of America Corporation et al. (filed April 29, 2013. Case No. CGC-13-531016 filed in California Superior Court, San Francisco County); The Berkshire Bank v. Bank of America Corporation, et al. (filed in U.S. District Court for the Southern District of New York, Case No. 12-cv-5723); Regents of the University of California v. Bank of America Corp. (BAC), U.S. District Court, Northern District of California, Case No. 13-2921) and Salix Capital US Inc. and Salix Capital Ltd. v. Banc of America Securities LLC, et al. (filed May 20, 2013 in New York State Supreme Court for New York County).

would receive the same fixed quarterly payments from Party B for the life of the swap. This fixed payment is $7,273,972[10]. Assume further that on day 90, the end of the first quarter, the current 3-month USD LIBOR rate is 6.2%. This would mean that Party A would pay Party B $7,643,835[11] and would receive $7,273,972. In net terms, the bank owes the pension fund $369,863. If, however, the bank had manipulated the fixed rate and increased the relevant ISDAfix rate by five basis points (0.05 percent) to 5.95% at the beginning of the swap, *the bank would have received an ill-gotten gain each quarter in the amount of $61,645 or $246,580 annually for a total manipulated gain of $4,931,600 for the life of the swap.*[12]

Fixed to floating swaps—termination payments

Any manipulation of the ISDAfix rates would also likely impact the termination costs of a fixed to floating swap, depending on the facts and the terms of the trade. The calculation of the termination value of a fixed-to-floating swap is based on the following variables: (i) the swap's fixed rate; (ii) the value of the referenced floating rate; (iii) the notional amount; (iv) the remaining term of the swap contract; (v) the forward curve as of the valuation date; and (vi) the discount rate to be used to calculate the present value. The forward curve is updated daily based upon market trading conditions. Any manipulation of ISDAfix rates (or LIBOR, for the purposes of our example) most likely would have also affected the forward curve. A party assessing its damages from any potential rate manipulation should account for this in its analyses. *Using the swap example above, if that trade was terminated after one year, a ten basis point (0.1 percent) manipulation of the interest rate could increase the termination payment paid by the pension fund to the bank by nearly half a million dollars.*[13]

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[10] The 5.9% fixed rate payment is on annual basis. To convert to a quarterly rate the convention is to use a 90/365 day count. So the quarterly rate is equal to [5.9% x (90/365)] = 1.45%. Multiplying this rate with the notional value of $500 million yields a quarterly cash flow of $7,273,972.

[11] [6.2% x (90/365)] x $500,000,000 = $7,643,835

[12] In our review of the available literature discussing the ISDAfix developments, we came across one example cited in a number of different articles: "On a $500 million swap that matures in 20 years, for example, a delay that prevents the instrument from moving one basis point (0.01 percent) equals $1 million in profit for the dealer." This hypothetical overstates the dealer's profit, as it does not take into account the time value of money. Rather, the value of the swap is based on the discounted future cash flow of the swap. Using our example swap, if a bank is making fixed quarterly payments based on an ISDAfix rate of 5.9%, for 20 years on a notional value of $500 million, the present value of its payments is $332,185,938 (for simplicity, we assume the 3-month LIBOR stays at 6.2% for purpose of calculating a discounting factor). If the true rate that bank should have paid was a basis point higher, 5.91%, the present value of its payments would have been $332,748,965. So in present terms the bank made a profit of $563,072.

[13] As discussed, the termination payment owed by one party to another is highly specific to the facts. Please contact the authors for a detailed explanation in the calculations involved.

Potential double dipping

If the bank in the above example was manipulating both LIBOR and ISDAfix, it was essentially double dipping, creating a "manipulation-on-manipulation" situation whereby the swap customers would have been paying for two different layers of price-fixing corruption. *Using the same swap example to illustrate this potential double dipping, assuming that LIBOR stays constant but is manipulated by 5 bps to the advantage of the bank and the fixed rate at the time the swap was entered into was also manipulated by 5 bps, the bank in our hypothetical would have received ill-gotten gains of $123,290 quarterly, $493,160 annually and $9,863,200 for life of the swap.*

Evaluating the impact of ISDAfix manipulation

The example we used above was a fixed to floating swap but the potential impact from any ISDAfix manipulation is not limited to swaps. To state the obvious, all of the markets and products that rely on ISDAfix are potentially affected.

A financial institution that wants to conduct an internal assessment of any potential impact from ISDAfix manipulation would need to undertake an extensive review that would generally include:

- Review of the firm's derivatives portfolio and ISDA documentation, including all trade confirms.
- Analysis of the firm's interest rate exposure in its swap book based upon currency and duration.
- Categorization of the firm's cash portfolio composition by asset types and identifying those with interest rate risk and potential exposure to ISDAfix.
- For public pension funds and any institution with liabilities in the form of annuities, a review of its pricing practices and procedures.

Possible areas of focus in the CFTC investigation

While the LIBOR controversy appeared in the mainstream with the Wall Street Journal's April 16, 2008 article,[14] the CFTC's investigation into the ISDAfix rate setting process was only first reported this year. In fact, regulators have released no details about the full scope of the investigations, and, indeed, there may be no finding of any wrongdoing. Nonetheless, regulators are plowing ahead with the ISDAfix inquiry, with the CFTC reportedly having issued subpoenas to ICAP and as many as fifteen Wall Street banks[15] and reviewing one million emails and instant messages looking for evidence of manipulation and wrongdoing.[16]

[14] http://online.wsj.com/article/SB120831164167818299.html
[15] http://www.bloomberg.com/news/2013-04-08/cftc-said-to-probe-icap-treasure-island-brokers-on-swap-prices.html
[16] http://www.bloomberg.com/news/2013-05-20/cftc-said-to-review-1-million-e-mails-in-isdafix-investigation.html

We have identified two areas of potential interest to the CFTC. First, the CFTC may be looking for evidence of manipulation of the ISDAfix rates. This case would be fairly straightforward in following the blueprint of the LIBOR investigations. The two indices follow a similar setting process in their daily reporting and share some common characteristics. Second, the CFTC may be examining whether ICAP delayed the reporting of swap rates to Screen 19901, for trades it has executed or matched, in order to provide a trading advantage to itself or another swap broker. While ICAP's Screen 19901 is widely followed in the swaps market, this information differs from a reported index that holds itself to be representative of the market generally.

Conclusion

Quick glance of key publicly reported indices subject to regulatory investigations around the world:

Index	USD LIBOR	ISDAfix	Crude Oil Market	WS/Reuters FX Rates
Estimated Market Size	$350 trillion in derivatives	$379 trillion	USD$3.4 trillion	USD$4.7 trillion a day
Investigation targets	LIBOR panel banks	ISDAfix contributors, ICAP	Royal Dutch Shell, BP and Platts	Unknown at this time

These indices and the markets to which they relate share a number of characteristics:

- Traders working in high-pressure environments where an unprofitable quarter or year can mean job loss.
- Markets where advance (and accurate) information could be translated into millions of dollars of profit.
- Indices that the market generally has trusted (and assumed) to be calculated in an objective manner and has therefore relied upon heavily.

Given the gargantuan sizes of the various markets that rely on ISDAfix for pricing, the temptation for manipulation can be overwhelming as even the smallest change could result in millions of dollars in ill-gotten gains. If the CFTC investigation reveals wrongdoing, the amount of damages in the ISDAfix controversy could rival and potentially surpass the LIBOR scandal.

About SFC

SFC Associates, LLC is an economic consulting firm specializing in litigation support and expert witness in complex securities litigation. Our staff and affiliates offer extensive experience and market participation in swaps, derivatives, financial and capital markets. We have been engaged in over 50 cases for law firms that include Sullivan and Cromwell, Sidley Austin, Quinn Emanuel, WilmerHale and others. For further information on the firm please visit our website at www.sfcassociates.com.

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Jack Chen is an Affiliate of SFC Associates ("SFC") and a finance professional who has testified in federal court on financial products and currently provides litigation support services on LIBOR and capital markets related matters. He is a recognized expert in structured finance where he has nearly 20 years of experience working in different roles in the capital markets. He started as a lawyer working at Willkie Farr & Gallagher then Sullivan and Cromwell before going to the business side rating structured products at Moody's Investors Service. He subsequently worked in asset management firms before beginning his consulting practice. His product expertise includes credit default swaps, interest rate derivatives and total return swaps, cash, market value and synthetic collateralized debt obligations, collateralized loan obligations and structured investment vehicles. Mr. Chen has appeared on the CBS Evening News and has been quoted or cited in a number of newspapers and trade journals, including Wall Street Journal, Market Watch News Hub, Risk, Creditflux, St. Petersburg Times, Asset-Backed Alert and Structured Credit Investor.

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[17] The authors would like to thank Amanuel and Derek for their assistance in writing this report.

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