A Global Derivatives Framework for Banks to Centrally Manage and Hedge Market Risks in the Financial System

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Abstract

The bank's customers *viz.* non-bank company often get into various kinds of derivative transactions with a bank or some other non-bank company in order to cover or hedge against the unwanted exposure to volatility in interest rates, currency rates or some other underlying rate. A non-bank company defaults when the situation goes unfavorable enough for it to have no other alternative; this cascades the impact to many other non-bank companies and banks. I take forward the opinion that **non-bank company defaults are more likely than those 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 non-bank companies to the derivative contracts. Instead, offer them such customized (hedged) products that meet the same objectives under the terms and covenants of the underlying borrowing or lending contract. This will not only ensure non-bank company to have an implicit risk hedging in the (hedged) transaction itself, but will 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 toward the opposite exposures of the same type of underlying assets. The overall effect apparently remains similar to what exists in the current framework. However, there are significant advantages under the proposed framework that describe how the banks can play a central role to the risk management (hedging) of market risks in the financial system.

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[2] and credit risk that exist because of the unhedged exposures of banks, financial institutions, non-bank company and other customers toward the corresponding underlying rate.

The primary function of the banks is making transactions with other participants of the financial systems—whether for extending credit advances, accepting deposits, 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 instruments. Here is the catch: derivatives instruments promise 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 ways to manage the risk existing in the financial system worldwide.

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

- Non-bank company default rates in derivatives transactions are much higher than those 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 non-bank company are in the form of terms and 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.

The 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.

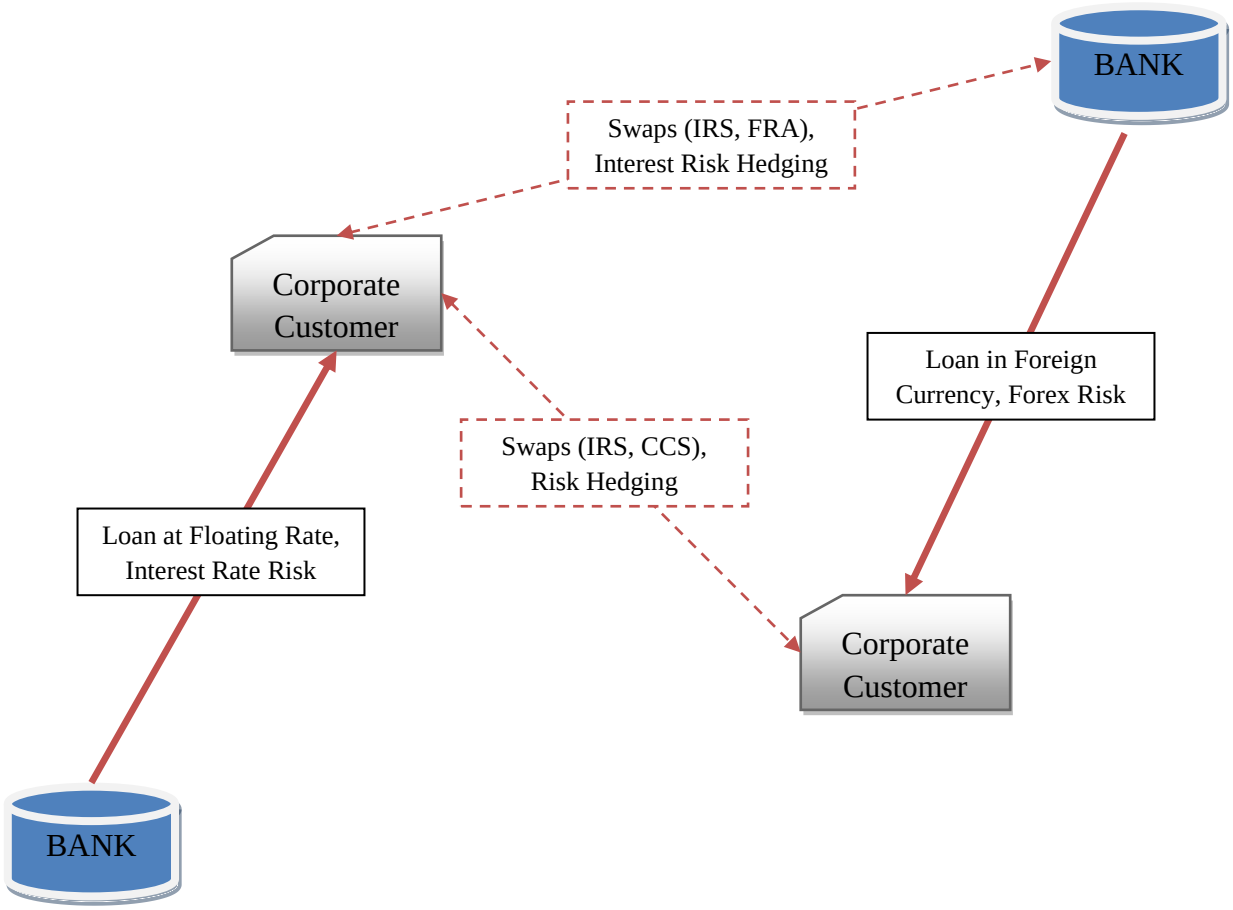
[2] Market risk here is referred to represent interest rate risk, currency risk, price risk, reinvestment risk, etc.

2. The Current Framework: Explicit Hedging by Customers on Unhedged Products

The most basic financial transactions amongst the banks and the non-bank company as the customers are loans and advances, investments, deposits and customized derivatives contracts.

In doing so, non-bank company 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, forward rate agreements (FRAs) and other complex derivatives with other non-bank company and/or banks. It basically becomes the primary responsibility of the non-bank company themselves to hedge the risks their funds and cash flow are exposed to. Less often, some non-bank company (read customer) would find another non-bank company looking to hedge an exact opposite exposure and so the two would get into a derivative contract with each other. However, more often the non-bank company needs to get into such transactions by taking positions into derivatives transactions in the open market with banks (like OTC derivatives).

Figure 1
Current Framework of Derivatives Usage: Unhedged Products by Banks and Explicit Hedging



Therefore, the non-bank companies are required to do an explicit hedging separately on the unhedged 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 non-bank company defaults on the derivatives? The massive cascading to the counterparty and further to other participants could prove disastrous—and we unfortunately have plenty of examples to prove this fact.

I summarize the cause of such default rates as:

- Non-bank companies 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 the derivatives contract. This is simply a blunder if they do so without an expert's advice.

- When non-bank companies deal amongst themselves, there is hardly any incentive for the central financial system to alert them to the risks of playing with derivatives instruments. And, we must accept that historically non-bank companies (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 that are hit first and hard.

- The fees and spread incentives of banks make them push toward extending such derivative transactions to non-bank companies, which can be disastrous to them. Now, banks rarely default—their business and expertise are to deal with such financial instruments. They can well hedge their exposures, and they will not let themselves be exposed to unhedged risk exposures generally.

- However, non-bank companies would be left with no other options but to default if their derivative transactions accidentally resulted in huge losses, because they had not taken double-sided protection to save the cost of protection. This is because the derivatives settlements are required to be settled down immediately on fixed dates without much of the flexibility, rescheduling or restructuring of the due payments as is possible in the case of normal loans. 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 non-bank companies, only a few would match the capabilities and effectiveness of risk hedging to those by the banks.

It is rather possible to restructure a $100 million 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.

The next result of 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 so because in an open market everything is ruled by the immediate incentive. Financial systems of course do not feel the need to take the onus of derivatives over them and, therefore, let their customers be exposed to the leveraged risky exposures of derivatives.

2.1 Products and Hedging Options Available to Non-bank Company (Customers)

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

TABLE 1
Partial List of Standard Banking Products (Unhedged) and Hedging Options Available to Customers

	Features	Risks to Customers	Hedging Derivatives
Working Capital Loan	Floating/Fixed Interest	Interest Rate Risk (short-term, minimal)	Swaps, Forwards
Short- to 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- to 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 Unhedged 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 them to the right entity that is more able to deal with that risk type.

3.1 Integrated Risk Management by Hedged Products and Exposure Hedging by Banks

The proposed framework is to transfer the market risk elements from the non-bank company and the large part of the financial system and confine them mainly to the banking system, so that those risks can be centrally managed.

The bullets below briefly summarize the proposed framework:

- Banks to provide **hedged products,** i.e., the covenants of loans and other products of the banks inherently include 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 what would have incurred by customers had they gone into separate derivative instruments to hedge the unhedged 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.

- Non-bank companies 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 that have huge numbers of exposures in all directions, in every possible risk element. 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 a minimum. *Sounds like centralization? Yes, it indeed is a centralization of market risk management through involvement of banks worldwide.*

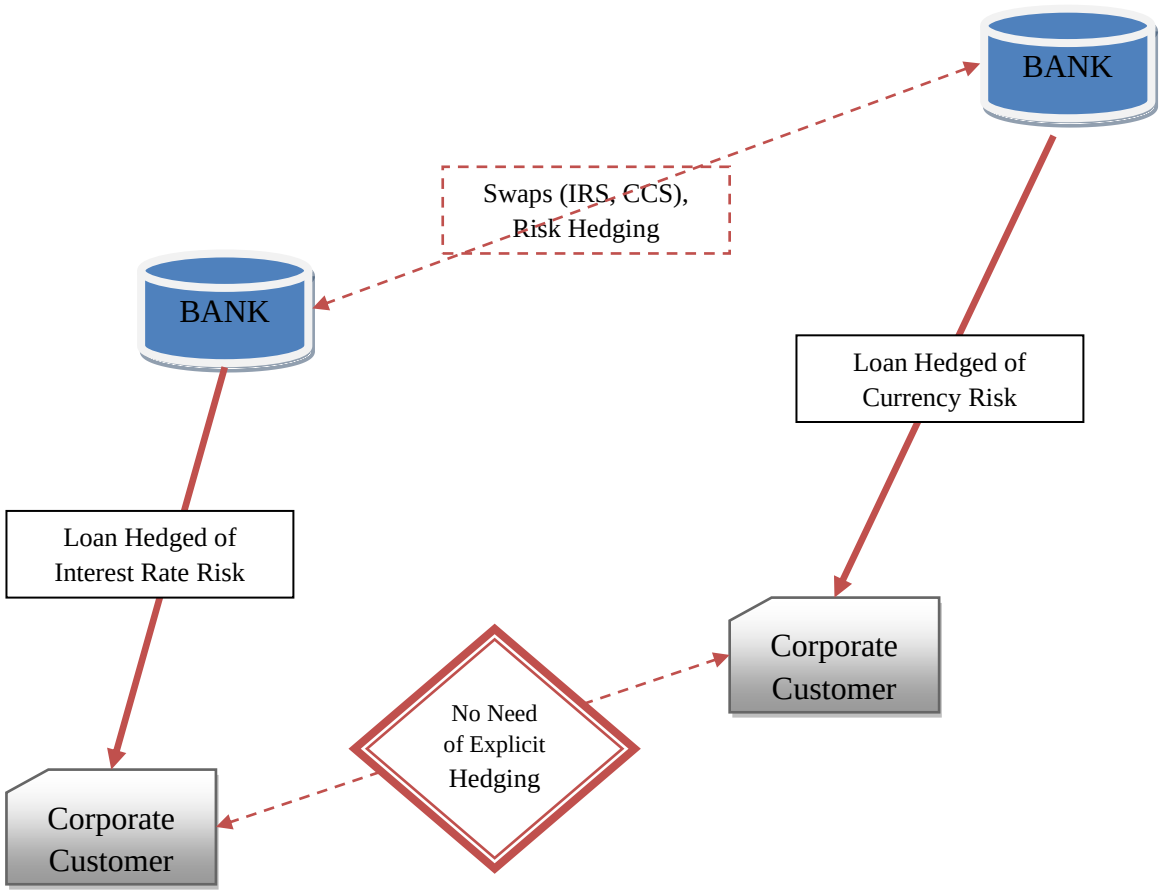
- Banks can trust banks; and they can trust yet other banks. After all, the bank is an entity that is last to default in an economy. So, **banks take the onus of risk exposures** onto themselves, and then minimize them. First, they minimize within the bank, then with fellow banks in the same country, then in different countries depending on their comfort level and needs.

- The leftover risk exposures in the **banking system** are then explicitly hedged using customized derivatives instruments, which transfer the risks to other banks and financial institutions that are more willing to accept specific risk types on their portfolios. It would incur a cost, but it is worth it to eliminate specific risks.

3.2 What Will the New (Proposed) Framework Look Like?

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

Figure 2
Proposed (New) Framework of Derivatives Usage: Hedged Products and Risk Minimization by Banks



The customers more or less will remain seamless so far as the benefits to them are concerned, because for them it will apparently be the same thing as the current framework. However, what lie beneath are the major operational changes in the management and distribution of risk elements due to interest rates and currency rates. Upfront, the non-bank company will

now not have to get into a 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 being dynamically reactive for the whole duration of the product.

3.3 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 in the inherent characteristics of those derivative instruments.

TABLE 2
Partial List of Demonstrative Hedged Products by Banks in the (New) Proposed Framework

	Integrated Hedged Features	Risks Hedged by the Product	Type of Derivatives (Equivalence)
ST/MT Loan[3]	Callable Loan (at strike)	Interest Rate Risk	Call Options (EU)
ST/MT Loan	Floating Rates with Caps	Interest Rate Risk	Caps, Options
ST/MT Loan	Interest Rate Changes	Interest Rate Risk	Forwards, Swap, FRA
FC Packing Credit	Forex Rate Caps	Forex Risk	Forex Caps, Options
ST/MT Loan	Interest Rate Decreases	Reinvestment Risk	Swaptions
LT Loan	Interest Rate Changes are Capped, Callable	Interest Rate Risk, ALM Risk, Reinvestment Risk	Forwards, Swaps, Options, FRAs for Long Term
Deposits (ST/MT/LT)	Interest Rates Increase (puttable)	Reinvestment Risk, Interest rate risk	Put Options (EU)
Investments-CDs/CPs/etc.	Interest Rates Decrease (floating)	Interest Rate Risks (floating rates)	Equity Derivatives, Put Options
Floating Rate Products	Convert to Fixed Rate at Customers' Options	Interest Rate Risks	Swaptions
Foreign Currency Loans	Hedges the Forex Currency Rates Movement	Forex (currency) Risk, Interest Rate Risk	Currency Options, Caps, Swaps, FRAs, Options
Forward Loans	To Lock in Future Rates of Loans	Price Risk, Interest Rate Risk, Forex Risk	Forward contracts, FRAs
Strike-in/ Knock-out Products	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

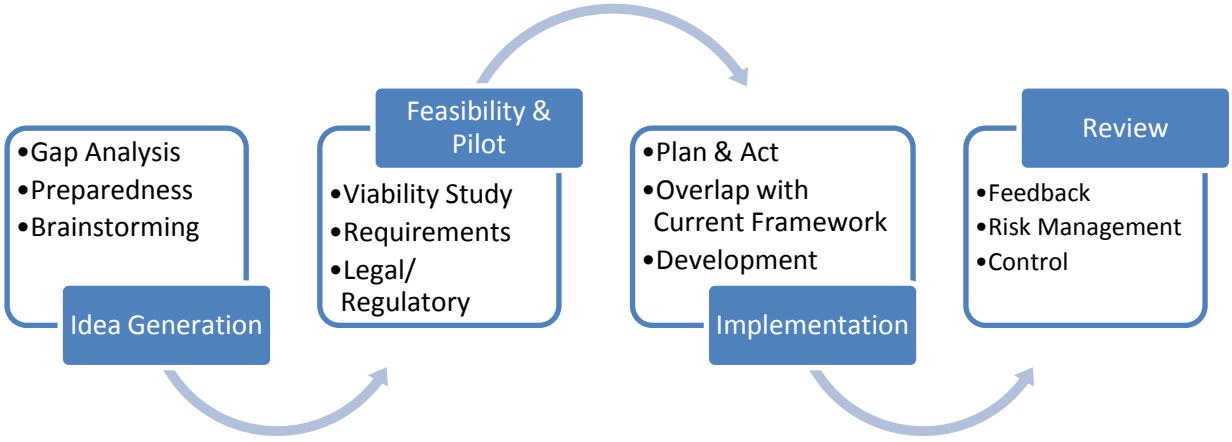
[3] ST = Short Term; MT = Medium Term; LT = Long Term; CD = Certificates of Deposit; FC = Foreign Currency

3.4 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 the implementation roadmap, however, remains the same. The framework can be developed with the involvement/establishment of globally recognized bodies like the 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 as 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 Non-bank Company (Customers):

- Essentially meet the similar risk mitigation and hedging objectives without getting involved in separate derivative contracts with other non-bank company, 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, in 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, is the improvement in the efficiency of the financial system as a whole, and hence, holistically speaking, the economy in general will benefit with this over the long term.

4.1 Risks and Limitations in the Proposed Framework

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

- The idea is in a 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. Banks 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-term.
- 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 will not be easy and quick.
- Every different country, every different bank and every different non-bank company (customer) may respond differently to such an idea. It would be extremely essential to bring them in on a common platform of understanding and preparedness before going ahead with this plan.

5. Working Examples

Interest-Rate-Sensitive Products

- A big non-bank company in India needs to hedge against the interest rate for three years on its loan worth $100 million at a floating rate of LIBOR +2 percent. (LIBOR trading at 4 percent on date - assumption).
- Another big non-bank company in India needs to hedge against interest rate decrease for one of its loans of $50 million at 6 percent fixed.
- Both these companies have access to derivative instruments (swaps, FRAs and interest rate options). In the current framework, either these non-bank companies would have bought derivatives from banks; or, alternatively, at a notional amount of $50 million, they would enter a swap, and on rest of the $50 million, the first non-bank company would get into a swap with another bank.
- In the proposed framework, however, the loans offered to these non-bank companies are structured in such a way, for example, that upon increase (or decrease) of the interest rate by, say, 100bp, this 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 if they would have been using an interest rate swap (automatically), or a swaption (at the discretion of the customer).

Forex Rate Sensitive Products

- Now, revisit the same two non-bank companies who had taken these two loans in USD but are operating in Indian rupee (INR), and hence are exposed to USD-INR rates.
- In the current framework, they would have to get into a few forward USD-INR contracts, or an FRA, or buy some USD-INR options (caps/floors) to compensate against the loss should the market move unfavorably.
- However, the proposed framework suggests to have integrated such characteristics within the loan products from the start. Integrated options do cost 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 situations, the central role would be of the banks who offered the non-bank company the requisite hedge products, and then covered up their exposures by entering into a derivatives contract to hedge the open exposures after offsetting the opposite exposures with each other.

6. Concluding Remarks[4]

The proposed framework of providing hedged products by the banks to the customers, and then the banks hedging up their unhedged 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 derivatives 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 non-bank company 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, defaults on derivative losses are rarely heard to be restructured—and they mainly result in the closing of the customer's business.

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

[4] Various general readings on the 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.