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Indian Institute of Management Calcutta

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# Editorial

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The draft Indian Finance Code (IFC) proposes to dilute powers of the Central Bank governor in matters of fixing benchmark rates. The proposed financial code also mentions that both finance ministry and the central bank should be on the same page while targetting inflation. The IFC is based on the recommendations of the Financial Sector Legislative Reforms Council (FSLRC) headed by Justice B N Srikrishna. Officials at the Reserve Bank of India are obviously not amused with these recommendations. While the Finance Minister had clarified that he has no intention to take away 'significant' powers of RBI, it is clear that RBI may not enjoy similar powers as it does now. The financial sector reform is a favourite topic of debate now in many countries including India.

We are introducing a new feature on “Commodities Market’ from this issue. This magazine has so far been covering equity, bank and debt markets. Introducing discussions on commodities market would definitely enhance the coverage of the magazine.

In the present scenario there cannot be any financial publication without mention of Greece. The first article in the present edition unfolds a different part of Greece crisis hitherto untold. The second article looks at the major transitions in the evolution of the MIBOR rate. The third article is on Commodity Futures Market in India, its functioning and the challenges in its functioning.

You may send your comments and feedback on this issue to [ashok@iimcal.ac.in](mailto:ashok@iimcal.ac.in)

Happy reading!

**Ashok Banerjee**

# Greek Crisis: The Untold Story

## Ashok Banerjee



Ashok Banerjee, Ph.D., is Professor, Finance and Control, Indian Institute of Management Calcutta (IIM-C). He is also the faculty in-charge of the Financial Research and Trading Lab at IIM-C. His primary research interests are in areas of Financial Time Series, News Analytics and Mergers & Acquisitions

Reams of paper have already been used to describe, analyse and contemplate on the Greek financial crisis. The bail-out package, now offered, would enforce severe austerity in Greece at least for next five years. The bailout will result in increased taxes in Greece, pension cuts, banking reform, and other austerity measures. Can Greece survive such austerity? Is the bail-out only going to postpone the inevitable by five years? These are the questions doing rounds in entire Europe and the world over. The GDP (Gross Domestic Product) of Greece has declined by 20% in the past five years. Its debt-to-GDP ratio is now over 150%. The country has unpaid bills in excess of €1 billion with drug makers. Greece has already witnessed sharp cuts in healthcare spending. More than half of Greece's food supplies (and large number of pharmaceutical products) are imported. The suppliers of these products would be hesitant to offer long-term credit to companies in Greece leading to further pressure on the liquidity.

Firms, having exposure with Greece, are now seriously thinking of providing for major impairment in their books of accounts. In a recent publication for the CFOs by the consulting firm, PwC, companies, having exposure with Greece, are advised to check whether their investments are impaired, receivables collectible, revenue recognizable etc. Revenue recognition could be a major issue as firms selling into Greece may have to wait till collection to recognize revenue. In other words, exporting firms may ask for cash payment for future deliveries to Greece.

India is reasonably secured from the Greece crisis as its trade with Greece is negligible. For example, India's trade with Greece in the entire decade of 1990-2000 was only US\$1 billion. The total trade has reached US\$5 billion in the next decade. In the first four years of the present decade (2011-2014), India's trade with Greece has touched US\$ 2.5 billion. India has always been a net exporter.

Assume that the present bail-out package would help Greece honour its sovereign debt obligations in next three years and also Mr. Tsipras, Prime Minister of Greece, is able to implement the austerity

measures. Will that solve Greece's problem? The author feels it is unlikely. Opinion and debate so far on Greece have focused on macro challenges and the problems that the present government has inherited. Is the micro-economic scenario in Greece manageable? Are the problems at the firm level of any grave concern? It is believed the firms in Greece will also have to undertake major austerity measures or process reengineering to survive and contribute to the economic development of the country.

On a much smaller scale one can compare crisis in Greece with the crisis once faced by our public sector steel giant- Steel Authority of India Ltd. (SAIL) in the mid-1990s. SAIL faced deep trouble when it had embarked upon a huge capacity expansion and modernization programme twenty years ago investing around Rs. 14,000 crore (US\$ 4 billion). A large part of the programme was financed through high-cost borrowing. It was pointed out that almost ninety percent of the capital expenditure was unproductive. Problems of SAIL got further accentuated when the company was unable to adequately utilize the increased capacity due to cyclical downturn in the steel sector at that time and domestic steel glut due to capacity expansion. In March 1999, CRISIL downgraded SAIL to BBB (moderate safety) and further to speculated grade in August 1999. SAIL, in March 1999, had a debt-to-equity of four. SAIL needed bail-out to clear its financial mess. However, the experts opined that any debt-restructuring package would be meaningless unless SAIL went for business restructuring. SAIL had high manpower cost, poor plant utilization and most of its steel plants were operationally losing money. Finally, SAIL could come out of its financial mess primarily due to both business restructuring (e.g., VRS, divestment of non-core assets, and improving operational efficiency of the plants) and debt restructuring.

### Capital Market

There are about 360 companies listed in Athens stock exchange- a thirty percent growth over past five years. However, the performance of majority the companies during this period was poor (**Table 1**).

**Table 1: Performance of Listed Companies**

As on	Jun-15	Jun-14	Jun-13	Jun-12	Jun-11
No. of companies	361	252	255	271	277
Negative EPS	205	176	175	193	182
Revenue less than \$100 M	190	145	146	153	153
Negative YTD Return	181	145	175	176	125

*Source: Bloomberg*

*Note: YTD Return refers to year-to-date market return*

More than 60% of the listed companies were consistently reporting losses over the past five years. In 2015, for example, there are only two companies with more than \$10 EPS and 67 companies (out of 361) with turnover of \$1 billion or above. The Athens stock exchange has large number of small-sized companies. Market reactions were also in tandem with fundamental performance of firms- only 42 firms in June 2015 registered YTD market return of 20% or more. In 2011, there were 53 listed firms which witnessed more than 20% YTD return. Of course financial institutions have done well in the stock market. Four of the top ten companies in terms of market capitalization were banks during 2014 and these banks have witnessed CAGR of more than 20% in market capitalization over the past five years.

The debt-to-market cap ratio of several companies, particularly in healthcare, have increased significantly during the past five years. For example, Euromedica, one of the top five companies, had a debt-to-market cap ratio of 64 in 2014 and the ratio was more than 150 for another healthcare company (Axon SA). Overall, there were about sixty companies, listed in Athens stock exchange, having debt-to-market cap ratio of 10 or above. Therefore, firm-level leverage was high and increasing.

### **Poor Microeconomics**

Tourism is one of the major industries in Greece and the flow of tourists directly benefit firms selling travel-related services, Jewellery, accessories, clothes etc. The currency crisis may adversely affect tourism in future. Another sector which is most vulnerable due to the present crisis is healthcare. The performance of top firms in these sectors over the past five years have been lackluster (**Table 2**). Majority of the healthcare firms were operating at loss and their performance deteriorated over the past four years. The consumer discretionary sector (selling jewellery, clothing, Travel-related services etc.) performed much better during this period- thanks to tourism. However, even in this sector sales growth has been sluggish.



**Table 2: Financial Performance**

(Figs in Million Euro)	2011	2012	2013	2014	CAGR
<b><u>Revenue</u></b>					
<b><u>Sector: Health Care</u></b>					
Athens Medical Center	219	229.5	142.4	148.9	14%
Diagnostic & Therapeutic Center	237.6	237.9	203.7	217.5	3%
Iaso	124.4	124.1	107.1	116.5	2%
Euromedica	192	209.5	7.3	140.4	11%
Lavipharm	168.7	37.9	30.1	30.3	77%
<b><u>Sector: Consumer Discretionary</u></b>					
FF Group	1021.4	1110	934.2	998.1	1%
Jumbo	490	494.3	502.2	541.8	-3%
Fourlis	438.2	420.3	403.3	413.4	2%
FG Europe	99.7	111.1	0.7	72.7	11%
Sarantis	221.3	236	236.6	248.4	-4%
<b><u>Operating Income</u></b>					
<b><u>Sector: Health Care</u></b>					
Athens Medical Center	-4.2	6.6	-22.4	-7.8	
Diagnostic & Therapeutic Center	-14.9	-4.5	-25.1	-8.5	
Iaso	8.3	12.6	5.8	6.3	
Euromedica	-30.5	-1.6	-231.5	-25.1	
Lavipharm	-4	-2.6	-3.7	-14.3	
<b><u>Sector: Consumer Discretionary</u></b>					
FF Group	174	185.9	173.4	209.4	
Jumbo	119.9	117	91.6	127.1	
Fourlis	15	2.8	10.6	5.7	
FG Europe	8.9	10.6	9.5	-1.3	
Sarantis	15.8	17.4	19.4	22	

Data source: Bloomberg

The problem with Greece, therefore, is not only a sovereign one. There are severe micro economic challenges. Following the example of SAIL in India, companies in Greece require major restructuring to survive and be competitive. The Government of Mr. Tsipras should be careful while administering strict covenants articulated in the bail-out package. In the process of implementing high-tax, low government spending regime the government should not stifle growth. Firms in Greece require support and incentive to get out of the financial mess. Domestic companies should make serious

attempts to cut operating costs and improve profitability. The focus of the economists and policy makers should now be on how to stimulate growth in business and provide confidence to local enterprises. Unless local firms are financial strong, the nation cannot be stronger. Otherwise, the present bailout will only be a postponement of the problem that the country is presently facing.

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# Commodity Futures Market in India

**Vivek Rajvanshi**



Vivek Rajvanshi, Fellow (IIMC), is Assistant Professor, Finance and Control, Indian Institute of Management Calcutta. His research interest areas are Commodity Futures Markets, Volatility Modelling, Risk Management.

In 2003, prohibition on futures trading was removed and three national exchanges, Multi Commodity Exchange Ltd. (MCX), National Commodity & Derivatives Exchange Ltd. (NCDEX) and National Multi-Commodity Exchange of India Ltd. (NMCE) were set up for wide network coverage, and transparent trading. Currently, six national level exchanges and 11 regional exchanges are facilitating trading in various futures contracts, covering food grains, oil seeds, sugar, spices, energy, metals and gas sectors. However, trading in some commodities has been suspended from time to time based on the perception that trading in futures contracts has increased the volatility and price in the spot market, which lead to higher inflation. Table-1 provides the list of commodities suspended after the inception of national exchanges. Several studies have examined the argument, that futures trading increase the inflation or the spot price and volatility but could not find any conclusive empirical evidence in support of the argument (e.g, Nath and Lingareddy, 2008; Pavaskar and Ghosh, 2008).

**Table-1 List of Commodities suspended from Trading since 2003.**

Commodity	Trading Suspended on	Suspension revoked
Tur, Urad	23 <sup>rd</sup> Jan 2007	Suspension continues
Rice	27 <sup>th</sup> Feb 2007	Suspension continues
Wheat	27 <sup>th</sup> Feb 2007	14 <sup>th</sup> May 2009
Chana Soya Oil	7 <sup>th</sup> May 2008	30 <sup>th</sup> November 2008
Rubber, Potato, Sugar	26 <sup>th</sup> May 2009	30 <sup>th</sup> September 2010
Guar Seedd Guar Gum	27 <sup>th</sup> Mar 2012	10 <sup>th</sup> Mat 2013

Source: <http://www.fmc.gov.in/>

Given the fact that commodities have emerged as an alternative investment class, commodity markets across the world are heading towards financialization. Technological innovations and upgradations

has made information flow from one market to another very fast. Therefore, market linkages across the world is increasing and hence finding support of such argument is not easy. Suspension of trading in any commodities always creates uncertainty about the regulations in the market which may affect liquidity and other characteristics of the market. Therefore such steps by the regulators should be taken with utmost care. However, since the inception of commodity futures in 2003, a phenomenal growth has been witnessed in terms of volume and value of trades. Trades in commodity futures have gone up from INR 5.7 lakh crore to in 2003 to 181.3 lakh crore in 2011-12. Table-2 Provide the trade volume in last decade in Indian commodity market.

**Table-2: Total Traded Volume (Value of the contracts in Lakh crore)**

YEAR	AMOUNT (lakh crore INR)
2004-2005	5.7
2005-2006	21.6
2006-2007	36.8
2007-2008	40.7
2008-2009	52.5
2009-2010	77.7
2010-2011	119.5
2011-2012	181.3
2012-2013	170.5
2013-2014	101.4
2014-2015	61.7

Source: <http://www.fmc.gov.in/>

### **Functioning of futures Market**

Futures market broadly helps in price discovery process and risk management. In futures market, investors take positions by depositing only a small amount (margins), as compared to spot market where investors need to pay/receive the full amount of the commodity. Also, in futures market, investors do not need the storage capacities as they can square-off their positions through cash settlement. Low transaction cost infuses more liquidity in futures market. Therefore, participants in futures market have more incentives to act aggressively as soon any news/information arrives in the market, resulting in fast price discovery in futures market than the spot market. Price discovery

process helps the producers in two ways. First, they take an informed decision about the fair price of their product in spot market. Second, producers can decide (at the time of sowing) which commodity they would prefer to sow (out of available alternatives) as the future (near harvest time) expected price are available in the futures market. For example, suppose March is the sowing time of two crops and futures contract price at the time of harvesting (say in October) is available. Then the producer can take an informed decision about which crop he/she would prefer to sow.

Futures market provides a mechanism of transferring the price risk as well. For example, producers can transfer the risk of lower future price by taking short position in futures market. The phenomenon that involves a short position in futures contracts when the hedger already owns or expected to sell the asset in future is known as short hedge. For example, the current spot price of the crop is  $S_1$  per unit and the futures contract price is  $F_1$ . Then by taking the short position in futures contracts the producer can lock in the price  $F_1$  (ignoring the basis risk; which is defined as the difference between the futures price and the spot price at the time of maturity). In case, if the price of the commodity goes down in future, through short position in futures contracts the producer will gain which will compensate for the losses incurred by selling in produce in the spot market. Similarly if investors believe that they need to purchase a certain asset in future he may go for long hedge in order to avoid the risk of price rise in near future. However, delivery mechanism, availability of futures contracts for a given quality (grade), location of delivery makes the task more difficult.

### **Challenges in Functioning of Futures Market**

Despite the fact that commodity market has witnessed huge volumes, there are concerns whether commodity market has achieved its intended goals. Is the commodity market successful in providing better price discovery? Does commodity market providing instruments for hedging to the farmers, processors, exporters, retail chain operators and other participants? Do speculators have dominated the overall market?

Studies find that futures price provides better price discovery and there is an information flow from futures markets to spot markets (Kumar, 2007; Elumalai et al., 2009). Aggarwal et al. (2004) analyzed the information share between futures and spot market for agricultural, metal and crude oil sectors. They find that futures market dominates spot market in discovering news/information arrival. This means that any news/information arrived in the market is first captured by the futures market and then pass to the spot market.

U of futures trading in transfer of risk through hedging in Indian commodity market is doubtful as most of the contracts are cash settled and very few contracts are settled through delivery. Table-3 provides a snapshot of the commodities and number of contracts delivered at MCX in the month of June 2015.

**Table 3: Quantity Delivered in June 2015**

Commodities / Contracts	Tender/Expiry Date	Location	Quantity	Unit
Gold Mini	01-Jun-2015	Ahmedabad	31.000	KG
GOLD	04-Jun-2015	Ahmedabad	232.000	KG
Gold Mini	04-Jun-2015	Ahmedabad	30.000	KG
Gold	05-Jun-2015	Ahmedabad	3.000	KG
Gold Mini	05-Jun-2015	Ahmedabad	32.800	KG
Cardamom	09-Jun-2015	Vandanmedu	5.500	MT
Cardamom	15-Jun-2015	Vandanmedu	2.100	MT
Gold Guinea	30-Jun-2015	Ahmedabad	0.0456	KG
Cotton	30-Jun-2015	Rajkot	41700.000	Bale
Mentha Oil	30-Jun-2015	Barabanki	998280.000	KG
Mentha Oil	30-Jun-2015	Chandausi	352440.000	KG
Gold Petal (Mumbai)	30-Jun-2015	Mumbai	2.848	KG

Source: <http://www.mcxindia.com/>

Other problems faced by the producer while hedging is, quality of the crop does not match with the quality accepted for delivery in futures contract. Also, because of market inefficiencies, basis risk is high in Indian context. Agarwal et al. (2013) find very low hedging effectiveness for eight commodity contracts. “*Hedging effectiveness is defined as the proportion of variance that is eliminated by hedging*” (Hull, 2009). In order to reduce the basis risk the role of arbitrageurs are very important as they take simultaneous positions in spot and futures market in order to get benefits of the anomalies in these markets if any. This helps in reducing the basis risk. However, the act of arbitrageurs depends upon the transaction cost, which significantly depends upon the liquidity of the market.

In short, in the last decade commodity market in India has witnessed a rapid growth. Suspension of trading in few commodities has put a question mark on the functioning of Indian commodity market. Banning trading in futures contract without solid empirical support and justification should be avoided. FMC should take more severe regulatory measures while banning commodities from trade. Commodity futures market is providing a mechanism for a better and transparent price discovery for the traded commodities. However, liquidity and higher transaction costs are still a concern for the market participants. To improve the liquidity in the market wider participation of banks, FIIs, mutual funds etc. is required. Also, in order to improve the risk management practices, trading for commodity options, which has been allowed by the FMC, may be started.

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# Two Decades of Primary Dealer Operations in India

**Golaka C Nath and Ms. Payal Ghosh\***



Dr. Golaka C Nath is a Senior Vice President at the Clearing Corporation of India Ltd. (CCIL). He has over 21 years of experience in the banking and financial sector, having previously worked with the National Stock Exchange of India Ltd. and Vijaya Bank. In the past, he has worked on a World Bank Project on “Developing Bond Market in South Asia”. He has also provided secretarial service to the High Powered Committee on “Corporate Bonds and Securitization” appointed by the Ministry of Finance, Government of India.

## **MIBOR – A Short History**

Financial benchmarks refer to prices, estimates, rates, indices or values that are used by the market participants for pricing, settlement, and valuation of financial contracts. These are also known as “Reference Rates” as financial contracts are referenced to or valued through the financial benchmarks. The reference rate is a representative rate for the market at a particular day or at a particular time. These rates have become critical as a result of the proliferation of derivatives that are based on them as well as the move towards automated trading. These rates have to be accurate, scientific and free of conflicts of interests that may act as incentives for manipulation as the loss of confidence in these rates may lead to widespread market disruptions. Hence, benchmark rates should ideally be computed by an unbiased source, be representative of the market, transparent, reliable and continuously available. These rates evolve with the markets as they have to be dynamic to capture the changing financing scenarios.

The MIBOR rate has been the most widely used benchmark rate in India. Over the years it has undergone several transitions in terms of the methodology, the underlying rates, the calculating agency and the regulator. It has moved away from being a polled rate determined by a restricted group of the market to a universal market based rate. The following were the major transitions in the evolution of the MIBOR.

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***FIMMDA-NSE MIBID-MIBOR***

Based on the recommendations of the Committee for the Development of the Debt Market, for the development for a benchmark rate for the call money market, the NSE developed and launched the NSE Mumbai Inter-bank Bid Rate (MIBID) and NSE Mumbai Inter-bank Offer Rate (MIBOR) for the overnight money market 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.

NSE polled quotes from a select panel of 30 banks/primary dealers between 9:40 AM - 9:45 AM for the overnight MIBID-MIBOR (3 days on Fridays) and between 11:30 AM - 11:40 AM for the term MIBID-MIBOR (14-day, 1-month and 3-month) on all the working days. The data collected was 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 number the number of iterations could be determined dynamically and the bootstrapping ensured that the data sets were drawn at random guarding against the possibility of cartelization and of extreme observations influencing the mean. The mean corresponding to the lowest standard deviation was 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 was 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 overnight NSE MIBID-MIBOR has been discontinued from July 22, 2015.

***CCIL MIBID-MIBOR***

The NDS-CALL platform was launched in September 2006 to facilitate the electronic trading of uncollateralized interbank call money transactions. This system was very efficient as market participants could see the entire market including their own position. As a result, a very large part of the market shifted to the electronic system. CCIL started using these rates to calculate the CCIL MIBOR-MIBID. There were two CCIL MIBOR-MIBID disseminations – at 10:00 AM and at 1:00 PM. The transparent execution and dissemination of the price and volume information of Call money

transactions on the NDS-CALL platform acted as an important safeguard against manipulation of polled submissions used for determination of the overnight MIBID-MIBOR.

All outstanding and traded orders that had come to the system from 9:00 AM to 10:00 AM were pulled out at about 10:02 AM from the NDS-Call system. The data was then split into two categories - Borrowing side rates and Lending side rates. The Mean Rate and Standard Deviation was calculated for each category. Rates in the order book which were outside the Mean Rate +/- 3 Standard Deviations were considered as outliers and dropped from the data for computation of the benchmark rate. The weighted average rate was computed for Borrowing and Lending side separately with their respective standard deviations and disseminated to the market at about 10:06 AM as the CCIL MIBID-MIBOR rates. The same exercise was repeated at 1:02 PM for all outstanding and traded orders that had come to the system from 9:00 AM to 1:00 PM. The CCIL MIBID-MIBOR has been discontinued from July 22, 2015.

### ***FBIL Overnight MIBOR***

In the backdrop of several discoveries of market manipulation in benchmark rates, the Reserve Bank of India constituted a committee chaired by Executive Director, Shri P. Vijaya Bhaskar 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 Committee had representation from select market participants, CCIL and academia along with senior officials from RBI. The Committee was directed to submit its report latest by December 31, 2013. RBI released the Draft Report of the Committee on Financial Benchmarks on its website on January 3, 2014 for public comments. The final report was published on February 7, 2014 and the recommendations were accepted by RBI on April 1, 2014.

As per the report, FIMMDA and FEDAI were identified on April 15, 2014 as Benchmark Administrators for Indian Rupee Interest rates and Forex benchmarks respectively. The Report recommended the shifting of the computation of overnight MIBID-MIBOR from the existing polling based method to volume weighted average of trades executed between 9:00 AM to 10:00 AM on the NDS-CALL platform operated by CCIL. FIMMDA was directed to decide the appropriate timeline for effecting the change in consultation with RBI. CCIL was directed to stop publishing the 1 PM MIBID-MIBOR fixing to avoid confusion for the end users. FIMMDA was directed to change the nomenclature of the overnight MIBID-MIBOR and take necessary steps for facilitating smooth transition by considering multilateral agreement for outstanding interbank/PD trades, and bilateral

agreements for outstanding trades with clients for transition to the new benchmark. FIMMDA and CCIL were directed to disclose the details of the methodology and put in place appropriate contingency mechanism. The daily fixation of 14-day, 1-month and 3-month MIBID-MIBOR through the polling process was also entrusted to CCIL. CCIL, being the Calculation Agent put in place a system for implementing the recommended changes in consultation with FIMMDA.

An independent company named 'Financial Benchmarks India Pvt. Ltd. (FBIL), jointly floated by the FIMMDA, the FEDAI and the IBA was incorporated to act as an independent benchmark administrator. FBIL announced taking over the administration of the benchmark for the overnight inter-bank rate to be based on the actual traded rate from July 22, 2015, replacing the existing "FIMMDA-NSE Overnight MIBID/MIBOR" by "FBIL - Overnight MIBOR". The dissemination of the "FBIL - Overnight MIBOR" commenced from July 22, 2015 with the rates released simultaneously on the websites of FIMMDA and CCIL.

All trades executed on NDS-Call system excluding reciprocal and reported Deals within the first hour of trading (currently from 9.00 AM to 10.00 AM) will be used for computation of the benchmark Overnight Weighted Average Rate that will be called FBIL Overnight Mumbai Inter-Bank Outright Rate (FBIL-Overnight MIBOR). The trades will be pulled out from the NDS-CALL system immediately after the cut-off time. Only T+0 Settlement deals are to be picked up. For any weekday, the maturity of the deals picked up for computation of FBIL-Overnight MIBOR should be of the next succeeding Mumbai Business Day excluding Saturdays. For example, if Friday is a holiday but succeeding Monday is a Mumbai Business working day, FBIL-Overnight MIBOR calculation on Thursday will pick up trades with a maturity of 4 days. Only trades for Rs.5 crore or above are retained for further calculation. A minimum of 10 trades with a total traded value of Rs.500 crore in the NDS-Call segment will be considered as the minimum threshold limit (both) for estimation of the volume weighted average rate.

In case either of the criteria mentioned in the above paragraph is not met, the timeframe for computation of rates will be extended by 30 minutes first and if the threshold criteria are still not met, then by another 30 minutes. If the threshold criteria are not met even after the two extensions, no rate computation will be initiated. The Previous Day's values will be used for dissemination. This may continue for a maximum of two consecutive working days (in case the threshold criteria are not met) after which if the threshold criteria are still not met, CCIL will not disseminate any rate on such days and Banks will use their own fallback mechanism. There will be a notification to that effect published on CCIL/FIMMDA websites.

The Weighted Average Rate and Standard Deviation (STDEV) are calculated for the retained trades after meeting the threshold criteria. These numbers will be rounded off to two decimal places. A Rate Range will be computed – Max will be Weighted Average Rate + 3\* Standard Deviation and Min will be Weighted Average Rate - 3\* Standard Deviation. Any trades at rates outside the said Max and Min range will be considered as outliers and dropped from the data (i.e. Higher than Max and Lower than Min). The final volume weighted average rate and standard deviation will then be computed using the remaining trades. The said numbers would be rounded off to two decimal places at each stage. The Final Rate will be released as FBIL-Overnight MIBOR for the day by 10.45 AM on the websites of FIMMDA and CCIL or such websites as may be notified. If the time is extended due to non-fulfillment of the threshold criteria, the dissemination time will be suitably extended.

### Features of various MIBOR rates

	<b><i>FIMMDA-NSE MIBID-MIBOR</i></b>	<b><i>CCIL MIBID-MIBOR</i></b>	<b><i>FBIL Overnight-MIBOR</i></b>
Nomenclature	FIMMDA-NSE Mumbai Inter-bank Bid Rate (MIBID) and NSE Mumbai Inter-bank Offer Rate (MIBOR)	CCIL MIBOR (CCIL Mumbai Inter-Bank Offer Rate)/MIBID (CCIL Mumbai Inter-Bank Bid Rate)	FBIL Overnight Mumbai Inter-Bank Outright Rate
Date of launch	June 15, 1998	January 25, 2007	July 22, 2015
Last day of dissemination	July 21, 2015	July 21, 2015	-
Based on	Polling	Actual order book	Actual trades
Participants	30 banks/primary dealers	All call market participants eligible	All call market participants eligible
Time	9:40 AM	10:10 AM	10:45 AM
Transparency	Individual Quotes are not available in public domain	Transparent execution and dissemination of the price and volume information eliminates chances of manipulation	Transparent execution and dissemination of the price and volume information eliminates chances of manipulation
Method	Bootstrapping	Volume weighing of trades and executable outstanding orders	Volume weighted average rate of actual trades

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