

# **A Global Derivatives Framework for Banks to centrally Manage & Hedge Market Risks in Financial System**

Anurag Singh Chauhan<sup>1</sup>

January 15, 2010

---

## ***Abstract:***

The Bank's customers *viz.* corporate often get into various kinds of derivative transactions with a bank or some other corporate in order to cover or hedge against the unwanted exposure to volatility in interest rates, currency rates, or some other underlying rate; And, a corporate defaults when situation goes unfavorable enough for it to have no other alternative; and this cascade the impact to many other corporate and banks. I take forward the opinion that **corporate defaults are more likely than that by a bank in a Derivative contract.**

This risk in the risk management approach using derivatives can be reduced through the **derivatives framework proposed in this paper.** The main objective is to reduce the direct exposure of corporate to the derivative contracts. Instead, offer them such customized (hedged) products which meet the same objectives of them under the terms and covenants of the underlying borrowing or lending contract. This will not only ensure corporate to have an implicit risk hedging in the (hedged) transaction itself, but also help them to avoid any direct obligation or exposure to the risky derivative instruments.

Now, the question is who will then get into the derivative transactions? The answer is **The Banks**; they need (and have) to hedge their own exposure by getting into derivative contracts with other banks that are exposed towards the opposite exposures of the same type of underlying. The overall effect apparently remains similar to what exists in the current framework. However, there are significant advantages under the proposed framework that described how the banks, can play a central role to the risk management (hedging) of market risks in the Financial System.

## ***Keywords:***

*Derivatives, Banking, Risk Management, Hedging, Banking framework & Regulation, Market Risk, Interest rate risk, Currency risk*

---

<sup>1</sup> Author is a 2<sup>nd</sup> year MBA student at *Narsee Monjee Institute of Management Studies, India* and can be reached at [contact anurag@yahoo.co.in](mailto:anurag@yahoo.co.in) or [anurag.s.chauhan@gmail.com](mailto:anurag.s.chauhan@gmail.com)

# 1. Introduction

Banks have always been central to the financial system in any economy, and by virtue of their role, they are the prime and undoubtedly the most prominent entities to centrally control the risk exposures existing in the financial system. The risks that I refer to here are primarily *Market Risk*<sup>2</sup> and *Credit Risk* that exist because of the un-hedged exposures of Banks, Financial Institutions, corporate, and other customers towards the corresponding underlying rate.

The primary functions of the banks is making transactions with other participants of the financial systems – whether for extending credit advances, or accepting deposits, or making investments, or carrying out any other transactions. As any participant gets in a financial transaction, immediately it becomes exposed to certain risk elements in the form of financial risks. To the extent the entity is not capable to bear the risk exposure; it would buy protection using various derivatives instrument. Here is the catch – Derivatives instruments promises to hedge the risk **provided** the parties involved in the transaction do not default on their commitments. Derivatives are capable of destroying the whole economy if not dealt with properly; yet they can prove one of the most effective and efficient way to manage the risk existing in the financial system worldwide.

Recent years have witnessed few of the largest defaults in derivatives contracts world over. The prominent observations in this regard can be summarized in two bullets as below:

- ❖ Corporate default rates in derivatives transactions are much higher than that of Banks
- ❖ Default on extended credit (loans) is relatively less probable than that on a derivative

What it logically infers is that if the financial contracts with corporate are in the form of terms & covenants embodied in the credit transaction itself – instead of their requirement to get into **separate** derivative contracts – then the defaults on the derivatives contracts can be minimized.

Rest of the paper explores this possibility and thereby proposes a derivatives usage framework that can be adopted by the banks to centrally manage (hedge) interest rate, currency risk, and other market risks existing in the financial system.

---

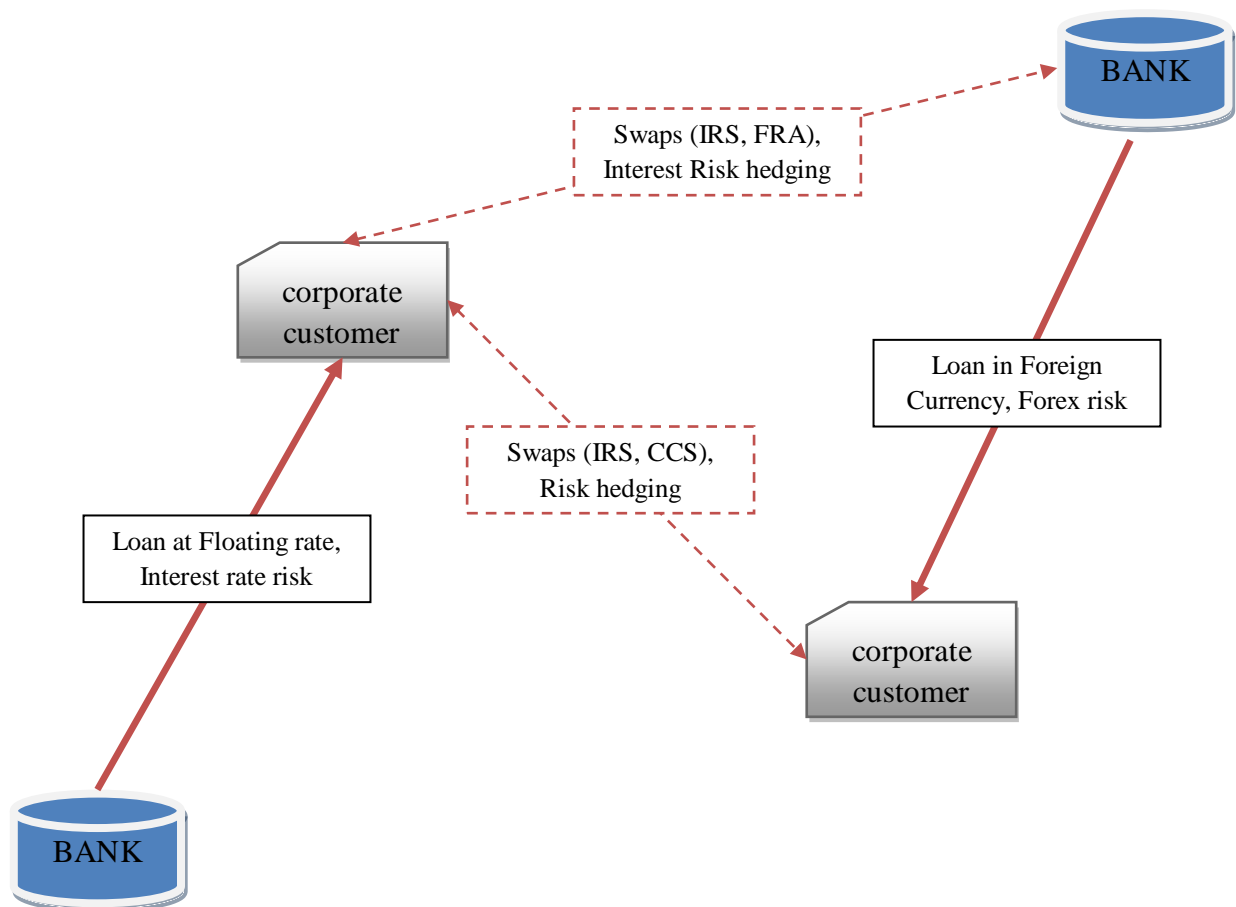
<sup>2</sup> Market Risk here is referred to represent *Interest rate risk, Currency Risk, Price risk, Reinvestment risk, etc*

## 2. The Current Framework –Explicit hedging by customers on un-hedged Products

The most basic financial transactions amongst the banks and the corporate as the customers are Loans & Advances, Investments, Deposits and Customized Derivatives contracts.

In doing so, corporate do get themselves exposed to certain portion of risks that they wish to hedge, and hence get into explicit derivatives transactions using *forwards*, *swaps*, *options*, *FRAs* and other complex derivatives with other corporate and/or banks. It basically becomes the primary responsibility of the corporate themselves to hedge the risks their funds and cash flow is exposed to. Less often, some corporate (read customer) would find another corporate looking to hedge an exact opposite exposure and so the two would get into a derivative contract with each other. However, more often the corporate need to get into such transactions by longing into derivatives transactions in the open market with banks (like OTC derivatives).

*Figure 1: Current framework of Derivatives Usage: un-hedged products by banks & explicit hedging*



Therefore, the corporate are required to do an explicit hedging separately on the un-hedged exposures of the financial transactions they get into. And, this triggers the need of playing with derivatives by that portion of economy participants who are relatively less expert in them.

There is nothing illogical in this scenario. However, what if one corporate defaults on the derivatives? The massive cascading to the counterparty and further to other participants could prove disastrous – and we unfortunate have plenty of examples to prove this fact.

I summarize the cause of such default rates as:

- ❖ Corporate are not expert in playing with derivatives – their lack of proper understanding and experience with derivatives can result in *investment* instead of *hedging* as the objective of derivatives contract. This is simply a blunder if they do so without an expert's advisory.
- ❖ When corporate deals amongst themselves, there is hardly any incentive for the central financial system to alert them the risks of playing with derivatives instruments. And, we must accept that historically corporate (customers) have not proved experts enough to predict the market and quickly react to their positions of financial exposures accordingly. Hence, they are the ones who are hit first and hard.
- ❖ The fees and spread incentives of banks make them push towards extending such derivative transactions to corporate which can be disastrous to them. Now, banks are rare to default – their business and expertise is to deal with such financial instruments – they can well hedge their exposures – they will not let themselves exposed to un-hedged risk exposures generally.
- ❖ However, corporate would be left with no other options but to default – if their derivative transactions accidentally resulted huge losses – because they had not taken double side protection to save cost of protection – because the derivatives settlements require to be settle down immediately on fixed dates without much of the flexibility or rescheduling or restructuring of the due payments as possible in the case of normal loan. The result is the hard crash!!!
- ❖ Banks do have expertise, resources and funds for effective and efficient hedging of their own exposures – because they deal in such transactions. Among corporate, only a few would match the capabilities and effectiveness of risk hedging to that by the banks.

*It is rather possible to restructure a \$100mn loan after its default; but, I have not come across much of the restructuring of a derivative defaults. That generally shows the way to chapter 11.*

I would not blame anyone in this whole situation; it is rather how our financial system has evolved and sets itself into equilibrium. It is what our complex financial system permits within the boundaries of legal and regulatory frameworks.

What results next to this framework, is that derivatives are excessively used by those who make inefficient use of them. And, those who could make a relatively more efficient and effective use,

do not do this because in an open market everything is ruled by the immediate incentive; and, Financial System of course do not feel the need to take the onus of derivatives over them and therefore, let its customers exposed to the leveraged *risky* exposures of derivatives.

***Products & Hedging Options available to corporate (customers)***

The below tabulation depicts a few products currently offered by banks, and the risks that customers are exposed to.

*Table 1: Partial List of standard banking products (un-hedged) and hedging options available to customers*

	<b>Features</b>	<b>Risks to customers</b>	<b>Hedging Derivatives</b>
Working Capital Loan	Floating/Fixed Interest	Interest Rate Risk (short term, minimal)	Swaps, Forwards
Short-Medium Term Loans	Fixed Interest/ Floating Interest	Interest Rate Risk, Reinvestment Risk	Swaps, Forwards, Options, FRAs
Long Term Loans	Generally Floating Interest rates	Interest Rate Risk, ALM Risk, Reinvestment Risk	Forwards, Swaps, Options, FRAs (available for short-medium term only)
Deposits (ST/MT/LT)	Generally Fixed Interest rates	Reinvestment Risk	FRA, Options
Investments – CDs/CPs/Market Instruments	Market rates	Price risks, Interest rate risks	Equity Derivatives, Options, Complex derivatives strategies
Foreign Currency Loans	Fixed/Floating Interest rate in foreign currency	Forex (currency) risk, Interest rate risk	Cross currency derivatives, Swaps, FRAs, Options

### **3. The proposed framework – Hedged products to customers and neutralizing un-hedged exposures by banks**

The proposed (new) framework of the usage of derivatives in the financial system, caters to some of the inefficiencies existing in the current framework, and hence, minimizes the risks further by distributing it to the right entity that is more able to deal with that risk type.

#### ***Integrated Risk Management by Hedged products & exposure hedging by banks***

The proposed framework is to transfer the market risk elements from the corporate and the large part of the financial system and confine it mainly to the banking system – so that those risks can be centrally managed.

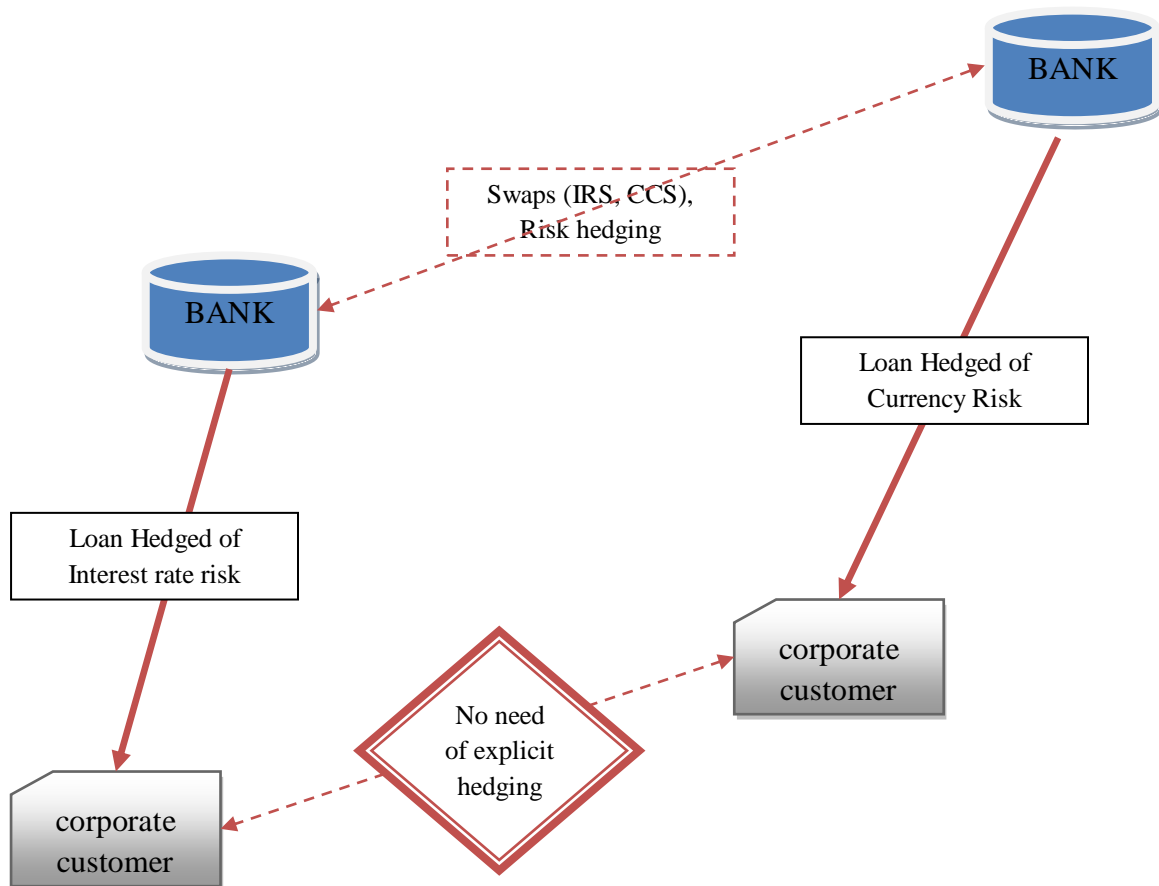
Below bullets briefly summarize the proposed framework:

- ❖ Banks to provide **hedged products** i.e. the covenants of loans and other products of the banks inherently includes such terms that provide natural protection against certain desired market risk elements like Interest rate risk, Currency Risk, etc.
- ❖ The hedged products would come at a higher cost to the customer; however, being a centralized and efficient framework, the **net cost would be lower** than that would have incurred by customers had they gone into separate derivative instruments to hedge the un-hedged exposures later on.
- ❖ The type of hedge that is integrated with a product offering, depends on the needs of the customers, and should be **customizable** as well as **dynamically reactive** to the risk elements.
- ❖ Corporate exposed to such hedged products virtually need not worry about specific risk elements, as the covenants would ensure a **predictable cash flow** irrespective of the market movements in interest rates, currency rates, etc
- ❖ Now, the banks are left exposed to such risk exposures; and, there are numerous banks, having huge numbers of exposures in all the directions, in every possible risk elements. All, they need to do first, is **square-off** or **set-off** against the opposite exposure amongst themselves so that the overall risk in the financial system collectively is reduced to minimum. *Sounds like centralization? Yes, it indeed is a centralization of market risk management through involvement of banks worldwide.*
- ❖ Banks can trust banks; and they can trust yet other banks. After all, bank is an entity that is last to default in an economy. So, **banks take onus of risk exposures** onto themselves, and then minimize them. First, they minimize within the bank, then with fellow banks in the same country, then in different countries depending on their comfort level and needs.
- ❖ The leftover risk exposures in the **banking system** is then explicitly hedged using customized Derivatives instruments – which transfer the risks to other banks and Financial Institutions who are more willing to accept specific risk types on their portfolio. It would incur a cost, but is worth to eliminate specific risks.

### ***How will the new (proposed) framework look like?***

The new framework is a close integration of various banks and collectively and centrally playing the role of risk management (hedging) and effective distribution. The banks collectively takes away the derivatives exposures from its customers (corporate); but at the same time provide them with the hedged products in order to minimize the risk exposures of the corporate (which they earlier used to do using separate derivative contracts).

***Figure 2: Proposed (new) framework of Derivatives usage: Hedged products & risk minimization by banks***



The customers more or less will remain seamless so far the benefits to them are concerned; because for them it will apparently be the same thing as the current framework. However, what lie beneath is the major operational changes in the management and distribution of risk elements due to interest rates, and currency rates. Upfront, the corporate will now not have to get into separate derivatives contract; and instead the benefits of the earlier vouched derivatives contract will be integrated within the products offered by the bank, and will keep on dynamically reactive for the whole duration of the product.

## ***Transformation of products offered by Banks (Hedged Products)***

The proposed framework will bring innovative products not in the form of exotic derivatives, but in the form of products culminating the inherent characteristics of those derivative instruments.

*Table 2: Partial list of demonstrative hedged products by banks in the (new) proposed framework*

	<b>Integrated Hedged Features</b>	<b>Risks hedged by the product</b>	<b>Type of Derivatives (Equivalence)</b>
<b>ST/MT Loan<sup>3</sup></b>	Callable Loan (at strike)	Interest Rate Risk	Call Options (EU)
<b>ST/MT Loan</b>	Floating rates with caps	Interest Rate Risk	Caps, Options
<b>ST/MT Loan</b>	Interest rate changes	Interest Rate Risk	Forwards, Swap, FRA
<b>FC Packing Credit</b>	Forex rate caps	Forex Risk	Forex Caps, Options
<b>ST/MT Loan</b>	Interest rate decreases	Reinvestment Risk	Swaptions
<b>LT Loan</b>	Interest Rate changes are capped, Callable	Interest Rate Risk, ALM Risk, Reinvestment Risk	Forwards, Swaps, Options, FRAs for Long Term
<b>Deposits (ST/MT/LT)</b>	Interest rates increase (Puttable)	Reinvestment Risk, Interest rate risk	Put Options (EU)
<b>Investments – CDs/CPs/etc</b>	Interest rates decreases (floating)	Interest rate risks (floating rates)	Equity Derivatives, Put Options
<b>Floating Rate Products</b>	Convert to Fixed Rate at customers' options	Interest rate risks	Swaptions
<b>Foreign Currency Loans</b>	Hedges the forex currency rates movement	Forex (currency) risk, Interest rate risk	Currency Options, Caps, Swaps, FRAs, Options
<b>Forward Loans</b>	To lock in future rates of Loans	Price risk, Interest rate risk, Forex risk	Forward contracts, FRAs
<b>Strike-in/ Knock out products</b>	To trigger the changes in product's rates at specific strikes	Interest rate risk, Forex risk, etc	Barrier (exotic) options, Knock-in/ Knock-out options

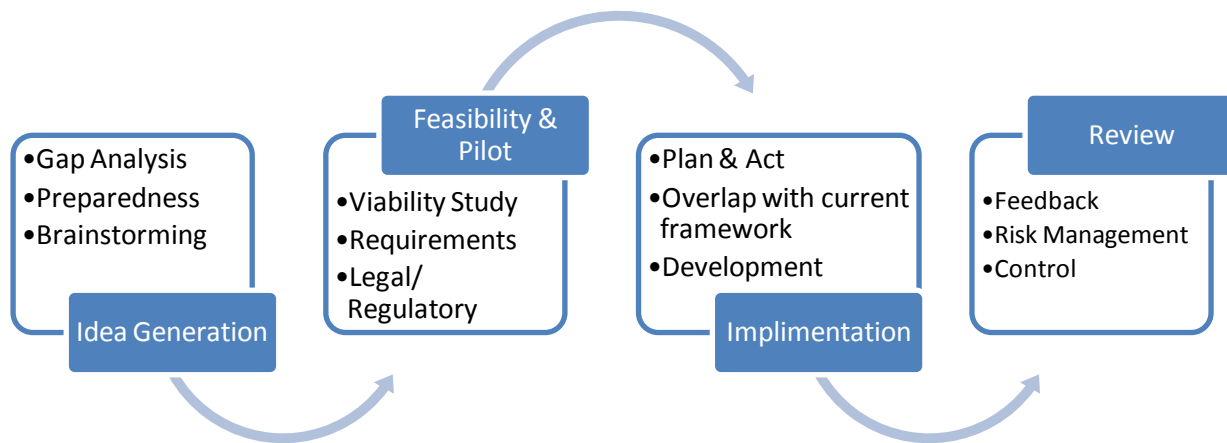
<sup>3</sup> ST = Short Term; MT = Medium Term; LT = Long Term; CD = Certificates of Deposits; FC = Foreign Currency

## ***Implementation Roadmap***

Single Euro Payments Area (SEPA) implemented in Eurozone was once merely a thought; however, today it has successfully resulted in a centralized and efficient payments mechanism across more than 30 countries. *Don't bother about what is SEPA, however.*

The point I would like to state here is that any (super) radical and apparently immature thought takes years to develop, to test, to pilot and to implement. The logical sequence of implementation roadmap however, remains the same. The framework can be developed with the involvement/ establishment of globally recognized bodies like *Bank for International Settlements* to prepare the norms and guidelines to be accepted by the participating banks.

***Figure 3: Demonstrative Phases of Implementation of the proposed framework***



## 4. Consequences and Outcome of the proposed Framework

As discussed repeatedly and is described below, the stakeholders share the total benefits emerging out of the improved efficiency in the proposed framework.

### ***Benefits to the Banks:***

- ❖ Highly Improved efficiency of financial transactions by largely **reducing the number of transactions** in derivatives.
- ❖ Cost savings and hence, improved profit margins and spreads
- ❖ Reduced credit risk of the portfolio, as default on hedged products will be less probable
- ❖ Central role playing in the derivatives business and Risk Hedging in the Financial System
- ❖ Improved Products offering, at more attractive pricing
- ❖ Collaborative role playing along with other banks, thereby strengthening their network

### ***Benefits to the Corporate (Customers):***

- ❖ Essentially meet the similar risk mitigation & hedging objectives without getting involved in separate derivative contracts with other corporate, financial institutions and banks
- ❖ Hedged products provide virtually more secure financial contracts
- ❖ Improved efficiency in the whole system improves the pricing of the products offering, and hence a portion of the reduction in costs will be enjoyed by the customers as well
- ❖ Will have access to *long term* hedging as contrast to only short term and medium term derivatives available in the current framework.

### ***Benefits to the Regulators and Governing bodies:***

- ❖ Confined set of transactions on which to keep a control; and hence more streamlined and effective regulation
- ❖ Cutting short of derivatives transactions will also relax the regulators in monitoring one of the most vulnerable areas of financial transactions

Last but not the least; it is the improvement in the efficiency of financial system as a whole, and hence holistically speaking, the economy in general will benefit with this over a long term.

### ***Risks & Limitations in the proposed framework***

While this is mere an idea at this stage, the risks can just be enormous enough to make this even non-feasible to implement. Nonetheless, the basic areas of potential risks would include:

- ❖ The idea is in nascent stage, and needs mature thoughts to nurture it
- ❖ The acceptance of some of the hedged products at additional cost may not seem beneficial to some customers as compared to directly and separately getting into derivative contracts.
- ❖ The hedging features may not be integrated with each and every type of products a bank offers. Bank will be required to additionally improve other products to match the risk hedging needs of the customers
- ❖ The banks may need improved Asset Liability Mismatch and Risk Mitigation practices amongst themselves after culminating long term hedging benefits in the products, while the derivatives available at their disposal would essentially be short to medium terms.
- ❖ Apprehensions about the framework in the minds of regulators are inevitable; hence to convince them and to integrate the proposed framework alongside the currently practiced one is not going to be easy and quick.
- ❖ Every different country, every different bank and every different corporate (customer) may respond differently to such an idea. It would be utmost essential to bring them on a common platform of understanding and preparedness before going ahead with this plan.

## **5. Working Examples**

### ***Interest Rate Sensitive Products***

- ❖ The big corporate in India needs to hedge against the Interest Rate for three years on its loan worth \$100mn at a floating rate of LIBOR +2%. (LIBOR trading at 4% on date - assumption)
- ❖ Another Big corporate in India needs to hedge against Interest rate decrease for one of its loan of \$50mn at 6% fixed
- ❖ Both these companies have access to derivative instruments (Swaps, FRAs, and Interest rate Options). In the current framework, either these corporate would have bough derivatives from banks – or – alternatively, at a notional amount of \$50mn, they would enter a swap, and on rest of the \$50mn, first corporate would get into a swap with another bank.
- ❖ In the proposed framework however, the Loans offered to these corporate are structured in such a way, for example, that upon increase (or decrease) of the interest rate by say 100bp, can trigger the hedging feature of the loan (automatically or at discretion of the customer), and hence would essentially result in virtually the same results as that would have been using a Interest rate swap (automatically), or a Swaption (at the discretion of the customer)

## ***Forex Rate Sensitive Products***

- ❖ Now, revisit the same two corporate who had taken these two loans in USD but are operating in INR, and hence are exposed to USD-INR rates.
- ❖ In the current framework, they would have get into a few forward USD-INR contracts, or a FRA, or buy some USD-INR options (caps/floors) to compensate against the loss should the market moves unfavorably.
- ❖ However, the proposed framework suggests to have integrated such characteristics within the loan products from the start. Integrated options do cost an extra (because of the premium associated) to the customer. The necessary hedged features are triggered or are called for by the customer as the strike is reached.

In both these situation, the central role would be of the banks who offered the corporate the requisite hedge products, and then cover up their exposures by entering in to derivatives contract to hedge the open exposures after offsetting the opposite exposures with each other.

## **6. Concluding Remarks<sup>4</sup>**

The proposed framework of providing Hedged products by the banks to the customers, and then the banks hedging up their un-hedged exposures amongst themselves, is an idea to centralize the hedging of market risks in the financial system.

Though, merely an idea as of now, however upon implementation, the proposed framework is expected to reduce the inefficiency and redundancy in a large number of derivative and other financial transactions, by centralizing and confining the explicit derivatives transactions mainly to the banking system worldwide. This would result in improvement in efficiency of financial transactions related to derivatives; and also improve the risk portfolio of the banks because the corporate and other customers are less likely to default on a loan or other standard products than on a derivative contract. Moreover, the default on loans can be restructured under various provisions, however the default on derivative losses are rarely heard to be restructured – and they mainly resulted in the closing of the customer’s business.

This paper is an attempt to project an open idea to be developed further.

---

<sup>4</sup> Various general readings on web in the areas of Banking, Derivatives, Banking Regulations, etc are broadly referred to while incubating this idea. There are no specific *References* that can be cited in this regard.