ISSN Print: 2394-7500
ISSN Online: 2394-5869
Impact Factor: 5.2
IJAR 2015; 1(12): 344-352
www.allresearchjournal.com
Received: 26-09-2015
Accepted: 29-10-2015

Prasanna K Baral
Ph D Scholar, Ravenshaw University Cuttack, Odisha

Correspondence
Prasanna K Baral
Ph D Scholar, Ravenshaw University Cuttack, Odisha

Credit Derivatives for Hedging Credit Risk: An Indian Perspective

Prasanna K Baral

Abstract
The ongoing financial crisis is very possibly the greatest threat ever faced by the international financial system. It raised millions of questions on the sustainability and effective credit risk management of banks and financial institutions. Just like any other business, banking too, needs to maximize returns while minimizing the risks involved. A viable solution for banks to increase their business while keeping a proper control over their credit risk exposure is Credit Derivatives.
This paper highlights the need and importance of Credit Derivatives in banking sector and opportunities of introducing it, in Indian banking sector. This paper is basically a hypothetical case study of minimizing credit risk through the use of Credit Derivatives by Indian banks, as currently no credit derivatives exist in India.

Keywords: Credit Risk, Credit Risk Management, Financial crisis, Credit Derivatives.

Introduction
Banking crises are very costly to the economy. The banking losses and the cost of capital infusion were between 10 and 50 percent of the GDP of several developing economies of Asia and Latin America in the last 20 years. Argentina had a cost of resolution (capital infusion) of 55 percent of its GDP, while Chile had about 40 percent, both in the eighties. In addition, banking crises have contagion effect over other countries economy because of integration of the international financial markets. (Bank for International Settlements annual Report 1996).
The recent banking crisis at the United States has its root from Sub-prime credit crisis which raised millions of questions on the effective credit risk management of banks. Managing credit risk exposure more effectively is crucial to improve capital market liquidity and efficiency. One of the solutions to this problem is use of credit derivatives by a bank.
Credit derivatives have emerged in the 1990s as a useful risk management tool. They enable market participants to separate credit risk from the other types of risk and to manage their credit risk exposure by selectively transferring unwanted credit risk to others. This uncoupling of credit risk from other types of risk creates new opportunities for both hedging and investing.
Credit derivatives have the potential to alter fundamentally the way credit risk is originated, priced, and managed; they permit investors to diversify their credit risk exposure; and they enable the credit markets to reallocate credit risk exposures to those market participants who are best equipped to handle them.
Credit derivatives and other complex financial instruments have contributed "to the development of a far more flexible, efficient, and hence resilient financial system than existed just a quarter-century ago." (Speech of Alan Greenspan, Chairman of the Federal Reserve, 2004). He further states in the same speech that "The new instruments of risk dispersion have enabled the largest and most sophisticated banks in their credit-granting role to divest themselves of much credit risk by passing it to institutions with far less leverage."

Objectives of the Study
- To know the meaning of Credit Derivatives and the role played by them.
- To know the reasons of using Credit Derivatives by banks to manage risks.

- To know the importance of introducing Credit Derivatives in India.

Literature Review

The literature on credit derivatives can be separated into three groups, namely academic research, publication by market participants and studies carried out at central banks. Academic research is at a very nascent stage and concentrates on pricing issues as if they are traded in standard market. Credit derivatives play an increasingly important and controversial role in financial markets. Commentators have lauded them for enabling banks to hedge credit risk while others have warned of hidden dangers and systemic risks.

Ashraf *et al*. (2007) [1] argue that banks that are exposed to higher credit risk are likely to incur higher loan loss allowances in their balance sheets. Hence, banks following a co-ordinated risk management approach should use credit derivatives in order to hedge against default risk of poor quality loans.

Duffie, D. (2008) [2], suggests that by allowing banks to conserve costly capital, credit risk transfer methods, such as using credit derivatives, could improve financial stability by dispersing risks among many investors. This is because banks can replace large potential exposures to direct borrowers with smaller and more diversified exposures. This principal benefit results in a reduction in the costs of raising external capital to take advantage of lending opportunities.

Heyde and Neyer (2010) [3], explore the impact of credit default swaps on the stability of the banking sector. They argue that CDS reduce the stability of the banking sector in a recession. The primary reason for the creation of instability is that due to CDS inducing banks to increase their investments into risky, illiquid asset portfolios and reduce their investments into safe and relatively liquid assets.

Minton *et al*. (2009)[4], in a study of large US banks reveal that by reviewing the credit derivative exposures of these banks, typical position on credit derivatives are taken on for dealer activities rather than hedging activities. The findings of this study suggest that as the market for credit derivatives are most liquid for investment grade corporations and countries, the use of credit derivatives are more intense for institutions with such exposure.

Antonio Nicolo & Loriana Pellizon (2005) [5], have investigated the problem faced by banks that may not have enough capital to satisfy capital requirement for issuing new loans when outside investors do not know the true type of the protection buyer and therefore faces an adverse selection problem. They argue that credit derivative contracts can be designed in order to solve the adverse selection problem; for it to happen banks should use first-to-default basket contracts in which the underlying assets have different maturities.

Raghuram G. Rajan, (2005) [6], has suggested that the hedging opportunities afforded by credit derivatives and other risk management techniques are transforming the banking industry. Banks have begun shedding ordinary risks such as interest rate risk in order to focus on more complex, borrower specific risk that they have a particular advantage in assessing and monitoring.

Standard & Poor's (2005) [7], research examined that, in the past banks generally warehoused credit risk, seeking to provision against losses as the economy and credit cycle evolved often in a procyclical manner. Today, encouraged by supervisors and shareholders, banks increasingly prefer to act as credit originators and to transfer credit exposures particularly concentrations to others via the capital markets. In doing so, banks are more actively managing a variety of credit risks.

Research Methodology

The required data for this study have been collected basically from secondary source. The required data on various aspects collected from various Journals, Monthly Issues, Articles, Books and different websites. The data is compiled based on Call Report information provided by all insured U.S. commercial banks and trust companies, reports filed by U.S. financial holding companies issued by Comptroller of the Currency Administrator of National Banks, Washington, DC.

Credit Derivatives: Conceptual Framework

"Credit derivatives are sometimes seen as the panacea, the answer to any finance problem that cannot be solved by conventional market strategies." -Janet Tavakoli

Credit Derivatives are over-the-counter (OTC) financial contracts, whereby the credit risk of a reference asset (such as; loan, bond, and debenture, receivable) is transferred from one party (Protection Buyer) who owns it, to another party (Protection Seller) without actually selling it, against a fee. A transfer of credit risk would mean that in the event of bankruptcy, insolvency, payment default, delinquency, price decline, or rating downgrade of the underlying asset/issuer, the Protection Seller would bear the credit loss. The settlement of the credit loss could be in the form of pre-defined fixed payment, cash settlement of the credit loss, or exchange of full payment against the reference asset.

Thus, in a Credit Derivative, the Protection Buyer (also called Credit Risk Seller or Beneficiary) who owns the Reference Asset (investment/ loan asset to which payments under the contract are linked) pays premium / fee to the Protection Seller (also called the Credit Risk Buyer or Guarantor) in consideration of getting settlement amount following a mutually agreed 'Credit Event'

For instance, Bank A has credit exposure to Company XYZ. Bank A wants to disown the credit risk of Company XYZ. Bank B wants to enhance its fee-based income. Bank B is interested in owning the credit risk arising from Company XYZ. This provides an opportunity for the creation of a Credit Derivative instrument. Bank A (as protection buyer) enters into a swap agreement with Bank B (protection seller).The seller undertakes that, should a credit event occur, either he will pay a net cash amount to the bank ("cash settlement") or he will accept delivery of the reference asset, or an equivalent, against payment of its face value in cash ("physical settlement"). In return for taking the default risk Bank B (protection seller) receives periodic premium payments from the Bank A (protection buyer).

The Role of Credit Derivatives

In an economy a broad variety of entities have a natural need to assume, reduce or manage credit exposures. These include banks, hedge funds, brokerage firms, insurance companies, fund managers, pension funds, corporations and government agencies. Each type of player will have different economic or regulatory motives for wishing to take positive or negative credit positions at particular times. Credit derivatives enable users to:

- hedge and/or mitigate credit exposure;
- transfer credit risk;

- generate leverage or yield enhancement;
- decompose and separate risks embedded in securities (such as in convertible bond arbitrage);
- proactively manage credit risk on a portfolio basis;
- use as an alternative vehicle to equity derivatives for expressing a directional or volatility view on a company; and
- manage regulatory capital ratios.

Conventional credit instruments (such as bonds or loans) do not offer the same degree of structural flexibility or range of applications as credit derivatives. A fundamental structural feature of credit derivatives is that they de-couple credit risk from funding. Thus players can radically alter credit risk exposures without actually buying or selling bonds or loans in the primary or secondary markets.

Credit Derivatives: Reasons to use by Banks

The most important factors of credit derivatives that motivate market participants to purchase protection against credit riskier

- Credit-line management and
- Regulatory arbitrage

Similarly, the factors that motivate market participants to sell protection against credit risk are

- Funding arbitrage and
- Product restructuring

Credit-line management deals with situations where a bank is over-concentrated in loans to companies in specific sectors of the economy, because of having comparative advantage in originating loans in those sectors. This gives rise to concentration risk, which can be mitigated by other means such as selling loans in the secondary market or originating loans in non-traditional sectors. But, there are advantages to using credit derivatives for this purpose.

Firstly, selling loans can potentially damage valuable client relationships i.e., clients may resent the fact that their bank is reducing its exposure to them, seeing this as a signal that the bank has diminished faith in their creditworthiness. Second, the origination of loans in non-traditional sectors can expose the bank to new risks.

So, Credit derivatives can help banks to diversify their loan portfolios more cost effectively, without damaging client relationships.

Regulatory arbitrage gives rise to Credit derivatives. Regulatory arbitrage is where a regulated institution takes advantage of the difference between its real (or economic) risk and the regulatory position. For example, if a bank, operating under the Basel II accord, has to hold 9% capital against default risk, but the real risk of default is lower, it is profitable to securitise the loan, removing the low risk loan from its portfolio. On the other hand, if the real risk is higher than the regulatory risk then it is profitable to make that loan and hold on to it, provided it is priced appropriately.

Credit derivatives can be used to facilitate a type of funding arbitrage in which low-funding-cost banks "rent" some of their comparative advantage to high funding- cost investors (such as hedge funds and securities firms) in return for credit-risk mitigation.

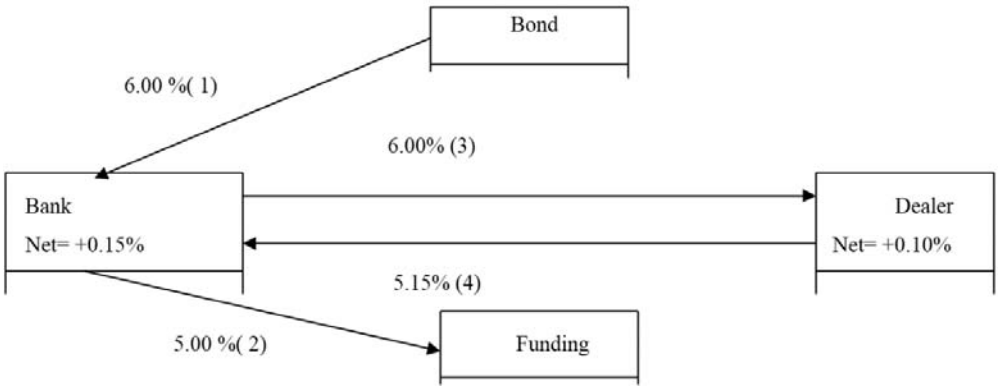


Chart 1: Funding Arbitrage

Example, the above figure shows a situation in which a bank buys a risky bond that pays 6.00 per cent (1), funds it at 5.00 per cent (2) and enters into the pay side of a total-rate-of-return swap with a dealer (who faces a higher funding rate of 5.25 per cent). The dealer receives the 6.00 per cent total rate of return on the bond (3) and, in return, pays 5.15 per cent to the bank (4). The bank improves its risk profile and earns 0.15 per cent (since it borrowed at only 5.00 per cent and is effectively lending the dealer funds at 5.15 per cent), but now has counterparty exposure to the dealer. The dealer earns a net 0.85 per cent rate of return on its risky bond position, which is 0.10 per cent higher than if it had conducted the transaction on its own (see figure 2), in which the dealer purchases the risky bond (5) and funds itself at 5.25 per cent (6)), but now has counterparty exposure to the bank. In essence, the bank could charge the dealer a lending rate anywhere between 5.00 per cent and 5.25 per cent, leaving both counterparties better off. In practice, the incremental revenue that both the bank and dealer receive must compensate them for the added counterparty credit risk they bear by undertaking this transaction generalizes some of these ideas and applies them to default swaps.

Chart 2: Rate of Return to a Dealer Not Using Credit Derivatives

On the product-restructuring side, credit derivatives facilitate the creation of risk/return profiles that may be either too expensive or impossible to achieve in cash markets.

Credit Derivatives: Optimizing capital needs and improving the ROE.

Banks can use Credit Derivatives to hedge credit risk and hence free up capital which can be used in other opportunities. In the process, they not only optimize capital adequacy requirement but also improve Return on Equity (ROE).

Let us take the following example:

Notional Principal Amount = ₹.100 Crores

Yield on Advance = 9% p.a.

Cost of funds (including Operating

& Reserve Maintenance Cost) = 7.5% p.a.

Fee for Protection Seller = 80 basis point

Before hedging, the loan asset carries 100% risk weight as the counter parties are individual entities. So the capital needed is ₹.9 crores for CAR @ 9%. After hedging, this loan asset carries 20% risk weight as the counter party is a bank. So the capital needed is ₹.1.80 crore (i.e. 9% of ₹.20 Crores). Thus hedging through Credit Derivatives help banks to derive benefits in terms of higher ROE. (See Table 1).

Credit Derivatives: A Growth Trend

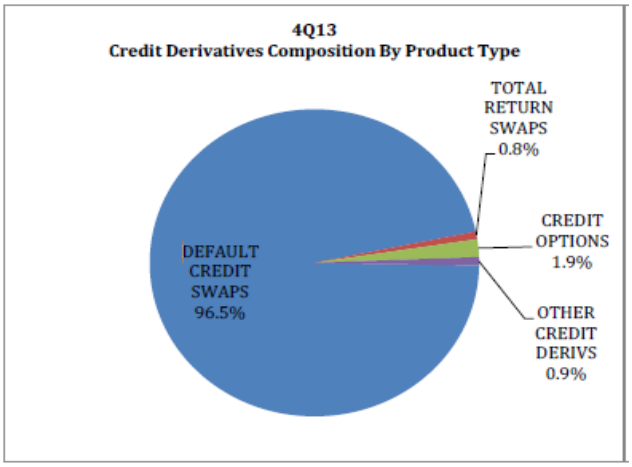
Since its introduction in the mid-1990s, the growth of the credit derivative market has been dramatic. The secular trend toward declining notional amounts of credit derivatives continued in the fourth quarter, with nationals falling another $1.6 trillion (12%) to $11.3 trillion. The decline in the fourth quarter, which was led by a $467 billion (8%) decline in contracts maturing between one and five years referencing investment grade credits, is the seventh in the past nine quarters. Credit derivatives outstanding remain well below the peak of $16.4 trillion in the first quarter of 2008. From year-end 2003 to 2008, credit derivative contracts grew at a 100% compounded annual growth rate. Industry efforts to eliminate offsetting trades ("trade compression"), as well as reduced demand for structured products, has led to a decline in credit derivative nationals.

Table 2 provides notional amounts of credit derivatives of top 25 commercial banks and trust companies. The credit derivatives contracts constitute $12.16 million of total derivatives contract. Table 3 provides notional amounts of credit derivatives of top 25 holding US companies. Table 4 shows distribution of derivative contracts of top 25 commercial banks, savings associations and trust companies and credit derivatives contract constitute 51.9% of total derivatives contracts.

The Table 5 shows the notional amount for the 25 banks that purchased credit protection (i.e., hedged credit risk) was $5.7 trillion, a decline of $810 billion (13%). Similarly, the Table 6 shows the notional amount for the 25 U.S. commercial banks that sold credit protection (i.e., assumed credit risk) was $5.6 trillion, down $781 billion (12%) from the third quarter of 2013.

Table 7 shows the growth of derivatives product-wise form 2005 to 2013.As shown in the Graph 1 below, credit default swaps are the dominant product at 97% of all credit derivatives nationals.

As shown in Table 9 below, Credit derivatives, which represent 5.91% of total derivatives nationals, decreased 4.75% to $11.25 trillion from Q4 2012 to Q4 2013.



Graph 1

Source: *Call Reports*

Credit Derivatives in Indian Perspective

Introduction of Credit Derivatives in India is relevant because of the reasons:-

1: Growth of Credit with concentration in the few sectors

There is a growing need for credit in India which has been catapulting at the rate of over 30% in recent years. With the growth in credit, risks associated with them also increase. This makes it imperative for banks to have modern risk management instruments in their armor to diversify them. Along with this, we can see that the growth in credit to be concentrated in a few sectors like industry. Since Credit Default Swaps can transfer risks from the buyer to the seller, banks can use them to spread the sector specific risk to those who want exposure but who don't have the necessary means.

2: Capital Adequacy under Basel II Norms

Since Indian banks now have to maintain Capital Adequacy at 9%, they can use default swaps to reduce their capital requirements. If a bank uses Credit Derivatives to hedge a banking book asset and trading book asset respectively, the capital requirement, $C_{b,}$ is calculated using the following formulae:

$C_b = NP * [(w*r_u) + (1-w)*r_{ps}]*8\%$
$C_b = NP *r_u*8\%*(1-0.80)$

Where,
NP = Notional Principal,
W= a constant 0.5 for credit derivatives
r_u =risk weight of the underlying asset,
r_{ps}= risk weight of the protection seller

In case of a banking book asset, the protection provider has a higher weight of 0.85 and the weight of the underlying is 0.15. Thus, by finding a protection provider that has a lower risk weighting than the underlying, the investor can reduce the amount of regulatory capital required. In the case of trading book assets which are more liquid, marked to market and is short term, Basel II norms provide 80% capital relief.

3: Efficient use of Capital
Banks in India face two broad issues: blockage of capital and loss of opportunities. Banks generally hold assets and hence credit risk until maturity. This results in blocking of capital and impairs growth through churning of assets. Also, due to exposure norms that restrict concentration of credit risk on their books, banks are forced to forego attractive opportunities on existing relationships. With the use of Credit Default Swaps, bank's blockage of funds can be reduced as the minimum capital required is now reduced and with the diversification of risk future opportunities can be exploited.

4: Reduced Cost of Borrowings and Better Pricing of Loans
A key objective of liberalization which is crucial to financial system is greater liquidity and subside volatility. If the RBI allows the market to develop, so that it becomes sufficiently liquid, this would be of considerable benefit in providing transparent market views of credit risk. This will also help banks to judge whether they are pricing loans to appropriately reflect credit risk. It will also bring down the cost of borrowing because of the development of a secondary market.

Hypothetical Case Study on Credit Derivative Deals in Indian Perspective
Case 1: Credit Default Swap (CDS) between Indian Bank and Union Bank of India
The credit risk management system of any bank formulates broad credit policies as regards maximum exposure to a single corporate or a sector as a whole. It further incorporates an internal rating system so as to periodically review its loan and bond portfolio and maintain the optimum level of risk. Any developments in the macroeconomic environment may trigger a variation in the ratings of loans / bonds, whereby the bank may decide to either reduce its exposure to a sector / company or even completely get out of it. CDS provides a mechanism for a bank to achieve that without actually selling the loan / bond while at the same time transferring the credit risk involved to the counterparty, but for a premium, which is a medium of yield enhancement for the counterparty.
I propose a case wherein Indian Bank, which currently holds a well-diversified portfolio wherein exposures are spread over 25 major industries with a board, defined ceiling of 12.5%. For the purpose of the case, let's assume that the bank intends to transfer its credit risk in the power sector, which currently stands at 7% of the net exposure. Indian bank assumes the role of Protection Buye rand transfers credit risk to Union Bank of India, which presumably holds an appetite for power sector loans and thereby becomes a Protection Seller for a premium(bps on the notional value of the loan).
Indian bank's capital (Tier I + Tier II) amounts to approximately₹. 600 Cr. As per RBI norms for lending to a single borrower (15% of the total capital), it can lend ₹.90 Cr. to a company in the power sector. Let's assume Tata Power has totally exhausted this limit and Indian bank now Power, for a premium, which Union Bank of India is ready to sell.

Details of the deal
- Reference asset: ₹. 90 Cr. Loans to Tata Power Co.
- Tenure of CDS: Shorter duration than that of reference asset.
- Premium: Negotiated between both parties since both the banks will have their own perceptions about the underlying credit risk.

Benefits for Union Bank of India
- Opportunity to invest synthetically in power sector.
- Sectoral diversification
- Off balance sheet transaction Benefits for Indian Bank.

Benefits for Indian Bank
- Credit risk is transferred to Union Bank of India
- Can reduce exposure to Power Sector (currently 7%). This can be achieved due to reduction in the economic capital requirement of the bank which would further result in Indian bank deploying the relieved capital in other sectors.

Regulatory capital relief (Statutory Regulatory norms) and Economic capital relief
Regulatory capital relief as per Basel-I norms can be observed from the reduction in risk weights attached to loan i.e. earlier risk weightage of 100% is now reduced to

$R^* = w.r + (1 - w).g$

Where,
R*= adjusted risk weight
r= risk weight of the obligor i.e. Tata Power (100%)
w= factor for 15% residual risk in the obligor, g= risk weight for counterparty (20% since it's a bank)
R^*= 100% · 15% + (1-15%) 20% =32%,

Thus R* is calculated to be 32%.

Let's now examine the capital relief in absolute terms. Pre-transaction required regulatory capital for a loan of₹. 90 Cr (CAR = 9%) would be ₹.8.10 Cr which post the CDS is reduced to (₹.8.10 Cr.× 32%) ₹. 2.59 Cr. Therefore the capital relief for Indian bank in this transaction is 5.51 Cr.

Case 2: Credit Linked Note (CLN) issued by HDFC Bank subscribed by Punjab National Bank (weak bank)
Although it is a deal between two banks as in the earlier case, the fundamental difference arises because of participation by a weak bank. Any CD (Credit Derivatives) deal in which a bank buys protection on its portfolio would incorporate a

counterparty whose credit rating would be necessarily better than that of the underlying credit.

Such a condition may not hold true in case of a weak bank. The protection buyer (HDFC Bank) would therefore like to strike a funded CD deal like a CLN with a weak bank. Weak bank which as such experiences a dearth of good credit would readily like to be the protection seller and take a synthetic exposure to some good credits of HDFC Bank for an initial investment.

The proposed structure would involve 150 Cr. loan portfolio of HDFC Bank being securitized synthetically through an SPV (Special Purpose Vehicle). The SPV writes a CDS with the Bank. The CLNs would be issued in 3 tranches - classes A, B and C.

Class A gets credit enhancement from class B and C and class B is credit enhanced by class C. The sizing of the subordinate classes is done with a rating target of 'AAA' for the class A and 'AA' for class B. Class C is the riskiest as it bears the burden of credit risk on the entire portfolio and is hence is subscribed by HDFC Bank itself.

In other words, first loss risk is borne by HDFC Bank. Ideally Class B gets a higher coupon rate and hence is subscribed by Punjab National Bank. Class A in turn may be either picked by a weak bank or any other investors.

Class A - CLN rated AAA issue size 80 Cr.

Class B - CLN rated AA issue size 65 Cr.

Class C - First loss position of 5 Cr.

Benefits to Protection Buyer (HDFC Bank)

- Can reduce exposure/ concentration on the particular corporate / industrial sector to which bank is overexposed.
- Regulatory capital relief - The risk weighted exposure is reduced by the amount of funding received. The extent of assets collateralized by government securities is assigned a 0% risk weightage. First loss provision of 5 Cr. would attract a capital requirement with 100 % risk weight.
- Pre-transaction regulatory capital requirement for HDFC bank would be CAR * risk weighted assets i.e. 9% x 100 % x 150 which is 13.5 Cr.
- Post-transaction capital requirement will reduce to provision for first loss piece as the class A and B are fully funded and hence attract 0 % risk weight, i.e. 5 Cr. Thus, there is regulatory capital relief of 8.5 Cr.
- Zero counterparty risk because of funded CD.

Benefits to Protection seller (Punjab National Bank)

- Can get synthetic exposure on good credits
- Sectorial diversification

Table 1: Credit Derivatives in Improving Return on Equity

(Amount in ₹. Crores)

	Before Hedging	**After Hedging**
Equity required to meet Capital Adequacy Ratio	@9%	@9%
Equity Employed to meet Capital Adequacy Ratio	9.00	1.80
Funding Required	91.00	98.20
Total Liability	100.00	100.00
Yield on Advances (9%)	9.000	9.000
Cost of funding @7.5% ofRs.91 Cr.	6.825	
Cost of funding @7.5% of Rs.98.20 Cr.		7.365
Hedge Expenses(80bp)		0.800
Net Income	2.175	0.835
Return on Equity=Net Income/Equity	24.2%	46.4%

Table 2: Notional Amount of Derivatives Contract Top 25 Commercial Banks, Savings Associations and Trust Companies in Derivatives December 31, 2013, $ Million

Rank	**Bank Name**	**Total Assets**	**Total Derivatives**	**Total Credit Derivatives**
1	Jp Morgan Chase Bank Na	$1,945,467	$70,088,625	$5,389,227
2	Citi Bank National Assn.	1,346,747	62,247,698	2,573,601
3	Goldman Sachs Bank Usa	105,616	48,611,684	265,276
4	Bank Of America Na	1,433,716	38,850,900	2,589,004
5	Hsbc Bank Usa National Assn.	179,772	5,404,721	367,417
6	Wells Fargo Bank Na	1,373,600	4,856,295	46,670
7	Morgan Stanley Bank Na	102,602	2,644,807	3,589
8	Bank Of New York Mellon	296,626	1,199,069	101
9	State Street Bank& Trust Co.	239,051	1,133,281	141
10	Pnc Bank National Assn.	310,000	387,294	4,872
11	Northern Trust Co.	102,659	233,523	0
12	Suntrust Bank	171,262	225,957	3,575
13	Td Bank National Assn.	217,626	139,269	567
14	Us Bank National Assn.	360,478	107,516	3,961
15	Regions Bank Assn.	116,609	76,964	1,038
16	Keybank National Assn.	90,440	64,743	910
17	Unionbank National Assn.	105,286	63,772	150
18	Branch Banking & Trust Co.	179,126	63,354	0
19	Fifth Third Bank	128,186	62,883	1,438
20	Capital One National Assn.	238,483	39,082	1,084
21	Rbs Citizens National Assn.	94,717	36,733	1,072
22	Bokf National Assn.	26,795	28,576	0
23	Huntington National Bank	59,305	27,621	840
24	Comerica Bank	65,202	21,494	872
25	Manufacturers & Traders Tr Co.	84,347	21,408	0

Note: Credit derivatives have been included in the sum of total derivatives. Credit derivatives have been included as an "over the counter" category, although the Call Report does not differentiate by market currently.

Data source: Call Reports, schedule RC-L(by all insured US Commercial banks and Trust Companies)

Table 3: Notional Amount of Credit Derivatives Contract Top 25 Holding Companies in Derivatives December 31, 2013, $ Million

Rank	Holding Company	Total Assets	Total Derivatives	Total Credit Derivatives
1	Jp Morgan Chase & Co.	$ 2,415,689	$70,406,710	$ 5,385,708
2	Citi Group Inc.	1,880,617	63,522,948	2,358,426
3	Bank Of America Corporation	2,104,995	55,702,661	2,671,971
4	Goldman Sachc Group, Inc, The	911,595	53,481,455	2,946,406
5	Morgan Stanley	832,702	46,638,370	2,805,204
6	Hsbc North America Holdings, Inc	290,014	5,403,716	367,417
7	Wells Fargo & Company	1,527,015	4,787,236	42,815
8	Bank Of New York Mellon Corp,	374,310	1,193,473	101
9	The	243,028	1,134,798	141
10	State Street Corporation	320,596	380,683	4,872
11	Pnc Financial Services	523,973	297,066	3,950
12	Group, Inc, The	102,947	232,773	0
13	General Electric Capital	175,381	225,617	3,575
14	Corporation	234,622	151,533	567
15	Northern Trust Corporation	364,021	108,122	3,561
16	Suntrust Banks, Inc.	151,167	101,222	0
17	Td Bank Us Holding Company	117,662	75,389	1,038
18	Us Bancorp	92,992	68,077	910
19	Ally Financial Inc.	130,443	64,579	1,438
20	Regions Financial Corporation	105,900	63,772	150
21	Keycorp	297,282	63,422	1,084
22	Fifth Third Bancorp	183,010	59,332	0
23	Unionbancal Corporation	122,258	44,617	1,454
24	Capital One Financial	153,387	42,224	0
25	Corporation Bb &T Corporation Rbs Citizens Financial Group, Inc. American Express Company Bok Financial Corporation	27,022	28,576	0

Note: Credit derivatives have been included in the sum of total derivatives.

Data source: Call Reports (Consolidated Financial Statements for Bank Holding Companies, FR Y- 9, schedule HC-L)

Table 4: Distribution of Derivative Contracts Top 25 Commercial Banks, Savings Associations and Trust Companies in Derivatives December 31, 2013, $ Million

Rank	Bank Name	Total Assets	Total Derivatives	Percent Credit Derivatives (%)
1	Jp Morgan Chase Bank Na	$1,945,467	$70,088,625	7.7
2	Citi Bank National Assn.	1,346,747	62,247,698	4.1
3	Goldman Sachs Bank Usa	105,616	48,611,684	0.5
4	Bank Of America Na	1,433,716	38,850,900	6.7
5	Hsbc Bank Usa National	179,772	5,404,721	6.8
6	Assn.	1,373,600	4,856,295	1.0
7	Wells Fargo Bank Na	102,602	2,644,807	0.1
8	Morgan Stanley Bank Na	296,626	1,199,069	0.0
9	Bank Of New York Mellon	239,051	1,133,281	0.0
10	State Street Bank& Trust	310,000	387,294	1.3
11	Co.	102,659	233,523	0.0
12	Pnc Bank National Assn.	171,262	225,957	1.6
13	Northern Trust Co.	217,626	139,269	0.4
14	Suntrust Bank	360,478	107,516	3.7
15	Td Bank National Assn.	116,609	76,964	1.3
16	Us Bank National Assn.	90,440	64,743	1.4
17	Regions Bank Assn.	105,286	63,772	0.2
18	Key bank National Assn.	179,126	63,354	0.0
19	Union bank National Assn.	128,186	62,883	2.3
20	Branch Banking & Trust Co.	238,483	39,082	2.8
21	Fifth Third Bank	94,717	36,733	2.9
22	Capital One National Assn.	26,795	28,576	0.0
23	Rbs Citizens National Assn.	59,305	27,621	3.0
24	Bok f National Assn.	65,202	21,494	4.1
25	Huntington National Bank Comerica Bank Manufacturers & Traders Tr Co.	84,347	21,408	0.0

Note: Currently, the Call Report does not differentiate credit derivatives by over the counter or exchange traded.Credit Derivatives have been included in the “over the counter” category as well as in the sum of total derivatives here.

Data source: Call Reports, schedule RC-L(by all insured US Commercial banks and Trust Companies)

Table 5: Distribution of Credit Derivatives Contract held for Trading (Bought wise)Top 25 Commercial Banks and Trust Companies in Derivatives December 31, 2013, $ Million

Bank Name	Total Credit Derivatives	Total Credit Derivatives Bought	Types of Credit Derivatives			
			Credit Default Swap	Total Return Swaps	Credit Options	Other Credit Derivatives
Jp Morgan Chase BankNa	$5,389,227	$2,690,340	$2,620,206	$19,586	$45,815	$4,733
Citi Bank National Assn.	2,573,601	1,316,372	1,264,430	15,852	36,090	0
Goldman Sachs Bank Usa	265,276	145,346	140,686	2,551	1,916	193
Bank Of America Na	2,589,004	1,296,158	1,272,928	8,946	14,284	0

Hsbc Bank Usa National Assn	367,417	180,590	170,700	9,890	0	0
Wells Fargo Bank Na	46,670	25,462	12,247	0	0	13,215
Morgan Stanley Bank Na	3,589	3,345	3,345	0	0	0
Bank Of New York Mellon	101	101	101	0	0	0
State Street Bank& Trust Co.	141	141	10	0	0	131
Pnc Bank National Assn.	4,872	2,102	95	0	0	2007
Northern Trust Co.	0	0	0	0	0	0
Suntrust Bank	3,575	2006	498	1,504	0	4
Td Bank National Assn.	567	562	562	0	0	0
Us Bank National Assn.	3,961	1,606	597	0	0	1009
Regions Bank	1,038	103	0	0	0	103
Keybank National Assn.	910	749	749	0	0	0
Unionbank National Assn.	150	150	10	140	0	0
Branch Banking & Trust Co	0	0	0	0	0	0
Fifth Third Bank	1,438	235	0	0	0	235
Capital One National Assn.	1,084	344	0	0	0	344
Rbs Citizens National Assn.	1,072	0	0	0	0	0
Bokf National Assn.	0	0	0	0	0	0
Huntington National Bank	840	522	0	0	0	522
Comerica Bank	872	257	0	0	0	257
Manufacturers & Traders Tr Co.	0	0	0	0	0	0

(Source: Call Reports, schedule RC-L (All Insured US Commercial Banks and Trust Companies)

Table 6: Distribution of Credit Derivatives Contract (Sold wise)Top 25 Commercial Banks and Trust Companies in DerivativesDecember 31, 2013, $ Million

Bank Name	**Total Credit Derivatives**	**Total Credit Derivatives Sold**	**Types of Credit Derivatives**			
			Credit Default Swap	**Total Return Swaps**	**Credit Options**	**Other Credit Derivatives**
Jp Morgan Chase Bank Na	$5,389,227	$2,698,887	$2,603,798	$385	$40,558	$54,146
Citi Bank National Assn.	2,573,601	1,257,229	1,224,373	2,198	30,658	0
Goldman Sachs Bank Usa	265,276	119,930	116,838	2,510	582	0
Bank Of America Na	2,589,004	1,292,846	1,245,214	8,525	39,107	0
Hsbc Bank Usa National Assn	367,417	186,827	170,005	16,822	0	0
Wells Fargo Bank Na	46,670	21,208	10,391	102	473	10,242
Morgan Stanley Bank Na	3,589	244	244	0	0	0
Bank Of New York Mellon	101	0	0	0	0	0
State Street Bank& Trust Co.	141	0	0	0	0	0
Pnc Bank National Assn.	4,872	2,770	0	0	0	2,770
Northern Trust Co.	0	0	0	0	0	0
Suntrust Bank	3,575	1,569	60	1,504	0	5
Td Bank National Assn.	567	5	5	0	0	0
Us Bank National Assn.	3,961	2,355	400	0	0	1,955
Regions Bank	1,038	935	0	0	0	935
Key bank National Assn.	910	161	68	93	0	0
Union bank National Assn.	150	0	0	0	0	0
Branch Banking & Trust Co	0	0	0	0	0	0
Fifth Third Bank	1,438	1,203	0	0	0	1,203
Capital One National Assn.	1,084	741	0	0	0	741
Rbs Citizens National Assn.	1,072	1,072	0	0	0	1,072
Bok f National Assn.	0	0	0	0	0	0
Huntington National Bank	840	318	0	0	0	318
Comerica Bank	872	614	0	0	0	614
Manufacturers & Traders Tr Co.	0	0	0	0	0	0

(Source: Call Reports, schedule RC-L (All Insured US Commercial Banks and Trust Companies)

Table 7: Derivative Contracts by Product All Commercial Banks and Savings Association Year ends 2005-2013

$ in Billion	**2005 Q4**	**2006 Q4**	**2007 Q4**	**2008 Q4**	**2009 Q4**	**2010 Q4**	**2011 Q4**	**2012 Q4**	**2013 Q4**
Futures & Forwards	12,049	14,877	18,967	22,512	26,493	35,709	37,248	43,443	42,054
Swaps	64,738	81,328	103,090	131,706	142,011	149,247	146,253	134,938	150,653
Options	18,869	26,275	27,728	30,267	30,267	32,075	37,534	31,583	33,058
Credit Derivatives	5822	9019	15,861	15,897	14,036	14,150	14,759	13,190	11,257
Total	101,478	131,499	165,645	200,382	212,808	231,181	230,794	223,154	237,023

Source: Call Reports

Table 8: Derivative Contracts by Type All Commercial Banks and Savings Association Year ends 2005-2013

$ in Billion	**2005 Q4**	**2006 Q4**	**2007 Q4**	**2008 Q4**	**2009 Q4**	**2010 Q4**	**2011 Q4**	**2012 Q4**	**2013 Q4**
Credit Derivatives	5,822	9,019	15,861	15,897	14,036	14,150	14,759	13,190	11,257
Commodities	598	893	1,073	1,050	979	1,195	1,501	1,402	1,241
Equity	1,255	2,271	2,522	2,207	1,685	1,364	1,589	1,952	2,077
Foreign Exchange	9,282	11,900	16,614	16,824	16,553	20,990	25,436	27,672	27,880
Interest Rate	84,520	107,415	129,574	164,404	179,555	193,482	187,509	178,937	194,567

Source: Call Reports

Table 9: Percentage Total Nationals by Type March 31st 2013

$ in Billions	Q4, 2013	Q4, 2012	$ Change	% Change	% of Total Derivatives
Interest Rate Contracts	194,567	178.937	15,630	8.73%	82.08%
Foreign Ex. Contracts	27,880	27,672	208	0.75%	11.76%
Equity Contracts	2,077	1,952	125	6.40%	0.88%
Commodity/Other	1,241	1,402	-161	-11.5%	0.53%
Credit Derivatives	11,257	13,190	-1,933	-14.66%	4.75%
Total	237,022	223,153	13,869	6.22%	100%

Source: Call Reports

Conclusion

From the study it can be concluded that, Credit Derivatives is gaining popularity among market participants because of its potential to exacerbate the credit risk. It may be pointed out that they do not solve the root problem of managing credit risk at the point of origin, especially during periods of economic distress, but only go about spreading the risk in the system and in place of a few the pain is shared by many. It may be wise to remind ourselves from time to time that Credit Derivatives are definitely not a panacea, not even an anodyne for the multidimensional subject of credit risk management.

So far as India is concerned, there are ample scopes for introduction of Credit Derivatives. With the draft guidelines issued by Reserve Bank of India on March 26, 2003, credit derivatives will be available to the Indian Banking Sector to transfer their credit risk. This would open up opportunities to mitigate credit risk, but at the same time would pose some challenges in terms of complexity of the products and lack of transparency considering the present state of banking and corporate disclosure standards and financial reporting. But, the Reserve Bank of India (RBI) is having second thoughts over relaxing norms for credit derivatives in the wake of the global crisis.

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