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Foreign Exchange Derivatives Market in India - Status and Prospects

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1 Introduction

The gradual liberalization of Indian economy has resulted in substantial inflow of foreign capital into India. Simultaneously dismantling of trade barriers has also facilitated the integration of domestic economy with world economy. With the globalization of trade and relatively free movement of financial assets, risk management through derivatives products has become a necessity in India also, like in other developed and developing countries. As Indian businesses become more global in their approach, evolution of a broad based, active and liquid forex derivatives markets is required to provide them with a spectrum of hedging products for effectively managing their foreign exchange exposures.

The global market for derivatives has grown substantially in the recent past. The Foreign Exchange and Derivatives Market Activity survey conducted by Bank for International Settlements (BIS) points to this increased activity. The total estimated notional amount of outstanding OTC con-

tracts increasing to $111 trillion at end-December 2001 from $94 trillion at end-June 2000. This growth in the derivatives segment is even more substantial when viewed in the light of declining activity in the spot foreign exchange markets. The turnover in traditional foreign exchange markets declined substantially between 1998 and 2001. In April 2001, average daily turnover was $1,200 billion, compared to $1,490 billion in April 1998, a 14 percent decline when volumes are measured at constant exchange rates. Whereas the global daily turnover during the same period in foreign exchange and interest rate derivative contracts, including what are considered to be "traditional" foreign exchange derivative instruments, increased by an estimated 10 percent to $1.4 trillion.

2 Evolution of the forex derivatives market in India

This tremendous growth in global derivative markets can be attributed to a number of factors. They reallocate risk among financial market participants, help to make financial markets more complete, and provide valuable information to investors about economic fundamentals. Derivatives also provide an important function of efficient price discovery and make unbundling of risk easier.

In India, the economic liberalization in the early nineties provided the economic rationale for the introduction of FX derivatives. Business houses started actively approaching foreign markets not only with their products but also as a source of capital and direct investment opportunities. With limited convertibility on the trade account being introduced in 1993, the environment became even more conducive for the introduction of these hedge products. Hence, the development in the Indian forex derivatives market should be seen along with the steps taken to gradually reform the Indian financial markets. As these steps were largely instrumental in the integration of the Indian financial markets with the global markets.

3 Developments in the capital inflows

Since early nineties, we are on the path of a gradual progress towards capital account convertibility. The emphasis has been shifting away from debt creating to non-debt creating inflows, with focus on more stable long term inflows in the form of foreign direct investment and portfolio investment.

In 1992 foreign institutional investors were allowed to invest in Indian equity & debt markets and the following year foreign brokerage firms were also allowed to operate in India. Non Resident Indians (NRIs) and Overseas Corporate Bodies (OCBs) were allowed to hold together about 24 percent of the paid up capital of Indian companies which was further raised to 40 percent in 1998. In 1992, Indian companies were also encouraged to issue ADRs/GDRs to raise foreign equity, subject to rules for repatriation and end use of funds. These rules were further relaxed in 1996 after being tightened in 1995 following a spurt in such issues. Presently, the raising of ADRs/GDRs/FCCBs is allowed through the automatic route without any restrictions.

FDI norms have been liberalized and more and more sectors have been opened up for foreign investment. Initially, investments up to 51 percent were allowed through the automatic route in 35 priority sectors. The approval criteria for FDI in other sectors was also relaxed and broadened. In 1997, the list of sectors in which FDI could be permitted was expanded further with foreign investments allowed up to 74 percent in nine sectors. Ever since 1991, the areas covered under the automatic route have been expanding. This can be seen from the fact that while till 1992 inflows through the automatic route accounted for only 7 percent of total inflows, this proportion has increased steadily with investments under the automatic route accounting for about 25 percent of total investment in India in 2001.

In 1991, there were also modifications to the limits for raising ECBs to avoid excessive dependence on borrowings that was instrumental for 1991 BoP crises. In March 1997, the list of sectors allowed to raise ECBs was expanded; limits for individual borrowers were raised while interest rate limits were relaxed and restrictions on the end-use of the borrowings largely eliminated. In 2000, the Indian Government permitted the raising of fresh ECBs for an amount up to US$ 50 million and refinancing of all existing ECBs through the automatic route. Corporates no longer had to seek prior approval from the Ministry of Finance for fresh ECBs of up to US$ 50 million and for refinancing of prevailing ECBs.

4 Developments in capital outflows

Thus, while the inflows from abroad have been freed to a large extent, outflows associated with these inflows like interest, profits, sale proceeds

and dividend etc are completely free of any restriction. All current earnings of NRIs in the form of dividends, rent etc has been made fully repatriable.

But convertibility in terms of outflows from residents, however, still remains more restricted although these restrictions are gradually reduced. Residents are not allowed to hold assets abroad. However, direct investment abroad is permissible through joint ventures and wholly owned subsidiaries.

An Indian entity can make investments in overseas joint ventures and wholly owned subsidiaries to the tune of US$ 100 million during one financial year under the automatic route. At the same time investments in Nepal and Bhutan are allowed to the tune of INR 3.50 billion in one financial year. Units located in Special Economic zones (SEZs) can invest out of their balances in the foreign currency account. Such investments are however subject to an overall annual cap of US$ 500 million. Indian companies are also permitted to make direct investments without any limit out of funds raised through ADRs/GDRs. Recently mutual funds have been allowed to invest in rated securities of countries with convertible currencies within existing limits.

A deep and liquid market for the underlying is necessary for the development of an efficient derivative market. The easy movement of capital between different markets and currencies is essential to eliminate pricing discrepancies and efficient functioning of the markets. The steps mentioned above to increase convertibility on the capital account and the current account aided the process of integration of the Indian financial markets with international markets. These reforms set in motion the process of the development of the forex derivatives markets by gradually opening the Indian financial markets and developing the foreign exchange & the money markets.

The forex derivative products that are available in Indian financial markets can be sectored into three broad segments viz. forwards, options, currency swaps. We take a look at all of these segments in detail:

5 Rupee Forwards

An important segment of the forex derivatives market in India is the Rupee forward contracts market. This has been growing rapidly with increasing participation from corporates, exporters, importers, banks and FIIs. Till

February 1992, forward contracts were permitted only against trade related exposures and these contracts could not be cancelled except where the underlying transactions failed to materialize. In March 1992, in order to provide operational freedom to corporate entities, unrestricted booking and cancellation of forward contracts for all genuine exposures, whether trade related or not, were permitted. Although due to the Asian crisis, freedom to re-book cancelled contracts was suspended, which has been since relaxed for the exporters but the restriction still remains for the importers.

5.1 RBI Regulations

The exposures for which the rupee forward contracts are allowed under the existing RBI notification for various participants are as follows:

Residents:

- Genuine underlying exposures out of trade/business
- Exposures due to foreign currency loans and bonds approved by RBI
- Receipts from GDR issued
- Balances in EEFC accounts

Foreign Institutional Investors:

- They should have exposures in India .
- Hedge value not to exceed 15 percent of equity as of 31 March 1999 plus increase in market value/ inflows

Non-resident Indians/Overseas Corporates:

- Dividends from holdings in a Indian company
- Deposits in FCNR and NRE accounts
- Investments under portfolio scheme in accordance with FERA or FEMA

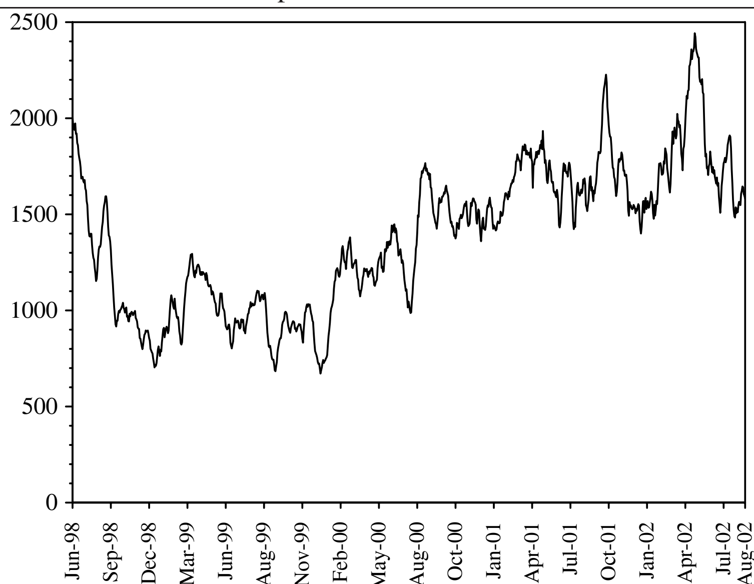
The forward contracts are also allowed to be booked for foreign currencies (other than Dollar) and Rupee subject to similar conditions as mentioned above. The banks are also allowed to enter into forward contracts to manage their assets - liability portfolio.

The cancellation and re-booking of the forward contracts is permitted only for genuine exposures out of trade/business upto 1 year for both exporters and importers, whereas in case of exposures of more than 1 year, only the exporters are permitted to cancel and re-book the contracts. Also another restriction on booking the forward contracts is that the maturity of the hedge should not exceed the maturity of the underlying transaction.

5.2 Market Liquidity

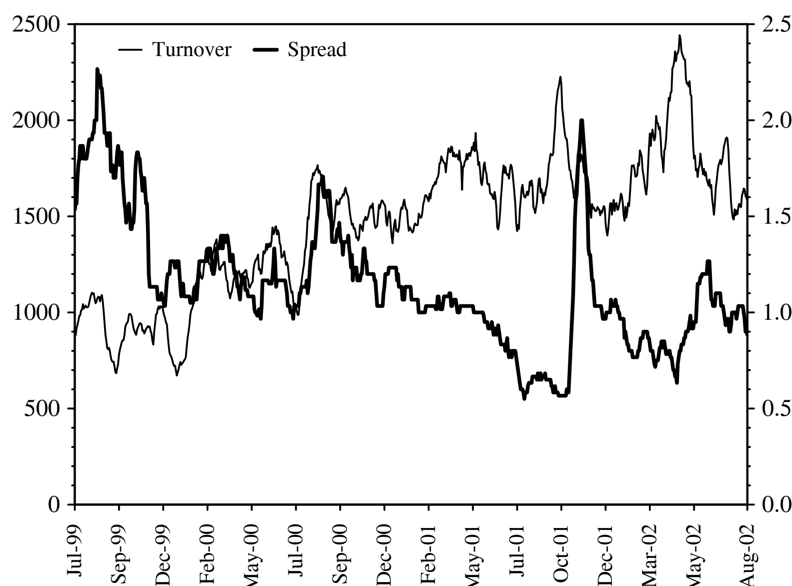
The liquidity in the Indian forwards market has been steadily improving as can be seen from the turnover and the market impact cost. The fortnightly average of total turnover of the forwards market from June 1998 to June 2002 has been plotted in Figure 10.1. A quick look at the figure illustrates the impact of the regulation restricting corporates to freely cancel and re-book the forward contracts on the turnover in the forwards market. The forwards volume shrank considerably around September 1998 and remained low till February 2000 and since then have been growing again.

Figure 10.1 Turnover of Rupee Forwards Market



Market impact cost in the forwards market can be analyzed from the bid-offer spread in the market. The fortnightly average of bid-offer spread for the 6 month forwards along with the daily market turnover from June 1999 to July 2002 have been plotted in Figure 10.2. It is evident that the spread for the 6 month forwards have decreased from a high of 2 paise in 1999 to the level of around 0.5 paise today. One interesting observation from this graph is that the bid offer spread has traced the movement of the turnover but in opposite direction. The spread has been decreasing considerably with the increase in total turnover of the forwards market.

Figure 10.2 6 month forwards bid-offer spread

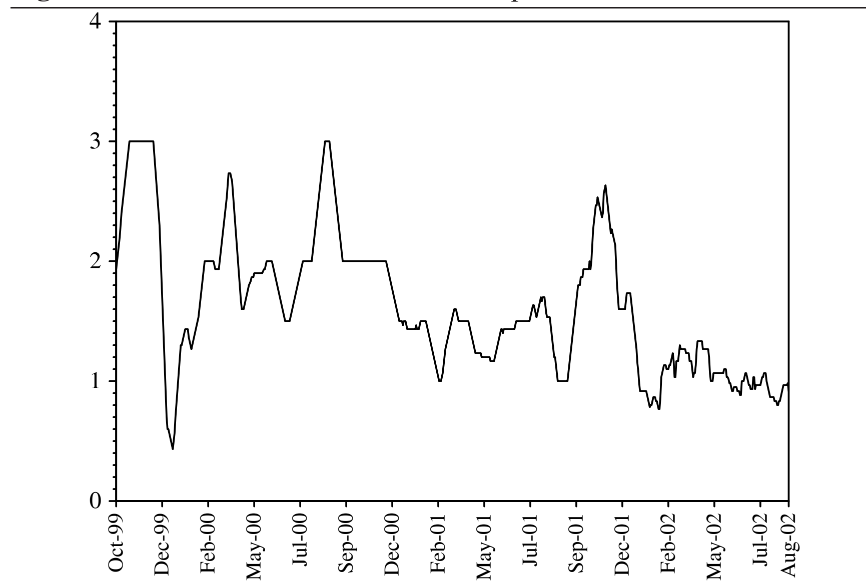


Similarly, the average of bid-offer spread for the 12-month forwards for the same period have been plotted in Figure 10.3. 12 month forwards spread has also come down from 3 paise to 1 paise. Hence, it can be said that the cost of transaction in the forward market has decreased substantially thus making hedging easier for the corporates.

5.3 Some impediments

One of the major issues that need to be addressed in the forward market relates to depth and liquidity. The forward market in our country was active only up to six months, where two-way quotes are available. As a result of the initiatives of the RBI, the maturity profile has elongated and now there are quotes available up to one year. Understandably, in most of markets where there are restrictions on capital movements, liquidity across the spectrum as seen in the developed markets, proves to be difficult at least in the early stages of development of the market. The question that we would need to address is within these constraints, how can the liquidity improve?

Figure 10.3 12 month forwards bid-offer spread



The liquidity in the Indian forwards market is mainly for the end maturity contracts, where the bid-offer spread is also low. Standard maturity contracts like for 3 months and 6 months are not quoted in the inter bank markets. Hence, the cost of entering into a standard maturity contract is much higher as compared to a month end contract. Other eccentricities such as the tenuous links with the interest rate differential still prevail in a market driven primarily by supply/demand. The forward premia has been gradually aligning to fundamentals of "interest rate parity", a process that should accelerate with increased convertibility on the capital account. One of the drivers for this could be that the integration between the domestic market and the overseas market has been facilitated now by allowing ADs to borrow from their overseas offices and invest funds in overseas money market up to 25 percent of Tier I capital.

5.4 Cross Currency Forwards

Cross currency forwards are also used to hedge the foreign currency exposures, especially by some of the big Indian corporates. The regulations for the cross currency forwards are quite similar to those of Rupee forwards, though with minor differences. For example, a corporate having

underlying exposure in Yen, may book forward contract between Dollar and Sterling. Here even though its exposure is in Yen, it is also exposed to the movements in Dollar vis a vis other currencies. The regulations for re-booking and cancellation of these contracts are also relatively relaxed. The activity in this segment is likely to increase with increasing convertibility of the capital account.

5.5 Outlook: Currency Futures

As mentioned earlier, Indian forwards market is relatively illiquid for the standard maturity contracts as most of the contracts traded are for the month ends only. One of the reasons for the market makers' reluctance to offer these contracts could be the absence of a well-developed term money market. It could be argued that given the future like nature of Indian forwards market, currency futures could be allowed.

Some of the benefits provided by the futures are as follows:

- Currency futures, since they are traded on organized exchanges, also confer benefits from concentrating order flow and providing a transparent venue for price discovery, while over-the-counter forward contracts rely on bilateral negotiations.
- Two characteristics of futures contract- their minimal margin requirements and the low transactions costs relative to over-the-counter markets due to existence of a clearinghouse, also strengthen the case of their introduction.
- Credit risks are further mitigated by daily marking to market of all futures positions with gains and losses paid by each participant to the clearinghouse by the end of trading session.
- Moreover, futures contracts are standardized utilizing the same delivery dates and the same nominal amount of currency units to be traded. Hence, traders need only establish the number of contracts and their price.
- Contract standardization and clearing house facilities mean that price discovery can proceed rapidly and transaction costs for participants are relatively low.

However given the status of convertibility of Rupee whereby residents cannot freely transact in currency markets, the introduction of futures may have to wait for further liberalization on the convertibility front.

6 Options

6.1 Cross currency options

The Reserve Bank of India has permitted authorised dealers to offer cross currency options to the corporate clients and other interbank counter parties to hedge their foreign currency exposures. Before the introduction of these options the corporates were permitted to hedge their foreign currency exposures only through forwards and swaps route. Forwards and swaps do remove the uncertainty by hedging the exposure but they also result in the elimination of potential extraordinary gains from the currency position. Currency options provide a way of availing of the upside from any currency exposure while being protected from the downside for the payment of an upfront premium.

6.2 RBI Regulations

These contracts were allowed with the following conditions:

- These currency options can be used as a hedge for foreign currency loans provided that the option does not involve rupee and the face value does not exceed the outstanding amount of the loan, and the maturity of the contract does not exceed the un-expired maturity of the underlying loan.
- Such contracts are allowed to be freely re-booked and cancelled. Any premia payable on account of such transactions does not require RBI approval
- Cost reduction strategies like range forwards can be used as long as there is no net inflow of premia to the customer.
- Banks can also purchase call or put options to hedge their cross currency proprietary trading positions. But banks are also required to fulfill the condition that no 'stand alone' transactions are initiated.
- If a hedge becomes naked in part or full owing to shrinking of the portfolio, it may be allowed to continue till the original maturity and should be marked to market at regular intervals.

There is still restricted activity in this market but we may witness increasing activity in cross currency options as the corporates start understanding this product better.

6.3 Outlook: Rupee currency options

Corporates in India can use instruments such as forwards, swaps and options for hedging cross-currency exposures. However, for hedging the USD-INR risk, corporates are restricted to the use of forwards and USD-INR swaps.

Introduction of USD-INR options would enable Indian forex market participants manage their exposures better by hedging the dollar-rupee risk. The advantages of currency options in dollar rupee would be as follows:

- Hedge for currency exposures to protect the downside while retaining the upside, by paying a premium upfront. This would be a big advantage for importers, exporters (of both goods and services) as well as businesses with exposures to international prices. Currency options would enable Indian industry and businesses to compete better in the international markets by hedging currency risk.
- Non-linear payoff of the product enables its use as hedge for various special cases and possible exposures. e.g. If an Indian company is bidding for an international assignment where the bid quote would be in dollars but the costs would be in rupees, then the company runs a risk till the contract is awarded. Using forwards or currency swaps would create the reverse positions if the company is not allotted the contract, but the use of an option contract in this case would freeze the liability only to the option premium paid upfront.
- The nature of the instrument again makes its use possible as a hedge against uncertainty of the cash flows. Option structures can be used to hedge the volatility along with the non-linear nature of payoffs.
- Attract further forex investments due to the availability of another mechanism for hedging forex risk.

Hence, introduction of USD-INR options would complete the spectrum of derivative products available to hedge INR currency risk.

6.4 Exotic options

Options being over the counter products can be tailored to the requirements of the clients. More sophisticated hedging strategies call for the use of complex derivative products, which go beyond plain vanilla options.

These products could be introduced at the inception of the Rupee vanilla options or in phases, depending on the speed of development of the market as well as comfort with competencies and Risk Management Systems of market participants.

Some of these products are mentioned below:

- Simple structures involving vanilla European calls and puts such as range-forwards, bull and bear spreads, strips, straps, straddles, strangles, butterflies, risk reversals, etc.
- Simple exotic options such as barrier options, Asian options, Lookback options and also American options
- More complex range of exotics including binary options, barrier and range digital options, forward-start options, etc

Some of the above-mentioned products especially the structure involving simple European calls and puts may even be introduced alongwith the options itself.

7 Other derivatives products

7.1 Foreign currency – rupee swaps

Another spin-off of the liberalization and financial reform was the development of a fledgling market in FC-RE swaps. A fledgling market in FC-RE swaps started with foreign banks and some financial institutions offering these products to corporates. Initially, the market was very small and two way quotes were quite wide, but the market started developing as more market players as well as business houses started understanding these products and using them to manage their exposures. Corporates started using FC-RE swaps mainly for the following purposes:

- Hedging their currency exposures (ECBs, forex trade, etc.)
- To reduce borrowing costs using the comparative advantage of borrowing in local markets (Alternative to ECBs – Borrow in INR and take the swap route to take exposure to the FC currency)

The market witnessed expanding volumes in the initial years with volumes upto US$ 800 million being experienced at the peak. Corporates were actively exploring the swap market in its various variants (such as principal only and coupon only swaps), and using the route not only to

create but also to extinguish forex exposures. However, the regulator was worried about the impact of these transactions on the local forex markets, since the spot and forward markets were being used to hedge these swap transactions.

So the RBI tried to regulate the spot impact by passing the below regulations:

- The authorized dealers offering swaps to corporates should try and match demand between the corporates
- The open position on the swap book and the access to the interbank spot market because of swap transaction was restricted to US$ 10 million
- The contract if cancelled is not allowed to be re-booked or re-entered for the same underlying.

The above regulations led to a constriction in the market because of the one-sided nature of the market. However, with a liberalizing regime and a buildup in foreign exchange reserves, the spot access was initially increased to US$ 25 million and then to US$ 50 million. The authorized dealers were also allowed the use of currency swaps to hedge their asset-liability portfolio. The above developments are expected to result in increased market activity with corporates being able to use the swap route in a more flexible manner to hedge their exposures. A necessary pre-condition to increased liquidity would be the further development and increase in participants in the rupee swap market (linked to MIFOR) thereby creating an efficient hedge market to hedge rupee interest rate risk.

7.2 Foreign currency derivatives

There is some activity in other cross currency derivatives products also, which are allowed to be used to hedge the foreign currency liabilities provided these were acquired in accordance with the RBI regulations.

The products that may be used are:

- Currency swap
- Coupon Swap
- Interest rate swap
- Interest rate cap or collar (purchases)
- Forward Rate Agreement (FRA) contract

However the regulations require that:

- The contract should not involve rupee
- The notional principal amount of the hedge does not exceed the outstanding amount of the foreign currency loan, and
- The maturity of the hedge does not exceed the un-expired maturity of the underlying loan

7.3 Outlook: Some proposed products

Finally some innovative products may be introduced which satisfy specific customer requirements. These are designed from the cash and derivative market instruments and offer complex payoffs depending on the movement of various underlying factors. Some of the examples of these products are provided below:

- Accrual forward: With an accrual forward, for each of the daily fixings up to expiry that spot remains within the range, the holder gets longer 1 unit of USD/INR at the Forward Rate. For example, for each of the daily fixings up to expiry that spot remains within the range let us say 48.50 to 48.60, the holder accrues 1 unit at the forward rate of 48.56.
- Enhanced accrual forward: Enhanced accrual forward is similar to accrual forward, but this contract has two forward rates, which apply for different ranges. For example, Accrue long 1 unit per fixing at forward rates of 48.56 (Range 1 - 48.50 to 48.60) or Long 1 unit per fixing at 48.47(Range 2- below 48.50). So for each of the daily fixings up to expiry that spot remains within the 48.50 – 48.60 range the holder accrues 1 unit at 48.56. For each of the daily fixings up to expiry that spot is below 48.50 the holder accrues 1 unit at 48.47. If spot is ever above 48.60 then nothing will be accrued on that day. Note that the two ranges do not overlap, so the holder will never accrue more than 1 unit per fixing.
- Higher yield deposits: This product can be developed to offer a comparable higher yield than on a traditional Rupee money market deposit.

  Exercise price: 48.80 per 1 US$
  Instrike: 48.70 per 1 US$

There are three possible scenarios at maturity:

- If spot never trades at or beyond the instrike before expiration, the investment plus interest at certain rate ‘r’ will be paid in rupee.
- If spot trades at or beyond the instrike before expiration and closes above the exercise price, the investor is paid the invested capital plus interest ‘r’ paid in rupee.
- But if spot trades at or beyond the instrike before expiration and closes below the exercise price, the investor is paid in USD. The sum paid in USD corresponds to the amount of invested capital plus interest of ‘r’ converted at the exercise price.

8 Conclusion

The Indian forex derivatives market is still in a nascent stage of development but offers tremendous growth potential. The development of a vibrant forex derivatives market in India would critically depend on the growth in the underlying spot/forward markets, growth in the rupee derivative markets along with the evolution of a supporting regulatory structure. Factors such as market liquidity, investor behavior, regulatory structure and tax laws will have a heavy bearing on the behavior of market variables in this market.

Increasing convertibility on the capital account would accelerate the process of integration of Indian financial markets with international markets. Some of the necessary preconditions to this as suggested by the Tarapore committee report are already being met. Increasing convertibility does carry the risk of removing the insularity of the Indian markets to external shocks like the South East Asian crisis, but a proper management of the transition should speed up the growth of the financial markets and the economy. Introduction of derivative products tailored to specific corporate requirements would enable corporate to completely focus on its core businesses, de-risking the currency and interest rate risks while allowing it to gain despite any upheavals in the financial markets.

Increasing convertibility on the rupee and regulatory impetus for new products should see a host of innovative products and structures, tailored to business needs. The possibilities are many and include INR options, currency futures, exotic options, rupee forward rate agreements, both rupee and cross currency swaptions, as well as structures composed of the above to address business needs as well as create real options. A further devel-

opment in the derivatives market could also see derivative products linked to commodities, weather, etc which would add great value in an economy where a substantial section is still agrarian and dependent on the vagaries of the monsoon.