

OTC Financial Derivatives Market in India *Development, Regulatory Framework and Issues*

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Abstract: Derivatives play a significant role in addressing the risk inborn in financial transactions. They can be used to hedge an existing market exposure (forwards), to obtain downside protection to an exposure even while retaining upside potential (options), to transform the nature of an exposure (swaps), and to obtain insurance against events such as default (credit derivatives). At the same time, derivatives involve incomprehension owing to the complexity of their valuation, design and risk implication. The Global Financial Crisis (2008) has spurred a large volume of literature laying much of the blame for the crisis on indiscriminate use of derivatives, pointing out the dangers integral to derivatives and emphasising the need for further regulation of the market. The OTC derivatives markets all over the world have shown tremendous growth in the recent years. OTC financial derivatives market in India has also grown, but by international standards the total size of the Indian OTC derivatives market still remains small. The origin of the Indian currency market can be traced to 1978 when banks were permitted to undertake intra-day trading in foreign exchange. The OTC derivatives in the form of foreign currency forward and foreign currency swaps contracts have been in existence for a long time. In January 1994, the RBI started permitting Indian banks to write “cross-currency” options including barrier options and other innovations. The deregulation of interest rates as a part of the financial liberalisation process created need for interest rate derivatives and the RBI responded by permitting interest rate swaps and forward rate agreements in 1999. The reporting platform for Credit Default Swaps (CDS) was put in place from the date of introduction of the instrument itself i.e. December 1, 2011. A good reporting system and a post-trade clearing and settlement system, through a centralised counter party, has ensured good surveillance of the systemic risk in the Indian OTC market. Firming up the position of the Clearing Corporation of India (CCIL) as the only centralised counterparty for Indian OTC derivatives market and better supervision of the off balance sheet business of financial institutions are two measures that confirm the stability of the market. This paper explores the Indian OTC financial derivatives market. It includes the study of evolution of the market, growth, supervision, regulation, reporting and clearing system and stability of the market. The present paper studies OTC Forex, Interest Rate and Credit Derivatives market in India. It also traces issues and challenges for OTC financial derivatives market in India.

Keywords: Over the Counter Market, Derivatives, Financial Regulation and Foreign Exchange

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I. Introduction

After the government ban on options and cash settlement in futures in 1952, the activity in the commodities market moved to informal forward segment. Futures’ trading in several commodities started after the ban was lifted in 2000 and commodity futures exchanges with electronic trading platforms were established. As far as equities are concerned, some form of OTC derivative trading was prevalent in India in the pre-independence days. The Securities Contract Regulation Act, 1956 banned all kinds of derivative trading in equities and it was only in 1999 after the recommendations of two influential committees headed by Shri L C Gupta and Shri J R Varma that a basis was created for amendment to the said Act. As far as foreign exchange markets are concerned, OTC derivatives in the form of forward and swap contracts have been in existence for a long time. The deregulation of interest rates as a part of the financial liberalisation process created a need for interest rate derivatives and the RBI responded by allowing interest rate swaps and forward rate agreements in 1999. In 1999, the Securities Contracts (Regulation) Act of 1956, was amended so that derivatives could be declared “securities.” This allowed the regulatory framework for trading securities to be extended to derivatives. The Act considers derivatives to be legal and valid, but only if they are traded on exchanges. In the RBI Act, 1934 as amended vide RBI (Amendment) Act 2006, derivatives have been defined in Section 45 (U)(a) as “*derivative*” means an instrument, to be settled at a future date, whose value is derived from change in interest

rate, foreign exchange rate, credit rating or credit index, price of securities (also called "underlying"), or a combination of more than one of them and includes interest rate swaps, forward rate agreements, foreign currency swaps, foreign currency-rupee swaps, foreign currency options, foreign currency-rupee options or such other instruments as may be specified by the Bank from time to time." In January 1994, the RBI started permitting Indian banks to write "cross-currency" options including barrier options and other innovations. They were required to cover themselves on a back to back basis. Currency options between Indian rupee and foreign currency were launched w.e.f., 7 July, 2003. Only banks are allowed to write currency options. Corporates can only buy options and that too for hedging underlying exposures. They cannot write options; more precisely they cannot receive a premium in any structured deal. The need for interest rate derivatives was recognised in early 1999, guidelines were issued for two core products in the OTC segment: the Forward Rate Agreement (FRA) and the Interest Rate Swaps (IRS). The absence of term money market has hampered the meaningful growth of the interest rate derivatives markets, except one product viz., the Overnight Index Swaps (OIS), which has gathered large volumes. As far as foreign exchange markets are concerned, OTC derivatives in the form of forward and swaps contracts have been in existence for a long time. The deregulation of interest rates as a part of the financial liberalisation process created need for interest rate derivatives and the RBI responded by permitting interest rate swaps and forward rate agreements in 1999. The reporting platform for Credit Default Swaps (CDS) was put in place from the date of introduction of the instrument itself i.e. December 1, 2011. CDS contracts have been standardised by FIMMDA upon regulatory mandate by RBI.

We should also look at the economic significance of OTC derivatives to understand its contribution to the efficiency of financial markets. The following arguments are generally given in support of importance of this market:

1. OTC market provides liquidity to the financial market,
2. OTC market promotes the price discovery process in the financial market and thereby, enhance allocation and operation efficiencies of intermediaries and the participants.
3. It helps in risk management by transferring the risk to the party that can shoulder it the best,
4. Financial OTC derivatives are important for monetary policy also, and
5. Competition between OTC and exchange traded derivatives markets can lead minimising the transaction costs and adoption of better practices.

The present research work on OTC financial derivatives market seeks to achieve, inter alia, the following objectives:

- (i) To provide brief introduction of the OTC financial derivatives market,
- (ii) To provide details about the market structure,
- (iii) To provide details about growth of Indian OTC derivatives market,
- (iv) To explain the regulatory framework, in which Indian OTC financial derivatives market operates, and
- (v) To elaborate the issues and challenges for Indian OTC derivatives market.

Section II of the paper provides a primer on the OTC derivatives markets, along with regulatory framework recommended by FSB and endorsed by G-20 leaders at the Seoul Summit in October 2010. Section III provides an assessment of the Indian OTC financial derivatives market. It studies the structure and growth of the market. Section IV describes the regulatory framework of the Indian OTC derivatives market. It also focuses on the regulatory measures taken by the Reserve Bank of India in light of FSB framework endorsed by G-20. Section V discusses the issues and challenges for the Indian OTC financial derivatives market. The last section provides a wrap-up of the discussion along with concluding remarks.

II. OTC Derivatives Markets

Derivatives are financial contracts that derive their value from the price of an underlying commodity, asset, rate, index or the occurrence of an event. Derivatives may either be standard or customized according to the needs of the participants. While the standardized products mostly trade on exchanges, the customized products are traded over the counter.

The OTC derivatives market can be divided into five distinct categories as mentioned below:

- (i) Interest rate derivatives,
- (ii) Foreign exchange derivatives,
- (iii) Credit derivatives,
- (iv) Equity linked derivatives, and
- (v) Commodity derivatives

The derivative techniques, generally used in hedging exposures, are given below:

(i) *Forwards*

Most popular and direct method of hedging foreign exchange exposure is by currency forward contracts. A forward is an agreement between two parties, a buyer and a seller, to buy or sell a currency at a specified rate on a particular date in future. Generally speaking, the firm may sell (buy) its foreign currency receivables

(payables) forward to eliminate its exchange risk exposure. The main advantage of a forward is that it can be tailored to the specific needs of the firm and an exact hedge can be obtained. For example, if RIL needs to buy crude oil in U.S. Dollar six months later, there is foreign exchange risk in case U.S. Dollar appreciates. The firm can eliminate the risk by entering into a forward contract to pay INR and buy USD six months later at the fixed exchange rate agreed at the time of agreement.

(ii) Options

Currency options offer the holder the right, but not the obligation, to buy or sell foreign currency at an agreed price, within a specified period of time. A call option gives the option buyer the right without obligation purchase agreed currency by paying the another agreed currency at the agreed price on or before agreed price. A put option gives the option buyer the right without obligation to sell the agreed currency for another agreed currency at the agreed price on or before the agreed date. Call Options are used if the risk is an upward trend on price (of currency), while Put Options are used if the risk is a downward trend in price. In the above example, RIL can hedge foreign exchange risk arising due to USD appreciation by buying USD call options in total amounting to the purchase of crude oil.

(iii) Swaps

Swap contract is an agreement to exchange one currency for another currency at a predetermined exchange rate, which is the swap rate, on sequence of future dates. As such, a swap contract is like a portfolio of forward contracts with different maturities. Swaps are very flexible in terms of amount and maturity; the maturity ranging from few months to 20 years. Two major types of swaps are currency swaps and interest rate swaps (also known as coupon swap). The two are combined to give a cross currency swap. A number of variations are possible within the two types of swaps. In a fixed to fixed currency swap (simply known as currency swap), one party pays in one currency (say INR) to the other party and receives in another currency (say USD) from the other party. At the outset, principal amounts are exchanged with the first party handing over INR to the second party and getting USD in return. Subsequently, the first party makes periodic USD payments to the second, computed as interest at a fixed rate on the USD principal, while receiving payments from second party in INR computed as interest on the INR principal. At maturity, the INR and USD principals are re-exchanged. A fixed to floating currency swap (known as cross currency swap) will have one payment say in currency INR calculated at a fixed interest rate while the other in another currency say USD calculated at a floating interest rate. In a standard interest rate swap (also known as plain vanilla interest rate swap), one party, known as the fixed rate payer, makes fixed payments all of which are determined at the outset. The other party, known as the float rate payer, will make payments the size of which depends on a specified interest rate index (say 6-month MIBOR). Interest payments are calculated on a notional amount because the parties do not exchange this amount at any time.

(iv) Credit Default Swaps

The most common credit derivatives are credit default swaps. Akin to insurance against default, a CDS references a specific credit obligation issued by a specific entity (for example, a bond issued by a corporate entity). One counterparty in CDS contract (the buyer of the protection) makes regular periodic payments to the other counterparty (the seller of the protection), in exchange the seller of the protection agrees to pay the buyer of the protection any loss in the value on the specified reference obligation if a credit event (like, default) occurs during the life of the CDS contract. The OTC derivatives market is reportedly characterized by large exposures between a limited numbers of market players. When the market is characterized by the existence of a few market makers, most of the activity takes place between these players and disruptions at any major dealer would soon transmit to other financial institutions and spread contagion to the entire market. The risk in the OTC derivative market also originates from the opacity in the market that constrains the market participants from assessing the quantum of risk held with the counterparty. Further, with increase in volumes and complexities of the OTC derivatives, the non-standardized infrastructure for clearing and settlement also becomes a major obstacle in containing risk. In the aftermath of the global financial crisis (GFC), improving transparency of the Over-the-counter (OTC) derivatives market has been a principal theme of discourse concerning the steps to be taken to prevent the recurrence of such a crisis in future. Two major steps in this direction are (a) clearing and settlement of OTC derivative transactions through a Central Counterparties (CCP) and (b) incentivising or mandating reporting of OTC derivatives trades to designated trade repositories (TRs). As a key measure for preventing recurrence of a crisis, major Central Banks and Market regulators have initiated measures to enhance the post-trading infrastructure in the OTC derivative markets. The G-20 Toronto summit declaration of June 26-27, 2010 lays down the future course in this regard. *“We pledged to work in a coordinated manner to accelerate the implementation of over-the counter (OTC) derivatives regulation and supervision and to increase transparency and standardization. We reaffirm our commitment to trade all standardized OTC derivatives*

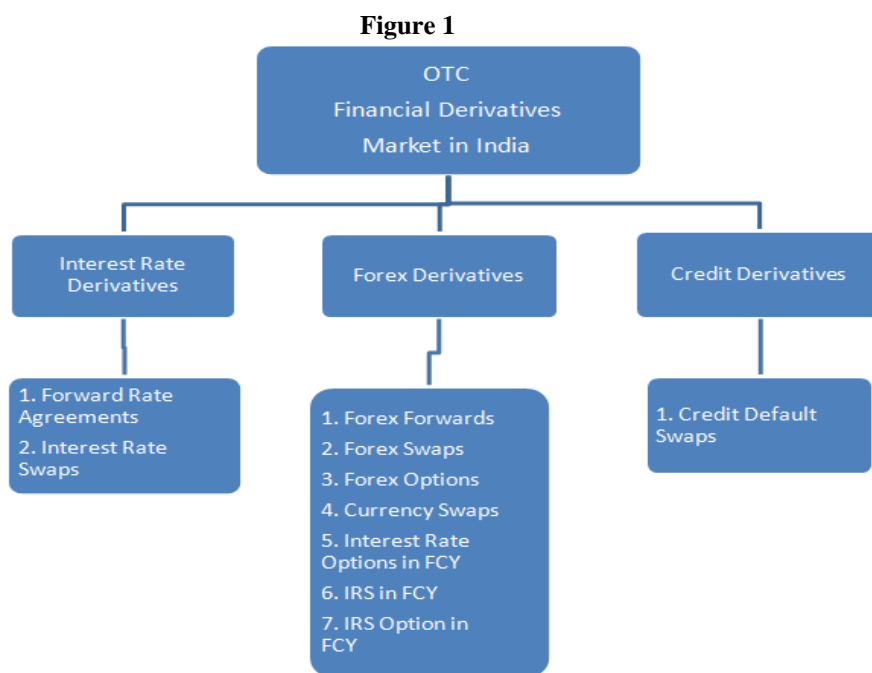
contracts on exchanges or electronic trading platforms, where appropriate, and clear through central counterparties (CCPs) by end-2012 at the latest. OTC derivative contracts should be reported to trade repositories (TRs). We will work towards the establishment of CCPs and TRs in line with global standards and ensure that national regulators and supervisors have access to all relevant information. In addition we agreed to pursue policy measures with respect to haircut-setting and margining practices for securities financing and OTC derivatives transactions that will reduce procyclicality and enhance financial market resilience. We recognized that much work has been done in this area. We will continue to support further progress in implementing these measures. A CCP is a financial institution that interposes as an intermediary between security (including derivatives) market participants. This reduces the amount of counterparty risk that market participants are exposed to. A sale is contracted between the seller of a security and the central counter party on one hand and the central counterparty and the buyer on the other. This means that no market participant has a direct exposure to another and if one party defaults, the central counterparty absorbs the loss. Unlike the CCP infrastructure, the objective of TRs is simply to maintain an authoritative electronic database of all open OTC derivative transactions. It collects data derived from centrally or bilaterally clearable transactions as inputted/verified by both parties to a trade. It may be mentioned that other market infrastructure or service providers that centrally maintain market wide OTC derivative contract information (e.g. CCPs) may also provide the function of the TR. The financial crisis of 2008 exposed weaknesses in the structure of the over-the-counter (OTC) derivatives markets that had contributed to the build-up of systemic risk. In response to the financial crisis, the G-20 initiated a series of reforms designed to strengthen the regulation and oversight of the financial system and tasked the Financial Stability Board (FSB) with coordinating the reforms and assessing their implementation. An important aspect of these reforms is a commitment to enhance the regulation of OTC derivatives markets so as to improve transparency, mitigate systemic risk and protect against market abuse. The reforms agenda consists of standardization, central clearing, exchange or electronic platform trading, margining and reporting of OTC derivatives transactions to trade repositories.

As G20 has tasked FSB to monitor the progress in OTC derivatives reforms, the FSB made 21 recommendations in its report on *Implementing OTC Derivatives Market Reforms*, addressing practical issues that the authorities may encounter in implementing these commitments concerning standardization, central-clearing, exchange or electronic platform trading and reporting of OTC derivative transactions to trade repositories which were endorsed by G-20 Leaders at the Seoul Summit in October 2010. The summary of recommendations is as under:

1. *Standardization*: The proportion of the market that is standardized should be substantially increased in order to further G-20's goals of increased central-clearing and trading on organized platforms, and hence mitigate systemic risk and improve market transparency.
2. *Central clearing*: To implement the G-20 commitment effectively, it is necessary to specify the factors that should be taken into account when determining whether a derivative contract is standardized and therefore suitable for clearing. In addition to mandatory clearing requirements, robust risk management requirements for the remaining non-centrally cleared markets; and supervision, oversight and regulation of central counterparties (CCPs) themselves need to be prescribed.
3. *Exchange or electronic platform trading*: Identify what actions may be needed to fully achieve the G20 commitment that all standardized products be traded on exchanges or electronic trading platforms, where appropriate.
4. *Reporting to trade repositories*: Authorities must have a global view of the OTC derivatives markets, through full and timely access to the data needed to carry out their respective mandates. The trade repository data must be comprehensive, uniform and reliable and, if from more than one source, provided in a form that facilitates aggregation on a global scale.

III. OTC Financial Derivatives Market In India

Derivatives instruments/techniques permitted in OTC financial derivatives market (comprising forex, interest rate and credit derivatives markets) in India are shown in figure 1.



(i) OTC Forex Derivatives Market in India

Table 1 shows daily turnover in OTC forex derivatives market in India vis a vis to World forex derivatives markets during 1995-2016. The average daily turnover in OTC forex derivatives market in India, which was negligible in 1995, rose to US\$ 32 billion in 2016. Its share in world OTC forex derivatives market has grown from nil in 1998 to 0.5 percent in 2016.

Table 1: Turnovers of OTC foreign exchange instruments
(Net-gross basis, April 1995-2016, daily averages, in billions of U.S. Dollars)

	1995	1998	2001	2004	2007	2010	2013	2016
India	---	2 (0)	3(0)	7(0)	38(0)	27(0)	31(0)	34(0)
World	1633	2099	1705	2608	4281	5045	6686	6514

Note: Figures in parenthesis are percentage shares.

Source: BIS Triennial OTC Derivatives Statistics

Table 2 shows the break-up of daily turnover of Indian OTC forex derivatives market on instrument basis. The spot market has remained the most important one, accounting about a half of the turnover. Foreign exchange swaps are the dominant form of OTC forex derivatives accounting for over 30% of the total turnover, followed by outright forwards (14% of the total turnover) during the period. The remaining turnover has been accounted by forex options, currency swaps and interest rate options in foreign currency. The amount of interest rate options in foreign currency has been negligible.

The maturity profile analysis of forex swaps shows that more than 60 percent of swaps have been with maturity of less than seven days. Approximately 39 percent of forex swaps had maturity between 7 days and one year. The forex swaps having maturity more than one year accounted mere 0.9 percent of total forex swaps.

Table 2: India: Foreign Exchange Derivatives Statistics
(Turnover, daily averages, net-gross basis, April 1995- 2016, in millions of U.S. Dollars)

Instrument	1998	2001	2004	2007	2010	2013	2016
Spot	1155.8	1575.9	3418.6	14349.3	13411.1	15475.0	15001.7
Outright forward	382.3	451.0	1210.1	6299.2	4894.9	3743.3	4828.9
FX Swaps	902.8	1388.9	2012.1	13436.8	7696.6	11167.2	13788.3
≤ 7 days						7118.6	8340.9
> 7 days						3708.2	5328.6
> 1 year						340.4	118.8
Currency Swaps	1.8	3.7	112.7	479.1	31.0	308.8	154.9
FX Options	2.8	4.1	121.7	3800.2	1324.9	582.0	856.1
Interest Rate Options in FCY	---	---	---	---	---	---	22.3
Total	2445.4	3423.6	6876.1	38364.6	27358.4	31276.3	34351.2

Source: BIS Statistics Warehouse

(ii) OTC Interest Rate Derivatives Market in India

The Reserve Bank of India allowed OTC interest rate derivatives in 1999. Table 3 shows that even after so many years the turnover of interest rate derivatives has not picked up the momentum. The benchmarks of tenor beyond overnight have not become popular due to the absence of a vibrant inter-bank term money market. This area is viewed as matter of concern for the long-term efficiency of the market. The share of Indian interest rate OTC derivatives market in global OTC derivatives has been negligible.

The market, which has been taken seriously so far, is the overnight index swaps (OIS) based on Mumbai Interbank Offered Rate (MIBOR) benchmark. The other benchmarks (such as MIFOR and INBANK) and benchmarks of tenor beyond overnight have not become popular.

Table 3: Turnover of OTC Single Currency Interest Rate Derivatives
(Net-gross basis, April 1995-2016, daily averages, in billions of U.S. Dollars)

	1995	1998	2001	2004	2007	2010	2013	2016
India	---	---	0(0)	1(0)	3(0)	3(0)	3(0)	2(0)
world	209	334	676	1330	2173	2649	2702	3039

Note: Figures in parenthesis are percentage share.

Source: BIS Triennial OTC Derivatives Statistics

Table 4 shows that OTC derivatives market was dominated by interest rate swaps. The volume of interest rate forwards was negligible.

Table 4: India: OTC Interest Rate Derivatives
(Net-gross, daily averages, in millions of U.S. Dollars)

Instrument	2013	2016
Forward rate agreement	34.5	4.7
Swaps	3213.2	1831.3
Total	3247.7	1836.0

Source: BIS Statistics Warehouse

The maturity profile of interest rate swaps based on MIBOR OIS benchmark are given in table 5. The majority of interest rate swaps have maturity of 6 months, 9 months or 1 year. Maturity of interest rate swaps based on MIFOR benchmark have generally been between 2 to 7 years.

Table 5: Interest rate swaps maturity profile
(In billions of Rupees)

MIBOR OIS														
		1M	2M	3M	6M	9M	1Y	2Y	3Y	4Y	5Y	7Y	10Y	Total
31 Aug. 2017	No. of trades	1			4	7	1	2	6	7	13			41
	Vol.				1250	3400	100	125	225	580	725			6505
	Wt. avg. rate				6.0952	6.1450	6.1675	6.0500	6.0942	6.155	6.2100			
29 Sep. 2017	No. of trades			3	26	13	31	20	19	12	52			176
	Vol.			300	5400	1300	3050	925	525	350	2025			13875
	Wt. avg. rate			5.9975	6.0735	6.0754	6.0948	5.9922	6.0812	6.1879	6.2693			
31 Oct. 2017	No. of trades			1	8	9	17	11	12	13	28			99
	Vol.			350	525	1000	2545	525	300	400	1050			6695
	Wt. avg. rate			6.0450	6.1200	6.1375	6.1650	6.0925	6.1800	6.2850	6.3775			
MIFOR														
31 Aug. 2017	No. of trades								1	1				2
	Vol.								50	100				150
	Wt. avg. rate								5.7700	5.8550				
29 Sep. 2017	No. of trades							1			1	3		5
	Vol.							25			150	175		350
	Wt. avg. rate							5.6900			5.9900	6.0271		
31 Oct. 2017	No. of trades							2	1		5	2		10
	Vol.							50	25		375	120		570
	Wt. avg. rate							5.8950	5.9500		6.2297	6.2613		

Source: ccil.com

(iii) Credit derivatives

The table 6 shows volume of Credit Default Swaps (CDS) market in India. The volume of Credit Default Swaps (CDS) has been negligible. Having been introduced in the aftermath of the GFC, the product has been launched with a high dose of safety measures. This could be the reason for limited liquidity of the product. There is need to revisit the issues hindering development of the CDS market.

Table 6: India: Credit Default Swaps
(Volume in billions of Rupees)

Period	Notional amount
2011-12	0.1
2012-13	0.2

Source: Reserve Bank of India

IV. Regulatory Framework Of OTC Derivatives Market In India

The Reserve Bank of India Act, 1934 (as amended in 2006) empowers RBI to regulate OTC product such as interest rate derivatives, foreign currency derivatives and credit derivatives. The Reserve Bank of India has legalised all derivatives trading where at least one of the parties in a transaction is a RBI regulated entity. As far as the regulatory regime is concerned, all scheduled commercial banks (SCBs) excluding Regional Rural Banks, primary dealers (PDs) and all-India financial institutions have been allowed to use IRS and FRA for their own balance sheet management as also for the purpose of market making. The non-financial corporations have been allowed to use IRS and FRA to hedge their balance sheet exposures, with a caveat that at least one of the parties in any IRS/FRA transaction should be a RBI regulated entity. OTC derivatives market comprises of clients, authorised dealers (ADs), Central Clearing Party/Trade Repository (CCIL) and the RBI, as regulatory authority. Authorised dealers report trade transactions to the RBI for market surveillance. While, CCIL reports all transactions to the RBI for systematic risk assessment. Authorised dealers also report trade transactions to Trade Repository (CCIL). All trade transactions between authorised dealers are centrally cleared by CCIL. In India, the small size of the OTC derivatives market, low level of complexity in products and robust regulation resulted in orderly derivatives market development and reduced the concerns with regard to systemic risk. The OTC derivative products were introduced in a phased manner keeping in view the hedging needs of the real sector. Reserve Bank of India has focused on improving transparency and reducing counterparty risk in the OTC derivatives markets and fostered development of robust market infrastructure for trading, settlement and reporting of transactions. As RBI has initiated steps for adoption of the G-20 / FSB reforms, reasonable progress has been made in implementing the OTC derivative reform measures in India.

The regulatory framework and initiatives taken by RBI are mentioned below:

1. Standardisation

As majority of inter-bank trades of forex forwards and forex swaps executed are to cover the non-standard client trades, it is recommended that standardisation of forex forwards and swaps may not be mandated for the present. The matter has to be reviewed in coming year(s). Inter-bank trade forex options are essentially entered to cover non-standard client trades, which are highly customised, hence standardisation is not compulsory at present. However, the matter is under review. The market liquidity is low in Currency Swaps, IRS in FCY, and Interest Rate Options in FCY to consider their mandatory standardisation. The matter has to be reviewed.

The inter-bank IRS on Overnight Index Swap –MIBOR has been standardised in April 2013 upon regulatory mandate by the RBI. It was decided to follow a gradual approach and consider examining standardisation of other benchmarks (Mumbai Interbank Forward Offer rate and Indian Bench Mark) in a phased manner due to low liquidity. The Credit Default Swaps contracts have been standardised by FIMMDA upon regulatory mandate by the RBI.

2. Central clearing

The operational and counterparty risks in financial markets can be effectively managed by making an arrangement for central clearance of transactions. Through central clearing numerous bilateral exposures of a market participant can be substituted for a single net exposure to a Central Counterparty (CCP). The resulting multilateral netting has the potential to substantially reduce the size of individual counterparties' outstanding obligations relative to bilateral arrangement, while reducing market-wide collateral requirements. The Clearing Corporation of India Ltd. (CCIL) clears, settles and functions as the central counterparty to all trade in both spot and forward markets in both foreign exchange and debt. CCIL started CCP clearing of Rupee denominated IRS and FRA in March 2014. All trades referenced to the MIBOR and MIOIS with original maturities ranging from 1 month to 10 years are eligible for guaranteed settlement. Trades supported by adequate margin are guaranteed for settlement. Trades not supported by margins (by either or both counterparties) are kept "Pending" with daily

margin check till 2 days prior to next cash flow settlement date. Novation occurs at the point in time when the trade is accepted for guaranteed settlement by CCIL. For forex forwards and forex swaps contracts, the CCP based clearing is mandatory for all interbank trades. The central clearing facility for forex options, currency swaps, IRS in FCY, Interest rate options in FCY is under consideration. Currently volumes in CDS are very low. As CCP based clearing which requires reasonable volume to calculate margin requirements has not been introduced.

3. Electronic platform for trading

Currently, there is no exclusive trading platform available. However, forex forward trades can be traded in CCIL's FX-SWAP trading platform for certain maturities. Introduction of exclusive trading platform for forex forwards is under consideration. Forex swaps can be traded on trading platforms developed by CCIL and Reuters. Forex option is not very standardised to be traded on an electronic platform. Establishing a trading platform is under consideration. In case of Currency Swaps, IRS in FCY, Interest Rate Options in FCY, market liquidity is not sufficient to consider setting up trading platform. Electronic trading platform developed CCIL is available for IRS and Forward Rate Agreements contracts. Since there is no activity in Credit Default Swaps (CDS), trading platform has not been introduced.

4. Reporting to trade repositories

In August 2007, RBI put in place a reporting arrangement for interbank/PD transactions in Rupee Interest Rate Swap (IRS) and Forward Rate Agreement (FRA). The CCIL's reporting platform for OTC foreign exchange derivatives was introduced on July 9, 2012 and was expanded thereafter in three phases to cater to the reporting of interbank and client transactions (threshold of USD 1 million and equivalent in other currencies) in various actively used derivative instruments. In December 2013, reporting of client transactions in Rupee IRS/FRA was also covered. The reporting platform for Credit Default Swaps (CDS) was put in place from the date of introduction of the instrument itself, i.e., December 1, 2011. Thus, the current trade reporting arrangement covers Rupee IRS/FRA, Foreign Exchange Forwards, Foreign Exchange Options, FX Swaps, Currency Swaps, IRS/FRA in foreign currencies and CDS.

5. Margin requirements

IRS trades are presently not margined as per the market practice. Thus, it is recommended that non-centrally cleared IRS trades (including client trades) should be subject to margin requirements. Work on modalities in accordance with the recommendations of the report of Working Group on Market Reform is under consideration. Workout on modalities on margin requirements for OTC foreign exchange derivatives in accordance with the recommendations of the report of Working Group on Market Reform is under consideration. Margin requirements for Credit Default Swaps have already been prescribed by RBI.

Table 7 shows the current status of OTC derivatives in context of trade repository, standardisation of products, central clearing, electronic trading platform and margin requirements.

Table 7 Current Status on OTC Derivatives Market in India

Product	Trade Repository	Standardisation	Central Clearing	Electronic Trading Platform	Higher capital/margin requirements for non-centrally clearing OTC derivatives
OTC Forex Derivatives					
1. Forex forward	Available for both interbank & client trades.	Not available as majority of interbank trades driven by customised client trades.	Guaranteed central clearing available.	No exclusive platform available. Can be traded on FX-SWAP.	No regulatory requirement.
2. Forex swap	Available for both interbank & client trades.	Not available as majority of interbank trades driven by customised client trades.	Guaranteed central clearing available.	Majority of trades through brokers. Can be traded on CCIL and Reuters' platform.	No regulatory requirement.
3. Forex option	Available for both interbank & client trades.	Not available as majority of interbank trades driven by customised client trades.	Not available.	Not available.	No regulatory requirement.
4. Currency swap	Available for both interbank & client trades.	Not available.	Not available.	Not available.	No regulatory requirement.
5. IRS in FCY	Available for both interbank & client	Not available.	Not available.	Not available.	No regulatory requirement.

	trades.				
6. IRS Option in FCY	Not available due to negligible trading volume.	Not available.	Not available.	Not available.	No regulatory requirement.
7. Interest Rate Options in FCY	Not available due to negligible trading volume.	Not available.	Not available.	Not available.	No regulatory requirement.
Interest Rate Derivatives					
1. IRS	Available for both interbank & client trades.	Partial, standardised.	MIBOR	CCP based clearing.	Not available. Under consideration.
2. FRA	Available for both interbank & client trades.	Partial, standardised.	MIBOR	CCP based clearing.	Not available. Under consideration.
Credit Derivatives					
3. CDS	Available for both interbank & client trades.	Standardised.		Not available.	Not available. Margin requirement in place.

V. Issues and Challenges

The issues like market liquidity, valuation norms, participants' sophistication in trading strategies, use of products as hedge etc., standardisation of products and central clearing, margin requirements, electronic trading platform and low trading volumes are to be tackled to develop the derivatives market in India. In Indian derivatives market, products are simple and with low volumes. The future roadmap has to be drawn after considering these factors. The roadmap may be placed in public domain to seek the opinion of all stakeholders. Regulatory reform of OTC derivatives is very important from financial stability perspective. As far as financial crisis are concerned, it is not so much the derivative products that to be blamed but the infrastructure for trading and regulations of the institutions. The RBI has drawn up and implementing a roadmap focussed on standardisation, reporting to the Trade Repositories, central clearing, margin requirements and electronic platform based trading. Market for derivatives in India, like financial markets, is about two decade old. The market is still evolving. It is wise to learn from other's mistakes and adopt a cautious and gradual approach. The common criticism of global OTC derivatives market relate to the fact that the OTC markets are less transparent and highly leveraged, heaving weaker capital requirements and contain elements of hidden risk. The growth of derivatives as off-balance sheet (OBS) items of Indian banks has been a matter of concern for the Reserve Bank of India. The off balance sheet exposures of Indian banks have increased many fold in recent years. The derivatives account for three-fourth of the total. The growth of derivatives in the OBS business of SCBs can be managed by a regulatory and supervisory framework. CCIL is the only centralised clearing party for trade processing and settlement services in India. The entry of one or two more CCPs in the post trade clearing and settlement may bring with it advantages of operational efficiency and, at the same time, reduces the concentration of risk. Another measure that could contribute to the strengthening of the CCPs relates to increasing liquidity requirements of CCIL. In Indian derivatives market, products are simple. The introduction of third generation derivatives is another challenge for the central bank and the corporates as well. The adequate infrastructure, comprehension of working of derivatives and regulatory framework are pre-requirements for the introduction of complex derivatives.

VI. Conclusions

India is committed to adopting OTC derivatives reforms as per G-20 reform agenda. In India, the small size of the OTC derivatives market, low level of complexity in products and robust regulation resulted in orderly derivatives market development and reduced the concerns with regard to systemic risk. The following conclusions have been drawn from the study:

- i. Indian OTC forex derivatives market has shown growth in the last two decades. Its share in the world OTC forex derivatives market has increased from nil in 1998 to 0.5 percent in 2016.
- ii. Forex swaps have been the dominant form of the OTC forex derivatives followed by outright forwards.
- iii. The maturity profile of forex swaps shows that more than 60% of swaps have been with maturity of less than 7 days. Approximately 39% of forex swaps have maturity between 7 days and one year.
- iv. Indian OTC interest rate derivatives market (except overnight market) has not picked up the momentum. This may be due to lack of a vibrant interbank term money market.
- v. The share of Indian OTC interest rate derivatives market in the global interest rate derivatives market has been almost nil.
- vi. The credit derivatives market's trading volume has been low. There is need to look into the issues hindering the growth of CDS market.

- vii. The foreign currency forwards and interest rate swaps occupy dominant positions in the Indian OTC financial derivatives market.
- viii. The notional value of OTC contracts is not true measure of risk. It is gross market value, measuring the cost of replacing all existing contracts, which shows market risk. However, for analysing the payment flows at the risk, a still better measure is the gross credit exposure. Which shows the aggregated market value of the OTC contracts after bilateral netting has been completed.
- ix. OTC derivatives market in India is well regulated by the Reserve Bank of India.
- x. A reasonable progress has been made by the RBI in adopting the G-20 FSB reforms in derivatives market.
- xi. Standardisation of products, electronic platform for trading, reporting of transactions to repositories have taken place in most derivative products.
- xii. Strengthening of the CCP approach is required for better surveillance of the OTC financial market. The issue of strengthening the liquidity of CCIL needs to be looked after.
- xiii. The entry of one or two more CCPs in the post trade clearing and settlement may bring with it advantages of operational efficiency and, at the same time, reduces the concentration of risk.

In Indian derivatives market, products are simple. The introduction of third generation derivatives is another challenge for the central bank and the corporates as well. The adequate infrastructure, comprehension of working of derivatives and regulatory framework are pre-requirements for the introduction of complex derivatives. The market is still evolving. It is wise to learn from other's mistakes and adopt a cautious and gradual approach.

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