

*Indian Derivatives Market - A Regulatory and Contextual Perspective**

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Let me first thank Euromoney for inviting me for this seminar on Indian derivatives market. The esoteric world of derivatives has come into sharp focus in recent times precisely on account of their complexity and recent events have triggered a debate on their impact on the financial system stability.

My discussion today will be confined to the regulatory framework in India in regard to forex, debt and credit derivative markets and the regulatory imperatives arising in dealing with these instruments and their future development, particularly in the context of global developments.

The financial markets, including derivative markets, in India have been through a reform process over the last decade and a half, witnessed in its growth in terms of size, product profile, nature of participants and the development of market infrastructure across all segments - equity markets, debt markets and forex markets.

Derivative markets worldwide have witnessed explosive growth in recent past. According to the BIS Triennial Central Bank Survey of Foreign Exchange and Derivatives Market Activity as of April 2007 was released recently and the OTC derivatives segment, the average daily turnover of interest rate and non-traditional foreign exchange contracts increased by 71 per cent to US \$ 2.1 trillion in April 2007 over April 2004, maintaining an annual compound growth of 20 per cent witnessed since 1995. Turnover of foreign exchange options and cross-currency swaps more than doubled to US \$ 0.3 trillion per day, thus outpacing the growth in 'traditional' instruments such as spot trades, forwards or plain foreign

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exchange swaps. The traditional instruments also show an unprecedented rise in activity in traditional foreign exchange markets compared to 2004. Average daily turnover rose to US \$ 3.2 trillion in April 2007, an increase of 71 per cent at current exchange rates and 65 per cent at constant exchange rates. Relatively moderate growth was recorded in the much larger interest rate segment, where average daily turnover increased by 64 per cent to US \$ 1.7 trillion. While the dollar and euro clearly dominate activity in OTC interest rate derivatives, their combined share has fallen by nearly 10 percentage points since the 2004 survey, to 70 per cent in April 2007, as turnover growth in several non-core markets outstripped that in the two leading currencies.

Indian forex and derivative markets have also developed significantly over the years. As per the BIS global survey the percentage share of the rupee in total turnover covering all currencies increased from 0.3 per cent in 2004 to 0.7 per cent in 2007. As per geographical distribution of foreign exchange market turnover, the share of India at US \$ 34 billion per day increased from 0.4 per cent in 2004 to 0.9 per cent in 2007. The activity in the forex derivative markets can also be assessed from the positions outstanding in the books of the banking system. As of August end, 2007, total forex contracts outstanding in the banks' balance sheet amounted to US \$ 1100 billion (Rs. 44 lakh crore), of which almost 84 per cent were forwards and rest options.

As regards interest rate derivatives, the inter-bank Rupee swap market turnover, as reported on the CCIL platform, has averaged around US \$ 4 billion (Rs. 16,000 crore) per

day in notional terms. The outstanding Rupee swap contracts in banks' balance sheet, as on August 31, 2007, amounted to nearly US \$ 1600 billion (Rs. 64,00,000 crore) in notional terms. Outstanding notional amounts in respect of cross currency interest rate swaps in the banks' books as on August 31, 2007, amounted to US \$ 57 billion (Rs. 2,24,000 crore).

The size of the Indian derivatives market is clearly evident from the above data, though from global standards it is still in its nascent stage. Broadly, the Reserve Bank is empowered to regulate the markets in interest rate derivatives, foreign currency derivatives and credit derivatives. Until the amendment to the RBI Act in 2006, there was some ambiguity in the legality of OTC derivatives which were cash settled. This has now been addressed through an amendment in the said Act in respect of derivatives which fall under the regulatory purview of the Reserve Bank (with underlying as interest rate, foreign exchange rate, credit rating or credit index or price of securities) provided one of the parties to the transaction is the Reserve Bank, a scheduled bank or any other entity regulated under the RBI Act, Banking Regulation Act or Foreign Exchange Management Act (FEMA).

Current Regulatory Framework

In the light of increasing use of structured products and to ensure that customers understand the nature of the risk in these complex instruments, the Reserve Bank after extensive consultations with market participants issued comprehensive guidelines on derivatives in April 2007, which cover the following aspects:

- Participants have been generically classified into two functional categories, namely, market-makers and users, which would be specific to the position taken by the participant in a transaction. This categorisation was felt important from the perspective of ensuring Suitability & Appropriateness compliance by market makers on users.
- The guidelines also define the purpose for undertaking derivative transactions by various participants. While **Market-makers** can undertake derivative transactions to act as counterparties in derivative transactions with users and also amongst themselves, **Users** can undertake derivative transactions to hedge - specifically reduce or extinguish an existing identified risk on an ongoing basis during the life of the derivative transaction - or for transformation of risk exposure, as specifically permitted by the Reserve Bank.
- The guidelines clearly enunciate the broad principles for undertaking derivative transactions.
 - Any derivative structure is permitted as long as it is a combination of two or more of the generic instruments permitted by the Reserve Bank and
 - Market-makers should be in a position to mark to market or demonstrate valuation of these products based on observable market prices.
 - Further, it is to be ensured that structured products do not contain derivative(s), which is/ are not allowed on a stand alone basis. This will also apply in case the structure contains 'cash' instrument(s).
 - All permitted derivative transactions shall be contracted only at prevailing market rates.
- The guidelines set out the basic principles of a prudent system to control the risks in derivatives activities. It is required that all risks arising from derivatives exposures should be analysed and documented and the management of derivative activities should be integrated into the bank's overall risk management system using a conceptual framework common to the bank's other activities.
- The critical importance of 'suitability' and 'appropriateness' policies within banks for derivative products being offered to customers (users) have been underlined. It is imperative that market-makers offer derivative products in general, and structured products, in particular only to those users who understand the nature of the risks inherent in these transactions and further that products being offered are consistent with users' internal policies as well as risk appetite.

Within the above broad framework, the specifics of the forex and interest rate derivatives permitted are explained below:

I. Forex derivatives

Economic entities in India currently have a menu of OTC products, such as forwards, swaps and options, for hedging their currency risk and the markets for the same are fairly deep and liquid, as reflected in the volumes and bid-offer spreads. The origin of the forex market development in

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India could be traced back to 1978 when banks were permitted to undertake intra-day trades. However, the market witnessed major activities only in the 1990's with the floating of the currency in March 1993, following the recommendations of the Report of the High Level Committee on Balance of Payments (Chairman: Dr. C. Rangarajan).

In respect of forex derivatives involving rupee, residents have access to foreign exchange forward contracts, foreign currency-rupee swap instruments and currency options – both cross currency as well as foreign currency-rupee. In the case of derivatives involving only foreign currency, a range of products such as IRS, FRAs, option are allowed. While these products can be used for a variety of purposes, the fundamental requirement is the existence of an underlying exposure to foreign exchange risk whether on current or capital account. While initially the forward contracts could not be rebooked once cancelled, greater flexibility has now been given for booking cancellation and rebooking of forward contracts. In the case of exporters and importers, they are also allowed to book forward contracts based on past performance and the delivery condition has also been gradually liberalised.

In order to simplify procedural requirements for Small and Medium Enterprises (SME) sector, the Reserve Bank has recently granted flexibility for hedging both underlying as well as anticipated and economic exposures without going through the rigours of complex documentation formalities. In order to ensure that SMEs understand the risks of these products, only banks with whom they have credit relationship are allowed to offer such

facilities. These facilities should also have some relationship with the turnover of the entity. Similarly, individuals have been permitted to hedge upto US \$ 100,000 on self declaration basis.

AD banks may also enter into forward contracts with residents in respect of transactions denominated in foreign currency but settled in Indian Rupees including hedging the currency indexed exposure of importers in respect of customs duty payable on imports. ADs have been delegated powers to allow residents engaged in import and export trade to hedge the price risk on all commodities in international commodity exchanges, with few exceptions like gold, silver, and petroleum. Domestic producers/users are allowed to hedge their price risk on aluminium, copper, lead, nickel and zinc as well as aviation turbine fuel in international commodity exchanges based on their underlying economic exposures.

Facilities for Non-residents

Foreign Institutional Investors (FII), persons resident outside India having Foreign Direct Investment (FDI) in India and Non-resident Indians (NRI) are allowed access to the forwards market to the extent of their exposure in the cash market. FIIs are permitted to hedge currency risk on the market value of entire investment in equity and/or debt in India as on a particular date using forwards. For FDI investors, forwards are permitted to (i) hedge exchange rate risk on the market value of investments made in India since January 1, 1993 (ii) hedge exchange rate risk on dividend receivable on the investments in Indian companies and (iii) hedge exchange rate risk on proposed

investment in India. NRIs can hedge balances/amounts in NRE accounts using forwards and FCNR (B) accounts using rupee forwards as well as cross currency forwards.

Currency Futures

In the context of growing integration of the Indian economy with the rest of the world, as also the continued development of financial markets, there is a need to allow other hedging instruments to manage exchange risk like currency futures. The Committee on Fuller Capital Account Convertibility had recommended that currency futures may be introduced subject to risks being contained through proper trading mechanism, structure of contracts and regulatory environment. Accordingly, the Reserve Bank in the Annual Policy Statement for the Year 2007-08 proposed to set up a Working Group on Currency Futures to study the international experience and suggest a suitable framework to operationalise the proposal, in line with the current legal and regulatory framework.

The group has had extensive consultations with a cross section of market participants including bankers associations, banks, brokers, exchanges, both Indian and international, and is in the process of finalising its report. Given that India is not yet fully convertible on capital account, various options are available to deal with the issue of reconciling the regulatory framework in the cash and OTC forward market with the currency futures segment. The international experience in this regard is mostly from OECD countries except for one single exception of South Africa which has very recently introduced domestic currency futures. The draft report of the

group will be placed in public domain for wider dissemination and feedback.

II. Rupee Interest Rate Derivatives

Rupee derivatives in India were introduced in July 1999 when the Reserve Bank permitted banks/FIs/PDs to undertake Interest rate swaps and Forward rate agreements. These institutions were allowed to offer these products to corporates for hedging interest rate risk as well as deal in these instruments for their own balance sheet hedging and trading purposes. Since then, many initiatives have been undertaken to deepen and broaden the market.

The rupee interest rate derivatives presently permissible are Forward Rate Agreements (FRA), Interest Rate Swaps (IRS) and Interest Rate Futures (IRF). The permitted benchmarks for FRA/IRS are any domestic money or debt market rupee interest rate; or, rupee interest rate implied in the forward foreign exchange rates, as permitted in respect of MIFOR swaps. While both banks and PDs are allowed as market makers in the swap market, all business entities (including banks and PDs) are permitted to hedge their underlying exposures using these instruments. PDs have been also permitted to hold trading position in IRF, subject to internal guidelines in this regard. The interest rate swap market has grown rapidly with participation from banks and corporates. The market is liquid and bid-offer spreads are narrow.

Transparency and Reporting

In order to have a mechanism for transparent capture and dissemination of trade information, the Clearing Corporation

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of India, at the instance of the Reserve Bank, has recently developed a reporting system for OTC interest rate swaps. The reported deals are processed by CCIL which also offers certain post trade processing services like resetting interest rates, providing settlement values *i.e.*, to the reporting members. Information in regard to traded rates and volumes are made available through CCIL's website.

Once things stabilise, the next phase could be development of post-trade processing infrastructure to address some of the attendant risks.

Interest rate futures

While FRA/IRS markets have shown phenomenal growth, the interest rate futures, first introduced on NSE in 2003, have not picked up on account of certain structural factors. A sub-group of the Reserve Bank Technical Advisory Committee on Markets having representatives from the industry and academia, has been constituted to examine the issues, including the following:

- (i) Review the experience with the Interest Rate Futures so far, with particular reference to product design issues and make recommendations for activating the Interest Rate Futures.
- (ii) Examine whether regulatory guidelines for banks for Interest Rate Futures need to be aligned with those for their participation in Interest Rate Swaps.
- (iii) Examine the scope and extent of the participation of non-residents, including Foreign Institutional Investors (FIIs), in Interest Rate Futures, consistent with the policy applicable to the underlying cash bond market.

The draft report of the group would be placed in the public domain for comments.

Structured Credit and Credit derivatives

The structured credit market internationally has grown phenomenally into a distinct asset class, encompassing a slew of complex products which have facilitated risk transfer across multiple chain of investors, leveraging several times on the original loan amount. The downside of this model has been eloquently demonstrated in the US sub-prime related fallout globally, which I will discuss later. In India, the structured credit market is still in its infancy, primarily constituting securitisation products, and the lessons of recent events can hold important lessons for the future development of this market here.

Securitisation in India has been in existence for over a decade confined mainly to a few banks and non-banking finance companies. Both mortgage backed securities and asset-backed securities are in vogue. The securitisation market has matured over the last few years and there is now an established investor community and regular issuers. As per ICRA's estimates, the structured issuance volumes have grown from Rs. 77 billion in 2003 to Rs. 369 billion in 2006-07. The growth in 2006-07 has been primarily on account of securitisation of single corporate loans, which accounted for nearly a third of the total volume. However, ABS is the largest product class at more than 60 per cent, with securitisation of retail loans remaining popular. The growth of ABS market can be attributed to a number of factors such as the growing retail loan portfolios held by banks and other financial institutions, investors' familiarity with the

underlying assets class the relatively short tenor of such issues. Growth of the MBS market has been slower despite the growth in the underlying housing finance market mainly due to the relatively long tenor, lack of secondary market liquidity and the risk arising from prepayment/repricing of the underlying loans.

In the light of the differing practices followed by banks in India and certain concerns on accounting, valuation and capital treatment, the Reserve Bank issued formal guidelines in February 2006 after extensive consultation with market participants. The guidelines are largely in line with those issued by other supervisors internationally and envisage the following:

- Detailed set of guidelines to ensure 'arms' length relationship between the originator and the SPV
- Credit enhancements provided by the originator for first as well as second losses to be deducted from the capital. For the first loss facility, the deduction is capped at the amount of capital that the bank would have been required to hold for the full value of assets. Thus a disincentive is created for an originator trying to provide second loss facility also. (However, the proposed Basel II guidelines envisage risk weight for securitised exposures, depending upon rating, will range from 20 per cent to 400 per cent or even deduction from capital)
- Any profit/premium arising on account of sale not allowed to be booked upfront and is to be amortised over the life of the securities issued or to be issued by the SPV.
- Provision of liquidity facility to be treated as an off-balance sheet item and attract 100 per cent credit conversion factor as well as 100 per cent risk weight.
- Disclosure by the originator, as notes to accounts, presenting a comparative position for two years:
 - total number and book value of loan assets securitised;
 - sale consideration received for the securitised assets and gain/loss on sale on account of securitisation;
 - form and quantum (outstanding value) of services provided by way of credit enhancement, liquidity support, post-securitisation asset servicing, *etc.*

In the context of recent global events, the above guidelines will go a long way in laying the foundation of a healthy structured credit market.

In respect of distressed assets, the legal framework was provided by the "Securitisation and Reconstruction of Financial Assets and Enforcement of Security Interests Act, 2002", more commonly called SARFAESI Act. This led to the constitution of asset reconstruction companies specialising in securitising distressed assets purchased from banks. The issuance of security receipts has since grown significantly, though the secondary market activity has not been large enough. To encourage proper market valuation, securitisation companies have been advised to take into account rating of instruments by SEBI registered rating agencies, based on 'recovery ratings' for declaring the NAV of the issued security receipts.

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Recently, The Securities Contracts (Regulation) Amendment Act, 2007 has amended Securities Contract (Regulation) Act to include "securitised instruments" in the definition of "securities" as defined in Securities Contract (Regulation) Act. The amendment is made to allow listing of securitised debt on stock exchanges and therefore, make the market more liquid.

Credit Derivatives

The issue of allowing credit derivatives in India is under consideration for some time now. The draft guidelines for introduction of credit default swaps were put in public domain this year and feedback from various quarters have since been received. These basically envisaged introduction of single entity CDS instruments, allowing protection selling and buying to resident financial entities (banks, PDs and other entities as permitted by respective regulators) under the overall ISDA framework. Special Investment Vehicles (SIV) and conduits are not envisaged. Banks that are active in the credit derivative market are required to have in place internal limits on the gross amount of protection sold by them on a single entity as well as the aggregate of such individual gross positions. These limits shall be set in relation to the bank's capital funds. Banks shall also periodically assess the likely stress that these gross positions of protection sold, may pose on their liquidity position and their options / ability to raise funds, at short notice. Banks have to determine an appropriate liquidity reserve to be held against revaluation of these positions. This is important especially where the reference asset is illiquid like a loan.

Learning from the global experience in this regard, it will be of utmost importance that proper disclosure and reporting framework, accounting and valuation policies and clearing & settlement system for these OTC transactions develops concomitantly with the market. This would go a long way in addressing some of the associated concerns.

Concluding Thoughts

The recent episode of financial turbulence has provoked debate about the measurement, pricing and allocation of risk by way of derivatives, which can have important lessons for India. I wish to conclude by flagging some of these issues:

(i) Credit Risk Transfer

Over the past decade or so, the business models of global banks have evolved from a "buy-and-hold" to an "originate-to-distribute" model. Instruments to transfer risks from the balance sheets of the originating institution have developed in size and in complexity. Risks have been repackaged and spread throughout the economy. The greater part of these risks is sold to other banks and to leveraged investors, very often the originating bank itself funding the investors. Small and regional banks, in particular, were significant buyers of subprime and other structured products. Insurance companies are also increasingly using such instruments to securitise their liabilities. This wider distribution of credit risks within the global financial system should in principle limit risk concentrations and reduce the risk of a systemic shock.

Recent events, however, suggest some reservations about this positive assessment.

One reservation is that banks have become increasingly able to sell quickly even the equity tranches of their loan portfolios (retaining no exposures). This means they have fewer incentives to effectively screen and monitor borrowers. A systematic deterioration in lending and collateral standards would of course entail losses greater than historical experience of default and loss-given-default rates would indicate, and it is not clear that current risk management practices make enough allowance for this. Further the gap between the original borrower and the ultimate investors widened with a number of vehicles in between.

Secondly, events may force banks to re-assume risks they had assumed transferred to other parties – either to preserve a bank's reputation (*eg.*, related to investment funds sponsored by a bank) or to honour contingency liquidity/credit lines. In a crisis, major banks could therefore end up holding a larger share of exposures that they had planned to securitise.

(ii) Ratings for Structured Products

Ratings on structured finance products provide investors with an independent assessment of risks embedded in them. Given the complexity of such products, some form of expert assessment is desirable. Nevertheless, some investors failed to appreciate that ratings did not purport to cover market risk. And the use of ratings in investment mandates may have tempted some fund managers to "reach for yield" without altering their measured risk exposures. The investment grade status given to tranches of highly leveraged structures (such as CPDOs) has also raised questions. Some have argued that ratings

should put more emphasis on the uncertainty associated with the rating of a given structured product – especially those involving the leveraged exposure to market and liquidity risk. Others argue that ratings should cover more than just the dimension of the probability of default.

(iii) Valuation of Financial Assets

A growing share of the assets of financial firms has now to be measured at "fair-value". This fosters more active risk management but also makes reported earnings and capital more sensitive to the volatility of asset prices. In the absence of traded prices, fair-value estimates are determined using a chosen pricing model. An intrinsic problem is that the parameter values used in all such models (especially default correlations and recovery rates) are inevitably matters of judgment given limited historical data. This can bias conclusions as default correlations inevitably rise during periods of market stress, when confidence in mark-to-model prices is undermined. As uncertainty about the true market value of securities with model-driven prices rose, trading in these securities almost ground to a halt.

A final aspect is that historical data available before recent events may not have been representative of a full credit cycle. The recent experience may go some way to correcting this shortcoming, and make model-driven estimates more reliable in the future. This could in turn induce a significant change in the behaviour of investors for some time.

(iv) Value at Risk (VaR)

Most financial firms use VaR and stress tests to measure market risks and assign

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position limits. Despite declining financial market volatility during recent years, most large banks have nevertheless reported a trend rise in the aggregate VaR of their trading book. This presumably implies that they have taken larger positions. This is not necessarily a matter of concern because trading profits and capital increased broadly in line with higher VaRs.

Yet the marked movements in the absolute VaRs of large firms over time does raise questions. These changes could reflect: (a) underlying market volatility; (b) frequent changes in the firm's positioning; or (c) changes in various aspects of methodology. If firms, conscious of methodological shortcomings, frequently modify how they compute their VaRs, changes over time may not be a good guide to changes in underlying risk exposures. This would also make it harder for counterparties to keep accurate track of how underlying risks are evolving.

(v) Stress tests

Stress tests used by banks probably do not adequately reflect their substantial reliance on liquid capital and money markets for managing, distributing and hedging risks. Some of the problems (*eg.*, difficulties in the leveraged loan market, the valuation of complex products) are not typically incorporated in stress tests. Stress tests at many banks also may fail to adequately capture the potentially significant growth in balance sheet exposures resulting from contingent credit and liquidity facilities to ABCP conduits. Moreover, stress tests tend to focus on a few risks and thus often fail to capture the potential interactions between many different risk factors. And in such stress

tests, banks frequently assume an ability to unwind positions across a wide range of asset classes – including structured credit and other complex products – that may not be feasible in stressed conditions. In addition, attempts to reduce risk exposures during a credit event can further impair market liquidity.

This failure to take into consideration the likelihood that leveraged firms (during a period of market stress) would attempt to reduce exposures in virtually identical ways might explain why large financial shocks have been more frequent during the past 10 years than models predicted – even as underlying macroeconomic conditions have become more stable.

It is thus clear that recent bouts of market uncertainty have been aggravated by the lack of information about the distribution of risks in the global financial system and the risk profiles of individual institutions. New, complex financial instruments have increased linkages across financial institutions and made the assessment of their exposures more difficult. It has also become harder to update the valuation of collateral as market developments have unfolded. Incomplete and differing disclosures also complicate attempts to draw comparisons between them. This insufficient transparency at the firm level probably undermined *ex ante* market discipline. These issues, which have been well-known to the regulators and the industry for some years, become pressing mainly in a crisis. Lending institutions find it difficult, if not impossible, to simultaneously review in a thorough manner a large proportion of their

exposures. How effectively *ex post* market discipline is allowed to operate will have a significant impact on the future conduct of financial firms.

To conclude, the derivatives market in India has been expanding rapidly and will continue to grow. While much of the activity is concentrated in foreign and a few private sector banks, increasingly public sector banks are also participating in this market as market makers and not just users. Their participation is dependent on development of skills, adapting technology and developing sound risk management practices. Corporates are also active in these markets. While derivatives are very useful for hedging and risk transfer, and hence

improve market efficiency, it is necessary to keep in view the risks of excessive leverage, lack of transparency particularly in complex products, difficulties in valuation, tail risk exposures, counterparty exposure and hidden systemic risk. Clearly there is need for greater transparency to capture the market, credit as well as liquidity risks in off-balance sheet positions and providing capital therefor. From the corporate point of view, understanding the product and inherent risks over the life of the product is extremely important. Further development of the market will also hinge on adoption of international accounting standards and disclosure practices by all market participants, including corporates.