Report of the Committee on Financial Benchmarks

Reserve Bank of India
February 2014

भारतीय रिज़र्व बैंक
RESERVE BANK OF INDIA
www.rbi.org.in

Letter of Transmittal

FMD. MSRG. No. 1358 /02.18.001/2013-14 February 07, 2014

Dr. Raghuram G. Rajan
Governor
Reserve Bank of India
Mumbai

Dear Sir,

Report of the Committee on Financial Benchmarks

We have great pleasure in submitting the Report of the Committee on Financial Benchmarks set up by the Bank on June 28, 2013 to review the systems governing major financial benchmarks in India. The Committee was immensely benefited by consultations held with a variety of stakeholders including FIMMDA, FEDAI, banks, primary dealers and CCIL. The feedback received on the draft Report posted on the Bank's website on January 3, 2014 has been taken into account for finalising the Report.

We sincerely thank you for entrusting us with this responsibility.

Yours sincerely,

(P. Vijaya Bhaskar)
Chairman

(Chandan Sinha)
Member

(G.S.Hegde)
Member

(R.Sridharan)
Member

(N.S.Venkatesh)
Member

(Shilpa Kumar)
Member

(Ananth Narayan)
Member

(B.B. Chakrabarti)
Member

(Gangadhar Darbha)
Member

(G. Mahalingam)
Member-Secretary

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Acknowledgements

The Committee acknowledges with gratitude the guidance provided by Deputy Governors of RBI Shri H.R. Khan and Dr. Urjit Patel.

The Committee places on record its deep sense of appreciation for the exemplary dedication and enormous efforts put in by the core team from the Financial Markets Department comprising Shri Sudarsana Sahoo, DGM, Shri Shariq Hoda, AGM and Shri Sirin Kumar, AGM, in providing comprehensive research and secretarial assistance to the Committee. The Committee acknowledges the assistance provided by Shri Sandeep Mahajan, AGM, Shri Ajay Sisodia, Manager, Shri Madhujit Sinha, Manager and Shri Vikas Kumar, Assistant, for providing various logistical supports for conducting the meetings.

The Committee was immensely benefitted by its interactions with Shri D G Patwardhan, Chief Executive, FEDAI; Shri B Prasanna, Chairman, PDAI; Shri Ashok Gautam, Senior Vice President & Head, Global Markets, Axis Bank; Shri Pradeep Khanna, Managing Director and Head- FX Trading, HSBC; and Shri Kuldeepsinh Jagtap, PDAI. The Committee also benefitted from valuable inputs on legal issues received from Shri Amit Shah, Head of Legal, India and South Asia, Standard Chartered Bank; Mr. Keith Noyes, Regional Director, Asia Pacific, ISDA; Ms. Jacqueline Low, Senior Counsel, ISDA; and Shri Erryan Abdul Samad, Counsel, ISDA. The Committee acknowledges the data inputs provided by CCIL team comprising Smt. Indirani Rao, Dr. Golaka C. Nath, Shri Anupam Mitra, Ms. Jigna Thakkar and Ms. Payal Ghose. The Committee acknowledges the background material on benchmarks provided by FIMMDA, FEDAI and Thomson Reuters with special thanks to Shri C.E.S Azariah and Shri DVSSV Prasad of FIMMDA; Shri D G Patwardhan and Shri K V Ramesh of FEDAI; and Shri Dayal Thakkar and Ms. Alice Joseph of Thomson Reuters.

The Committee is thankful for the valuable suggestions provided by officials of RBI, viz. Shri K.K. Vohra, PCGM, IDMD, Shri R N Kar, CGM-in-Charge, FED, Dr. N.B. Raje, Director, FMD, Shri Susobhan Sinha, GM, IDMD, Shri Ishan Shukla, GM, FMD, Shri G Seshsayee, DGM, Hyderabad RO, Shri Indranil Chakraborty, DGM, DBS, Shri Rakesh Tripathy, DGM, FMD, Shri Puneet Pancholy, DGM, DBOD, Smt. Mini Kuttykrishnan, ALA, Legal Dept and officials of the Analytics Division of DBS. The Committee gratefully acknowledges the support extended by the personnel attached to IT Cell and Lounge of Mumbai Regional Office of RBI in facilitating the smooth conduct of meetings of the Committee even on holidays.

Abbreviations

ABS	Association of Banks in Singapore
AFMA	Australian Financial Markets Association
AFS	Available for Sale
AGM	Assistant General Manager
ALA	Assistant Legal Advisor
ATM	At the Money
BBA	British Bankers Association
BBSW	Bank Bill Swap
BIS	Bank for International Settlements
CAD	Canadian Dollar
CCIL	The Clearing Corporation of India Ltd.
CD	Certificate of Deposit
CGM	Chief General Manager
CP	Commercial Paper
CRISIL	Credit Rating Information Services of India Ltd.
DBOD	Department of Banking Operations & Development
DBS	Department of Banking Supervision
DGM	Deputy General Manager
EBA	European Banking Authority
EBF	European Banking Federation
EC	European Commission
ESMA	European Securities Market Authority
EUR	Euro
EURIBOR	Euro Interbank Offered Rate
FCA	Financial Conduct Authority
FCNR (B)	Foreign Currency Non-Resident (Bank)
FCY	Foreign Currency
FED	Foreign Exchange Department
FEDAI	Foreign Exchange Dealers' Association of India
FEMA	Foreign Exchange Management Act
FIMMDA	Fixed Income Money Market and Derivatives Association of
FMD	Financial Markets Department
FRBs	Floating Rate Bonds
FSA	Financial Services Authority
FSB	Financial Stability Board

FX	Foreign Exchange
GBP	British Pound
GM	General Manager
GOI	Government of India
G-Secs	Government Securities
HFT	Held for Trading
HIBOR	Hong Kong Interbank Offered Rate
HKAB	Hong Kong Association of Banks
HKMA	Hong Kong Monetary Authority
ICE	Intercontinental Exchange
IDMD	Internal Debt Management Department
IDR	Indonesian Rupiah
IMF	International Monetary Fund
INBMK	Indian Benchmark
INR	Indian Rupee
IOSCO	International Organization of Securities Commissions
IRS	Interest Rate Swap
ISDA	International Swaps and Derivatives Association
IST	Indian Standard Time
JISDOR	Jakarta Interbank Spot Dollar Rate
JBA	Japanese Bankers Association
JPY	Japanese Yen
LIBOR	London Interbank Offered Rate
MAS	Monetary Authority of Singapore
MIBID	Mumbai Interbank Bid Rate
MIBOR	Mumbai Interbank Offer Rate
MIFOR	Mumbai Interbank Forward Offered Rate
MIOCS	Mumbai Interbank Offered Currency Swaps
MIOIS	Mumbai Interbank Overnight Indexed Swaps
MITOR	Mumbai Interbank Term Offered Rate
MOT	Market Observable and Tradable
MoU	Memorandum of Understanding
MPG	Market Participants Group
MYR	Malaysian Ringgit
NBFC	Non-Banking Financial Company
NSE	National Stock Exchange

OIS	Overnight Index Swaps
OSSG	Official Sector Steering Group
OTC	Over -the –counter
PDAI	Primary Dealers' Association of India
PDs	Primary Dealers
PSU	Public Sector Undertaking
RO	Regional Office
RUB	Russian Rouble
SDLs	State Development Loans
SDRs	Special Drawing Rights
SFA	Securities and Futures Act
SFEMC	Singapore Foreign Exchange Market Committee
SGD	Singapore Dollar
SIBOR	Singapore Interbank Offered Rate
SOR	Swap offer rate
T-Bills	Treasury Bills
THB	Thai Baht
TIBOR	Tokyo Interbank Offered Rate
TMA	Treasury Markets Association
USD	US Dollar
VND	Vietnamese Dong
VWAP	Volume Weighted Average Price
YTM	Yield to Maturity

Executive Summary

Background and Recent Global Developments

1. Financial benchmarks are primarily used for pricing, valuation and settlement purposes in financial contracts. The aggregate volume of underlying financial contracts referenced to or valued through financial benchmarks being quite huge, the robustness and reliability of financial benchmarks play a critical role for the stability of the financial system. Recent global developments with regard to manipulation of several key global benchmark rates, viz. LIBOR, EURIBOR, TIBOR, London 4 PM FX fixing, etc., have raised concerns about the reliability of the financial benchmarks, particularly about their governance frameworks and setting methodologies. Several international standard setting bodies, national regulators, central banks, and self regulatory market bodies have reviewed the existing benchmark setting process and came out with comprehensive measures and governing principles for reforming financial benchmarks. Important ones among them are IOSCO's Principles on Financial Benchmarks, Wheatley Review of LIBOR, BIS's Report titled 'Towards better reference rate practices: a central bank perspective', ESMA-EBA's Principles for benchmark setting processes in EU, European Commission's proposed regulation on indices used as benchmarks in financial instruments and financial contracts as also the Monetary Authority of Singapore's proposed regulatory framework for financial benchmarks. The FSB, working under the mandate of G-20, has endorsed the IOSCO's Principles.

2. The key principles for reform of financial benchmarks that have been accepted across many jurisdictions include (i) Benchmark Administrators are to be primarily responsible for all aspects of benchmark determination, (ii) calculation of financial benchmarks should be, as far as possible, based on observable transactions, (iii) the illiquid benchmarks/benchmark tenors should be phased out, (iv) benchmark setting methodology should be transparently disclosed, (v) individual submissions should be publicly disclosed after a suitable lag (vi) appropriate policies should be framed to address transition issues, (vii) effective policies should be put in place to address the conflicts of interests in benchmark submission and administration, (viii) benchmark submission should be subjected to appropriate Code of Conduct and oversight, (ix) benchmark submission should be supported by well-defined hierarchy of inputs and (x) greater regulatory oversight of benchmark setting process with stringent penal provisions.

Review of Major Indian Rupee Interest Rate and Foreign Exchange Benchmarks

3. The Committee identified the major Rupee interest rate benchmarks and foreign exchange benchmarks based on their extent of usage and relevance to the Indian financial system. The base rate and other proprietary rates of individual banks are not considered as these rates are institution specific and are not used in the financial market transactions involving banks/other financial intermediaries. The major Rupee interest rate benchmarks identified are MIBID-MIBOR, MIFOR, INBMK, MIOIS, MIOCS, G-sec yield curve, prices for SDL, spreads for GOI FRBs, Prices for corporate bonds, T-Bill Curve, CP Curve and CD Curve. The major foreign exchange benchmarks identified are RBI Reference Rate, FEDAI's spot fixings, Month-end revaluation rates for forex spot and forward contracts, FCY/INR option implied volatility and FCNR (B) rates. The Committee reviewed the above major benchmarks with regard to their quality, setting methodology and governance systems.

Benchmark Quality and Setting Methodology

4. On the benchmark quality and setting methodology, the Committee observed that although the methodologies followed for the above mentioned benchmarks are generally satisfactory, several measures need to be taken to further strengthen the benchmark quality and setting methodology. The benchmark administrators and calculation agents may need to suitably augment their resources for being up to the rather onerous tasks allotted or expected of them. The major recommendations of the Committee in this regard include:

- FIMMDA and FEDAI may be designated as administrators for all the Rupee interest rate and foreign exchange benchmarks respectively, with primary responsibility for the entire benchmark setting process;
- The benchmark calculation may be based on observable transactions, wherever available, as first layer of inputs subject to appropriate threshold criteria. The executable bids and offers, wherever available, subject to appropriate threshold and polled submissions may be used as second and third layer of inputs respectively in terms of hierarchy of inputs;
- The Benchmark Administrator may publicly disclose individual submissions after a suitable lag;
- The Administrators may periodically review each benchmark and undertake necessary changes;
- New benchmarks may be registered with the concerned Administrator before being introduced in the market;

- Credible contingency provision may be put in place and there should be written policies and procedure to handle possible cessation of a benchmark;
- Overnight MIBID-MIBOR setting may be shifted from existing polling method to volume weighted average of trades executed between 9 AM to 10 AM on NDS-CALL operated by CCIL;
- FIMMDA may coordinate the transition of legacy contracts referenced to NSE MIBID-MIBOR through multilateral and bilateral amendment agreement, as appropriate;
- Construction of the G-sec yield curve may use volume weighted average rate of the trades executed over longer time window in place of last traded yields;
- Transaction data may be used for calculation of INBMK, T-Bill, CP, and CD Curves as the first layer of data inputs;
- The threshold trades/bids and offers specified for setting of G-sec yield curve, spread for FRBs, prices of SDL and corporate bonds may be subjected to periodic resetting at a well-defined time intervals, for keeping them at reasonably higher level taking into account the overall liquidity and developments in the respective market segments. In the absence of required trading volume in SDL, the spread discovered in the last two SDL auctions, subject to appropriate qualifying criteria, may be used in place of existing fixed 25bps spread;
- RBI may continue with the existing system of fixation of Reference Rates, keeping in view the recent international moves where the official sector is assuming greater role in fixation of financial benchmarks and also the fact that several central banks in developed as well as emerging economies publish such reference rates;
- RBI Reference rates may be based on volume weighted average of actual transactions executed during a sufficiently longer time window in place of existing polling method;
- The benchmark/benchmark tenors that are not used in the interbank/PD transactions may be phased-out subject to FIMMDA ascertaining the extent of outstanding client transactions referenced to those benchmarks/benchmark tenors (MIFOR- 1-month, 2-month and 1-year; MITOR, INBMK–all tenors except 1-year) and facilitate suitable transition arrangements, if required;
- FEDAI may stop publishing spot fixings, if it is not used for any meaningful purpose by corporates and other clients;

- Banks may strive to develop the USD/INR basis swaps and USD/INR forwards (beyond 1 year) so as to obviate the need to use MIFOR;
- MIOIS and MIOCS may be uniformly used for valuation of outstanding OIS and MIFOR swap trades respectively.

Governance Framework

5. The existing Governance Framework for the Benchmark Administrators and Calculation Agents was found lacking in several aspects. The Committee recommends several measures to be implemented by the Benchmark Administrators, Calculation Agents and Submitters for strengthening the governance framework for the benchmarks.

6. The Administrators may put in place a comprehensive Code of Conduct for the Submitters specifying hierarchy of data inputs for submission, pre-submission validation and post-submission reviews of inputs by competent officials, role and responsibility of key personnel, procedures to identify suspicious inputs, policies and procedures to manage conflicts of interest, etc. and may oversee the compliance by the Submitters to the Code. The Administrators may constitute a governing body to ensure quality and integrity of the benchmark determination process; retain adequate access to and control over the data and calculation process where the calculation is outsourced, put in place policies and procedures for the identification, disclosure, avoidance or management of existing and potential conflicts of interest; put in place appropriate confidentiality protocols with respect to the data and other information received by or produced by it; establish an effective whistleblowing mechanism; develop appropriate oversight function; establish an effective complaint redressal system; subject the benchmark related activities to periodic independent external audit; maintain all records for a minimum period of eight years. Where the Administrator has outsourced certain functions of benchmark determination, the Administrator may be responsible for all acts of omissions and commissions of the outsourced agent/s. In order to overcome the possible conflicts of interest with the benchmark setting process arising out of the current governance structure, FIMMDA and FEDAI may consider creating a separate independent structure, either jointly or separately, for administration of the benchmarks on the lines of Singapore.

7. The Calculation Agents may strengthen the governance of calculation function by appointing personnel with appropriate level of seniority and clear accountability to be responsible for Benchmark calculation, establishing robust pre- and post-calculation control, setting up an effective whistleblowing mechanism, putting in place appropriate confidentiality protocols with respect to the data and other information received by or produced by it, subjecting the calculation function to periodic internal and external audit,

maintaining all records for a minimum period of eight years and submitting a report to the Administrator periodically confirming compliance with all applicable guidelines.

8. The Benchmark Submitters may put in place an internal Board approved policy for governance of the submission process in line with the Code of Conduct prescribed by Administrator; clearly accountable personnel at appropriate senior positions are to be responsible for submissions; maker-checker system to ensure integrity of submissions; periodical review of submissions by appropriate senior level officials; establish effective conflicts of interest policy and whistleblowing policy; subject the submission process to periodic internal audit and where appropriate, to external audit; preserve all records for a minimum period of eight years; and submit a confirmation to the Administrator periodically for having complied with all applicable guidelines including the Code of Conduct prescribed by the Administrator.

Regulatory Oversight

9. The Committee favours increased role of RBI for oversight of the benchmark determination in line with international experiences. Although there is no specific provision in the RBI Act with regard to regulation of financial benchmarks, the Committee's considered opinion is that a broader interpretation of Section 45W of RBI Act empowers RBI to issue directions to the Benchmark Administrators. However, as a long term measure, Section 45W may be amended to explicitly empower RBI to determine the policy with regard to benchmarks used in Money, G-sec, Credit and Foreign Exchange markets in India and to issue binding directions to all the agencies involved in benchmark setting including Administrators, Calculation Agents and Submitters.

10. Pending legal amendments, RBI may entrust the administration function of Rupee interest rate benchmarks and foreign exchange benchmarks to FIMMDA and FEDAI respectively. FIMMDA and FEDAI may review their Memorandum and Articles of Association to bring out necessary amendments and may also enter into agreements with Calculation Agents to enforce the standards. RBI, in exercise of its existing powers, may advise the Banks and PDs to strengthen the Governance Framework for benchmark submission and to extend necessary support to the Administrator for strengthening the benchmark setting process.

11. RBI may bring the benchmark submission system of banks and PDs under its on-site supervision and off-site monitoring. RBI may constitute an internal expert group to conduct periodic on-site inspection of Benchmark Administrators and Calculations Agents and also monitor their activities through an off-site monitoring system.

CHAPTER 1

INTRODUCTION

1.1. Financial benchmarks are mainly used for pricing, settlement, and valuation of financial contracts. The IOSCO's Report on Principles for Financial Benchmarks describes financial benchmarks as:

"Prices, estimates, rates, indices or values that are:
a) Made available to users, whether free of charge or for payment;
b) Calculated periodically, entirely or partially by the application of a formula or another method of calculation to, or an assessment of the value of one or more underlying Interests;
c) Used for reference for purposes that includes one or more of the following:
• determining the interest payable, or other sums due, under loan agreements or under other financial contracts or instruments;
• determining the price at which a financial instrument may be bought or sold or traded or redeemed, or the value of a financial instrument; and/or
• measuring the performance of a financial instrument."

1.2. Keeping in view the huge volume of financial contracts referenced to or valued through the financial benchmarks, robust and credible benchmarks contribute immensely to the stability of the financial system. Properly designed benchmarks help the end-users to effectively manage their financial risks. Loss of confidence in major benchmark/s may disrupt the functioning of the financial markets and may impair the efficiency of the financial system with significant negative externalities as has been observed during the recent period.

1.3. The revelations regarding manipulation of LIBOR in June 2012 had shocked the entire global financial markets. The probes conducted by regulators in various jurisdictions found several governance related issues surrounding conflicts of interests as the major causes of manipulation of LIBOR and some other key benchmark rates. These cases of manipulation of major financial benchmarks have raised serious concerns about the appropriateness of the methodologies and processes followed in determination of such benchmarks and the overall credibility and reliability of the financial benchmarks.

1.4. Market regulators in many jurisdictions and various international standard setting bodies as well as self-regulatory institutions undertook comprehensive reviews of the then existing benchmark setting system and came up with several recommendations to strengthen the

system. Notable among them were the Wheatley Review of LIBOR published in September 2012, BIS's Report titled 'Towards better reference rate practices: a central bank perspective' published in March 2013, International Organization of Securities Commissions (IOSCO)'s consultation report on draft Principles for financial benchmarks published in January 2013 and subsequently in April 2013, European Securities Market Authority (ESMA)-European Banking Authority (EBA)'s Principles for benchmark setting processes published in June 2013 and IOSCO's final report on Principles for financial benchmarks published in July 2013. Several reform measures were undertaken in many jurisdictions with respect to benchmark setting methodology and Governance Framework including introduction of regulatory oversight on the benchmark setting process and stipulation of stringent penal provisions for curbing manipulative practices.

1.5. The Financial Stability Board (FSB), working on the mandate of G-20, has since endorsed the IOSCO's Principles for financial benchmarks. The IOSCO's report requires the Benchmark Administrators to disclose their compliance with the Principles within 12 months of its publication, i.e. by July 2014, and subsequently, on an annual basis. The IOSCO expects the member countries to encourage implementation of the Principles including through regulatory actions wherever appropriate. RBI, being the regulator of Money, G-sec and Foreign Exchange markets in India, is required to take appropriate steps to ensure compliance by the Administrators of the Rupee interest rate and foreign exchange benchmarks in India with the IOSCO Principles by July 2014.

Constitution of the Committee

1.6. Against the backdrop of these international developments, a need was felt to review the process of computation and dissemination of major financial benchmarks in India, the governance mechanisms in the institutions involved in computing the benchmarks and other related issues. The Reserve Bank of India initiated discussions with the institutions involved in computation and dissemination of benchmarks such as FIMMDA, NSE, Thomson Reuters and CCIL; and select banks and primary dealers who participate in the polling for different benchmarks. It emerged from the consultation process that, in view of the varieties of benchmarks, methodologies and Governance Frameworks in place, it would be appropriate to consider a committee approach to examine the issues surrounding the financial benchmarks in India. However, the Committee's scope of study was restricted to the major Indian foreign exchange and Rupee interest rate benchmarks primarily used by the banking sector.

1.7. Accordingly, a Committee on Financial Benchmarks was constituted by RBI to study the various issues relating to financial benchmarks on June 28, 2013 with the following members:

1	Shri P. Vijaya Bhaskar, Executive Director, Reserve Bank of India	Chairman
2	Shri Chandan Sinha, Principal Chief General Manager, Department of Banking Operations and Development, Reserve Bank of India	Member
3	Shri G.S.Hegde, Principal Legal Adviser, Legal Department, Reserve Bank of India	Member
4	Shri R.Sridharan, Managing Director, Clearing Corporation of India Ltd.	Member
5	Shri N.S. Venkatesh, Chairman, Fixed Income Money Market and Derivatives Association of India (FIMMDA)	Member
6	Ms. Shilpa Kumar, Senior General Manager, ICICI Bank	Member
7	Shri Ananth Narayan, Co-Head of Wholesale Banking, South Asia, Standard Chartered Bank	Member
8	Professor B.B. Chakrabarti, Indian Institute of Management- Calcutta, Kolkata	Member
9	Dr. Gangadhar Darbha, Executive Director, Nomura Securities	Member
10	Shri G. Mahalingam, Principal Chief General Manager, Financial Markets Department, Reserve Bank of India	Member-Secretary

Shri D.G. Patwardhan, Chief Executive, FEDAI participated in the deliberations of the Committee as a permanent invitee.

The Secretariat of the Committee was provided by the Financial Markets Department of RBI and comprised Shri Sudarsana Sahoo, DGM, Shri Shariq Hoda, AGM and Shri Sirin Kumar, AGM.

Terms of Reference

1.8. The terms of reference of the Committee are as follows:

i. Study all major financial benchmarks in India with a view to assessing their current relevance/usage, fallback mechanisms in place in the event of benchmark being rendered obsolete and suggest changes, if any, for inclusion of new benchmarks or exclusion of some of the existing benchmarks.
ii. Study international experience in addressing issues relating to benchmarks and draw suitable lessons therefrom relevant to the Indian context.
iii. Examine the governance mechanisms within the organizations computing the benchmarks with a view to assessing conflicts of interest, if any, and suggest measures for mitigating such conflicts and enhancing transparency.
iv. Examine the need for regulators' involvement in computation and dissemination of benchmarks and if so, advise on appropriate systems and processes therefor.
v. Suggest suitable mechanisms for dealing with transition issues arising out of legacy contracts in the event of markets shifting to a new benchmark.
vi. Propose a system of supervisory oversight in respect of institutions involved in computing /disseminating the benchmarks.
vii. Study and advise on any other related issues.

Approach

1.9. The Committee adopted a four-pronged approach as under:

- Detailed study of recent international developments with respect to financial benchmarks to draw lessons.
- Inventorisation of the major Rupee interest rate and foreign exchange benchmarks in India in terms of their relevance and extent of use.
- Formation of two Sub-Committees comprising the members of the Committee to study the benchmarks in terms of their two main usages, i.e. pricing/settlement and valuation of Rupee interest rate and foreign exchange instruments in India.
- Consultation with experts from various banks, primary dealers and International Swaps and Derivative Association (ISDA) on several issues relating to Indian financial benchmarks.

1.10. The Committee held discussions over five meetings in Mumbai and also through teleconferencing and exchange of information over e-mail. The Committee had consulted few outside experts on the subject, viz. Shri B Prasanna, Chairman, Primary Dealers' Association of India; Shri Ashok Gautam, Senior Vice President and Head of Global Markets, Axis Bank; and Shri Pradeep Khanna, Managing Director and Head of FX trading, HSBC. The Committee had discussed various legal issues involved in transition to new benchmarks and international developments on financial benchmarks with Ms. Jacqueline Low, Senior Counsel Asia, ISDA; Mr. Keith Noyes, Regional Director- Asia Pacific, ISDA; and Mr. Erryan Abdul Samad, Counsel Asia, ISDA. The Committee had also consulted concerned officials of FIMMDA, FEDAI, and Thomson Reuters to know details about the existing benchmark setting process and their Governance Framework.

Structure of the Report

1.11. The report is organized as follows:

- Chapter 2 discusses the recent global developments relating to the financial benchmarks including the various reform measures undertaken/underway in several jurisdictions.
- Chapter 3 provides a brief overview of the major Rupee interest rate and foreign exchange benchmarks in India.
- Chapter 4 provides a comprehensive review of the quality and setting methodology of the major Indian Rupee interest rate and foreign exchange benchmarks and discusses the Committee's recommendations thereof.
- Chapter 5 examines the existing governance mechanisms with regard to Benchmark Administrators and Calculation Agents of the major Indian Rupee interest rate and foreign exchange benchmarks and recommends the Principles to be followed by them as well the Submitters for strengthening the Governance Framework.
- Chapter 6 discusses RBI's role in regulation and supervision of benchmark setting process and the legal provisions thereof.
- Chapter 7 provides a summary of the recommendations made by the Committee.

CHAPTER 2

RECENT GLOBAL DEVELOPMENTS IN FINANCIAL BENCHMARKS

2.1. The cases of manipulation and false submissions in some major global financial benchmarks have seriously undermined the credibility and reliability of the financial benchmarks. The official sector across the globe has started playing a crucial role in ensuring that widely-referenced financial benchmarks are subject to appropriate standards of governance, transparency and reliability. The chapter provides a brief coverage of the principles and reform measures recommended by various international standard setting bodies, national regulators, central banks and self-regulatory market bodies for enhancing the robustness and reliability of financial benchmarks. The chapter also provides a snapshot of the reform measures already undertaken/ underway in some countries in respect of some major financial benchmarks with the objective of drawing lessons for suggesting reform measures in the Indian context.

2.2. The major global financial benchmarks came under intense public scrutiny after the information relating to manipulation of London Interbank Offered Rate (LIBOR) came to the fore in June 2012. The LIBOR has been the primary benchmark for short term interest rates globally and has been used for pricing and settlement of large varieties of interest rate and derivative contracts. As per the available estimates, hundreds of trillions of dollars worth of outstanding loans and financial contracts world-wide are linked to LIBOR. The LIBOR had been under the scrutiny of analysts and researchers even before the scandal broke out. The questions surrounding it intensified after the Wall Street Journal published an article on April 16, 2008 alleging that several global banks might have understated their borrowing costs while submitting quotes for LIBOR setting. The public authorities in different jurisdictions including the United Kingdom, United States, Canada, Japan, Switzerland and the European Union have been investigating a number of institutions since 2009 for alleged misconduct relating to LIBOR and other major benchmarks, including EURIBOR (Euro Interbank Offered Rate) and TIBOR (Tokyo Interbank Offered Rate).

2.3. On June 27, 2012, the Financial Services Authority (FSA) of UK notified[1] that Barclays Bank had admitted to have made inappropriate submissions towards US dollar LIBOR and EURIBOR on numerous occasions driven by motives such as, requests by derivatives traders who sought to benefit to the detriment of other market participants, avoiding negative media comment about its liquidity position which were facilitated, in part, by lack of effective

[1] FSA's Notice to Barclays, June 27, 2012

controls within the bank, etc. The authorities in US and UK have fined several banks and brokerage firms for manipulation of benchmark interest rates. More than a dozen banks and brokerage firms are being investigated, at the moment, by regulators and anti-trust watchdogs worldwide for manipulation of different benchmark rates.

2.4. Following the LIBOR scandal, another sensational scandal of similar proportion broke out in the form of Forex Market scandal. It essentially involved the rigging of WM/Reuters 4PM London fixing rates which is a widely used forex benchmark. It has been alleged that some banks had been front-running client orders in order to manipulate the WM/Reuters fixings by pushing through the trades before and during the 60-second windows in collusion with counterparts. As per the available reports, several foreign exchange traders at various global banks in London, New York and Tokyo have been suspended as a consequence of regulatory and internal inquiries into possible attempted manipulation of various foreign exchange benchmarks. Regulators in UK, Switzerland, the US and some other countries are investigating several banks on the subject.

2.5. Following the FSA's June 2012 announcement of findings against Barclays, the British Government appointed Martin Wheatley, the then Managing Director of the FSA and Chief Executive-designate of the Financial Conduct Authority (FCA), to conduct an independent review of the various aspects of setting and usage of LIBOR. The final report was published in September 2012. The Review arrived at three fundamental conclusions, viz. (i) LIBOR should be reformed rather than be replaced as moving to a new benchmark may cause financial instability, apart from litigation between parties who are holding contracts referenced to LIBOR, (ii) LIBOR submissions should be explicitly supported by transaction data, (iii) Market participants should continue to play major role in production and oversight of LIBOR with the role of the authorities being primarily to ensure integrity of the setting process.

2.6. The Wheatley Review proposed a ten-point comprehensive reform plan for LIBOR covering the regulation, institutional reform, governing rules and international co-ordination. The Review recommended that the process of submission and administration of LIBOR be classified as regulated activities under the Financial Services and Markets Act 2000 (Regulated Activities) Order 2001 and an 'Approved Persons Regime' be introduced in terms of which only individuals who can satisfy FSA with regard to complying with the "fit and proper" criteria can perform the activities that are designated as 'controlled functions'. The proposed framework provides for accountability of the individuals who perform the controlled functions. The FSA needs to be empowered to impose public censure or financial penalty and prohibit the individuals from getting involved in the regulated activities. On the

institutional reform front, the Review has recommended that the British Bankers Association (BBA) should transfer responsibility for LIBOR to a new administrator, framing operational issues such as procedure and criteria for banks to become member of LIBOR panel, oversight etc. On the governing rules, the Review has recommended that the new administrator should introduce a Code of Conduct for submitters providing clear guidelines for explicit use of transaction data for determination of submissions, systems and controls, responsibility for maintenance of transaction records by submitting banks, and regular external audit of submitters. The recommendations for immediate improvements to LIBOR include reduction in existing number of currencies and tenors for which there are insufficient transaction data to support submission, delayed dissemination of individual submissions after three months mainly to avoid inferences on credit quality of the Submitter, expanding the contributor panel size, regulatory mandate to expand the panel size, if necessary; and developing robust contingency procedures. The Review envisages international coordination with the European and international community on the long-term future of LIBOR and other global benchmarks, as also for establishing and promoting clear principles for effective global benchmarks.The Review also analyses various features of the main alternatives of LIBOR and feels that though exploring an alternative for LIBOR is favoured, the choice of alternative should be market-led. The Review discusses moving to a transaction-based model and committed-quote model for determination of LIBOR and concludes that it may not be a viable option in the short-term but can be considered in the longer-term when the unsecured interbank lending market revives.

2.7. Several international standard setting bodies, national regulators, and central banks have also come up with guiding principles and suggestions to improve the setting methodology, Governance Framework and oversight of financial benchmarks. The BIS formed a working group chaired by Hiroshi Nakaso, Chairman of its Markets Committee, comprising experts and senior officials from select central banks to review the role of reference interest rates from a central bank perspective, implications of reference rate choice, design and use for financial stability and the conduct of monetary policy. The report of the group was published in March 2013. The Report discusses concerns regarding the potential inaccuracy or manipulation of Benchmarks and identifies Benchmark-related policy issues. While mentioning that the choice of reference rate should be left to private sector participants, the Group opined that the official sector has to play a critical role in developing effective principles and governance framework for the reference rates. If the central banks' assessment is that various market or regulatory impediments prevent the private sector participants from adopting reference rates which are economically appropriate for their jurisdictions, the

authorities should take necessary steps to remove the impediments and encourage smooth transition. On the benchmark setting process, the Group recommended for promotion of sound benchmark setting processes based on increased use of transaction data in combination with appropriate use of expert judgment in a transparent way, where appropriate, and introduction of robust fallback procedures. The Group also recommended that the central banks should work cooperatively with concerned domestic regulators and authorities for strengthening governance framework of the reference rate setting and provide necessary guidance to the market participants for using the reference rates that are reliable and robust. The report has also emphasized the need for improving transparency by disclosing the transaction volume and price in public domain.

2.8. The ESMA-EBA (European Securities and Markets Authority-European Banking Authority) have jointly come out with Principles for benchmark setting processes in the European Union (EU) which was published in June 2013. The Principles seek to address the problems in the area of benchmarks in the period until a potential formal regulatory and supervisory framework for benchmarks has been put in place for the EU. Although the provisions are without binding legal effect, they provide benchmark users, benchmark administrators, benchmark calculation agents and publishers and firms involved in benchmark data submissions, a common framework to work together and provide a transition path towards potential future legal obligations. On the benchmark setting methodology, the Principles suggest that the calculation of a benchmark should be documented and subjected to regular scrutiny and controls to verify their reliability. The data used to construct a benchmark should be anchored in observable transactions, where appropriate. The administrators may rely on non-transactional data such as offers and bids and adjustments based on expert judgment for constructing a Benchmark subject to such data being used only as an adjunct or supplement to transactional data. The Principles provide for well-defined criteria and procedures for selection of members of the governance and compliance functions. The Principles suggest that benchmark should be transparently disclosed to the public with fair and open access to the rules governing its establishment and operation, calculation, and publication. The details of the methodology along with historical records should be placed in the public domain wherever possible, and if this is not possible due to contractual provisions, the relevant information such as weights and prices of components should be disclosed to the public before any change is undertaken in the composition of the Benchmark with sufficient notice period.

2.9. The International Organization of Securities Commissions (IOSCO) published its final report on Principles for Financial Benchmarks in July 2013. The Report prescribes 19

principles covering benchmark governance, quality of benchmark, quality of methodology, and accountability. The Report prescribes that the Benchmark Administrators should publicly disclose their compliance with the Principles within twelve months of the publication of this report, i.e. by July 2014. The Principles do not provide for a one-size-fits-all method of implementation, rather it provides flexibility for application of the Principles in proportion to the size and risks posed by each benchmark and/or administrator and the overall benchmark setting process. On the benchmark governance, the Principles call for the benchmark administrators to hold primary responsibility for all aspects of benchmark setting process and put in place credible and transparent governance, oversight and accountability procedures. On the quality of benchmark determination, the Principles recommend that a variety of data may be used appropriately to determine the benchmark subject to same satisfies the principles of data sufficiency. The benchmark construction should be based on prices, rates, indices or values supported by actual transactions in a well functioning market executed at arm's length between buyers and sellers. However, the Principles do not preclude the use of executable bids or offers as long as these are available in a well functioning market consisting of genuine transactions carried out at arm's length. The Principles also do not preclude the use of non-transactional data for indices where the nature of the index supports use of non-transactional data, e.g. certain volatility indices. The Principles call for formulation of guidelines on hierarchy of data inputs and use of expert judgment. Further, while ensuring data sufficiency and transparency of benchmark determinations, the administrator also has to periodically review the conditions in the underlying market interest in all its dimensions that the benchmark measures so as to determine any structural changes in the underlying market interest that might require changes to the design of the methodology. On the quality of methodology, the Principles support publication of the benchmark construction methodology and stipulate that the administrators should have clear policies in place to transit to a new benchmark in case a benchmark ceases to exist. Recognizing the vulnerabilities in the submission process, the Principles prescribe formulation of Submitter's Code of Conduct outlining the systems and procedures to be followed in submissions. On accountability, the Principles recommends complaints procedures, independent external audit and maintenance of audit trails for verifying compliance with the quality standards prescribed in the IOSCO's Principles and own policies.

2.10. The G-20 has assigned the Financial Stability Board (FSB) the responsibility to promote consistency in assessments of the financial benchmarks and to ensure that a coordinated approach is followed by the national/regional authorities in this mission. The G-20's February 2013 Declaration reads as:

"We also expect more progress on measures to improve the oversight and governance frameworks for financial benchmarks coordinated under the current FSB agenda this year, including the promotion of widespread adoption of principles and good practices and ask for reporting to our Leaders at the St Petersburg Summit."

2.11. The FSB has established a high-level Official Sector Steering Group (OSSG)[2] of regulators and central banks which is responsible for coordinating and maintaining the consistency of reviews of existing interest rate benchmarks and guiding the work of the Market Participants Group (MPG) which is tasked with studying the feasibility and viability of adopting additional reference rates and the potential transition issues involved therein. The FSB asked the OSSG to review the standards and principles used in sound benchmarks developed by various standard setting bodies and to recommend whether adoption or endorsement of a single consolidated set of principles for financial benchmarks would be desirable. Based on the recommendation of the OSSG, the FSB has endorsed the IOSCO Principles for Financial Benchmarks published in July 2013. The OSSG's future work plan includes undertaking an assessment of the governance and processes relating to the most widely used interest rate benchmarks against IOSCO Principles and reporting the outcome of these assessments to the FSB by June 2014. The OSSG will also assess the feasibility and viability of the proposals to be made by the MPG with regard to alternative benchmark rates and the strategies for transition to the new benchmark rates. The MPG has been asked to submit its final report to the OSSG by mid-March 2014 and the OSSG in turn will provide its analysis and recommendations to the FSB by June 2014.

2.12. Several countries have adopted measures to reform the benchmark setting process in many major financial benchmarks. The UK Government accepted all the recommendations of Wheatley Review in October 2012 and started implementing them since then. The Hogg Tendering Advisory Committee was constituted by the Government to oversee the reform process and to recommend new set of institutions for the regulation and administration of activities related to LIBOR. For an interim period, the BBA was asked to continue to support the ongoing collection, calculation and dissemination of LIBOR rates. Since April 2, 2013, BBA LIBOR Limited is being authorised and regulated by the FCA as a specified benchmark administrator. The LIBOR became a regulated activity under FSMA (Financial Services and Markets Act 2000) from April 2, 2013[3]. Under the new regulatory regime, the Administrators and Submitters are subject to the regulatory requirements to strengthen their Governance

[2] FSB's Press Release on financial benchmark reform, August 29, 2013

[3]The FSMA (Regulated Activities) (Amendment) Order 2013 and FSA (Misleading Statements and Impressions) Order 2013

Framework and internal controls. The persons found guilty of LIBOR manipulation will be subject to criminal sanctions.

2.13. Pursuant to the Wheatley Committee's recommendation for reducing the number of currencies and tenors for which LIBOR is published, the LIBOR on Danish Krone, Swedish Krona, Canadian Dollar, Australian Dollar and New Zealand Dollar have been phased out and the benchmark tenors have been reduced from 15 to seven. As a result, the LIBOR is currently available for five currencies and seven maturities in place of earlier system of 10 currencies and 15 maturities. In line with the recommendations set out in the Wheatley Review, the publication of BBA LIBOR individual panel banks' daily submissions for USD, EUR, GBP, CHF and JPY, across all tenors, was embargoed for three months with effect from July 1 2013.[4] The BBA LIBOR Ltd. has since published an interim Code of Conduct and Whistleblowing Policy. The Whistleblowing Policy[5] for LIBOR is designed to provide guidance to all those who work with BBA Libor Ltd and/or are interested persons who intend to disclose concerns about perceived irregularities in conduct relating to the administration of LIBOR and/or LIBOR submissions in good faith and in reasonable belief that the information indicates malpractice and to raise those concerns in confidence and on an anonymous basis, without fear of victimisation or harassment. On July 9, 2013[6], the Hogg Committee announced that the BBA has accepted its recommendation that NYSE Euronext should be the new LIBOR administrator. The NYSE Euronext was subsequently acquired by the Intercontinental Exchange (ICE). The BBA LIBOR Ltd handed over the administration of LIBOR to ICE Benchmark Administration Ltd on February 01, 2014[7] after due approval of the FCA.

2.14. Based on the joint-review, the EBA and ESMA had observed several deficiencies in the determination of Euribor and recommended various reform measures[8] in January 2013 to strengthen the Euribor setting process. The major recommendations included broadening Euribor Steering Committee, representation of panel banks in the Steering Committee to be kept to a minority, declaration of conflicts of interest to be made public, fixations to be limited to tenors with highest use and the illiquid tenors to be phased out, definition of the benchmark to be adjusted to provide more clarity, improvement in code of conduct especially to address conflicts of interest, benchmark to be subjected to internal and external audit and preservation of records of all submissions. In response, Euribor-EBF (European Banking

[4] BBALL's Press Release on LIBOR rate embargo, June 12, 2013
[5] BBALL's Press Release on whistleblowing policy, July 08, 2013
[6] UK Government's Press Notice on new LIBOR administrator, July 09, 2013
[7] BBALL's Press Release on handover of administration of LIBOR to ICE Benchmark Administration, January 17, 2014
[8] ESMA-EBA's recommendations on EURIBOR, January 11, 2013

Federation) has changed the composition of the Euribor Steering Committee by reducing the number of members from panel banks to minority and including members from other classes of stakeholders. It has notified the new Code of Conduct setting out the rights and obligations of Steering Committee, Conflicts of interest policy, accountability procedures, record keeping requirements, obligations of calculation agents and providing clarifications on the definition of Euribor. Effective from November 1, 2013, the number of Euribor maturities has been reduced from 15 tenors to eight tenors.

2.15. The European Commission (EC) proposed draft legislation in September 2013 to help restore confidence in the integrity of benchmarks[9]. The proposed regulation has four main objectives that aim to improve the framework under which benchmarks are provided, contributed to and used, viz. (i) improvement of the governance and control over the benchmark construction process and to ensure that conflicts of interest with the Administrator are avoided, or at least adequately managed, (ii) improvement of the quality of the input data and methodologies used for benchmark construction and to ensure that sufficient and accurate data is used in construction of benchmark rates, (iii) to ensure that benchmark submitters are subject to adequate controls so as to avoid conflicts of interest and that their contributions to benchmarks are subject to adequate controls. Wherever necessary, the concerned authority should have adequate power to mandate contributors to continue their contributions to the benchmark construction; and (iv) to provide adequate protection for consumers and investors who use the benchmarks by improving transparency of the benchmark, ensuring adequate rights of redress and ensuring that suitability is assessed where necessary. Central banks that are members of the European System of Central Banks are excluded from the scope as they already have systems in place that ensure compliance with the objectives of this draft regulation.

2.16. The Japanese Bankers Association (JBA) had appointed a Working Committee in April 2013 to suggest specific measures to enhance the credibility of the Tokyo Interbank Offered Rate (TIBOR)[10]. The interim report of the Committee was published in July 2013 and the final report was released in December 2013. Based on the recommendations of the Committee, the JBA had announced that it will form a new legal entity for TIBOR calculation and publication and establish a Code of Conduct to be followed by the reference banks which would be annually assessed for compliance. The Committee has also clarified the definition of TIBOR. The JBA has announced reduction in the number of tenors for the JPY TIBOR and Euroyen TIBOR from the existing 13 tenors to six tenors which will be

[9] EC's Press Release on measures to restore confidence, September 18, 2013
[10] JBA's Press Release on enhancing credibility of TIBOR, July 05, 2013

effective from April 1, 2015.[11]. The JBA has also announced[12] the "JBA TIBOR Code of Conduct" which will replace the current "JBA TIBOR Publication Rules". The Code of Conduct sets forth rules to be adhered to by the Submitters for ensuring compliance with the IOSCO's Principles for Financial Benchmarks.

2.17. The Hong Kong Association of Banks (HKAB) commissioned the Treasury Markets Association (TMA) to conduct a review of Hong Kong Interbank Offered Rate (HIBOR) in July 2012[13]. Based on the report submitted by the TMA in November 2012, the Hong Kong Monetary Authority (HKMA) had decided to review the composition of the panel once every year instead of every two years, phase out HIBOR fixings with less market demand and to transfer the administrator function of the HIBOR fixing process from HKAB to TMA. The HKMA had also announced several supervisory measures to be implemented forthwith for enhancing the robustness of the revised HIBOR fixing mechanism, viz. (i) HKMA will issue guidelines under Section 7 of the Banking Ordinance with regard to compliance to the Rate Submission Guidance and Code of Conduct to be developed by the TMA, (ii) The guidelines will make the in-charges of the treasury, risk management and compliance functions accountable for the concerned bank's rate submission activities, (iii) HKMA will exercise powers under the Banking Ordinance to ensure that there is a sufficient number of reference banks participating in the HIBOR fixing process to enhance the representativeness of the benchmark rate, if voluntary basis of participation is not yielding the desired results. The HKMA has also advised the HKAB and TMA to form a joint working group for implementation of various HIBOR enhancement measures. Subsequently, the HKMA announced a statutory guideline on Code of Conduct for Benchmark Submitters.[14] The Code lays down the systems of control that the reference banks of HIBOR have to put in place. It also provides comprehensive guidance on the rate corroboration process. The HKMA expects the reference banks to take steps to comply with the provisions of the Code so that full compliance to the Code can be achieved within six months from the notification date. The Code is intended to be of generic application to the Benchmark Submitters, although the application will be confined to reference banks of HIBOR currently. On June 7, 2013, the HKAB announced that it will cease to calculate and publish HIBOR for 7 different tenors with effect from April 01, 2014[15].

2.18. The Monetary Authority of Singapore (MAS), based on its review of the processes relating to banks' benchmark submissions, has taken a range of supervisory actions against

[11] JBA's Report on Review of JBA TIBOR Administration, December 27, 2013
[12] JBA's Press Release on JBA TIBOR Code of Conduct, December 27, 2013
[13] HKMA's Press Release on measures to strengthen the HIBOR fixing, February 06, 2013
[14] HKMA's Press Releases on Code of Conduct, April 29, 2013 and August 20, 2013
[15] HKAB's Press Release on phasing out some HIBOR fixings, June 07, 2013

banks for deficiencies in the governance, risk management, internal controls, and surveillance systems relating to benchmark submissions. The MAS announced the proposed regulatory framework for financial benchmarks on June 14, 2013. The proposed regulatory framework has two key thrusts. First, the MAS will introduce specific criminal and civil sanctions under the Securities and Futures Act (SFA) for manipulation of any financial benchmark. This will cover all financial benchmarks including SGD SIBOR, SGD SOR, and FX Benchmarks. Second, the setting of key financial benchmarks will be subjected to regulatory oversight. The MAS will have the powers under the SFA to designate key benchmarks based on considerations such as the systemic importance of a benchmark and an assessment of its susceptibility to manipulation. The MAS has proposed to designate the SGD SIBOR, SGD SOR and FX Benchmarks as key benchmarks currently administered by the Association of Banks in Singapore (ABS). The MAS has also proposed to introduce a system of licensing for the submitters and administrator of key benchmarks and bring them under its regulation. Several ongoing requirements have been proposed for the Benchmark Administrators which include robust governance arrangements, identification and mitigation of actual/potential conflict of interest, development of Code of Conduct, surveillance of benchmark submissions, formation of oversight committee that would be responsible for overseeing the benchmark administration process, annual review of the Administrator's adherence to its state policies and procedures by independent external auditors, storage of records for at least five years, putting in place policies and procedures for addressing transition issues, etc. Several ongoing requirements have also been proposed for the Benchmark Submitters which include compliance to the criteria set by the administrator, abiding by the code of conduct prescribed by the administrator, bringing the process of submissions under the scope of external audit, etc. It is also proposed that in case the number of Benchmark Submitters is lower than required quorum then MAS may compel entities to become Submitters to designated benchmarks.

2.19**.** The Association of Banks in Singapore (ABS) together with the Singapore Foreign Exchange Market Committee (SFEMC) has reviewed all the 11 benchmarks under its administration and has proposed several changes in their media release on June 14, 2013[16]. They have proposed discontinuation of certain less liquid benchmarks, viz. THB SOR, IDR SOR, VND Spot FX, USD SIBOR, SGD IRS and certain maturities of SGD SOR and SGD SIBOR. It has proposed transition of certain surveyed benchmarks, importantly the SGD SOR and SGD Spot FX, to rates based on the volume weighted average price of the actual interbank transactions that are routed electronically and captured through approved brokers.

[16] ABS-SFEMC media release, June 14, 2013

They have proposed to retain the survey based method for SGD SIBOR with improved governance for submitters and the submission process. Since then, six benchmarks have been discontinued due to low usage and market demand. Further, four benchmarks, viz. USD/VND spot rate, SGD IRS rate, THB SOR rate and IDR SOR rate were discontinued after July 12, 2013 and in two other benchmarks, viz. SGD SIBOR and SGD SOR, certain tenors were discontinued. The MYR Spot FX was replaced by the onshore MYR spot FX rate after August 5, 2013 and USD SIBOR was replaced with USD LIBOR after December 31, 2013. ABS and SFEMC have also announced setting up of a new entity, ABS Benchmarks Administration Co. Pte Ltd, to carry out benchmark administration.

2.20. The Australian Financial Markets Association (AFMA) conducted a comprehensive review of the Australia's Bank Bill Swap (BBSW) benchmark rate. Based on the review, the AFMA has announced its decision to transit the BBSW benchmark rate from the existing submission-based mechanism to a system that collects tradable bids and offers directly from multiple market venues. The AFMA now collects three samples of the prevailing bids and offers for all specified tenors from all approved venues (including brokers with electronic screens and electronic OTC venues) at 9:59 AM, 10:00 AM and 10:01 AM. The best bid/ offer from the range of bids/ offers collected from the approved venues are determined as the National Best Bid/ Offer for that sample. The midpoint of the average National Best Bid and the average National Best Offer for each tenor are published.[17]

2.21. The reform measures proposed by various national regulators, central banks and international standard setting bodies are being implemented across various jurisdictions with great sense of urgency. The key principles for reform of financial benchmarks that have been accepted across jurisdictions and discussed in the previous paragraphs may be summarised as under.

- Benchmark administrators have to hold primary responsibility for all aspects of benchmark determination process.
- The determination of financial benchmarks should be, as far as possible, based on observable transactions executed in a well functioning market.
- The benchmarks and benchmark tenors should be rationalised as per their extent of usage subject to them reliably representing the interest that the benchmark intends to measure.
- Appropriate policies and procedures should be put in place for addressing transition issues for the legacy contracts.

[17] AFMA's BBSW General Conventions, October 2013 and 2013 Australian Financial Markets Report

- The Benchmark Administrators should lay down Code of Conduct for the Submitters and institute appropriate oversight to monitor compliance by the Submitters.
- The Benchmark Submitters should have well defined hierarchy of inputs to support their submissions. The individual submissions should be disclosed in the public domain after a suitable lag.
- The benchmark setting methodology should be documented and transparently disclosed to the public.
- The Governance Framework should be robust enough to avoid conflicts of interests and if not fully avoided, the conflicts of interests should be efficiently managed.
- The Benchmark setting process should be subjected to independent external audit and regulatory oversight.
- Stringent penal provisions should be in place to curb manipulative practices.
- There should be effective whistleblowing policy in place for reporting of perceived irregularities in submission and calculation of benchmarks.

2.22. As mentioned earlier, the FSB, working on the mandate of G-20, has endorsed the IOSCO Principles for Financial Benchmarks. The Benchmark Administrators are required to disclose their compliance with the Principles by July 2014. The IOSCO expects the member countries to encourage implementation of the Principles including through regulatory actions wherever appropriate. The IOSCO intends to review within an 18-month period from the publication of the Report, i.e. by January 2015, the extent to which the Principles have been implemented by obtaining the inputs from Stakeholders, Market Authorities and, as appropriate, Benchmark Administrators. In this backdrop, this Committee has been primarily guided by the IOSCO Principles for reviewing the major Indian financial benchmarks. The Chapter 2 of the IOSCO Report providing Summary of the Principles is provided in the Annex.

CHAPTER 3

OVERVIEW OF INDIAN FINANCIAL BENCHMARKS

3.1. As mentioned in Chapter 1, the Committee's scope of study is restricted to the major[18] Indian foreign exchange and Rupee interest rate benchmarks primarily used by the banking sector. The base rate and other proprietary rates of individual banks are not covered under Committee's scope of study as these rates are institution specific and are not used in the financial market transactions involving banks/other financial intermediaries. The Indian foreign exchange and Rupee interest rate benchmarks are used by the banking sector mainly for two purposes, i.e. (i) pricing and settlement of foreign exchange and Rupee interest rate contracts, (ii) periodic valuation of various foreign exchange and Rupee interest rate related assets and liabilities. The major foreign exchange and interest rate benchmarks currently in use by the banking sector are listed below.

A. Rupee Interest Rate Benchmarks

i) FIMMDA-NSE Mumbai Interbank Bid Rate (MIBID) and Offer Rate (MIBOR)
ii) FIMMDA-Thomson Reuters Mumbai Interbank Forward Offered Rate (MIFOR)
iii) Thomson Reuters Indian Benchmark Yield Curve (INBMK)
iv) FIMMDA-Thomson Reuters Mumbai Interbank Overnight Indexed Swaps (MIOIS)
v) FIMMDA-Thomson Reuters Mumbai Interbank Offered Currency Swaps (MIOCS)
vi) FIMMDA-PDAI G-Sec Yield Curve
vii) FIMMDA- PDAI Spread for GOI Floating Rate Bonds
viii) FIMMDA- PDAI Prices for State Development Loans
ix) FIIMDA- PDAI Prices for Corporate Bonds
x) FIMMDA-Thomson Reuters T-Bill Curve
xi) FIMMDA-Thomson Reuters CP Curve
xii) Thomson Reuters CD Curve

B. Foreign Exchange Benchmarks

i) RBI Reference rates
ii) FEDAI Spot Fixing Rates
iii) FEDAI FCNR(B) Benchmark Rates
iv) FEDAI Month end Revaluation Rate – Foreign Exchange Contracts
v) FEDAI USD-INR Option Volatility

[18] the benchmarks which are/were extensively used in India for pricing/settlement or valuation of transactions involving Rupee interest rate and foreign exchange rate

Brief overview of the Benchmarks

A. Rupee Interest Rate Benchmarks

3.2. FIMMDA-NSE MIBID-MIBOR

- The NSE had introduced the MIBID-MIBOR for the overnight tenor on June 15, 1998. Thereafter, it introduced the 14-day MIBID-MIBOR on November 10, 1998 and the 1-month and 3-month MIBID-MIBOR on December 1, 1998. It also introduced a 3-day MIBID-MIBOR on all Fridays with effect from June 6, 2008 in addition to the existing overnight MIBID-MIBOR. FIMMDA became a partner to NSE in co-branding the dissemination of MIBID-MIBOR rates for the overnight and term segments on March 4, 2002 and the product thereafter was rechristened as FIMMDA-NSE MIBID/MIBOR.

- The MIBID-MIBOR rates are published by the NSE at 9:55 AM for overnight rates (3 day on all Fridays) and at 12:15 PM for the three term rates, viz. 14-day, 1-month and 3-month. The benchmark is computed through a polling process conducted by the NSE. Of the above tenors, the overnight MIBOR is the most widely used one which is used for pricing and settlement of Overnight Index Swaps (OIS). The OIS is actively traded by the banks and primary dealers with average daily trading volume (notional principal) of INR 105.7 billion during the period from May to October 2013. Corporates use the OIS for hedging their interest rate risks. The aggregate amount of outstanding interbank/PD notional principal referenced to MIBOR remained at INR 16,847.6 billion as on October 31, 2013[19].

3.3. FIMMDA-Thomson Reuters MIFOR

- MIFOR is a synthetic term Rupee rate derived from the USD LIBOR and USD/INR forward premium. The MIFOR evolved in the market towards the end of 1990s. Subsequently, there was a rapid growth in the outstanding volume of IRS contracts referenced to MIFOR entered into by the banks. Keeping in view the risks involved in using LIBOR as a benchmark and the increased liquidity in the domestic money market instruments over the period since introduction of IRS in July 1999, RBI issued a directive on May 20, 2005 advising the market participants to use only domestic rupee benchmarks for interest rate derivatives. Market makers were, however, given a transition period of six months for using MIFOR as a benchmark, subject to review.

[19] Source: CCIL

Subsequently on request from FIMMDA, RBI allowed the market makers to use MIFOR swaps in respect of transactions having underlying permissible forex exposure, subject to limits prescribed by the RBI.

- Thomson Reuters publishes the benchmark rates at 5 PM (after LIBOR gets updated) on every working day for five tenors i.e. 1 month, 2 month, 3 month, 6 months and 1 year, based on polled quotes. The MIFOR fixing is used for pricing and settlement of IRS transactions referenced to MIFOR. Trading in MIFOR swaps is permitted only for Authorised Dealer (AD) Banks. The banks providing currency swaps to corporates/ financial institutions for hedging their long term foreign currency borrowings use MIFOR swaps to price the currency swaps and cover their positions. The MIFOR is also used by banks for pricing of long-term forex forwards in the absence of liquid markets in the above instruments beyond 1 year. The average daily trading volume (notional principal) of IRS referenced to MIFOR during the period from May to October 2013 remained at INR 3.1 billion and the aggregate amount of outstanding interbank notional principal remained at INR 2,819.9 billion as on October 31, 2013[20].

3.4. Thomson Reuters Indian Benchmark Yield Curve (INBMK)

The INBMK comprises fixings for the yields of the central government securities for 20 fixed tenors ranging from 3 month T-Bill to 30 year dated security. The benchmark rates are published by Thomson Reuters at 12:30 PM and 5:10 PM based on quotes collected through polling. The daily INBMK fixings are used for pricing and settlement of INBMK swaps. Banks and financial institutions are the participants in the INBMK swaps. As per the data reported to CCIL, there has been no trading in the INBMK swaps since September 26, 2012. The aggregate amount of outstanding interbank/PD notional principal remained at INR 233.9 billion as on October 31, 2013[21].

3.5. FIMMDA- Thomson Reuters MIOIS

The MIOIS comprises fixings for OIS rates for 11 tenors ranging from 1-month to 10-year. Thomson Reuters publishes the benchmark rates at 5:10 PM based on polled quotes. The daily MIOIS fixings are used for pricing and settlement of MIOIS swaps. It is understood that some market participants use MIOIS fixings for valuation of

[20] Source: CCIL
[21] Source: CCIL

outstanding OIS contracts. As per the data reported to CCIL, there has been no trading in the MIOIS since March 23, 2011. There is one interbank/PD contract referenced to MIOIS for INR 154 million outstanding as on October 31, 2013[22].

3.6. FIMMDA- Thomson Reuters MIOCS

The MIOCS comprises fixings for MIFOR rates for five tenors ranging from 2 years to 10 years. Thomson Reuters publishes the benchmark rates at 5:10 PM based on polled quotes. It is understood that some banks use the fixings for valuation of their outstanding MIFOR contracts. As mentioned at para 3.3, the aggregate amount of outstanding interbank MIFOR swaps (notional principal) remained at INR 2,819.9 billion as on October 31, 2013.

3.7. FIMMDA-PDAI Government Securities (G-Sec) Yield Curve

FIMMDA, PDAI G-Sec Yield Curve is published by FIMMDA after market hours on every working day. The benchmark curve is derived using the Cubic Spline methodology based on the secondary market transactions in the central government securities wherever they have met the pre-defined threshold volume and number of trade criteria. FIMMDA uses the Yield Curve to arrive at the day-end as well as month-end valuation prices for the outstanding central government securities. The month-end valuation prices are used by the banks for valuation of central government securities held in the 'Held for Trading' (HFT) and 'Available for Sale' (AFS) portfolios. The banks and PDs which undertake short sale transactions use the day-end valuation prices to mark-to-market their entire HFT portfolio, including the short positions. The Yield Curve is also used along with applicable spreads for valuation of SDLs and Corporate Bonds. The secondary market in the central government securities is moderately liquid with average daily trading volume of about INR 414.4 billion during the period from May to October 2013 as against the total outstanding dated securities of INR 33,316.3 billion as on October 31, 2013[23]. The banks, insurance companies and primary dealers are the major players in the market.

3.8. FIMMDA-PDAI Spread for GOI Floating Rate Bonds (FRBs)

The FIMMDA Spread for FRBs is used as mark-up over the benchmark T-Bill rate for arriving at the valuation prices of the FRBs which are published by FIMMDA every day after market closure as well as at the end of the month. FIMMDA computes

[22] Source: CCIL
[23] Source: CCIL

the spread based on actual transaction data or the executable bids/offers subject to the same having met the threshold criteria. Otherwise, FIMMDA uses the spread arrived through polling to determine the applicable spread. The total outstanding amount of GOI FRBs stood at INR 393.5 billion as on October 31, 2013[24].

3.9. FIMMDA-PDAI Prices for State Development Loans (SDLs)

FIMMDA publishes the day-end as well as month-end prices for valuation of SDLs. The last traded price in an SDL is taken as valuation price only if the total volume of trades in the SDL during the day is for INR 50 million and above. In the absence of required volume of trades, FIMMDA adds a spread of 25 basis points (bps) to the corresponding par yields to derive the valuation price for SDLs as per the guidelines issued by RBI in April 2000[25] based on the then prevailing spread of SDLs over the central government securities of corresponding maturities. The SDLs are very thinly traded in the secondary market with average daily trading volume of INR 6.18 billion during the period from May to October 2013 as against total outstanding amount of SDLs of INR 9,545.03 billion as on October 31, 2013[26]. The banks, insurance companies and primary dealers are the major participants in the market.

3.10. FIMMDA-PDAI Prices for Corporate Bonds

FIMMDA publishes the valuation prices for bonds issued by coporates, banks, PSUs and NBFCs based on actual trades subject to threshold. In the absence of required volume of trades, the spread matrix published by FIMMDA is used to arrive at the valuation prices of the bonds of different residual maturities by adding the spread corresponding to the rating and residual tenor of the bond to the yield of the Central Government securities of corresponding maturities. FIMMDA publishes the spread matrix at every month end for four different types of issuers, viz. Banks, PSUs and FIs, NBFCs and Corporates, covering both coupon bearing as well as zero coupon bonds for different tenors and different rating categories. The matrix covers ten rating categories from AAA to BBB-. The spread for 15 year tenor is used for all the bonds with residual maturity of 15 years and above. The corporate bond market in India had registered an average daily trading volume of INR 45.8 billion during the period from April to September 2013 with total outstanding issuances of INR 13,575 billion as on

[24] Source: RBI
[25] RBI Circular – BP.BC.163/21.04.048/2000, April 7, 2000
[26] Source: CCIL

September 30, 2013[27]. Banks, mutual funds, pension funds, and insurance companies are the major participants in the market.

3.11. FIMMDA-Thomson Reuters Treasury Bill (T-Bill) Curve

FIMMDA T-Bill Curve is computed and published on every working day by Thomson Reuters based on the data sourced through polling of a panel of market participants. The Curve is used to arrive at valuation prices for outstanding T-Bills. However, the Banks generally do not use the T-Bill Curve as they are required to value the T-Bills at carrying cost. The total outstanding amount of T-Bills stood at INR 4,333.2 billion as on October 31, 2013[28].

3.12. FIMMDA-Thomson Reuters Commercial Paper (CP) Curve

The CP Curve is computed and published on every working day by the Thomson Reuters based on the quotes collected through polling. The curve is used to arrive at the valuation prices of outstanding CPs. The banks generally do not use the benchmark Curve as they are required to value the CPs at carrying cost. The total outstanding amount of CP was at INR 1,574.5 billion as on October 31, 2013[29]. The mutual funds and banks are the major investors in CPs.

3.13. Thomson Reuters Certificates of Deposit (CD) Curve

The CD Curve is computed and published on every working day by the Thomson Reuters based on the quotes collected through polling. The curve is used to arrive at the valuation prices of outstanding CDs. The banks generally do not use the Curve as they are required to value the CDs at carrying cost. The total outstanding amount of CDs remained at INR 3,361.8 billion as on November 1, 2013[30].

B. Foreign Exchange Benchmarks

3.14. RBI Reference rates

RBI publishes Reference rates for USD/INR and EUR/INR at about 12:30 PM daily. The rates are arrived at based on the quotes polled during a randomly selected five minutes window between 11:45 AM and 12:15 PM from a set of banks selected randomly from a large panel of banks. RBI also publishes the rates for GBP/INR and JPY/INR by crossing the Reference rate for USD/INR with the middle rates of the

[27] Source: SEBI
[28] Source: RBI, Weekly Statistical Supplement, November 8, 2013
[29] Source: RBI, Weekly Statistical Supplement, December 6, 2013
[30] Source: RBI, Weekly Statistical Supplement, December 13, 2013

ruling GBP/USD and USD/JPY exchange rates respectively. The RBI Reference Rates are used for settlement of exchange traded currency futures and options. The average daily trading volume of the USD-INR futures and options during the period from May to October 2013 remained at USD 4.08 billion and USD 1.43 billion respectively. The aggregate open interest in the above instruments stood at USD 1.01 billion and USD 0.32 billion, respectively, as on October 31, 2013[31]. The Reference Rate is reportedly used by many corporates for determining transfer pricing. The foreign exchange transactions of GOI undertaken through RBI take place at the Reference Rate. The RBI's foreign currency assets and liabilities are revalued at weekly and monthly intervals using the Reference Rate. The IMF also uses the rate for revaluation of SDRs.

3.15. FEDAI Spot Fixing Rates

FEDAI publishes spot fixing rates for USD, GBP, EUR and JPY against INR at 11:40 AM - 12 noon on every working day based on quotes collected through polling. It is understood that the FEDAI spot fixings are used for cash settlement of exercise of OTC FCY-INR options primarily by some corporates. As per the data available with the OTC derivative trade repository at CCIL, the average daily interbank trading volume of OTC FCY-INR options remained at USD 97.85 million during the period from May to October 2013[32].

3.16. FEDAI FCNR (B) Benchmark Rates

The interest rate ceilings in FCNR (B) deposits are prescribed in terms of certain spread over the LIBOR/Swap rates for the respective currencies and corresponding maturities as per RBI guidelines. The FEDAI publishes the LIBOR/SWAP rates for 13 currencies and for five tenors, i.e. 1-year, 2-year, 3-year, 4-year and 5-year at every month-end. The benchmark rates are used by banks for determination of periodic interest payable on FCNR (B) deposits. The total outstanding FCNR (B) deposits remained at USD 24.7 billion as on October 31, 2013. [33]

3.17. FEDAI Month end Revaluation Rate – Foreign Exchange Contracts

FEDAI publishes revaluation rates for spot contracts (against INR) in 25 currencies and for forward contracts (against INR) upto 6 months in nine currencies and upto 12 months in four currencies. The banks use the FEDAI revaluation rates for marking to

[31] Source: NSE, MCX-SX, USE
[32] Source: CCIL
[33] Source: RBI, Monthly Bulletin, December 2013

market the outstanding spot and forward contracts in their books. As per the data available with the OTC derivative trade repository at CCIL, USD 377.6 billion of FCY-INR interbank forward contracts are outstanding as on October 31, 2013[34].

3.18. FEDAI USD-INR option Volatility

FEDAI publishes implied volatilities for USD/INR At-the-Money, 25 delta risk reversal and 25 delta butterfly options for 1-week, 1-month, 3- month, 6-month and 1-year tenors at 5 PM on every working day. The rates are arrived at based on the poll conducted by FEDAI among a panel of banks. The benchmark volatility rates are used as reference rates by banks and corporate. Banks use the benchmark volatility rates to compute delta of the option portfolio for calculating open position of the portfolio.

[34] Source: CCIL

Chapter 4

BENCHMARK QUALITY AND SETTING METHODOLOGY

4.1. The Benchmark setting process involves four major activities, i.e. Administration, Submission (for the benchmarks determined through polling process), Calculation and Publication. The Benchmark Administration involves all the processes starting from design of benchmark to determination and dissemination of benchmark and periodic review of benchmark for bringing about necessary changes to ensure that the benchmarks appropriately reflect the underlying interest. While Submission refers to contribution of rate/price by the entities empanelled by the Benchmark Administrator, the Calculation refers to determination of the benchmark based on the inputs defined by the Benchmark Administrator and using the methodology provided/approved by the Benchmark Administrator. The Publication refers to appropriate dissemination of the benchmark rate/price.

4.2. The quality of a benchmark refers to the extent to which it reflects a credible market for an interest measured by that particular benchmark. The quality of a benchmark depends on design factors, sufficiency of data used to construct the benchmark, hierarchy of data inputs, transparency of benchmark determination, and periodic review to determine whether there is any significant change in the interest necessitating changes to the design of methodology. The setting methodology is the methodology used to determine the benchmark rate. The quality of methodology depends on the content of methodology, existence of transparent system to undertake changes in the methodology and internal controls over the data collection process. The Committee's review of benchmark quality and setting methodology in respect of the Rupee interest rate benchmarks and foreign exchange benchmarks are detailed in the following paragraphs.

A. Rupee Interest Rate Benchmarks

4.3. FIMMDA-NSE MIBOR

4.3.1. The benchmark is determined by NSE. FIMMDA has co-branded the benchmark. NSE polls quotes from a select panel of 30 banks/primary dealers. The poll is conducted between 9:40 AM – 9:45 AM for the overnight MIBOR (3 days on Fridays) and between 11:30 AM – 11:40 AM for the term MIBORs (14-day, 1-month and 3-month) on all the working days. The data collected is subjected to bootstrapping, a non-parametric technique which involves trimming of the outliers followed by generation of multiple data sets with a dynamically determined number of iterations and computation of mean and standard deviation for each of

the multiple data sets. The mean corresponding to the lowest standard deviation is taken as the fixing rate for the day subject to availability of at least 14 quotes after trimming (not applied for the tenors where polled rates are less than 14). The trimming is carried out at four levels, i.e. 2, 4, 6 and 8 quotes are removed with half from the top and half from the bottom in terms of levels. The NSE has disclosed the methodology on its website. However, the methodology does not contain any contingency provision to determine the benchmark in absence of adequate number of polled submissions.

4.3.2. Issues and Recommendations

i) FIMMDA has merely co-branded the benchmark and has not assumed the administrative roles. FIMMDA is the market representative body for the fixed income, money and derivatives markets and has been discharging several market development and self regulatory roles. FIMMDA is therefore better placed to assume the administrative roles for the interest rate benchmarks. The Committee recommends that FIMMDA may be designated as the administrator of MIBID-MIBOR.

ii) The NDS-CALL platform operated by CCIL caters to the trading of Call, Notice and Term Money transactions. Although the Notice and Term Money trades are a few, the Call Money market has remained quite deep. The data published by CCIL shows more than 80 percent of the Call Money trades are executed on the NDS-CALL platform. The transparent execution and dissemination of the price and volume information of Call money transactions on NDS-CALL platform acts as an important safeguard against manipulation of polled submissions used for determination of overnight MIBID-MIBOR.

iii) CCIL independently publishes overnight MIBID and MIBOR (named as CCIL MIBID-MIBOR) twice daily at 10 AM and 1 PM based on actual transactions and executable bids/offers available on the NDS-CALL platform. The highlights of the CCIL's methodology are as follows:

   a) CCIL pulls out all the overnight (3-day on Fridays) trades and outstanding executable bids/offers from the NDS-CALL as at the time of fixing, e.g. for the 10 AM fixing, the CCIL pulls out all the trades that have taken place till 10 AM and the executable bids/offers outstanding as at 10 AM.

   b) All cancelled and indicative orders are removed. The reciprocal deals done between banks are also excluded.

c) The trades are divided into traded bids and traded offers depending on which side of the trade (bid/offer) came to the system first. The traded bids and traded offers are then added to the outstanding executable bids and offers to formulate datasets for bid (borrowing) and offer (lending) side respectively.

d) The volume weighted mean and standard deviation is calculated separately for each side.

e) Any trade and outstanding bid/offer falling outside the mean +/- 3 standard deviations are considered as outliers and removed from the data sets.

f) The volume weighted average rates for borrowing and lending side are published as CCIL MIBID and MIBOR respectively.

iv) The Committee favours shifting the determination of the overnight MIBID and MIBOR (3-day on Fridays) from the current polling based method to the actual transaction based method. There are three options to move over to transaction based method. First option is to replace the NSE MIBID and MIBOR with the existing CCIL MIBID and MIBOR. The second option is to replace the NSE MIBID and MIBOR with modified CCIL MIBID and MIBOR wherein the traded bids and offers are only considered and the outstanding executable bids and offers are excluded. The third option is to move over to a single volume weighted average traded rate based on all the Call transactions (3-day transactions on Fridays) executed between 9 AM to 10 AM without segregating them into bids and offers. The first option may not be preferred as it considers outstanding bids and offers apart from the actual transactions and is fraught with the risk of the benchmark rate being influenced by off-market outstanding bids and offers despite CCIL's pruning of outlier bids and offers. Between the second and third option, the latter is preferred as a trade reflects matching of bid and offer rates and hence, the single weighted average traded rate is the correct indicator of the prevailing market dynamics. As discussed in Chapter 2, some major benchmarks in different jurisdictions have shifted to actual traded rates or to the mid of bid and offer rates. The Wheatley Review of LIBOR at the Annex A has discussed the option of using the executed price of transactions or in absence of transactions, the mid-price of committed bids and offers. Although the option was found non-viable due to lack of sufficient transactions/quotes in the market, the Review has indicated that the option be explored in longer term as interbank term lending market revives. The Committee recommends that the existing NSE MIBID and MIBOR may be replaced by CCIL's volume weighted average traded rate

computed under the third option. The FIMMDA may decide appropriate timeline for implementing the recommendation in consultation with RBI and disclose the same in public domain. The study of transaction data sourced from CCIL for the period from May 1, 2013 to October 30, 2013 revealed that the first hour of trade in the Call money, i.e. 9am to 10am, contributed 55% and 61% of the day's trades in terms of number of trades and trading volume respectively on a daily average basis. Since the first hour of trade is the most active hour of the day, the benchmark based on the trades during this hour would embed the best representative character of the market. The study also revealed that the average daily variation between the NSE MIBOR and the CCIL's weighted average traded rate was at about 0.75 bps and that between NSE MIBID and the CCIL's weighted average traded rate was about 5 bps. There have been no interbank/PD and client IRS transaction referenced to NSE MIBID reported to CCIL and RBI respectively so far and hence, no transition issue is involved in the NSE MIBID. In case of NSE MIBOR, the variation being quite minimal as mentioned above, may not pose any problem for transition.

v) The CCIL may stop publishing the 1 PM fixing to avoid confusions for the end users. As such, the 1 PM fixing does not carry much relevance keeping in view the fact that major chunk of the call market transactions gets cleared during the morning hours.

vi) FIMMDA may change the nomenclature of the benchmark keeping in view the change in the calculation agent as well as the nature of inputs to be used for calculation. However, such a change will require amendment to the ISDA agreements for the outstanding IRS contracts referenced to NSE MIBID/MIBOR. Keeping in view the international experience in this regard, it is suggested that all banks and PDs may be mandated to enter into a multilateral agreement which includes an amendment clause specifying transition to the new benchmark. The banks holding IRS contracts referenced to NSE MIBID/MIBOR entered into with their clients may execute bilateral amendment agreements with their clients. The loans and other credit products referenced to NSE MIBID/MIBOR may require bilateral agreement between the counterparties to change the reference benchmark rate to CCIL's weighted average traded rate. FIMMDA may take necessary steps to facilitate smooth transition. FIMMDA may also educate corporates to agree to bilateral arrangements with banks by pointing out the consequences of not agreeing and the benefits of agreeing.

vii) The FIMMDA and CCIL may disclose the details of the methodology used for determination of the benchmark and put in place appropriate contingency mechanism

to construct the benchmark rates when the number and/or volume of trades fall below the specified threshold and the same may be disclosed in the public domain.

viii) NSE publishes term MIBID and MIBOR for three tenors, viz. 14-day, 1-month and 3-month. It is observed from the IRS trade data reported to CCIL that there has been no trade referenced to the above benchmarks reported to CCIL since introduction of trade reporting in August 2007. The Rupee IRS market in India predominantly uses the overnight MIBOR. The term MIBORs, unlike term LIBORs used internationally, are generally not used as benchmark rates for pricing of loans, debt instruments and derivative products in India primarily on account of lack of credibility in the benchmark rates in absence of active underlying term money market. In the absence of any meaningful utility, the term MIBORs may have to be phased out. However, in the absence of a liquid term money market, the term MIBORs currently provide some idea about the market participants' view on the term money rates. In view of their informational value, the Committee feels that daily fixation of the term MIBID and MIBOR may be continued. The 3-month MIBOR may be a potential candidate for being referenced in the Rupee IRS contracts in future when term money market develops. The term MIBID and MIBOR may continue to be determined through polling process.

ix) In terms of synergy in the work process, it would be advisable to entrust the daily fixation of term MIBID-MIBOR to CCIL as it will handle fixation of overnight benchmark rate. FIMMDA, in consultation with CCIL, may formulate the polling method and timing so as to enhance the representative character of the term MIBID-MIBOR. Appropriate contingency provisions may also be put in place to construct the benchmarks in the absence of adequate submissions. The details of benchmark setting methodology and contingency provisions may be disclosed in the public domain.

4.4. FIMMDA-Thomson Reuters MIFOR

4.4.1. Thomson Reuters determines the benchmark based on polling. FIMMDA has co-branded the benchmark. Thomson Reuters polls the rolling USD/INR forward premium levels for 1-month, 2-month, 3-month, 6-month and 1-year from six banks between 12 noon to 12:10 PM on all the working days for the rates as of 12 noon. The rates submitted for each tenor are subjected to trimming by removing the highest and the lowest submissions. The remaining rates are averaged and the average rate for each tenor is converted into annualised forward premium levels. In the event when the contributions are less than five, no trimming is carried out. The benchmark is not to be calculated when less than three contributions are

available. Thomson Reuters publishes the annualised forward premium levels around 1 PM after publication of RBI Reference Rate. The annualised forward premium levels and the LIBOR for respective tenors are used for arriving at the MIFOR rates by using the formulae: MIFOR = ((1+LIBOR * No of days/36000) * (1+USD/INR annualised forward premium in percentage* No of days/36500)-1) *36500/No of days. The Thomson Reuters has disclosed the methodology used to calculate the benchmark.

4.4.2. Issues and Recommendations:

i) FIMMDA has merely co-branded the benchmark and has not assumed the administrative roles. The Committee recommends that FIMMDA may be designated as the administrator of the benchmark.

ii) The MIFOR evolved in the market primarily as an instrument for hedging long term FCY/INR currency swaps in absence of an USD/INR basis swap market in India. The Committee feels that the banks being the market makers in MIFOR, should strive to develop a liquid interbank USD/INR basis swap market that will directly take care of their hedging requirements of long term FCY/INR currency swaps. Similarly, the banks, instead of depending on MIFOR to price long term USD/INR forwards, should endeavour to develop an active USD/INR forward market beyond 1 year.

iii) It is observed that there are only six banks participating in the MIFOR fixing. Although only few banks use MIFOR, the credibility and reliability of the benchmark needs to be enhanced through wider participation by the banks in the polling process. The Committee suggests that the benchmark administrator may encourage more banks to participate in the polling and if need be, mandate the major banks in the foreign exchange forward market to participate in the polling.

iv) The daily MIFOR fixings are published for five tenors, i.e. 1-month, 2-month, 3-month, 6-month and 1-year. The analysis of interbank MIFOR trades reported to CCIL suggests that there has been no IRS trade referenced to 1-month, 2-month and 1-year MIFOR reported to CCIL since introduction of trade reporting in August 2007. There has been no IRS trade on 3-month MIFOR reported to CCIL since January 31, 2013. The 6-month MIFOR is the most widely used benchmark tenor. Of the total outstanding amount of interbank MIFOR trades of INR 2819.9 billion (notional principal) as on October 31, 2013, only three trades for INR 3.5 billion are referenced to 3-month MIFOR and the remaining trades are referenced to 6-month MIFOR[35]. In

[35] Source: CCIL

the absence of any usage of the 1-month, 2-month and 1-year MIFOR in interbank/PD transactions, the Committee feels that the MIFOR fixing for these tenors may be phased out. However, FIMMDA may conduct a survey among the banks on the MIFOR tenors referenced to the outstanding trades with their clients and accordingly decide on rationalisation of MIFOR tenors within three months from publication of the final Report and facilitate suitable transition arrangement, if required.

v) The Committee discussed the possibility of use of transaction data for determination of the benchmark. It was gathered from the market participants that major chunk of interbank USD/INR forward transactions (done through FX swaps) are undertaken through brokers and a limited amount is transacted on electronic trading platforms of Thomson Reuters and CCIL. Further, the market participants conventionally trade on month-end forwards. The rolling forwards for fixed tenors up to 1 year are undertaken through brokers who match the customised requirements of banks. In the absence of enough trading volume in electronic trading platforms, sourcing of transaction data from different brokers for computation of the benchmark may not be an efficient system. The Committee feels that the existing system of polling may continue for determination of the benchmark. However, FIMMDA may, in consultation with Thomson Reuters, put in place a roadmap to shift determination of the benchmark from use of polled data to use of transaction data.

vi) The Mumbai Interbank Term Offered Rate (MITOR), a benchmark similar in design to MIFOR is calculated by Thomson Reuters and co-branded by FIMMDA. The MITOR is a synthetic overnight INR interest rate derived through combination of USD/INR cash-tom premium and the US Fed Fund Rate. Thomson Reuters fixes the benchmark daily through a polling process wherein USD/INR cash-tom levels are polled from a panel of nine banks. It is observed from the CCIL data that there has been no interbank IRS trade referenced to MITOR reported to CCIL since introduction of IRS trade reporting in August 2007. There has been no trading in the benchmark so far. The Committee recommends that FIMMDA may conduct a survey among the banks to ascertain the extent of use of the benchmark for their client transactions and accordingly decide on phasing-out the benchmark within three months from publication of the final Report and facilitate suitable transition arrangement, if required.

4.5. THOMSON REUTERS INBMK

4.5.1. Thomson Reuters calculates and publishes the benchmark. FIMMDA has not co-branded the benchmark. Thomson Reuters calls a panel of 13 banks on random sequence at 11:55 AM and 4:40 PM on all the working days for government security levels for various tenors with specific security name assigned to each tenor. The highest and lowest submissions are removed and the remaining data are averaged. The government securities used for various tenors are revised based on market polls conducted at every month end. In the event of non-availability of quotes for a certain tenor, the interpolated rates are used. In case of fresh issuance of a security in a particular tenor, the new issue is considered as a replacement. In the event of a security assigned to a particular tenor turns out to be illiquid, another liquid security in that tenor is taken as replacement. The followings are the eligible criteria used for selection of a new benchmark security or rolling over the existing benchmark security:

a) The security should be within the required maturity range of the benchmark tenor

b) The security should have a sizable outstanding amount. In case of a new security, the outstanding amount should be at least INR 100 billion.

c) The security should have registered good trading volume in the previous fortnight or month.

d) The general response of the market participants should be in favour of considering the security as the benchmark for specific tenor.

The reference yields for 3-month and 6-month are computed on annualized basis, while that for tenors of 1-year and above are computed on semi-annualized basis. Thomson Reuters has disclosed the methodology used to calculate the benchmark.

4.5.2. Issues and Recommendations:

i) FIMMDA has not been involved in this benchmark. The benchmark, being an interest rate benchmark based on the yields of the central government T-Bills and dated securities, FIMMDA may be designated as the administrator of the benchmark.

ii) The daily INBMK fixings are published for 20 tenors starting from 3-month T-Bill to 30-year government security. The analysis of IRS data reported to CCIL reveals that there has been no interbank/PD INBMK IRS trade reported to CCIL since September 26, 2012. All the trades reported to CCIL till September 26, 2012 were referenced to 1-year INBMK. Further, all the 460 INBMK IRS trades outstanding as on October 31,

2013 are referenced to 1-year INBMK[36]. Keeping in view the usage of the benchmark tenors, the Committee is in favour of restricting the daily INBMK fixing to the 1-year tenor only. However, FIMMDA may conduct a survey among the banks on the INBMK tenors referenced to the outstanding trades with their clients and accordingly decide on rationalising INBMK tenors within three months from publication of the final Report and facilitate suitable transition arrangement, if required. The outstanding INBMK IRS contracts for the phased-out tenors may be valued using the FIMMDA generic yields for government securities published daily.

iii) The Committee is in favour of greater use of actual transactions for determination of the benchmark. The traded yields of the T-Bill and dated securities available on NDS-OM may be used to determine the benchmark rate. The FIMMDA may stipulate threshold in terms of number and volume of trades, below which the executable bids and offers may be considered subject to having satisfied the threshold criteria prescribed by FIMMDA in terms of number and volume of executable bids and offers. The threshold may be kept at a reasonably higher level and be subjected to periodic resetting at a well-defined time interval taking into account the overall liquidity and developments in the government securities market in order to ensure that off-market transactions in T-Bills/dated securities do not influence the benchmark level. The polling system may continue and the polled submissions may be used only when the actual trades and executable bids and offers do not satisfy the threshold criteria.

4.6. FIMMDA-THOMSON REUTERS MIOIS

4.6.1. Thomson Reuters determines the benchmark through polling and FIMMDA has co-branded the benchmark. The benchmark is published at 5:10 PM for 11 tenors ranging from 1-month to 10-year. Thomson Reuters polls a panel of eight contributors randomly from 4:40 PM onwards on all the working days.The highest and lowest submission are removed when the total number of contributions is more than five. In other cases, no trimming is carried out. The benchmark is not to be calculated when the number of contribution falls below three. The rates up to 1-year are computed on annualized basis, while that for tenors of 1-year and above are done on semi-annualized basis.The submissions are published after the benchmark rates are released. Thomson Reuters has disclosed the methodology used to calculate benchmark.

[36] Source: CCIL

4.6.2. Issues and Recommendations

i) FIMMDA has merely co-branded the benchmark and has not assumed the administrative roles. The Committee recommends that FIMMDA may be designated as the administrator of the benchmark.

ii) As per the IRS trade data reported to CCIL, there has been no trading in the benchmark since March 23, 2011. A single interbank/PD trade referenced to 3-month MIOIS for INR 154 million (notional principal) is outstanding. There are also some outstanding client transactions referenced to this benchmark. It is understood that many banks have been using the MIOIS rates for valuation of their outstanding OIS transactions. The MIOIS rates, being the OIS fixings for fixed tenors spanning from 1-month to 10-year, are ideally suited for valuation of the outstanding OIS transactions. The Committee recommends that banks and PDs may use the benchmark for valuation of their outstanding OIS transactions.

iii) The Committee discussed the possibility of use of interbank/PD OIS transaction data reported to CCIL for construction of the benchmark. It is observed that the transaction data reported to CCIL do not carry trade time stamp and hence, considering the transaction data for a particular time window to calculate the benchmark would not be possible. However, going forward, the CCIL will capture the trade time stamp for the interbank/PD IRS transactions as a part of its trade repository function. The construction of MIOIS then may take into account the interbank/PD OIS transactions reported to CCIL.

4.7. FIMMDA-THOMSON REUTERS MIOCS

4.7.1. The benchmark is published daily by FIMMDA for five tenors, viz. 2-year, 3-year, 5-year, 7-year and 10-year. Thomson Reuters determines the benchmark rates based on polling of the MIFOR swap rates from a panel of seven banks called on a random sequence from 4:40 PM onwards. In the event when the number of contributions is more than five, the highest and lowest contributions are removed. Otherwise, no trimming is carried out. The benchmark is not to be calculated when less than three contributions are received.

4.7.2. Issues and Recommendation

i) FIMMDA has merely co-branded the benchmark and has not assumed the administrative roles. The Committee recommends that FIMMDA may be designated as the administrator of the benchmark.

ii) It is observed that there has been no IRS trade referenced to MIOCS reported to CCIL since introduction of IRS trade reporting in August 2007. It is gathered that some banks use the MIOCS rates for valuation of their outstanding MIFOR swap trades. The benchmark rates being the MIFOR fixings covering five most liquid tenors, the rates are suitable for valuation of the outstanding MIFOR swap trades. The Committee recommends that the banks may use the benchmark for valuation of outstanding MIFOR swap trades.

iii) In line with the recommendation at paragraph 4.6.2 (ii), construction of MIOCS may take into account the interbank MIFOR swap transactions reported to CCIL as and when CCIL captures the trade time stamp**.**

4.8. FIMMDA-PDAI G-Sec Yield Curve

4.8.1. FIMMDA calculates and administers the benchmark. FIMMDA uses the G-Sec yield curve to calculate prices of outstanding central government securities at the end of the day as well as at month-end. FIMMDA applies Cubic Spline methodology for smoothening of the yield curve. The steps followed for construction of the curve are mentioned below.

(i) Nodal points for a month are identified at the beginning of the month based on the following criteria:

- Securities with minimum 100 trades and trading volume of INR 10 billion in the immediate preceding month qualify for being a nodal point security. For each calendar year, only one nodal point security is identified
- If a nodal point security fails to meet the above criteria in the subsequent month, it would still qualify as nodal point security only for the subsequent month subject to its registering 50 trades and trading volume of INR 5 billion
- In case more than one security satisfies the above criteria, then based on popularity and age of the bond or bond which is more likely to get traded, nodal points are decided by the FIMMDA Valuation Committee.
- As 1-7 year and 10-year tenors are important input points for construction of a smooth and reliable yield curve, the above criteria is not applied for these tenors. The securities with maximum number and volume of trades in these tenors are considered as nodal points.

(ii) The curve is constructed daily using the following inputs and methods:

- Traded yield of nodal point securities are taken as inputs for yield curve construction. However, traded prices of these securities replace the final model generated price for valuation of these securities.
- If any nodal point is not traded during the day and some other bond in that tenor has been traded then that traded bond's yield would be used, subject to it qualifying the 'Filter' criteria.
- Steps to calculate the 'Filter' are: (a) nodal point with highest number of trades (T1) and volumes (V1) and with lowest number of trades (T2) and volumes (V2) are identified, (b) percentage of T2/T1 and V2/V1 calculated is approved by Valuation Committee every month. Based on the percentages calculated, threshold number of trades and volumes are defined daily. The security whose number of trades and volume exceed the threshold is considered to have passed the 'Filter' criteria and the last traded price of such security replaces the final model generated price for valuation of the security.
- If the 'Filter' criteria is also not satisfied, a 'Market Observable and Tradable' (MOT) input is used. Steps to calculate MOT are: (a) for the nodal points that have bids and offers aggregating INR 0.15 billion with maximum bid-offer spread of 10 bps at 12 noon, 2 PM and 4 PM, the mid yields at these points in time are computed, (b) volume weighted average of the above calculated mid-yields are taken as the input.
- In absence of all the above, proxy yields are used for 1-7 year and 10-year tenors. The proxy yields are calculated by adding average of the difference in traded yields of immediate previous tenor and immediate succeeding tenor to previous day's traded/proxy yield.
- If 30-year nodal point doesn't trade on a particular day, then difference in its last traded yields (within last 14 working days) and model generated 20-year yield is added to current 20-year yield. If there were no trades in the last 14 working days, then the yield of the farthest tenor traded bond of the current day would be taken as the yield for the 30 year bond.
- If a new security has been issued during the month, and meets the criteria for being a nodal point, then new bond would be used, if (a) it passes the filter criteria, (b) no other bond in this tenor has been used as input point, (c) yield of new bond is lower than yield of existing bond in the nodal point, (d) yield of new

bond is higher than yield of bond in nodal point, but the volume and no. of trades in the new bond are higher than existing bond.

- Illiquidity Adjustment – The illiquidity adjustment is made to the securities which do not pass the filter criteria and are valued using the model generated price. It is a mark-up over the model-calculated yield to provide for the illiquidity of the respective security. The illiquidity spread is calculated using the following procedure:

  a) Difference in traded yield and model-generated yield is calculated for each bond and four weeks average of such differences is calculated

  b) Average of positive illiquidity spreads for all bonds maturing in each tenor is also calculated

  c) If a bond has traded for minimum five days in last four weeks, then bond's respective illiquidity spread is used, else the average positive illiquidity spread for the respective tenor is used.

  d) If none of the bonds maturing in a particular tenor have traded for five days in the last four weeks, then the average of positive illiquidity spreads of the immediate preceding and immediate succeeding tenor is used. If there are no trades beyond a particular tenor, then the positive illiquidity spread of immediate preceding tenor is used.

  e) If after adding the illiquidity factor, any non-traded bond shows a yield lower than the yield of a traded bond in the same tenor which has cleared the filter criteria, the yield of non-traded bond would be increased to equal the yield of traded bond.

4.8.2. The methodology used to calculate the benchmark is documented and is publicly available on the website of FIMMDA. The Benchmark construction process follows a well laid-out hierarchy of data inputs covering the actual transactions and executable bids and offers in a particular security and traded yields of other securities of proximate maturities.

4.8.3. Issues and Recommendation

i) Keeping in view the concentration of trading liquidity in few tenor points at present, the Committee feels that the current methodology followed by FIMMDA may be continued. However, FIMMDA may appoint an expert team to verify the robustness of the Cubic Spline model being used for fitting the G-sec yield curve.

ii) The threshold specified for trades/bids and offers may be subjected to periodic resetting at a well-defined time interval, for keeping them at reasonably higher level taking into account the overall liquidity and developments in the government securities market, in order to ensure that off-market transactions do not influence the benchmark levels.

iii) FIMMDA uses the last traded yields of the eligible securities as the inputs for construction of yield curve. The last traded yield is fraught with the risk of the yield being manipulated by traders to their advantage. Keeping in view the huge volume of government securities and other securities being valued through this curve, FIMMDA may appropriately use the volume weighted average yield of the eligible securities, covering a sufficiently longer time window for construction of the yield curve.

4.9. FIMMDA-PDAI Spread for GOI Floating Rate Bonds

4.9.1. FIMMDA calculates and administers the benchmark. FIMMDA publishes the price and yield of all Floating Rate Bonds (FRBs) on a daily basis. It follows the following methods to determine the benchmark rates.

Traded FRBs

i) Spread of traded yield over the floating rate is considered, provided there are at least 3 trades and total trading volume of INR 250 million during the day.

ii) In absence of above, Market Observable and Tradable (MOT) input is used for which the security should have bids and offers for INR 150 million, with a spread of 10 bps, at 12 noon, 2 PM and 4 PM during the day.

iii) In absence of the above two, if the sum of the number and amount of trades and executable bids and offers in a security satisfies threshold of 3 trades and INR 300 million volume during the day, then the traded yield is considered.

Non-traded FRBs

i) A 'Desired Spread' is polled every month and approved by the FIMMDA Valuation Committee.

ii) The desired spread is then used as input to the calculator used by the FIMMDA to derive the price of FRB. The other inputs include the current floating rate benchmark and the Benchmark Rate embedded in the current period coupon calculated on each coupon reset date.

4.9.2. The setting methodology provides for well-defined hierarchy of data inputs for determination of the benchmark. The preference is for the traded data followed by executable bids/offers and spreads arrived through polling. FIMMDA has disclosed the calculation methodology on its website.

4.9.3. Issues and Recommendations

i) FIMMDA polls the spreads every month and the spreads are approved by the FIMMDA Valuation Committee for being applied for calculation of the price of the FRBs. The Committee feels that FIMMDA may fix the minimum quorum and composition of the meeting of the Valuation Committee for approval of the spreads and the same should be disclosed in the public domain.

ii) For the reason mentioned at para 4.8.3.(i) of the Chapter, the threshold specified for trades/bids and offers may be subjected to periodic resetting at a well-defined time interval, for keeping them at reasonably higher level taking into account the overall liquidity and developments in the government securities market.

iii) For the reason mentioned at para 4.8.3.(iii) of the Chapter, FIMMDA may appropriately use volume weighted average yield of the trades covering a sufficiently longer time window to calculate the spread instead of using just the last traded yield.

4.10. FIMMDA-PDAI Prices for State Development Loans

4.10.1. The benchmark is computed and administered by FIMMDA. FIMMDA publishes the price and yield of each SDL on a daily basis. The last traded price/ yield of SDLs are considered subject to individual security has registered trading volume of at least INR 50 million during the day. Otherwise, SDLs are valued by using 25 bps spread over the G-Sec yields of the corresponding maturities as per RBI guidelines. FIMMDA has disclosed the above methodology on its website.

4.10.2. Issues and Recommendations

i) FIMMDA has specified the threshold only in terms of trading volume. The threshold may be specified in terms of both number and volume of trades. For the reason mentioned at para 4.8.3.(i) of the Chapter, the threshold may be subjected to periodic resetting at a well-defined time interval, for keeping them at reasonably higher level taking into account the overall liquidity and developments in the SDL market. The spreads discovered in the primary auction may be used when the secondary market trades in SDL do not satisfy the threshold criteria.

ii) For the reason mentioned at para 4.8.3.(iii) of the Chapter, FIMMDA may appropriately use the volume weighted average price of the SDLs covering a sufficiently longer time window during the day for fixation of the benchmark.

iii) RBI had prescribed the 25 bps spread over the G-Sec yields for valuation of SDLs in April 2000[37] based on the then prevailing differential in yields between SDLs and G-Secs of corresponding maturities. During the recent period, the above differential has widened significantly above 50 bps. The Working Group on Enhancing Liquidity in the Government Securities and Interest Rate Derivatives Markets (Chairman: Shri R. Gandhi) constituted by RBI had recommended to use the weighted average spreads emerged during last few auctions for valuation of unquoted SDLs. The primary auction of SDLs takes place generally once in a fortnight. The Committee feels that it may be appropriate to use the weighted average spread of SDLs observed during the last two auctions as the benchmark spread for valuation of SDLs in the absence of required volume of trades as specified by FIMMDA. The FIMMDA may specify threshold in terms of amount of securities auctioned and number of states participating in the auction for deciding the auctions eligible to be considered for calculation of the spread.

4.11. FIMMDA-PDAI Prices for Corporate Bonds

4.11.1. The methodology followed by FIMMDA to provide valuation prices for bonds issued by corporates and other institutions are as follows:

i) If a security is traded for more than threshold amount of INR 50 million on the last day of the month, then the Volume Weighted Average Price (VWAP) of entire day's trades is taken as the price for valuation.

ii) If the traded volume is less than the threshold amount on the last day of the month, then the lower of the two is considered:

a. VWAP of any day in preceding 15 days, subject to threshold criteria

b. Price calculated using CRISIL spread or 50 bps spread, whichever is higher

4.11.2. FIMMDA uses the service of the CRISIL which calculates the Spread Matrix based on the quotes collected through polling. The CRISIL conducts poll for securities issued by four categories of institutions, viz. Bank, PSU, NBFC, and Corporate, covering four rating categories from AAA to BBB- and for eight different tenors ranging from 6 months to 15

[37]RBI Circular –BP.BC.163/21.04.048/2000, April 7, 2000

years. Based on spread matrix received from CRISIL, FIMMDA computes the spreads for additional 4 tenors, i.e. 4-year, 6-year, 8-year and 9-year, through linear interpolation. FIMMDA also computes spread for additional 6 rating categories, i.e. A+, A, A-, BBB+, BBB and BBB-, by adding fixed spreads of 25bps, 30bps, 35bps, 40bps, 45bps and 50bps over the spread of the immediate preceding rating categories respectively. The spread for 15-year tenor is used for valuation of all the bonds with residual maturity of 15 years and above.

4.11.3. Issues and Recommendations

i) The methodology followed by CRISIL for determination of spread matrix including conduct of polling is not available in the public domain. The Committee recommends that the same may be disclosed by FIMMDA in the public domain.

ii) FIMMDA has specified the threshold only in terms of trading volume. The threshold may be specified in terms of both number and volume of trades. For the reason mentioned at para 4.8.3.(i) of the Chapter, the threshold may be subjected to periodic resetting at a well-defined time interval, for keeping them at reasonably higher level taking into account the overall liquidity and developments in the Corporate Bond market.

iii) As mentioned at 4.11.2, FIMMDA has been using a fixed mark-up for computing the spread for six rating categories. It was understood from the FIMMDA that the said mark-up was decided by FIMMDA Valuation Committee in 2008. The fixed mark-up method was used as the trading volume in the above low rated bonds was negligible and the market participants found it difficult to provide quotes for such bonds. The Committee feels that in view of the growth in liquidity in the corporate bond market over the years, FIMMDA may explore the possibility of polling the spreads for the above rated bonds. As the liquidity in the corporate bonds of various rating categories improves, FIMMDA may make use of the traded rates available on FIMMDA reporting platform/NSE/BSE for computation of the spread matrix subject to the trades satisfying threshold criteria stipulated by FIMMDA.

4.12. FIMMDA-Thomson Reuters T-Bill Curve

4.12.1. Thomson Reuters conducts polling and calculates the benchmark based on the submissions. FIMMDA has co-branded the benchmark. The discount yields and YTMs for 14 tenors ranging from 7-day to 364-day are published at 12:30 PM every working day. The T-Bills having the maximum trading volumes during the previous week maturing in specific residual maturity buckets are considered as benchmark T-Bills. Thomson Reuters polls bid

and ask rates for benchmark T-bills from a panel of 17 contributors comprising banks, PDs, brokers and Mutual Funds at 11:45 AM on all working days. The highest and lowest contributions are removed when the total number of contributions is more than five. In case of less than three contributions, no fixing is done. The median bid and offer yields for the Benchmark T-Bills are taken as the Benchmark bid and offer yields. The median of the Benchmark bid and offer yield is considered as the final Benchmark YTM for the residual maturity of the benchmark T-Bill. The YTM for other fixed tenors are calculated by interpolation or extrapolation as the case may be. The discount yields are calculated by converting the benchmark YTM into price and then converting the price to discount yield. Thomson Reuters has disclosed the methodology used to calculate the benchmark. It is understood that the historical data is archived and maintained with the Thomson Reuters.

4.12.2. Issues and Recommendations

i) FIMMDA has merely co-branded the benchmark and has not assumed the administrative roles. The Committee recommends that FIMMDA may be designated as the administrator of the benchmark.

ii) The T-Bills are traded on NDS-OM and NSE's Wholesale Debt Segment (WDM). The average daily trading volume of T-Bills during the period from May 1, 2013 to October 31, 2013 remained at INR 34.24 billion[38] and INR 10.84[39] billion on NDS-OM (including OTC trades shown on NDS-OM) and NSE-WDM respectively. The secondary market liquidity in T-Bills has increased over the time period. The Committee recommends that construction of T-Bill Curve may take into account transaction data, wherever available. The FIMMDA may stipulate threshold in terms of number and volume of trades, below which the executable bids and offers may be considered subject to having satisfied the threshold criteria prescribed by FIMMDA in terms of number and volume of executable bids and offers. The threshold may be kept at a reasonably higher level and be subjected to periodic resetting at a well-defined time interval taking into account the overall liquidity and developments in the government securities market in order to ensure that off-market transactions in T-Bills do not influence the benchmark level. The polling system may continue and the polled submissions may be used only when the actual trades and executable bids and offers do not satisfy the threshold criteria.

[38] Source: CCIL
[39] Source: NSE

iii) It is observed that Thomson Reuters has not disclosed the name of the polling constituents. The same may be disclosed for enhancing the transparency and credibility of the benchmark.

4.13. FIMMDA-Thomson Reuters CP Curve

4.13.1. Thomson Reuters conducts polling and calculates the benchmark based on the submissions. FIMMDA has co-branded the benchmark. The benchmark is published at 12:30 PM for 12 tenors ranging from 30-day to 364-day. Thomson Reuters polls quotes from a panel of issuers and investors at 11:45 AM on every working day for 1-month, 3-month, 6-month and 1-year primary market commercial papers with rating of A1+. Median for the quotes submitted, after eliminating the highest and lowest contributions, is computed separately for that of investors and issuers. Average of the investors' median and issuers' median for each tenor is used as final rate for that tenor. The benchmark rates for other tenors are computed by interpolating the proximate tenors. In the event of less than five contributions, trimming of highest and lowest contribution is not carried out. In case of less than three contributions, no fixing is done. Thomson Reuters has disclosed the methodology used to calculate benchmark.

4.13.2. Issues and Recommendations

i) FIMMDA has merely co-branded the benchmark and has not assumed the administrative roles. The Committee recommends that FIMMDA may be designated as the administrator of the benchmark.

ii) The secondary market trades in CPs are now reported to FIMMDA's reporting platform. The Committee recommends that the transaction data reported to FIMMDA may be used for construction of CP curve subject to having satisfied the threshold criteria stipulated by FIMMDA. The FIMMDA may stipulate threshold in terms of number and volume of the reported transactions. The threshold may be kept at a reasonably higher level and be subjected to periodic resetting at a well-defined time interval taking into account the overall liquidity and developments in the CP market. The polling system may continue and the polled submissions may be used only when the reported transactions do not satisfy the threshold criteria.

4.14. Thomson Reuters CD Curve

4.14.1. Thomson Reuters conducts polling and calculates the benchmark based on the submissions. FIMMDA has not co-branded the benchmark. Thomson Reuters polls quotes from a panel of 15 market participants at 3:55 PM every working day for the 1-month, 2-

month, 3-month, 6-month and 1-year tenors for secondary market rates of A1+ rated PSU banks CDs. The averages of the contributed quotes, after eliminating the highest and lowest contributions, are taken as the benchmark rates for the above tenors. The benchmark rates for other tenors are computed using the Cubic Spline methodology. The benchmark is published at 4:30 PM. In the event of less than five contributions, trimming of highest and lowest contribution is not carried out. In case of less than three contributions, no fixing is done. Thomson Reuters has disclosed the methodology used to calculate benchmark. It is understood that the historical data is archived and maintained with the Thomson Reuters.

4.14.2. Issues and Recommendations

i) FIMMDA has not been involved in this benchmark. The CD Curve being a money market benchmark, FIMMDA may be designated as the administrator of the benchmark.

ii) The secondary market trades in CDs are now reported to FIMMDA's reporting platform. The Committee recommends that the transaction data reported to FIMMDA may be used for construction of CD curve subject to having satisfied the threshold criteria stipulated by FIMMDA. The FIMMDA may stipulate threshold in terms of number and volume of the reported transactions. The threshold may be kept at a reasonably higher level and be subjected to periodic resetting at a well-defined time interval taking into account the overall liquidity and developments in the CD market. The polling system may continue and the polled submissions may be used only when the reported transactions do not satisfy the threshold criteria.

B. Foreign Exchange Benchmarks

4.15. RBI Reference Rates

4.15.1. RBI calculates and administers the benchmark. RBI publishes the exchange rate of Rupee against US Dollar and Euro at about 12:30 PM on the working days. RBI also publishes the rates for GBP/INR and JPY/INR by crossing the Reference Rate for USD/INR with the middle rates of the ruling GBP/USD and USD/JPY exchange rates respectively. RBI conducts polling of rates from a select list of contributing banks. The contributing banks are selected on the basis of their market-share in the domestic foreign exchange market and representative character.

4.15.2. In line with the changing dynamics of the domestic foreign exchange market, the reference rate computation process was reviewed and changed with effect from April 15, 2010. In the changed procedure, the number of banks in the polling panel was significantly

expanded, of which a set of banks are selected randomly every day for calling for quotes. Further, the reference time window was expanded to 30 minutes, i.e. 11:45 AM to 12:15 PM from earlier system of 15 minutes, of which a five minute window is selected randomly for conducting poll. The means of the polled bids and offers are calculated for each contributing bank and the outlier mean rates are removed. The Reference Rates are arrived at by averaging the remaining mean rates. The revised procedure has instilled a greater degree of uncertainty in terms of selection of a bank/group of banks for polling as well as timing of poll; which has further enhanced its credibility.

4.15.3. RBI undertakes periodic review of the benchmark setting methodology and the procedure for selection of contributing banks. The changes undertaken post-review are publicly disclosed through press releases. The historical data is archived and maintained with RBI and is available on the website for public viewing.

4.15.4. Issues and Recommendations:

i) One issue which has been widely debated is whether RBI being the regulator of the Indian foreign exchange market should be involved in fixation of Reference Rates. The Committee has discussed the pros and cons of discontinuation of fixation of Reference Rates by RBI. The international practice on the subject was studied by the Committee. It is observed that a number of central banks across the world publish their reference rates. The practices followed by some major central banks are discussed below.

   a. ECB publishes daily Euro foreign exchange reference rates updated by 3 PM. These rates are based on a regular daily concertation procedure between central banks across Europe and worldwide, which normally takes place at 2:15 PM.

   b. Bank of Canada publishes exchange rate for the Canadian dollar against the US dollar on the basis of trades that take place daily between 11:59 AM and 12:01 PM. All other Canadian dollar noon exchange rates are derived from the USD/CAD exchange rate and indicative wholesale market quotes for a broad array of other currencies. The noon rates are updated by about 12:45 PM ET at month-end and 12:30 PM ET on other business days. Bank of Canada also publishes daily closing exchange rates based on official parities or market rates.

   c. Central Bank of Brazil publishes daily reference exchange rate of Real against the US dollar, known in the market as the PTAX rate. The foreign exchange dealers authorized by the Central Bank submit bid/offer rates for the exchange rate of Real against the US dollar for publication of bulletins four times daily at 10 AM, 11 AM,

12 noon and 1 PM. The PTAX rate is determined by the arithmetic average of these four bid/offer rates. The bulletins also give the par value of the Real in relation to ten other major currencies, which are determined based on the exchange rate of these currencies against US dollar published by Bloomberg or Reuters or other agency.

d. South African Reserve Bank publishes daily Rand per USD, GBP and Euro on the basis of the weighted average of the banks' daily rates at approximately 10:30 AM. Weights are based on the banks' foreign exchange transactions.

e. Central Bank of the Russian Federation sets the official exchange rates of Rouble against USD based on the USD/RUB quotations in the domestic interbank foreign exchange market. The Bank also publishes official exchange rates of Rouble against other foreign currencies based on the official exchange rate of the Rouble against US Dollar and quotations of these foreign currencies against US dollar in the international foreign exchange market.

f. Bank of Indonesia has started daily publication of Jakarta Interbank Spot Dollar Rate (JISDOR) at 10 AM since May 20, 2013. JISDOR represents the weighted average of USD/IDR spot transactions traded in the interbank market within 8 AM – 9:45 AM Jakarta time which is captured on a real time basis through Bank of Indonesia's monitoring system of foreign exchange transactions against Rupiah.

g. Bank of Thailand publishes daily volume weighted-average Interbank Exchange Rate of Thai Baht against US dollar at 6 PM based on interbank purchase and sale transactions amounting more than or equal to 1 million USD. It also publishes the Average Counter Rates calculated by simple-averaging of all the foreign exchange counter rates quoted by commercial banks for making transaction deals with their customers including special purpose institutions.

h. In South Korea, the basic exchange rate of the Korean won against the US dollar is determined as the transaction volume-weighted average of the rates applied in the previous business day's transactions between foreign exchange banks through brokers. The basic Korean won rates against foreign currencies other than the U.S. dollar are arrived at by crossing the US dollar rates of foreign currencies in the international markets with the basic exchange rate of the Korean won against the US dollar. The basic Korean won rates are calculated by a designated brokerage company. The Bank of Korea publishes the rates at 10 AM the following business day.

ii) The international practice clearly suggests that many central banks in developed as well as emerging economies publish reference exchange rates of their local currencies against US dollar and other major currencies. Further, the recent unfolding of scandals relating to manipulation of major global foreign exchange benchmarks administered by private sector entities supports the greater role of official sector in fixation of the major benchmarks. Keeping in view the current credibility crisis of several major financial benchmarks in global markets and increasing role of official sector in restoring the market confidence in the benchmark setting process, as also the fact that the Reference Rate setting process has remained quite robust, the Committee feels that it may not be appropriate for RBI to discontinue fixing the Reference Rates at this point of time.

iii) The IOSCO principles as well as the reports of other international agencies recommend enhanced use of transaction data for determination of benchmarks. As mentioned earlier, South Africa, South Korea, Thailand and Indonesia use the weighted average of actual market transactions for determining the reference exchange rates. The Committee feels that the USD/INR Reference Rate of RBI should be derived based on the actual market transactions obtained from defined source/s covering a sufficiently longer time window so as to ensure that the Reference Rate appropriately represents the prevailing spot rate. The Reference Rate may be volume weighted to smoothen the impact of small value off-market transactions in determination of the benchmark.

iv) Currently RBI publishes two Reference Rates, i.e. USD/INR and EUR/INR. The interbank market primarily trades on USD/INR and there is hardly any liquidity in EUR/INR. The contributor banks provide the EUR/INR rates to RBI by crossing the USD/INR rate with the ruling EUR/USD rate. It is felt that calling for quotes in EUR/INR in absence of a direct market does not serve any meaningful purpose. The Committee recommends that RBI may fix only USD/INR Reference Rate and publish other three rates, viz. EUR/INR, GBP/INR and JPY/INR by crossing the USD/INR Reference Rate with the ruling EUR/USD, GBP/USD and JPY/USD rates. The sources of the EUR/USD, GBP/USD and JPY/USD rates may be publicly disclosed.

4.16. FEDAI Spot Fixing Rates

4.16.1. The FEDAI calculates and administers the benchmark. It polls USD/INR spot rates from a panel of 27 banks at 11:30 AM every working day. A minimum of 12 submissions are needed. The polled rates are subjected to trimming of the highest and lowest rates and the remaining rates are averaged to determine the USD-INR spot fixing. FEDAI takes the EUR/USD, GBP/USD and JPY/USD rates from Reuters (Tokyo close 11:30 AM IST) and

crosses it with USD/INR fixing to derive the EUR/INR, GBP/INR and JPY/INR spot fixings. The methodology does not have any contingency provision to determine the benchmark in absence adequate availability of data through polling. The methodology used to calculate the benchmark has not been publicly disclosed by FEDAI. It is understood that the historical data is archived and maintained with the FEDAI.

4.16.2. Issues and Recommendations

i) The FEDAI fixings and RBI Reference Rates are basically spot fixings for USD/INR except for that the former is with reference to the rates at 11:30 AM and the latter is with reference to a randomised five minute window between 11:45 AM to 12:15 PM. Both the rates are available almost around the same time with a gap of about 30-45 minutes. Hence, the Committee feels that the FEDAI fixing is not serving any useful purpose. It is reported that some corporates prefer to use the FEDAI fixing for cash settlement of their FCY/INR option exercises. However, FEDAI fixing is not a mandatory rate to be used for cash settlement of option exercises. The corporate can very well use the ongoing spot rate from mutually agreed sources to cash settle their option exercises. The Committee recommends that FEDAI may conduct a survey to ascertain the extent of use of FEDAI spot fixings and take a call on continuation or otherwise of the benchmark within three months from publication of the Committee's final Report.

ii) If FEDAI decides to continue the benchmark based on the market survey, the benchmark may be determined by taking the volume weighted average of USD/INR spot transactions executed during a sufficiently longer time window. The methodology may be publicly disclosed. Appropriate fallback procedures may also be put in place.

4.17. FEDAI FCNR (B) Benchmark Rates

4.17.1. FEDAI publishes LIBOR/Swap rates for 13 currencies and for 5 tenors, i.e. 1- year, 2-year, 3-year, 4-year and 5-year at every month end which are used to determine the periodic interest rate to be applied on FCNR(B) deposits as per RBI guidelines. FEDAI takes the 1-year LIBOR rates published by the BBA Libor Ltd. for five currencies, i.e., USD, GBP, Euro, Yen and Swiss Franc. FEDAI sources the swap rates for remaining eight currencies and for other tenors in the above five currencies from various pages of Reuters at 5 PM. It is understood that the historical data is archived and maintained with FEDAI.

4.17.2. Issues and Recommendations

i) FEDAI's fixations are basically with respect to the swap rates as the LIBOR rates are as fixed by the BBA Libor Ltd. FEDAI has not disclosed the source and time of taking the snapshot of prevailing swap rates of the respective currencies and tenors. The information may be publicly disclosed by FEDAI.

ii) FEDAI may put in place appropriate fallback procedures for determining the benchmark rates in case non-availability of information from Reuters.

4.18. FEDAI Month end Revaluation Rate – Foreign Exchange Contracts

4.18.1. The FEDAI calculates and administers the benchmark. The benchmark covers revaluation rates for spot contracts (against INR) in 25 currencies and for forward contracts (against INR) upto 6 months in nine currencies and upto 12 months in four currencies. FEDAI sources USD/INR Spot and forward closing rates from Reuters at 5 PM. The spot and forward exchange rates of other foreign currencies against USD are taken from various Reuters pages at 4 PM and are crossed with the corresponding USD/INR spot and forward rates to get FCY/INR spot and forward rates. The methodology does not provide for any fallback mechanism for determining the benchmark rates in case of non-availability of trade information from Reuters. The methodology used to calculate benchmark is not disclosed in the public domain. It is understood that the historical data is archived and maintained with FEDAI.

4.18.2. Issues and Recommendations:

i) FEDAI may disclose the benchmark setting methodology in the public domain.

ii) FEDAI takes the snapshot of USD/INR spot and forward rates from Reuters prevailing at a particular point of time. This method is fraught with the risk of the rates being manipulated by traders to their advantage. Keeping in view the huge amount foreign exchange spot and forward contracts being valued through the benchmark rates, FEDAI may use the volume weighted average rate of the USD/INR spot and forward trades executed during a sufficiently longer time window during the day as the benchmark revaluation rates.

iii) FEDAI derives the FCY/INR spot and forward rates by crossing the USD/INR spot and forward rates taken at 5 PM with FCY/USD spot and forward rates of respective tenors taken at 4 PM. There is a time difference of one hour in taking the above two rates and hence, the benchmark FCY/INR spot and forward rates may not represent

the rates prevailing at both 4 PM and 5 PM. Till FEDAI shifts to the volume weighted average traded rate, it may source both spot and forward rates at the same point in time.

iv) FEDAI may develop appropriate fallback mechanism to determine the benchmark rates in case of non-availability of the trade information.

4.19. FEDAI USD-INR Option Volatility

4.19.1. FEDAI calculates and administers the benchmark. It polls 10 banks for the implied volatility levels of USD/INR ATM, 25 delta risk reversal and 25 delta butterfly options for 1-week, 1-month, 3-month, 6-month and 1-year tenors between 4:30 PM to 5 PM on all working days. At least seven banks are required to contribute for determining the benchmark rates. The contributions are then subjected to trimming of outliers by removing the top and bottom rates in each tenor. The remaining contributions are averaged to determine the benchmark volatility levels. The individual contributors' quotes are not published. The methodology does not provide for any fallback mechanism to determine the benchmark in absence of adequate availability of contributions. It is understood that the historical data is archived and maintained with FEDAI.

4.19.2. Issues and Recommendations

i) FEDAI may disclose the benchmark setting methodology in the public domain.

ii) It may develop fallback procedures to determine the benchmark in the absence of adequate availability of data through polling.

iii) FEDAI's month-end volatility levels are used by banks for valuation of their outstanding option contracts. Some members opined that FEDAI may publish the benchmark volatility levels only at month-end as it does for revaluation rates for spot and forward contracts. The Committee examined the issue and feels that the daily publication of volatility levels may continue as it would facilitate uniform application of volatility rates across the banks for computation of overnight open position of their outstanding option contracts. The delta of the outstanding option contracts are added to the overnight open position of the banks. However, the time of polling may be advanced sufficiently so that the benchmark can be published during active market hours which would facilitate better management of option positions by the user banks.

iv) Unlike spot and forward transactions, there is no dealing platform for interbank OTC FCY-INR options. The OTC FCY-INR option trades are executed bilaterally between

banks. However, the liquidity in the OTC FCY-INR options has remained moderate with average daily interbank trading volume of around USD 97.85 million during the period from May 2013 to October 2013 as per the data reported to CCIL. The Committee recommends that as the option market liquidity improves, FEDAI may, in consultation with active market makers in the OTC FCY-INR options, take appropriate steps for developing a dealing platform for the instrument. The dealing platform will not only enhance the transparency and efficiency of the market, but also facilitate use of traded rates to determine the benchmark volatility levels.

4.20. Recommendations common for all Rupee Interest Rate and Foreign Exchange benchmarks[40]

Major recommendations common for all Rupee Interest Rate and Foreign Exchange benchmarks are as under:

i) The Benchmark Administrators, while designing a Benchmark, may take into account appropriate generic factors which help the Benchmark accurately representing the economic realities of the interest that the Benchmark intends to measure. The factors that might distort the benchmark may be eliminated.

ii) The methodologies used for calculation of benchmarks may have well-defined criteria so that reliance on judgement, qualitative estimation or discretionary decision is very limited.

iii) The data used for calculating a Benchmark may be adequate enough to accurately and reliably represent the interest that the Benchmark intends to measure.

iv) The Administrator may put in place a well-defined hierarchy of data inputs for calculation of benchmarks. The data inputs may be based on observable transactions, wherever available for a significant amount, entered into at arm's length between buyers and sellers in a well-functioning market. In absence of sufficient amount of observable transactions, the Administrator may rely on executable bids/offers quoted for a significant amount in a well-functioning market followed by submissions obtained through an independent and fair polling process.

v) In case of benchmarks determined on the basis of submissions, the Administrator may prescribe a Code of Conduct for the Submitters which may cover, among others, the followings:

[40] excluding base rate and other proprietary rates of individual banks

a. Hierarchy of inputs – Submitters' own transactions in the underlying, third party transactions in the underlying, broker quotes, expert judgement, etc.

b. Eligibility criteria for the person submitting the data

c. Procedures to identify suspicious inputs

d. Guidelines for exercise of expert judgment

e. Role and responsibility of key personnel

f. Policies and procedures to manage conflict of interest in submissions

g. Procedure for pre-submission validation of inputs and post-submission reviews by senior officials to check quality of inputs in terms of minimum variance threshold[41] with respect to the final benchmark

h. Confidentiality protocol with respect to the data submitted and other information for computation of the benchmark

i. Guidelines on record keeping

vi) Where benchmark determination uses actual transaction data and/or executable bids and offers, the Administrator may review the transaction data as well as executable bids/offers data that were used to construct the benchmark at monthly or more frequent intervals and any evidence of fictitious trades and/or fictitious bids/offers undertaken to influence the benchmark rate may be immediately brought to the notice of RBI for regulatory verification and appropriate action.

vii) The Benchmark Administrator may specify a minimum number of submitters to be polled in each benchmark. It may identify the submitters from the market participants trading in the respective benchmark/instrument linked to the benchmark, based upon their trading activity. If voluntary participation is not forthcoming, the Benchmark Administrator may mandate these identified submitters in the underlying market to participate in the polling for enhancing the credibility of the benchmarks.

viii) Benchmark Administrator may disclose the methodology for calculation of benchmark and the rationale for adopting a particular methodology to the public. Whenever there is any change in composition and/or methodology for calculation of benchmark, the changes and the rationale thereof may be notified to all stakeholders well in advance. The disclosure on the methodology may be comprehensive enough to

[41] threshold variance of the submission with respect to the final benchmark level as stipulated in internal policy of Submitter

enable stakeholders to adequately understand the computation the Benchmark so as to assess its relevance and appropriateness for their requirements.

ix) To enhance transparency in the benchmark setting process based on polled submissions, the Benchmark Administrator may publish the individual submissions after a certain lag as suitable to the individual benchmarks.

x) Benchmark Administrators may put in place credible contingency provisions, which should be transparent and preferably written into the contract, to cater to the needs of contracting parties.

xi) The Benchmark administrator may regularly review each benchmark to ensure that the benchmarks continue to reflect the underlying interest which it is supposed to measure. In case of change in the interest, the benchmark design may need to be changed to match the changed interest. The benchmarks that have become redundant may be phased out.

xii) New benchmarks developed by various agencies may be registered with the concerned Administrator before being introduced in the market. The Benchmark Administrator may put in place appropriate systems to periodically assess the emerging needs of the end-users and encourage the market participants to introduce new benchmarks to cater to those needs.

xiii) The Administrator may have written policies and procedures to handle possible cessation of a benchmark. The policies and procedures may include criteria to decide on an alternative benchmark and steps to be followed for ensuring orderly transition to the new benchmark. The Administrator may devise appropriate multilateral/bilateral amendment agreements to facilitate smooth transition to the new benchmarks. The Administrator may also encourage the Subscribers to incorporate robust fallback provisions in the contracts referenced to financial benchmarks to address the possible cessation of a benchmark or a particular tenor of a benchmark.

CHAPTER 5

GOVERNANCE FRAMEWORK

5.1. The Benchmark setting process needs to be governed by transparent and robust procedures in order to avoid and manage conflicts of interests and protect the integrity of the Benchmark. Where conflicts of interests are unavoidable, the Governance Framework should provide for identification and mitigation of such conflicts and transparent disclosure of the position to the stakeholders so as to maintain their confidence in the Benchmark setting process.

5.2. This chapter reviews the Governance Framework in vogue with the Benchmark Administrators and Benchmark Calculation Agents for the major Indian foreign exchange and interest rate benchmarks and recommends general principles to be followed for strengthening the Governance Framework. As mentioned in Chapter 4, the FIMMDA administers four benchmarks, viz. FIMMDA-PDAI G-Sec Yield Curve, FIMMDA-PDAI Prices for State Development Loans, FIMMDA-PDAI Spread for GOI Floating Rate Bonds, FIMMDA-PDAI Prices for Corporate Bonds and has co-branded seven benchmarks, viz. FIMMDA-NSE MIBID-MIBOR, FIMMDA-Thomson Reuters MIFOR, MITOR, MIOIS, MIOCS, T-Bill Curve, and CP Curve. The FEDAI administers four benchmarks, viz. FEDAI Spot Fixings, FEDAI FCNR(B) Benchmark Rates, FEDAI Month end Revaluation Rates for Foreign Exchange Contracts, and FEDAI Option Volatility. The NSE currently calculates one benchmark (MIBID-MIBOR), while Thomson Reuters calculates eight benchmarks (INBMK, MIFOR, MITOR, MIOIS, MIOCS, T-Bill Curve, CP Curve and CD Curve) and CRISIL provides calculation service for construction of Spread Matrix for corporate bonds.

5.3. The FIMMDA and FEDAI have provided details to the Committee about their Governance Framework for the benchmarks administered by them. The FIMMDA has also provided the details of the existing governance arrangements for the benchmarks co-branded by them along with Thomson Reuters and NSE and also for calculation of the Spread Matrix for corporate bonds outsourced to CRISIL. The Committee has also received information from the Thomson Reuters about their Governance Framework for the benchmarks calculated by them. Based on the information received by the Committee from the above mentioned entities, the existing governance arrangements with them are furnished below:

5.4. Governance Framework for Benchmarks Administered by FIMMDA

FIMMDA follows a maker-checker system for calculation of the valuation prices. The valuation prices are signed off by CEO/Deputy CEO or another senior officer. The name of the officers who have calculated and checked the valuation prices are recorded in a separate register and are also appended in the valuation sheets uploaded on FIMMDA's website. Additionally, the month-end valuation prices are placed before the FIMMDA Valuation Committee held on the first day of the succeeding month. The Committee goes through the valuation prices and any amendments suggested by the committee are recorded in the minutes. The minutes of the monthly Valuation Committee meeting is placed on FIMMDA's website. FIMMDA maintains the data and records since the introduction of Cubic Spline methodology in January 2011. The FIMMDA has not prescribed any Code of Conduct for the Submitters. It has also not subjected the benchmark determination process to any external audit.

5.5. Governance Framework for the Benchmarks Administered by FEDAI

The FEDAI follows a maker-checker system to compute the benchmark rates. The benchmark rates are signed off by the Deputy Chief Executive or Chief Executive before being published on FEDAI's website. FEDAI has not prescribed any Code of Conduct for the Submitters in case of the Benchmarks determined through polling process. However, it has advised all the banks to lay down internal policy for contribution of polling rates which should cover (i) the process/methodology to be followed to work out the quotes, (ii) mandating designated officials to contribute and approve the contributions, (iii) alternative arrangements to contribute rates in absence of the designated persons, (iv) periodical verification of the contributions by a senior level official. FEDAI has preserved all the records for last eight years. However, it has not subjected the benchmark determination process to any external audit.

5.6. Governance Framework for Benchmark calculated by NSE

The NSE follows a maker-checker system to ensure accuracy of the MIBOR-MIBID rates. FIMMDA has also introduced a verification system whereby the overnight MIBOR published by NSE is compared with the ruling overnight call rates and any significant variation between the two rates is taken up with NSE. The computation and dissemination of MIBID-MIBOR has been subjected to periodic internal audit of NSE. FIMMDA has recently appointed an external audit firm to review the NSE's benchmark setting process for MIBID-MIBOR and the audit report has since been submitted.

5.7. Governance Framework for Benchmarks calculated by Thomson Reuters

5.7.1. Thomson Reuters' OTC Market Content department, headquartered in London, is responsible for the firm's benchmark related activities across the globe. The benchmarks in India are calculated and published by a dedicated team based in Mumbai. The OTC Market Content department is responsible for managing the submission process by the contributing banks, adhering to the time frames for publication, and ensuring accuracy of the computation process. The Legal/Compliance functions keep the business appraised of the important existing and upcoming legal and regulatory guidelines. The Legal/Compliance functions is going to provide oversight to ensure that OTC Market Content Department operates within the outlined Code and adhere to its regulatory and corporate standards, including the firm's policies on confidentiality, data security, conflicts of interests and whistleblowing.

5.7.2. The Business Assurance and Internal Audit functions of Thomson Reuters is going to examine operations of the OTC Market Content team semi-annually to ensure that the unit is performing in line with required policy and procedure of the firm. It will also undertake back-testing of published results to ensure the level of quality in the benchmarking process. It is understood that FIMMDA is in the process of appointing an external audit firm to conduct audit of all the benchmarks calculated by Thomson Reuters.

5.7.3. Thomson Reuters has put in place policies to identify and manage potential or actual conflict of interests with appropriate systems, controls, and procedures which includes disclosure and escalation requirements. The firm recognizes potential conflicts of interests in the benchmark determination process given the other business relationships that the firm has with the contributing banks. The firm has taken steps to manage this conflict of interest through segregation of duties as well as requiring appropriate disclosure as outlined in the firm's corporate policies.

5.7.4. Thomson Reuters has systems and alerts in place to detect and prevent incorrect submissions by the contributors. If there are traded rates available for the fixing asset class, the submissions are compared with the traded rates to ensure integrity of the data. In case of significant variations between the two rates, the submissions are reconfirmed with the contributor. The benchmark rates are published after being scrutinized by a senior member of the team. In case of delay in publication or no publication of benchmark rates on a day, appropriate alerts are sent to the subscribers and the same is published on relevant Thomson Reuters pages.

5.8. Governance Framework for Benchmarks calculated by CRISIL

The CRISIL follows a maker-checker system wherein a primary analyst is involved in preparation of the matrices for the corporate bond spreads and the same are checked by a secondary analyst/manager. The matrices are thereafter verified by the Team Leader. In case of exceptional situations involving sharp market movements, key policy announcements, etc., the spread matrices are placed before an internal Valuation Committee comprising President-Research, Senior Director-Capital Markets and Director–Funds and Fixed Income Research. The CRISIL carries out an operational audit of its benchmark determination processes at an annual frequency.

5.9. Recommendations on Governance Framework

Taking into account the IOSCO Principles on the governance system for financial benchmarks, the best practices implemented/being implemented in various jurisdictions and specific requirements in the Indian context, the Committee recommends the following principles to be adopted by the Benchmark Administrators, Benchmark Calculation Agents and Benchmark Submitters involved in determination of Indian foreign exchange and interest rate benchmarks.

5.10. Recommendations on Governance Framework for Benchmark Administrators

i) The Benchmark Administrator may retain primary responsibility for all aspects of the Benchmark determination process including development of benchmark setting methodology, transparent disclosure of benchmark setting methodology, determination and dissemination of benchmark, transparent disclosure of important decisions impacting the benchmark determination process, establishing a robust and transparent governance, oversight and accountability system for the benchmark determination process, and setting out fallback mechanisms and transition provisions in case of cessation of a benchmark.

ii) The Benchmark Administrator may constitute a governing body to ensure quality and integrity of the benchmark setting process. It may lay down well-defined criteria and procedures for selection of members of the governance body. The governance body may include independent members who do not face conflicts of interests with the benchmark determination. The membership of the governance body along with declaration of any conflicts of interests and the process followed for appointment to and removal from the governance function may be disclosed in the public domain.

The membership of the Governance body may be rotated as per pre-determined periodicity.

iii) Where the Administrator has outsourced certain functions of benchmark determination, the Administrator may be responsible for all acts of omissions and commissions of the outsourced agent/s. The Administrator may put in place transparent written policies setting out the roles and obligations of entities handling the functions and regularly monitor compliance of these entities with the policies. The identity and role of these entities may be disclosed to the stakeholders. The Administrator should put in place appropriate contingency plans to manage operational risks involved in the outsourced functions.

iv) Where the Administrator has outsourced benchmark calculation functions to a Benchmark Calculation Agent, the Administrator should retain adequate access to and control over the data and calculation process and ensure compliance by the Benchmark Calculation Agent with the stated policies of the Administrator and with the regulatory guidelines.

v) The Administrator may document and implement policies and procedures for the identification, disclosure, management, mitigation or avoidance of existing and potential conflicts of interest. It may include the conflict of interest that may exist between the benchmark determination process and any other business of the Administrator or any of its affiliates. The policies and procedure may be periodically reviewed and updated.

vi) There should be proper segregation of reporting lines within the Administrator to clearly define responsibilities and prevent any conflicts of interest or perception of such conflicts of interest.

vii) The Administrator may put in place an effective system to control the exchange of information between the employees engaged in activities involving a risk of conflicts of interest or between employees and third parties, where that information may reasonably affect the determination of benchmarks.

viii) The Administrator may implement an appropriate control framework to address the existing and potential conflicts of interest in the benchmark determination and to maintain the integrity and quality of benchmark determination. The control framework may be periodically reviewed and updated.

ix) Authorised employees may supervise the benchmark determination process and approve the benchmark rates before they are disseminated.

x) The Administrator may put in place appropriate confidentiality protocols with respect to the data and other information received by or produced by it, subject to the disclosure obligations.

xi) The employees involved in benchmark determination may possess relevant expertise with a system of periodic review and enhancement of their competencies.

xii) The Administrator may have adequate remuneration polices to ensure that employees engaged in benchmark determination are not directly or indirectly rewarded by the levels of the benchmark.

xiii) The Administrator may establish an effective whistleblowing mechanism to facilitate early detection of any potential misconduct or irregularities in the benchmark determination process. This mechanism may allow for external reporting of such cases where appropriate.

xiv) In case of benchmarks determined based on submissions, the Administrator may ensure that the Submitters as a group appropriately represent the underlying interest measured by the Benchmark.

xv) The Administrator may develop appropriate oversight function for regular review of various aspects of the benchmark determination process. The oversight function may be carried out by a separate committee or by any other suitable arrangement. The procedures involved in oversight function including criteria for selection of members; processes for election, nomination, removal and replacement of members; declaration of conflicts of interest; may be documented and made available to the stakeholders as well as the relevant regulatory authorities.

xvi) The responsibilities of the oversight function may include, among others, the followings:

a. Periodic review of the definition and setting methodology of the Benchmark.

b. Establishing appropriate system to gather information about the issues and risks involved with the Benchmark.

c. Reviewing and overseeing of any changes to the Benchmark setting methodology and assessing whether the changed methodology continues to appropriately reflect the underlying interest.

d. Overseeing the management and operation of the Benchmark including the activities undertaken by a third party involved in Benchmark determination.

e. Ensuring that the exercise of expert judgment, if any, by the Benchmark Administrator is as per the laid down policies.

f. Following up for implementation of the remedial actions recommended in the audit reports.

xvii) Additional responsibilities of the oversight function in case of benchmarks determined based on submissions:

a. Overseeing the compliance by the Submitters to the Code of Conduct issued by the Administrator as per the recommendation contained in paragraph 4.20. (v) of Chapter 4 and instituting an effective system to address breach of the Code of Conduct by Submitters. To start with, the oversight system may be established through off-site monitoring by way of periodic returns and may be undertaken through on-site verification later as the administrator builds its manpower and technological capabilities. The findings of the oversight may be reported immediately to RBI.

b. Instituting appropriate system to detect potential anomalous or suspicious submissions and to initiate necessary follow up action thereafter. The details of such submissions may be reported immediately to RBI.

xviii) The oversight function may comprise balanced representations from a range of Stakeholders, Submitters and Subscribers, to counterbalance the potential or actual conflicts of interest with the Administrator arising out of its ownership structures or controlling interests, or due to activities of any entity owning or controlling the Administrator or by the Administrator or by any of its affiliates.

xix) The Administrator may establish a complaints redressal system which should contain procedures for receiving and investigating complaints about the Benchmark determination process in a timely and fair manner. The redressal body may take into consideration all the relevant factors prevailing in the market at that point in time. All documents submitted by the complainant as well as the Administrator's records relating to handling of a complaint may be preserved for a minimum period of eight years.

xx) The Administrator may appoint an independent external auditor with appropriate experience and capability to periodically review and report on the Administrator's

adherence to its stated criteria, methodology and with Principles. The frequency of audit may be decided based on the size and complexity of Benchmark determination process and the extent of use of the Benchmark.

xxi) The Administrator may retain all the records relating to Benchmark determination, including market data/submissions/any other data/expert judgment relied upon for Benchmark determination, changes in the standard procedures and methodologies during periods of market stress, names and roles of personnel responsible for submission and oversight of submission, declarations of conflicts of interest, findings of internal/external audits and remedial actions taken thereof, for a minimum period of eight years.

xxii) The Administrators of Rupee interest rate and foreign exchange benchmarks in India, viz. FIMMDA and FEDAI, may conduct a reality self-check of their governance framework vis-à-vis the above principles and report to RBI within a period of three months from the date of publication of the final Report.

xxiii) At present, the Boards of FIMMDA and FEDAI comprise of directors from their member institutions. Such a governance structure is riddled with conflicts of interest in the context of benchmark settings. To overcome the same, FIMMDA and FEDAI may consider creating a separate independent structure, either jointly or separately, for administration of the benchmarks on the lines of Singapore.

5.11. Recommendations on Governance Framework for Benchmark Calculation Agents

i) Individuals at appropriate level of seniority and clear accountability may be made responsible for Benchmark computation.

ii) The Benchmark Calculation Agents may establish robust pre- and post-calculation control to ensure consistent and timely Benchmark computation.

iii) The Benchmark Calculation Agents may establish an effective whistleblowing mechanism for facilitating early detection of potential misconduct or other irregularities in Benchmark computation.

iv) The Benchmark Calculation Agents may lay down clear policies to handle any issue arising out of any error in calculation of benchmarks.

v) The Benchmark Calculation Agents may put in place appropriate confidentiality protocols with respect to the data and other information received by or produced by it, subject to the disclosure obligations.

vi) The Benchmark Calculation Agents may keep records of all data used in the computation of Benchmark rates including the submissions by Benchmark Submitters for at least eight years. They may also keep records of all interactions with the Submitters as well as with the Benchmark Administrators for at least eight years.

vii) The Benchmark calculation process may be subjected to periodic internal and external audit.

viii) The Benchmark Calculation Agents may periodically submit a confirmation to the Benchmark Administrator for having complied with the guidelines issued by the Regulator and the Codes and Standards prescribed by the Administrator. The Benchmark Administrator may renew the accreditation of the Benchmark Calculation Agent subject to it satisfying the Codes and Standards set by the Administrator.

ix) The Benchmark Calculation Agents for Rupee interest rate and foreign exchange benchmarks in India may conduct a reality self-check of their governance framework vis-à-vis the above principles and report to RBI through their Benchmark Administrators within a period of three months from the date of publication of the final Report.

5.12. Recommendations on Governance Framework for Benchmark Submitters

i) The Benchmark Submitters may put in place an internal Board approved policy on governance of the Benchmark Submission process. The Governance policy may ensure that clearly accountable personnel at appropriate senior positions are responsible for Benchmark data submissions. The personnel involved in the Benchmark data submission may have requisite knowledge and expertise for discharge of their responsibilities. There may be a maker-checker system in place to ensure integrity of the submissions. The submissions may be periodically reviewed by appropriate senior level officials in terms of minimum variance threshold with respect to the final benchmark as mentioned at paragraph 4.20. (v) of Chapter 4.

ii) The Benchmark Submitters may establish an effective conflict of interest policy which facilitates identification of potential and actual conflict of interest with respect to Benchmark submissions and prescribes procedures to be followed for management, mitigation or avoidance of such conflicts.

iii) The Submitters may establish an effective whistleblowing policy to facilitate early detection of any potential misconduct or irregularities in the Benchmark data submissions.

iv) The Submitters may retain all the records relating to submissions including those containing procedures and methodologies governing the submission, relevant communications between submitting parties, interactions with Administrator, names and roles of personnel responsible for submission and oversight of submission, declarations of conflicts of interest, exposure of individual traders as well as the aggregate exposures of the Submitter to the instruments referenced to the Benchmark, findings of internal and external audits and remedial actions taken thereof, for a minimum period of eight years. All the rate submissions may be by way of written communications or through robust contribution devices which leave an audit trail to eliminate possibilities of errors.

v) Appropriate internal controls may be put in place to secure compliance with the submission procedures. The transactions which are taken as the basis for the submission are to be recorded to verify that they represent bonafide arm's length commercial transactions, and are not undertaken solely for the purpose of Benchmark submission. The controls may require the staff involved in Benchmark data submission to document the verifiable basis for their qualitative assessment in absence of actual transaction data.

vi) The Benchmark data submission may be subjected to periodic internal audit, and where appropriate, to external audit.

vii) The Benchmark Submitters may periodically submit a confirmation to the Benchmark Administrator for having complied with the regulatory guidelines and Code of Conduct issued by the Administrator as per the recommendation contained in paragraph 4.20. (v) of Chapter 4.

viii) The Benchmark Submitters for Rupee interest rate and foreign exchange benchmarks in India may conduct a reality self-check of their governance framework vis-à-vis the above principles and report to RBI through their Benchmark Administrators within a period of three months from the date of publication of the final Report.

Chapter 6

REGULATORY OVERSIGHT

6.1. As mentioned in Chapter 2, the IOSCO Principles for Financial Benchmarks have been accepted as the international standards for reforming the financial benchmarks. The IOSCO has stated that it expects the member countries to encourage implementation of the Principles including through regulatory actions wherever appropriate. Several legislative and regulatory measures have been undertaken/underway in many countries for reforming the financial benchmarks in their jurisdictions. The LIBOR became a regulated activity under UK's Financial Services and Markets Act, 2000 with effect from April 2, 2013. The BBA LIBOR Limited was authorised and regulated by the Financial Conduct Authority (FCA), UK as a specified benchmark administrator since then. The Hong Kong Monetary Authority (HKMA) laid down statutory guidelines on Code of Conduct for the Submitters. The Monetary Authority of Singapore (MAS) announced a proposed regulatory framework for financial benchmarks on June 14, 2013 which will introduce specific criminal and civil sanctions under the Securities and Futures Act for manipulation of any financial benchmark. The benchmark setting process of key financial benchmarks will be subjected to oversight of MAS. The MAS has also proposed to designate certain financial benchmarks as the key benchmarks and introduce a system of licensing for the submitters and administrator of key benchmarks. The European Commission (EC) proposed draft legislation in September 2013 to help restore confidence in the integrity of benchmarks.

6.2. Legal Basis for Regulation of Financial Benchmarks in India

6.2.1. In India, the Reserve Bank of India regulates the Money, G-sec and Foreign Exchange markets and the related derivatives markets. Section 45W of the Reserve Bank of India Act, 1934 (RBI Act) empowers the Reserve Bank to determine the policy relating to interest rates or interest rate products and give directions in this regard to all agencies dealing in derivatives, money market instruments, securities, etc. Section 45W of RBI Act reads as follows:

"(1) The Bank may, in public interest, or to regulate the financial system of the country to its advantage, determine the policy relating to interest rates or interest rate products and give directions in that behalf to all agencies or any of them, dealing in securities, money market instruments, foreign exchange, derivatives, or other instruments of like nature as the Bank may specify from time to time:

Provided that the directions issued under this sub-section shall not relate to the procedure for execution or settlement of the trades in respect of the transactions mentioned therein, on the Stock Exchanges recognised under section 4 of the Securities Contracts (Regulation) Act, 1956(42 of 1956).

(2) The Bank may, for the purpose of enabling it to regulate agencies referred to in sub-section (1), call for any information, statement or other particulars from them, or cause an inspection of such agencies to be made."

6.2.2. The Indian interest rate benchmarks, viz. MIBOR, MIFOR, INBMK, MIOIS, G-Sec/T-Bill/CP/CD yields, are basically Rupee interest rates and are related to/derived from various money market, fixed income and derivative instruments. The terms 'interest rate' and 'interest rate product' used in Section 45W of RBI Act are not defined in the Act. As there is no specific provision in the RBI Act with regard to regulation of financial benchmarks, the Committee pondered on whether the expression, "agencies ... dealing in" used in section 45W(1) of RBI Act needs to be given a very narrow interpretation of referring to agencies engaged in buying or selling of securities, money market instruments, derivatives, etc. or whether a broader interpretation is permissible so as to include agencies closely associated with such transactions so that directions may be issued by RBI under section 45W to Benchmark Administrators. The Committee feels that in view of the extensive directions required to be issued to Benchmark Administrators, Calculation Agents, Submitters, Users and any other agencies associated with the above benchmarks, explicit provisions in this regard are necessary. As such, in the interest of clarity, as a long term measure, the Committee recommends that suitable amendments may be carried out in the RBI Act to confer specific powers on RBI in this regard. However, for the present, the Committee opines that a broader interpretation of Section 45W(1), confers the requisite powers to RBI for regulating the financial benchmarks.

6.2.3. The amendments in the RBI Act, may explicitly empower RBI to determine policy with regard to benchmarks used in Money, G-sec, Credit and Foreign Exchange markets in India and to issue binding directions to the Benchmark Administrators, Calculation Agents, Submitters, Users and such other agencies associated with the above benchmarks as may be specified by RBI from time to time. RBI may be empowered to call for information and inspect such agencies and to impose penalty for violation of its directions in order to ensure credibility of the benchmarks for securing stability of the financial system of the country. The power to issue directions may cover various regulatory aspects such as designation of Benchmark Administrators; designation of key benchmarks; roles and responsibilities of

Benchmark Administrators, Calculation Agents and Submitters; measures for strengthening benchmark quality, setting methodology, Governance Framework and accountability mechanisms; system of accreditation of Benchmark Calculation Agents by the Benchmark Administrators; whistleblowing mechanism; periodic review and independent audit of benchmark setting process; system of phasing-out of inactive benchmarks and phasing-in of new benchmarks; methods to handle transitions; etc.

6.3. Actions Pending Legal Amendments

In the present global scenario, there is a felt need for bringing benchmark setting process under some kind of regulation at the earliest. As such, pending legislative measures as discussed above, which may take some time, the Committee reflected on the other avenues that may be explored for achieving the objectives. The Committee recommends that RBI may entrust the responsibility of benchmark administration of Rupee interest rate benchmarks and foreign exchange benchmarks with FIMMDA and FEDAI respectively. FIMMDA and FEDAI, being Companies incorporated under Section 25 of the Companies Act, 1956, may have to review their Memorandum and Articles of Association to see if any amendments in these documents are called for to enforce such standards through the members. FIMMDA and FEDAI may also enter into appropriate agreements with their Calculation Agents to implement the standards. RBI, in exercise of its power to regulate Banks and PDs and the power to regulate transactions in derivatives, money market instruments, securities, etc., may appropriately advise the Banks and PDs to strengthen their Governance Framework for benchmark submission and extend necessary support to the Benchmark Administrators for strengthening the overall benchmark setting process as per the recommendations of the Committee mentioned in Chapters 4 and 5 of the Report.

6.4. RBI's Supervisory Framework for Financial Benchmarks

6.4.1. The submission, calculation and administration activities relating to the Indian Rupee interest rate benchmarks and foreign exchange benchmarks may be brought under the purview of RBI's supervision. The Bank may inspect the benchmark submission activities of the banks and PDs including their governance arrangements for the submissions during the on-site supervision of these institutions. The Bank may also bring the above under the existing Off-Site Monitoring System at the earliest and mandate the banks and PDs to submit periodic returns covering various aspects of their benchmark submission system.

6.4.2. The benchmark administration by FIMMDA and FEDAI and the calculation of the benchmarks by various agents may be subjected to periodic inspection by RBI. The Bank

may constitute an internal expert group to carry out inspection of the activities of the Benchmark Administrators and Calculation Agents. An Off-Site Monitoring system may also be put in place whereby periodic returns and internal/external audit reports may be collected from the Benchmark Administrators and Calculation Agents and analysed. The Bank may also put in place a system of gathering intelligence inputs and feedback from various stakeholders of the benchmarks.

6.4.3. The Bank may take appropriate penal actions against Benchmark Administrators, Calculation Agents and Submitters for their manipulative practices, if any, established through Bank's oversight system in order to strengthen the benchmark setting process and enhance the credibility and reliability of the Indian financial benchmarks.

CHAPTER 7

SUMMARY OF RECOMMENDATIONS

A chapter-wise summary of recommendations is given below:

Chapter 4: Benchmark Quality and Setting Methodology

A. Rupee Interest Rate Benchmarks

1. FIMMDA may be designated as the administrator of all Rupee Interest Rate Benchmarks. **[Para 4.3.2(i),4.4.2(i),4.5.2.(i),4.6.2.(i),4.7.2.(i),4.12.2.(i),4.13.2.(i),4.14.2.(i)]**

2. The computation of overnight MIBID-MIBOR may be shifted from existing polling based method to volume weighted average of trades executed between 9 AM to 10 AM on NDS-CALL operated by CCIL. The FIMMDA may decide appropriate timeline for effecting the change in consultation with RBI. **[Para 4.3.2.(iv)]**

3. The CCIL may stop publishing the 1PM MIBID-MIBOR fixing to avoid confusions for the end users. **[Para 4.3.2.(v)]**

4. FIMMDA may change the nomenclature of the overnight MIBID-MIBOR and take necessary steps as mentioned in the Report for facilitating smooth transition. Multilateral agreement may be followed for outstanding interbank/PD trades, while bilateral agreement may be undertaken for outstanding trades with clients for transition to the new benchmark. **[Para 4.3.2.(vi)]**

5. The FIMMDA and CCIL may disclose the details of the methodology and put in place appropriate contingency mechanism. **[Para 4.3.2.(vii)]**

6. The 14-day, 1-month and 3-month MIBID-MIBOR may be fixed by CCIL through the polling process. **[Para 4.3.2.(viii)]**

7. In terms of synergy in the work process, the daily fixation of term MIBID and MIBOR may be entrusted to CCIL. **[Para 4.3.2.(ix)]**

8. Banks may strive to develop the USD/INR basis swap market and USD/INR forwards (beyond 1 year) so as to obviate the need to use MIFOR. **[Para 4.4.2.(ii)]**

9. The FIMMDA may encourage more banks to participate in the polling for MIFOR and if need be, mandate the major banks in the foreign exchange forward market to participate in the polling. **[Para 4.4.2.(iii)]**

10. In the absence of interbank transactions in certain benchmarks/benchmark tenors, viz. 1-month, 2-month and 1-year MIFOR; MITOR; and all INBMK tenors except 1-year, may be phased out subject to FIMMDA ascertaining from banks through survey about lack of referencing of the above of benchmarks in their outstanding client trades within three months from publication of the final Report and facilitate suitable transition arrangement, if required. **[Para 4.4.2.(iv) & (vi), 4.5.2.(ii)]**

11. In the absence of enough liquidity in electronic trading of forwards, the existing system of polling for MIFOR may continue. However, FIMMDA may lay out a roadmap for use of transaction data to determine the benchmark. **[Para 4.4.2.(v)]**

12. The construction of INBMK, T-Bill, CP and CD Curves may take into account transaction data as the first layer of input followed by executable bids and offers subject to threshold for both. The polling system may continue and the polled submissions may be used when the actual trades and executable bids/offers fall below threshold. **[Para 4.5.2.(iii), 4.12.2.(ii), 4.13.2.(ii) & 4.14.2.(ii)]**

13. MIOIS and MIOCS rates may be used for valuation of outstanding OIS and MIFOR trades, respectively. **[Para 4.6.2.(ii) & 4.7.2.(ii)]**

14. The construction of MIOIS and MIOCS may take into account the OIS and MIFOR swap trades, respectively, reported to CCIL after the CCIL starts capturing the trade time stamp. **[Para 4.6.2.(iii) & 4.7.2.(iii)]**

15. The current methodology followed by FIMMDA for construction of G-sec yield curve may continue. However, FIMMDA may appoint an expert team to verify the robustness of the Cubic Spline model. **[Para 4.8.3.(i)]**

16. Threshold specified for trades/bids and offers may be subjected to periodic resetting at a well-defined time interval for keeping them at reasonably higher level taking into account the overall liquidity and developments in the respective markets. **[Para 4.8.3.(ii), 4.9.3.(ii), 4.10.2.(i), 4.11.3.(ii)]**

17. The volume weighted average of the eligible trades covering a sufficiently longer time window may be used for setting of G-sec yield curve, FRB spreads, and prices for SDLs instead of considering just the last traded yield.**[Para 4.8.3 (iii), 4.9.3.(iii), 4.10.2.(ii)]**

18. FIMMDA may fix the minimum quorum and composition of the meeting of the Valuation Committee for approval of the spreads for GOI FRBs and the same should be disclosed in the public domain. **[Para 4.9.3. (i)]**

19. In the absence of required trading volume in SDLs, the spread discovered in the last two SDL auctions, subject to appropriate qualifying criteria, may be used in place of existing fixed 25bps spread. **[Para 4.10.2.(iii)]**

20. FIMMDA may disclose the methodology used for computation of Spread Matrix including conduct of polling by CRISIL for valuation of corporate bonds in the public domain. **[Para 4.11.3.(i)]**

21. FIMMDA may explore the possibility of polling the spreads for six lower rating categories instead of using the fixed mark-up. As the liquidity in corporate bonds of various ratings improves, FIMMDA may make use of the traded rates available on its reporting platform/NSE/BSE, subject to threshold criteria, for calculation of spread matrix. **[Para 4.11.3.(iii)]**

22. The names of the polling constituents for construction of T-Bill Curve may be publicly disclosed. **[Para 4.12.2.(iii)]**

B. Foreign Exchange Benchmarks

1. RBI may continue with the existing system of fixation of Reference Rates keeping in view the recent international developments where the official sector is assuming greater role in fixation of financial benchmarks and the fact that several central banks in developed as well as emerging economies publish such reference rates. **[Para 4.15.4.(ii)]**

2. The USD/INR Reference Rate of RBI may be based on volume weighted average of spot transactions obtained from defined source/s covering a sufficiently longer time window. **[Para 4.15.4.(iii)]**

3. RBI may fix only USD/INR Reference Rate and publish other three rates, viz. EUR/INR, GBP/INR and JPY/INR by crossing the USD/INR Reference Rate with the ruling EUR/USD, GBP/USD and JPY/USD rates and publicly disclose the sources of the above FCY-FCY rates. **[Para 4.15.4.(iv)]**

4. FEDAI spot fixings do not serve any meaningful purpose. FEDAI may conduct a survey among banks to ascertain nature of use of the benchmark by corporates and other clients and accordingly decide on phasing out the benchmark within three months from publication of the final Report. **[Para 4.16.2.(i)]**

5. If FEDAI decides to continue Spot fixings, the benchmark may be determined by taking the volume weighted average of USD/INR spot transactions executed during a sufficiently longer time window. **[Para 4.16.2.(ii)]**

6. FEDAI may publicly disclose the source and time of getting the swap rates for various currencies and tenors which are used for fixation of periodic interest rate on FCNR (B) deposits. **[Para 4.17.2.(i)]**

7. FEDAI may put in place appropriate fallback procedures for determining all the benchmark rates published by it. **[Para 4.16.2.(ii), 4.17.2(ii), 4.18.2.(iv) & 4.19.2.(ii)]**

8. FEDAI may disclose the benchmark setting methodology in the public domain for all the benchmark rates published by it. **[Para.4.16.2.(ii), 4.17.2.(i), 4.18.2.(i) & 4.19.2.(i)]**

9. FEDAI may use the volume weighted average rate of the USD/INR spot and forward trades executed during a sufficiently longer time window for calculation of month-end revaluation rates for forex contracts. **[Para 4.18.2.(ii)]**

10. Till FEDAI shifts to the volume weighted average traded rate, it may source the spot and forward rates at the same time for calculation of month-end revaluation rates. **[Para 4.18.2.(iii)]**

11. FEDAI may continue daily publication of USD/INR option implied volatilities for uniform application of the same by banks for computation of overnight open position of their outstanding option contracts. The time of polling may be advanced sufficiently so that the benchmark can be published during active market hours which would facilitate better management of option positions by the user banks. **[Para 4.19.2.(iii)]**

12. As liquidity in FCY/INR option market improves, FEDAI may, in consultation with active market makers, take steps for developing a dealing platform for the instrument. **[Para 4.19.2.(iv)]**

C. Recommendations common for all Rupee Interest Rate and Foreign Exchange benchmarks (excluding base rate and other proprietary rates of individual banks)

1. The Benchmark Administrators may take into account appropriate generic factors in designing a benchmark so that the benchmark accurately represents the economic realities of the interest that it intends to measure. **[Para 4.20.(i)]**

2. The methodologies used for calculation of benchmark may have well-defined criteria and discretionary decisions may be very limited. **[Para 4.20.(ii)]**

3. Adequate amount of data may be used for calculation of benchmarks. The Administrator may put in place a well-defined hierarchy of data inputs for calculation of benchmarks. **[Para 4.20.(iii) & (iv)]**

4. In case of benchmarks determined based on submissions, the Administrator may prescribe a comprehensive Code of Conduct for the Submitters specifying aspects such as hierarchy of inputs, role and responsibility of key personnel, pre-submission validation of inputs and post-submission reviews, procedures to identify suspicious inputs, procedures to manage conflict of interest, etc. Where benchmark determination uses transaction data and/or executable bids and offers, the Administrator may report the fictitious transactions and/or fictitious bids/offers used to influence the benchmark rate immediately to RBI upon identification through periodic review. **[Para 4.20.(v) & (vi)]**

5. The Administrator may specify a minimum number of submitters to be polled in each benchmark and if necessary, mandate participation by the submitters identified based upon their trading activity in the benchmark/instrument linked to the benchmark. **[Para 4.20.(vii)]**

6. The Administrator may disclose the methodology for calculation of benchmark, rationale thereof and any subsequent change in the methodology in the public domain. **[Para 4.20.(viii)]**

7. Individual submissions may be published after a suitable lag. **[Para 4.20.(ix)]**

8. The Administrator may put in place credible contingency provisions. **[Para 4.20(x)]**

9. The Administrator may regularly review each benchmark to ensure that the benchmark continue to reflect the underlying interest and to phase-out benchmarks that have become redundant. **[Para 4.20.(xi)]**

10. New benchmarks developed by various agencies may be registered with the concerned Administrator before being introduced in the market. Administrator may encourage market participants to introduce new benchmarks as per the emerging needs of the end-users. **[Para 4.20.(xii)]**

11. The Administrator may have written policies and procedures to handle possible cessation of a benchmark and may devise suitable multilateral/bilateral amendment agreements to facilitate smooth transition to new benchmarks. **[Para 4.20.(xiii)]**

Chapter 5: Governance Framework

A. Governance Framework for Benchmark Administrator

1. The Administrator may retain primary responsibility for all aspects of benchmark determination process. It may constitute a governing body to ensure quality and integrity of the benchmark determination process. **[Para 5.10.(i) & (ii)]**

2. Put in place policies for the outsourced functions setting out the roles and obligations of entities handling these functions and regularly monitor compliance by these entities. The Administrator may retain adequate access to and control over the data and calculation process of the Calculation Agents. **[Para 5.10.(iii) & (iv)]**

3. Put in place appropriate policies and procedures for the identification, disclosure, management, mitigation or avoidance of existing and potential conflicts of interest. **[Para 5.10. (v)]**

4. There should be proper segregation of reporting lines. The Administrator may put in place system to control the exchange of information between the employees engaged in activities involving a risk of conflicts of interest or between employees and third parties where exchange of information may reasonably affect the benchmark determination. Appropriate control framework may be instituted to address the existing and potential conflicts of interest. **[Para 5.10.(vi), (vii) & (viii)]**

5. Only authorised employees may supervise the benchmark determination and approve the benchmark rates. **[Para 5.10.(ix)]**

6. The Administrator may use appropriate confidentiality protocols with respect to the data and other information received by or produced by it. **[Para 5.10.(x)]**

7. The employees involved in benchmark determination may possess relevant expertise. The remuneration polices may be adequate to ensure that employees engaged in benchmark determination are not rewarded by the levels of the benchmark. **[Para 5.10.(xi) & (xii)]**

8. Establish an effective whistleblowing mechanism to facilitate early detection of any potential irregularities in the benchmark setting process. **[Para 5.10.(xiii)]**

9. In case of benchmarks determined based on submissions, ensure that the Submitters appropriately represent the underlying interest measured by the Benchmark. **[Para 5.10.(xiv)]**

10. Develop appropriate oversight function for regular review of various aspects of the benchmark determination process. In case of benchmarks determined based on submissions, the oversight may include the compliance by the Submitters to the Code of Conduct and appropriate system to detect potential anomalous submissions. The findings may be immediately reported to RBI. The oversight function may comprise of balanced representations from a range of Stakeholders, Submitters and Subscribers. **[Para 5.10. (xv), (xvi), (xvii) & (xviii)]**

11. Establish a complaint redressal system containing procedures for receiving and investigating complaints on benchmark setting process in a timely and fair manner. **[Para 5.10.(xix)]**

12. Appoint an independent external auditor with appropriate experience and capability to periodically review and report on the Administrator's adherence to its stated criteria, methodology and with principles. **[Para 5.10.(xx)]**

13. Retain all the records relating to benchmark determination including findings of internal and external audits for a minimum period of 8 years. **[Para 5.10.(xxi)]**

14. FIMMDA and FEDAI may conduct a reality self-check of their governance framework vis-à-vis the above principles and report to RBI within a period of three months after publication of the final Report. **[Para 5.10.(xxii)]** .

15. FIMMDA and FEDAI may consider creating a separate independent structure, either jointly or separately, for administration of the benchmarks on the lines of Singapore. **[Para 5.10.(xxiii)]**

B. Governance Framework for Benchmark Calculation Agents

1. Individuals at appropriate level of seniority with clear accountability may be made responsible for Benchmark computation and establish robust pre- and post-calculation control. **[Para 5.11.(i) & (ii)]**

2. Establish an effective whistleblowing mechanism. **[Para 5.11.(iii)]**

3. Lay down clear policies to communicate any errors in calculation. **[Para 5.11.(iv)]**

4. Put in place appropriate confidentiality protocols with respect to the data and other information received by or produced by it. **[Para 5.11.(v)]**

5. Retain all the records relating to benchmark calculation including the submissions for at least eight years. **[Para 5.11.(vi)]**

6. Subject the benchmark calculation to internal and external audit. **[Para 5.11.(vii)]**

7. Submit a periodic confirmation to the Benchmark Administrator on compliance with the applicable guidelines. Renewal of accreditation of Calculation Agents may be subject to compliance with the standards prescribed by Administrator. **[Para 5.11. (viii)]**

8. The Calculation Agents may conduct a reality self-check of their governance framework vis-à-vis the above principles and report to RBI through the Administrators within a period of three months after publication of the final Report. **[Para 5.11.(ix)]**

C. Governance Framework for Benchmark Submitters

1. Put in place an internal Board approved policy on governance of the benchmark submission process covering various aspects of internal control, oversight, etc. Appropriate internal controls may be put in place to ensure proper basis for submissions. **[Para 5.12. (i) & (v)]**

2. Establish an effective conflicts of interest policy for identification and management, mitigation or avoidance potential/actual conflicts of interests with respect to submissions and an effective whistleblowing policy. **[Para 5.12. (ii) & (iii)]**

3. Retain all records relating to submissions including relevant communications and findings of internal/external audits for a minimum period of eight years. **[Para 5.12.(iv)]**

4. Subject the benchmark submission to periodic internal audit, and where appropriate, to external audit. **[Para 5.12.(vi)]**

5. Submit a periodic confirmation to the Benchmark Administrator for having complied with the regulatory guidelines and Code of Conduct. **[Para 5.12.(vii)]**

6. The Submitters may conduct a reality self-check of their governance framework vis-à-vis the above principles and report to RBI through the Administrators within a period of three months after publication of the final Report. **[Para 5.12.(viii)]**

Chapter 6: Regulatory Oversight

1. Although the RBI Act does not have any specific provision for regulation of financial benchmarks, a broader interpretation of Section 45W of the Act may empower RBI to issue directions to the Benchmark Administrators. However, in view of the extensive directions required to be issued by RBI to various agencies involved in benchmark determination, necessary amendments may be made in the Section 45W, as a long term measure, to enable RBI to determine policies with regard to Money, G-sec, Credit and Foreign Exchange benchmarks in India and to issue binding directions to different agencies. **[Para.6.2.2 & 6.2.3]**

2. RBI may entrust the administration function of Rupee interest rate benchmarks and foreign exchange benchmarks with FIMMDA and FEDAI respectively. FIMMDA and FEDAI may review their Memorandum and Articles of Association to bring out necessary amendments and may also enter into agreements with Calculation Agents to enforce the standards. RBI may advise the Banks and PDs under its existing power to strengthen the Governance

Framework for benchmark submissions and to extend necessary support to the Administrator for strengthening the benchmark setting process. **[Para.6.3.]**

3. RBI may bring the benchmark submission system of banks and PDs under its on-site supervision and off-site monitoring. An internal expert group may be formed to conduct periodic on-site inspection of Benchmark Administrators and Calculation Agents. An off-site monitoring system may also be instituted for the benchmark administration and calculation functions. **[Para.6.4.]**

Annex

Extract of Chapter 2 of IOSCO's Final Report: 'Principles for Financial Benchmarks' - Summary of Principles

These Principles are intended to promote the reliability of Benchmark determinations, and address Benchmark governance, quality and accountability mechanisms. Although the Principles set out uniform expectations, IOSCO does not expect a *one-size-fits-all* method of implementation to achieve these objectives. The Principles provide a framework of standards that Administrators should implement according to the specificities of each Benchmark. In particular, the application and implementation of the Principles should be proportional to the size and risks posed by each Benchmark and/or Administrator and the Benchmark-setting process. Moreover, nothing in these Principles is intended to restrict an Administrator from adopting its own unique Methodology or from adapting their Methodologies to changing market conditions in order to meet the Principles.

Governance:

These Principles are intended to ensure that Administrators will have appropriate governance arrangements in place in order to protect the integrity of the Benchmark determination process and to address conflicts of interest. Specifically, these Principles address:

• The retention by the Administrator of primary responsibility for all aspects of the Benchmark determination process, such as the development and determination of a Benchmark and establishing credible and transparent governance, oversight and accountability procedures. This Principle makes clear that, regardless of the particular structure for Benchmark determination and administration, there should be an overall entity which is responsible for the integrity of the Benchmark. **[1. Overall Responsibility of the Administrator]**

• The adoption by the Administrator (and its oversight function) of clearly defined written arrangements setting out the roles and obligations of the parties involved in the Benchmark determination and the monitoring of any third party's compliance with those arrangements. This Principle reflects the concern that any outsourcing of functions should be subject to oversight by the Administrator. This Principle applies only where activities relating to the Benchmark determination process are undertaken by third parties, for example with respect to collection of inputs, or where a third party acts as the Calculation Agent or Publisher of the Benchmark. **[2. Oversight of Third Parties]**

• The documentation, implementation and enforcement of policies and procedures for the identification, disclosure, management and avoidance of conflicts of interest, including the disclosure of any material conflicts of interest to Stakeholders and any relevant Regulatory Authority. This framework should be appropriately tailored to the level of existing or potential conflicts of interest identified by the Administrator and should seek to mitigate existing or potential conflicts of interest created by the ownership or control structure or due to other interests arising from the Administrators' staff or wider group in relation to Benchmark determinations. This Principle is intended to address the vulnerabilities that create incentives for Benchmark manipulation. [**3. Conflicts of Interest for Administrators]**

• An appropriate control framework at the Administrator for the process of determining and distributing the Benchmark, which should be appropriately tailored to the materiality of the potential or existing conflicts of interest identified, and to the nature of Benchmark inputs and outputs. The control framework should be documented, available to any relevant Regulatory Authority and Published or Made Available to Stakeholders. Among other things, a control framework should include an effective whistleblowing mechanism in order to facilitate early awareness of potential misconduct. **[4. Control Framework for Administrators]**

• An oversight function to review and provide challenge on all aspects of the Benchmark determination process, which should be appropriate to the Benchmark in question (i.e., including its size, scale and complexity) and provide effective oversight of the Administrator. The oversight function and its composition should include consideration of the features and intended, expected or known usage of the Benchmark and the materiality of existing or potential conflicts of interest identified. A separate committee or other appropriate governance arrangements should carry out the oversight function. [**5. Internal Oversight**]

Quality of the Benchmark:

These Principles are intended to promote the quality and integrity of Benchmark determinations through the application of design factors that result in a Benchmark that reflects a credible market for an Interest measured by that Benchmark. The Principles also clarify that a variety of data may be appropriately used to construct a Benchmark, as long as the Data Sufficiency Principle is met (i.e., based on an active market). Specifically, these Principles address:

• The design of a Benchmark should take into account generic design factors that are intended to result in a reliable representation of the economic realities of the Interest that the Benchmark seeks to measure and to eliminate factors that might result in a distortion of the

price, rate, index or value of that Benchmark. The factors presented are generic and non-exclusive illustrations. **[6. Benchmark Design]**

• The data used to construct a Benchmark should be based on prices, rates, indices or values that have been formed by the competitive forces of supply and demand (i.e., in an active market) and be anchored by observable transactions entered into at arm's length between buyers and sellers in the market for the Interest the Benchmark measures. This Principle recognizes that *Bona Fide* observable transactions in active markets provide a level of confidence that the prices or values used as the basis of the Benchmark are credible. Principle 7 does not mean that every individual Benchmark determination must be constructed solely from transaction data. Provided that an active market exists, conditions in the market on any given day might require the Administrator to rely on different forms of data tied to observable market data as an adjunct or supplement to transactions. Depending upon the Administrator's Methodology, this could result in an individual Benchmark determination based predominantly, or exclusively, on bids and offers or extrapolations from prior transactions.

• Provided that an active market exists, Principle 7 does not preclude Benchmark Administrators from using executable bids or offers as a means to construct Benchmarks where anchored in an observable market consisting of *Bona Fide*, Arms-length transactions. For example, this approach might be appropriate in a market where overall transaction volume is high over sustained periods, though on any given day there might be more firm bids and offers than posted transactions taking place.

• The Principle also recognizes that various indices may be designed to measure or reflect the performance of a rule-based investment strategy, the volatility or behaviour of an index or market or other aspects of an active market. The Principle also does not preclude the use of non-transactional data for indices that are not designed to represent transactions and where the nature of the index is such that non-transactional data is used to reflect what the index is designed to measure. For example, certain volatility indices, which are designed to measure the expected volatility of an index of securities transactions, rely on non-transactional data, but the data is derived from and thus *anchored* in an actual functioning securities or options market. **[7. Data Sufficiency]**

• The establishment of clear guidelines regarding the hierarchy of data inputs and the exercise of Expert Judgment used for the determination of Benchmarks. This Principle is intended to make transparent to users the manner in which data and Expert Judgment may be used for the construction of a Benchmark. This Principle is not intended to create a rigid checklist or

otherwise restrict an Administrator's flexibility to use inputs consistent with the Administrator's approach to ensuring the quality, integrity, continuity and reliability of its Benchmark determinations, set out in the Benchmark Methodology, provided that the Data Sufficiency Principle is met. **[8. Hierarchy of Data Inputs]**

• The publication with each Benchmark determination, to the extent reasonable without delaying the Administrator's publication deadline, of a concise explanation sufficient to facilitate a Subscriber's or Market Authority's ability to understand how the Benchmark determination was developed, as well as a concise explanation of the extent to which and the basis upon which judgment, if any, was used by the Administrator in establishing a benchmark determination. Benchmarks that regularly publish their Methodologies would satisfy principle 9 when derived from data sourced from Regulated Markets or Exchanges with mandatory post-trade transparency requirements. In addition, a Benchmark that is based exclusively on executable quotes as contemplated by Principle 7 would not need to explain in each determination why it has been constructed with executable bids or offers, provided there is disclosure in the Methodology. **[9. Transparency of Benchmark Determinations]**

• The periodic review by the Administrator of the conditions in the underlying Interest that the Benchmark measures to determine whether the Interest has undergone structural changes that might require changes to the design of the Methodology (e.g., the Interest has diminished to the extent that it can no longer function as the basis for a credible Benchmark). In order to facilitate Stakeholders' understanding of the viability of a Benchmark, a summary of such reviews should be Published or Made Available when material revisions have been made to a Benchmark, including the rationale for the revisions. **[10. Periodic Review]**

Quality of the Methodology:

These Principles are intended to promote the quality and integrity of Methodologies by setting out minimum information that should be addressed within a Methodology, which should be Published or Made Available so that Stakeholders may understand and make their own judgments concerning the overall credibility of a Benchmark. The Methodology should also address the need for procedures that control when material changes are planned, as a means of alerting Stakeholders to these changes that might affect their positions, financial instruments or contracts.

The Principles also establish that Administrators should have credible policies in case a Benchmark ceases to exist or Stakeholders need to transition to another Benchmark. These

policies are intended to encourage Administrators and Stakeholders to plan prospectively for the possible cessation of a Benchmark.

These Principles also address vulnerabilities in the Submission process (e.g., conflict of interest, improper communication between Submitters and Administrators, selective Submission of data) by outlining the responsibilities that should be undertaken by Submitters (i.e., a Submitter Code of Conduct). These Principles also make clear the Administrator's responsibilities to have internal controls over the collection of data from regulated sources. Specifically, these Principles address:

• The documentation and publication of the Methodology used to make Benchmark determinations, with sufficient detail to allow Stakeholders to understand how the Benchmark is derived and to assess its representativeness, its relevance to particular Stakeholders, and its appropriateness as a reference for financial instruments. **[11. Content of the Methodology]**

• The publication of the rationale of any proposed material change in its Methodology, and procedures for making such changes. These procedures should clearly define what constitutes a material change, and the method and timing for consulting or notifying Subscribers (and other Stakeholders where appropriate, taking into account the breadth and depth of Benchmark use) of changes. **[12. Changes to the Methodology]**

• Clearly written policies and procedures that address the need for possible cessation of a Benchmark, due to market structure change, product definition changes, or any other condition, which makes the Benchmark no longer representative of its intended function. These policies and procedures should be proportionate to the estimated breadth and depth of contracts and financial instruments that reference a Benchmark and the economic and financial stability impact that might result from the cessation of the Benchmark. The Administrator should take into account the views of Stakeholders and any relevant Regulatory and National Authorities in determining what policies and procedures are appropriate for a particular Benchmark. Administrators should encourage Subscribers and Stakeholders to have robust fall-back provisions in contracts or financial instruments that reference a Benchmark. **[13. Transition]**

• The development of guidelines for Submitters ("Submitter Code of Conduct, which should be available to any relevant Regulatory Authorities and Published or Made Available to Stakeholders. Note: This Principle is only applicable to a Benchmark based on Submissions. **[14. Submitter Code of Conduct]**

• Appropriate internal controls over the Administrator's data collection and transmission processes – when an Administrator collects data directly from a Regulated Market, Exchange or other data aggregator, which address the process for selecting the source, collecting the data and protecting the integrity and confidentiality of the data. **[15. Internal Controls over Data Collection]**

Accountability:

These Principles establish complaints processes, documentation standards and audit reviews that are intended to provide evidence of compliance by the Administrator with its quality standards, as defined by these Principles and its own policies. The Principles also address making the foregoing information available to relevant Market Authorities. Specifically, these Principles address:

• The establishment and publication of a written complaints policy by which Stakeholders may submit complaints concerning whether a specific Benchmark determination is representative of the underlying Interest it seeks to measure, application of the Methodology to a specific Benchmark determination and other Administrator decisions in relation to a Benchmark determination. This Principle is intended to promote the reliability of Benchmark determinations through Stakeholder input and alert Market Authorities to possible factors that might affect the reliability of determinations. **[16. Complaints procedures]**

• The appointment of an independent internal or external auditor with appropriate experience and capability to periodically review and report on the Administrator's adherence to its stated criteria and the requirements of the Principles. The frequency of audits should be proportionate to the size and complexity of the Administrator's operations. Under certain circumstances (i.e., appropriate to the level of existing or potential conflicts of interest identified by the Administrator) an Administrator should appoint an independent external auditor to periodically review and report on the Administrator's adherence to its stated Methodology criteria. These provisions are intended to promote compliance with the Principles and provide confirmation to relevant Market Authorities and Stakeholders of such compliance. [**17. Audits]**

• The retention of written records by the Administrator for five years, subject to applicable national legal or regulatory requirements. This Principle is intended to safeguard necessary documents for Audits. Additional requirements apply for Benchmarks based on Submissions. **[18. Audit Trail]**

• Relevant documents, Audit Trails and other documents addressed by these Principles shall be made readily available by the relevant parties to the relevant Regulatory Authorities in carrying out their regulatory or supervisory duties and handed over promptly upon request. This is intended to facilitate a Regulatory Authority's ability to access information that might be needed to determine the reliability of a given Benchmark determination or to access information that might be needed to investigate misconduct. **[19. Cooperation with Regulatory Authorities]**

Bibliography

1. ABS- SFEMC (2013), 'Singapore to Enhance Financial Benchmarks', *June 14, 2013* available at: http://www.abs.org.sg/pdfs/Newsroom/PressReleases/2013/ABS_SFEMC_Press_Release_20130614.pdf
2. AFMA (2013), 2013 Australian Financial Markets Report, available at: https://www.afma.com.au/afmawr/_assets/main/lib90013/2013%20afmr.pdf
3. AFMA (2013), 'Bank Bill Swap (BBSW) Benchmark Rate General Conventions', *October 21, 2013* available at: http://www.afma.com.au/afmawr/_assets/main/lib90031/bbsw%20general%20conventions.pdf
4. BBA LIBOR Ltd. (2013), 'Announcement of LIBOR changes', *June 12, 2013* available at : http://www.bbalibor.com/news/announcement-of-libor-changes
5. BBA LIBOR Ltd. (2013), 'Policy on Public Interest Disclosure - Whistleblowing Policy for LIBOR', *July 08, 2013* available at: http://www.bbalibor.com/download/9069
6. BBA LIBOR Ltd. (2013), 'BBA to hand over administration of LIBOR to Intercontinental Exchange Benchmark Administration Ltd', *January 17, 2014* available at : http://www.bbalibor.com/news/bba-to-hand-over-administration-of-libor-to-intercontinental-exchange-bench
7. BIS (2013), 'Towards better reference rate practices: a central bank perspective', *March 18, 2013* available at: http://www.bis.org/publ/othp19.htm
8. Brousseau, V., Chailloux, A., Durré, A.(2013): 'Fixing the Fixings: What Road to a More Representative Money Market Benchmark?', IMF Working Paper, WP/13/131, *May 01, 2013* available at: http://www.imf.org/external/pubs/ft/wp/2013/wp13131.pdf
9. EC (2013), 'New measures to restore confidence in benchmarks following LIBOR and EURIBOR scandals', *September 18, 2013* available at: http://europa.eu/rapid/press-release_IP-13-841_en.htm
10. Eisl, Alexander and Jankowitsch, Rainer and Subrahmanyam, Marti G. (2013), 'Are Interest Rate Fixings Fixed? An Analysis of Libor and Euribor', *January 15, 2013*. available at : http://papers.ssrn.com/sol3/papers.cfm?abstract_id=2201013

11. ESMA-EBA (2013), 'EURIBOR recommendations to EBF', *January 11, 2013* available at: http://www.esma.europa.eu/system/files/eba_bs_2013_001_euribor_-_recommendations_to_ebf.pdf
12. ESMA -EBA (2013), 'Principles for Benchmark-Setting Processes in the EU', *January 11, 2013, ESMA/ 2013/659* available at: http://www.esma.europa.eu/system/files/2013-12.pdf
13. FSB (2013), 'Progress report on the oversight and governance framework for financial benchmark reform', *August 29, 2013* available at: http://www.financialstabilityboard.org/publications/r_130829f.pdf
14. HKAB (2013), 'Phasing out HIBOR Fixings with Less Market Demand', *June 07, 2013* available at: http://www.hkab.org.hk/DisplayWhatsNewsAction.do?ss=1&id=2020
15. HKMA (2013), 'Measures to strengthen the HIBOR fixing mechanism', *February 06, 2013* available at: http://www.hkma.gov.hk/eng/key-information/press-releases/2013/20130206-4.shtml
16. HKMA (2013), 'Supervisory Policy Manual (SPM) CG-7 "Code of Conduct for Benchmark Submitters', *April 29, 2013* available at: http://www.hkma.gov.hk/media/eng/doc/key-information/guidelines-and-circular/2013/20130429e1.pdf
17. HKMA (2013), 'Supervisory Policy Manual (SPM) Annex B to CG-7: Code of Conduct for Reference Banks for TMA's CNH Hong Kong Interbank Offered Rate', *August 20, 2013* available at: http://www.hkma.gov.hk/media/eng/doc/key-information/guidelines-and-circular/2013/20130820e1.pdf
18. ICE (2013), 'Intercontinental Exchange Completes Acquisition of NYSE Euronext', *November 13, 2013* available at: http://ir.theice.com/investors-and-media/press/press-releases/press-release-details/2013/IntercontinentalExchange-Completes-Acquisition-of-NYSE-Euronext/default.aspx
19. IOSCO (2013), 'Principles for Financial Benchmarks, Consultation Paper', *April 16, 2013, CR04/13* available at: http://www.iosco.org/library/pubdocs/pdf/IOSCOPD409.pdf
20. IOSCO (2013), 'Principles for Financial Benchmarks, Final Report', *July 17, 2013*, *FR07/13* available at: http://www.iosco.org/library/pubdocs/pdf/IOSCOPD415.pdf
21. ISDA (2013), Asia Pacific (APAC) Monthly Update, *June 30, 2013* available at:

http://www2.isda.org/regions/asia-pacific/page/2

22. JBA (2012), 'TIBOR Publication Rules', *July 20, 2012* available at: http://www.zenginkyo.or.jp/en/tibor/publication_rules/
23. JBA (2013), 'The Progress of Our Efforts to Enhance the Credibility and Transparency of the JBA TIBOR', *July 05, 2013* available at: http://www.zenginkyo.or.jp/en/news/2013/07/05110000.html
24. JBA (2013), 'Seeking public comments on the review of JBA TIBOR tenors', *October 18, 2013* available at: http://www.zenginkyo.or.jp/en/news/2013/10/18100000.html
25. JBA (2013), 'JBA TIBOR Code of Conduct', *December 27, 2013,* available at: http://www.zenginkyo.or.jp/en/news/entryitems/news131227_2.pdf
26. JBA(2013), 'Report on the Review of JBA TIBOR Administration', *December 27, 2013,* available at: http://www.zenginkyo.or.jp/en/news/entryitems/news131227_1.pdf
27. MAS (2013), 'Consultation Paper - Proposed Regulatory Framework for Financial Benchmarks', *June 14, 2013, P007-2013* available at: http://www.mas.gov.sg/News-and-Publications/Consultation-Paper/2013/Consultation-Paper-on-Proposed-Regulatory-Framework-for-Financial-Benchmarks.aspx
28. Reserve Bank of India Act, 1934 available at: http://rbidocs.rbi.org.in/rdocs/Publications/PDFs/RBIAM_230609.pdf
29. Reserve Bank of India (2000): DBOD Notification 'Income recognition, asset classification, provisioning and other related matters – Valuation of Investments', BP.BC.163/21.04.048/2000, *April 7, 2000* available at: http://www.rbi.org.in/scripts/NotificationUser.aspx
30. Reserve Bank of India (2012), 'Working Group on Enhancing Liquidity in the Government Securities and Interest Rate Derivatives Markets', *August 10, 2012* available at: http://rbidocs.rbi.org.in/rdocs/PublicationReport/Pdfs/WRD310512FL.pdf
31. SFEMC Statement on ABS Financial Benchmarks, *June 14, 2013* available at: http://www.sfemc.org/pdf/SFEMC_Statement_on_ABS_Financial_Benchmarks.pdf
32. Thomson Reuters Codes: <INSWAP04> , <INBMK/INFO>,< INBMK/INFP>, <MIOIS/INFO>, <INTB/INFO>, < INTB/INFP>, <INCP/INFO>, <MIOCS/INFO>, <INCD/INFO>,<0#INFIMCPBMK=>, <0#INFIMTBBMK=>, <0#INCDBMK=>, <0#MIFORBMK=>, <0#INBMK=>, <0#MIOISBMK=>, <MIOCS=>
33. UK Government (2013), The Financial Services Act 2012 (Misleading Statements and Impressions) Order 2013 No.637 available at:

http://www.legislation.gov.uk/ukdsi/2013/9780111533796

34. UK Government (2013), The Financial Services and Markets Act 2000 (Regulated Activities) (Amendment) (No.2) Order 2013 No. 1881 available at: http://www.legislation.gov.uk/ukdsi/2013/9780111100493
35. UK Government (2013), 'The Hogg Tendering Advisory Committee announces that NYSE Euronext is to be the new LIBOR administrator', *July 09, 2013* available at: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/211330/Hogg_Tendering_Advisory_Committee.pdf
36. UK Treasury (2012), "The Wheatley Review of LIBOR: final report", *September 29, 2012* available at: http://cdn.hm-treasury.gov.uk/wheatley_review_libor_finalreport_280912.pdf.
37. US Commodity Futures Trading Commission (2012), 'CFTC Orders Barclays to pay $200 Million Penalty for Attempted Manipulation of and False Reporting concerning LIBOR and Euribor Benchmark Interest Rates', *June 27, 2012* available at: http://www.cftc.gov/PressRoom/PressReleases/pr6289-12
38. Publication of Reference Rates by select Central Banks are available at:

i. http://www.bcb.gov.br/sddsi/taxacambio_i.htm
ii. http://www.bankofcanada.ca/rates/exchange
iii. http://wwwrs.resbank.co.za/webindicators/HomePageDefinitions.aspx?DataCategory=HPREXCH
iv. http://dsbb.imf.org/pages/sdds/DQAFBase.aspx?ctycode=RUS&catcode=EXR00
v. http://www.bi.go.id/web/en/Ruang+Media/Siaran+Pers/sp_150413.htm
vi. http://www.bot.or.th/English/Statistics/FinancialMarkets/ExchangeRate/Documents/Exchange%20Rate%20Description_EN.pdf
vii. http://www.ecb.europa.eu/stats/exchange/eurofxref/html/index.en.html
viii. http://dsbb.imf.org/pages/sdds/DQAFBase.aspx?ctycode=KOR&catcode=EXR00
ix. https://www.boj.or.jp/en/statistics/market/forex/fxdaily/index.htm/#p01