An analytical study on credit and interest rate Derivatives in Indian Banking Sector

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Abstract

Insurers serve two primary functions in the economy- a risk-bearing and risk-pooling function and financial intermediation. In their risk-bearing and risk pooling function, insurers provide a mechanism for individuals and businesses exposed to the risk of loss of life, health, or property to transfer these risks to an insurer in return for a premium payment. The insurer can diversify most of this risk (usually called underwriting risk) by writing insurance on large numbers of policyholders (the risk pooling function), whose risk of loss is more or less statistically independent. However, diversification does not fully eliminate underwriting risk, giving rise to the need for insurers to hedge this risk. The other important economic function performed by insurers is financial intermediation. Financial intermediation involves raising funds by issuing specialized types of debt contracts and investing the funds in financial assets. Intermediary gains from specialization in certain types of financial transactions give intermediaries economic value, Intermediaries typically are compensated for their services in the form of yield spreads; i.e. they pay less for the funds they borrow than they earn on the funds they lend or invest. Life insurers raise funds by issuing various types of products such as cash value life insurance, annuities, and guaranteed investment contracts (GICS). They invest in traded bonds and stocks, but globally life insurers are also major participants in the markets for privately placed bonds and mortgages. The intermediation function of insurers gives rise to the majority of their need for financial risk management.

The opening of the economy and the adoption of the liberalized policies have exposed the business houses to various risks such as exchange rate risk, interest rate risk, economic risk and political risk and thus created the need for hedging instruments for enterprises to minimize the risk. In the present times, when deregulated interest rates on most debt instruments is continuously exposing the market players to risks arising from unanticipated movements in interest rates, it has become indispensable to hedge this risk. The sharp fall in interest rate in the last five years has spelt down financial institutions, insurance companies provident funds and millions of depositors. While reduction in the interest rate provided some occur to the government in mopping up resources from the market, it was providing to be a dampner to depositors.

Keywords: *credit rates, interest rate, RBI, banking, regulation, derivatives, investment contracts, capital*

INTRODUCTION

The main regulatory hurdle, which is affecting the growth of the credit derivatives market, concerns the allocation of capital on a financial institution's balance sheet against outstanding credit derivatives contracts. Regulators set rules which define the capital necessary for a given position is usually dependent on its relative risk. The firm needs more capital if the position is highly risky and less for higher quality assets. The capital adequacy directive (CAD) of the European Union has defined various risk categories. Capital charges are made according to the risk categories of the position, including market risk, counterparty risk, large single party exposure and foreign exchange risk. Credit derivatives offer in many instances the possibility of offsetting counterparty risk against the market risk but may not achieve a reduction in risk capital requirements from the regulators. For example, a TRS may allow a credit exposure to be transformed into a market exposure plus some other counterparty exposure. The institution will be required under existing regulation to hold capital against both the loan and the offsetting credit swap. Various issues need to be sorted out, among them: Do default puts attract position risk charges? If yes, what are the appropriate risk weightings? What offsetting, if any, should be allowed for credit derivatives? What percentage of notional amounts must be held against different credit derivatives transactions? Another question is when, if regulators will recognize firms' internal models for credit derivative valuation. This problem is aggravated by the absence of widely accepted valuation techniques for credit derivatives. Perhaps the best

INTEREST RATE DERIVATIVES

Under the guidelines issued by the Reserve Bank, interest rates derivatives have been launched in India on National Stock Exchange and Bombay Stock Exchange on June,24, 2003. This has enabled the Scheduled Commercial Banks (SCBs) (excluding Regional Rural Banks and Local Area Banks), Primary dealers and specified All India Financial Institutions, to hedge the interest rate risk in their underlying government securities portfolio by booking a future transaction on payment of a small premium to insure the unexpected liability that may arise in future.

To begin with, it has been decided by RBI to start trading in only two kinds of interest rate futures contracts on the following underlying securities

— Notional Treasury Bills

— Notional 10 year bonds (coupon bearing and non- coupon bearing)

Fair Value Accounting Treatment: When hedging exposures associated with the price of an asset, liability, or a firm commitment, the total gain or loss on the derivative is recorded in earnings. In addition, the underlying exposure due

to the risk being hedged must also be marked-to-market to the extent of the change due to the risk being hedged; and these results flow through current income, as well. This treatment is called a "fair value hedge." Hedgers may elect to hedge all or a specific identified portion of any potential hedged item. Fair value hedge accounting is not automatic. Specific criteria must be satisfied both at the inception of the hedge and on an ongoing basis. If, after initially qualifying for fair value accounting, the criteria for hedge accounting stop being satisfied, hedge accounting is no longer appropriate.

With the discontinuation of hedge accounting, gains or losses of the derivative will continue to be recorded in earnings, but no further basis adjustments to the original hedged item would be made. Reporting entities have complete discretion to de-designate fair value hedge relationships at will and later re-designate them, assuming all hedge criteria remain the same.

Derivative regulatory time line

November, 1996	L C Gupta Committee set up by SEBI examined the need for financial derivatives in a broader perspective and recommended introduction of interest rate and currency derivatives.
July 7, 1999	RBI permitted SCBs (excluding RRBs), PDs and all-India financial institutions to undertake Forward Rate Agreements/Interest Rate Swaps (FRAs/IRS) as plain vanilla products for their balance sheet management and market making.
April 27, 2000	For pricing of rupee interest rate derivatives, banks were allowed to use interest rate implied in foreign exchange forward market, etc.
November 7, 2002	Working Group under the Chairmanship of Shri Jaspal Bindra constituted by RBI to review the progress and map further developments in regard to IRD in India.
January 31, 2003	Working Group on Rupee Derivatives submitted its Report. Major recommendations included: • Mandatory anonymous disclosure of deals done in a standardized manner on the NDS platform which would download trades to CCIL, just as in the case of government securities. • Introduction of a centralized clearing system for OTC derivatives through CCIL. RBI advised to consider mandatory clearing of swap contracts through CCIL in view of the several advantages of such a facility. • Product standardization to facilitate central clearing. • Implementation of a daily mark-to-market margining system by CCIL and use the existing Settlement Guarantee Fund for swap contracts as well. • Amendment of the Banking Regulation Act, 1949 to clarify the status of derivatives contracts in India undertaken by banks/FIs/PDs. • Inclusion of netting of derivative contracts in the draft legislation on netting forwarded to the Government by RBI.
April 1, 2003	Banks were encouraged to follow the Current Exposure Method (CEM) for measuring the credit risk exposure inherent in derivatives for determining individual/group borrower exposures.
June 1, 2003	Interest Rate Futures (IRF) were introduced in India on the National Stock Exchange (NSE). Banks/FIs were allowed to deal in exchange traded interest rate derivatives in a phased manner, with a view to enabling them to manage their exposure to interest rate risks.
June 3, 2003	RBI Guidelines on participation of PDs in Exchange Traded IRD.
August 7, 2003	Group constituted by RBI to study issues related to IRD on an on-going basis.
December 31, 2003	Report on Rupee IRD released. Recommendations included: • Reduction in risk weight for exposures on clearing agencies like CCIL, NSCCL, BOI Clearing house to 20% from existing 100%. • CCIL should be encouraged to evaluate the feasibility of multilateral netting in OTC derivative contracts like IRS.
March 20, 2004	RBI decided to introduce trading and settlement of OTC derivatives through CCIL.
May 18, 2004	RBI's Annual Monetary and Credit Policy for the year 2004-2005 indicated operationalization of settlement of OTC Derivatives through CCIL by March 2005.
March 31, 2005	For ensuring smooth transition to Basel II norms, banks directed to maintain capital charge for market risk in respect of their trading book exposures (including derivatives).
May 20, 2005	Market participants advised to use only domestic rupee benchmarks for IRD.
June, 2006	Reserve Bank of India Act, 1934 amended providing RBI with the statutory backing for regulating the money market and also for regulating trading of over-the-counter derivatives. It also provided legality of OTC derivative instruments, including credit derivatives.
October 31, 2006	Internal Group constituted by RBI to review the existing guidelines on derivatives and formulate comprehensive guidelines on derivatives by banks.
December 11, 2006	RBI released draft comprehensive guidelines on derivatives.
April 20, 2007	RBI notified comprehensive guidelines on derivatives.
April 24, 2007	CCIL directed to start a trade reporting platform for Rupee Interest Rate Swaps (IRS). This reporting module was expected to be functional by August 31, 2007 and thereafter be available to all market participants.

August 10, 2012	Working Group on G-secs and Interest Rate Derivatives Markets (Chairman: Shri R. Gandhi) finalized its report.
October 30, 2012	RBI proposed to standardize IRS contracts to facilitate centralized clearing and settlement of these contracts.
January 28, 2013	To improve tradability and facilitate centralized clearing and settlement of IRS contracts in future, RBI decided to standardize IRS contracts in terms of minimum notional principal amount, tenors, trading hours, settlement calculations etc. to be prescribed by FIMMDA in consultation with the market participants. All new INR MIBOR-OIS contracts executed from April 1, 2013 onwards standardized. The standardization requirement mandatory for all IRS contracts other than client trades.
April 1, 2013	IRS on Overnight Index Swap for interbank trades was standardized.
July 2, 2013	The finalized guidelines on capital requirements for banks' exposures to central counterparties notified - effective from January 1, 2014.
December 9, 2013	RBI notified operational guidance on novation of OTC derivative contracts.
January 1, 2014	RBI granted the status of a Qualified Central Counterparty (QCCP) to CCIL.
January 1, 2014	Guidelines on capital requirements for banks' exposures to CCPs became effective. One of the significant aspects in the guidelines was the proposal to treat the exposures to CCIL on net basis. In cases, where the CCIL provides guaranteed settlement, banks may reckon their total replacement cost (MTM) on net basis, i.e., on net replacement cost as part of trade exposure determination. This would provide significant capital relief to banks.
January 6, 2014	RBI selected CCIL to act as a Local Operating Unit (LOU) for issuing globally compatible Legal Entity Identifiers (LEIs) in India.
March 6, 2014	Implementation Group on OTC Derivatives Market Reforms - Recommendations: • Make operational CCP based clearing for interbank IRS trades by March 2014. • CCP based clearing would be made mandatory for all interbank Forex Swaps trades by March 2014. • Electronic trading platform for IRS trades may to be put in place by September 2014 subject to approval from RBI. • Non-centrally cleared IRS trades (including client trades) should be subject to margin requirements.
March 27, 2014	PD's clearing exposure to a QCCP to be kept outside of the exposure ceiling of 25% of its net owned funds applicable to a single borrower/counterparty.
March 28, 2014	CCIL commenced CCP clearing for IRS trades referenced to the MIBOR and MIOIS benchmarks.
November 18, 2014	CCIL launched its services as a LOU for issuing globally compatible LEIs in India.
May 28, 2015	Basel III framework on liquidity standards Net Stable Funding Ratio (NSFR) draft guidelines released.
July 22, 2015	Launch of FBIL Overnight MIBOR, with CCIL as the Calculation Agent.
August 3, 2015	Launch of ASTROID, CCIL's Anonymous IRS Dealing System for trading in OTC rupee derivative trades. The anonymous trading platform with CCP facility has many benefits like availability of transparent quotes, less documentation requirement, reduced credit risk, saving of capital, higher credit exposure etc.
June 1, 2016	All regulated institutional entities, subject to the approval of their respective sectoral regulators, allowed to apply for membership of electronic trading platforms in IRS which have CCIL as the central counterparty for settlement.
January 4, 2017	Legal Entity Identifier India Limited (LEIL), a wholly owned subsidiary of CCIL, was accredited by the Global Legal Entity Identifier Foundation (GLEIF) as a LOU for issuance of LEIs, among the first LOUs to be accredited by GLEIF.
March 29, 2017	CCIL obtained recognition as a "third-country CCP" under the European Market Infrastructure Regulation ("EMIR"), consequent upon recognition of India as an equivalent regime by European Commission's decision dated December 15, 2016.
June 1, 2017	RBI mandated the implementation of the LEI system for all participants in the OTC markets for Rupee IRD, foreign currency derivatives and credit derivatives in India.
November 2, 2017	Schedule for introduction of Legal Entity Identifier for large corporate borrowers notified.
April 3, 2018	Launch of the FBIL MIBOR-OIS benchmark.
April 10, 2018	RBI proposed to permit nonresidents access to the Rupee IRS market in India.
November 19, 2018	Guaranteed settlement services in respect of trades referenced to the MIFOR benchmark commenced by CCIL.
November 29, 2018	Final schedule for implementation of LEI in the money market, g-sec market and forex market notified.

OBJECTIVES:

This paper seeks

- To study derivatives markets in general
- To analyse the overall credit and interest rate impact on the derivatives market;

METHODOLOGY FOR INTEREST/CREDIT RATE DERIVATIVES

Derivative is an instrument, which derives its value from the underlying asset. As mentioned earlier, at present notional treasury bills and notional 10 years security bonds have been allowed as underlying instruments in the interest rate derivative market. There can be spot and futures contracts on these underlying securities. The spot market contract is a contract where the transaction settles at a current date whereas in the futures market contract, settlement of a transaction happens at a future date while all other financial aspects of a transaction are fixed today. For example, X agrees to buy 4000 notional 10-year bonds expiring on 31st October,2003 @ Rs.50/-. On 31st October, if the price of the bond is Rs.60/-,he will get Rs.40,000/- i.e the difference between the agreed price and the market price. Similarly, if the price is Rs. 40/- he will have to pay Rs.40,000/-. This is because of "cash settlement" in the interest rate derivative market. There can be three kinds of transactions in the futures market:

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1. Speculation
2. Arbitrage
3. Hedging

We shall discuss all one by one.

1. Speculation

A speculator is one who enters into a transaction with his forecast about the market trend. If he takes a short position and markets fall, he ends up making money and vice versa. Similarly, if he thinks that the interest rates will go down and buys interest rate futures but if interest rates rise, he tends to lose.

2. Arbitrage

Arbitrage is a transaction where one creates a locked in position by entering into two transactions, simultaneously, one in spot market and the other in futures market, thereby making profit out of the difference between the two. On a future date both the transactions are reversed to square up the open positions. Arbitrage opportunities arise out of inefficient market.

Suppose, the futures price is higher than the spot price (capitalized to future date at current rate of interest) then, to get the benefit of arbitrage, one must sell at a futures date. For example, in such a case, if one agrees to deliver a 90-day Treasury bill 30 days from now, he must,

a. Buy a zero coupon bond with 120 days to expiry

b. Short the 90 days futures with 30 days to expiration.

This is known as cash and carry arbitrage. It is possible only when,

$$F > S(1+r30/365)30/365$$

where,

F is futures market rate

S is spot market rate

r is rate of interest

In the opposite situation, where futures rate is lower than the spot rate (capitalized to future date at current rate of interest), one must sell at the spot market. If he sells 120 days bond, he should invest it into 30 day Treasury bill at spot market and buy 90 days Treasury bill in future market. This is known as "reverse cash and carry". At present, we don't have securities lending system; therefore, reverse cash and carry is limited in this example only to people who have 120 days bond in hand. Secondly, on expiration date, we are left with 90 days bond in hand, which is exactly where we would have been, if we had not entered into any transaction. The aforementioned transaction would be profitable only if the 30 days spot rate is higher than the futures rate and we are left holding cash in hand

3. Hedging

Hedging is done to prevent unfavorable movement in interest rate, which may increase the liability of the borrower on the repayment date. The intention behind hedging is not to make profit but to contain the risk of loss. Therefore, if you have a payment liability on a future date and there is 1 base point rise in yield curve, you may have shortage of funds. To hedge this uncertainty, find a futures position, which completely offsets this loss. For example, if you have 100 crores with duration of 11 years. One base point rise in yield curve will increase your liability by Rs.11 lakhs. You have to look for a short future position of Rs.110 crore which gains Rs.11 lakhs if the yield curve moves up by 1bps (considering the parallel shift of yield curve).

TRADING OF INTEREST RATE DERIVATIVES-PROCEDURE

Contract Period

The interest rate future contract is for a period of maturity of one year with three months continuous contracts for the first three months and fixed quarterly contracts for the entire year. New contracts are introduced on the trading day following the expiry of the next month contract. For example, if a contract is to be entered in June 2003, it can have expiry(s) on the last Thursdays in the months of July, August, September, December 2003 and March, 2004.

Expiry Day

Interest rate future contracts expire on the last Thursday of the expiry month. If the last Thursday is a trading holiday, the contracts expire on the previous trading day.

INTEREST/CREDIT DERIVATIVES IN BANKING PARADIGM

1. Banks are major players in the credit market and are, therefore, exposed to credit risk. Credit market is considered to be an inefficient market. On the one hand, market players like banks and financial institutions mostly have loans and little of bonds in their portfolios. They have competitive advantage in pricing and back office capabilities and therefore, earn comparatively high returns on loans. On the other hand, the mutual funds, insurance companies, pension funds and hedge funds have mostly bonds in their portfolios, with little access to loans because of lack of back office capabilities required for processing, monitoring and supervising loans. Thus, they are deprived of high returns of loans portfolios.

2. The market in the past did not provide the necessary credit risk protection to banks and financial institutions. Neither did it provide any mechanism to the mutual funds, insurance companies, pension funds and hedge funds to have an access to loan market to diversify their risks and earn better return. Even within the groups of banks and financial institutions, some of them had concentrated portfolios because of location or client specific business commitments. As a result, credit was sub-optimally held across financial institutions and investors.

3. Credit derivatives were, therefore, developed to provide a solution to the inefficiencies in the credit market. Internationally, banks are able to protect themselves from the credit risk through the mechanism of credit derivatives. However, credit derivative has not yet been used by banks and financial institutions in India in a formal way.

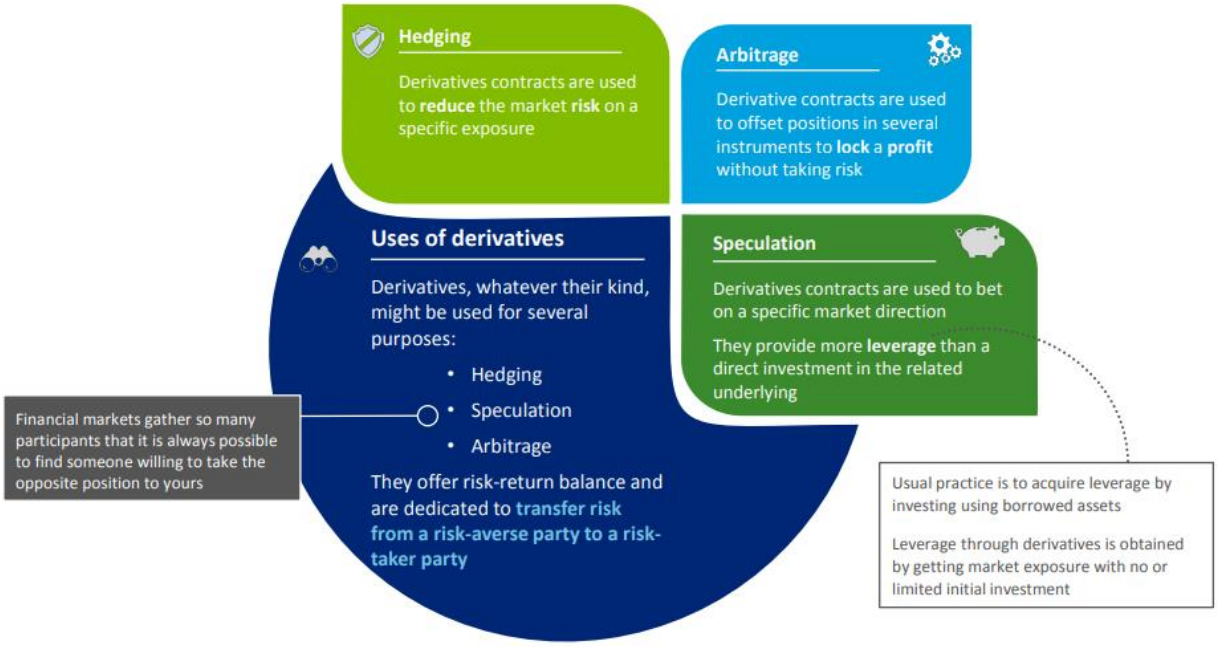
4. With a view to understanding the concept, products and types of credit derivatives, the need and scope for allowing banks and financial institutions to use credit derivatives in India and also to study the regulatory issues in this regard, a Working Group with the following members was set up in the Department of Banking Operations and Development.

RECENT EXPERIENCE WITH CREDIT DERIVATIVES:

The Enron and WorldCom credit default swaps paid off without any problems. There was a controversy with Rail Track. Rail Track is a rail services provider in the UK, and it went into receivership. Nomura delivered convertible bonds, and Credit Swiss First Boston said it didn't want convertible bonds; it wanted regular bonds. The International Swaps and Derivatives Association (ISDA) clarified that prospectively in November of 2001, but this had happened before that time. It is very important to know what is deliverable and what is not so you can get the definitions. To summarize, there's going to be continued focus on credit. CDOs, both funded and synthetic, offer yield enhancement opportunities. We really need to understand the risks better in some of these investment areas. Many companies just bought these saying that this is A rated and satisfied their investment guideline without really understanding what could happen if something like 2001 and 2002 hypothetically occurred again. We can't just do cash-flow testing

based on interest rate risk. We need to start building models that will take into account the different contingencies for these deal structures.

Derivative ecosystems



CONCLUSION

Getting into derivatives shouldn't be done lightly. It requires quite a bit of investment flair. The standard settlement procedures of company probably are not going to be adequate. Many of these contracts, for instance, futures contracts, are marked to market and settled in cash daily. Companies are going to have to designate people in their organization to monitor, not only the mark to market and make sure that this cash settles back and forth every day, but companies are also going to have to put somebody on the analytical side to make sure they can monitor the risk. Company doesn’t want to be caught owning an exposure or selling an exposure that you didn't really want to sell or buy. From regulatory perspective specifically with respect to India I would like to make following recommendations regarding limits on trading these instruments.

- Transactions, which have nothing to do with hedging preliminary purchases or obtaining additional returns, should be restricted through stringent reporting process.
- Writing naked call should not be permitted i.e. Call options may be sold only if the assets involved in the option deal are in the portfolio at the time of the sale. These assets may not be sold during the period of the call option.

The regulator should take account that the main motive for taking out an insurance has changed from retirement insurance to a new awareness for profitable invests, consequently using retirement insurance as assets.

Another reason for increasing investments in insurance policies is the fact that consumers are better educated and informed nowadays, enabling them to "make their money work" by investing it. Their knowledge makes it possible to demand better services from the insurance companies. But not only the insurance's performance has to be improved; the products themselves have to be adapted to the new standards set by the market and by the customers. Whereas products-innovation will largely depend upon the type of investment instruments available in market. Please refer to Appendix 3 showing a comprehensive list of derivative products available in India. From capital market perspective both insurance regulator and securities (Banks) regulator should take active role in promoting more and more trades in these products to develop an efficient liquid market in India. There will be serious impact on Indian financial system if financial institutions are not allowed to trade in various instruments when compared to their counterparts in other developed countries. I hope this will not another story of missed opportunities. A controlled investment climate with plethora of investment instruments will lead to globalization of Indian insurance industry.

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