

Unevaluated potential blowout losses of Indian corporates on exotic forex derivatives

The same exotic options exploding today had been boosting bottomlines of Indian corporate houses consistently in previous quarters. Trading in these options has become a popular tool for profit management in these companies' treasuries. We spoke to treasuries of foreign and private banks, and a number of companies, to understand the issue. The exotic options entered into require a strong understanding of highly correlated international macroeconomics. Understanding the possible blowout risks is difficult, and in many cases, hard to quantify. This gives rise to the undesirable position, where the best case profit is known, while the worst case loss is unknown, possibly even to the market maker. So, what are we saying? Possibly, that the worst case scenarios were difficult to envision upfront and quantify.

Most popular - Yen ECB or CHF swap trap

High interest rates and an appreciating INR were looking to severely impact earnings and became the genesis of today's problem. The interest rate on a partially hedged yen-denominated ECB was as low as 6%, as against 12% on a similar INR borrowing. The CHF swap - a benefit of about 2.75% could be realised by swapping INR loans into CHF loans. Truly speculative - short-term structures were entered into with high payoffs and high blowouts in the belief that the market was predictable in the short term. USD/INR strips - long forward premiums were averaged to yield better export realisations and once these proved insufficient, additional value was derived by selling blowout options. We have discussed all these structures in the note in greater detail.

What has gone wrong? - The currency movements that are hurting the companies

Based on historical trends, USD/JPY at 110 and USD/CHF at 1.10 became sacred cows, which the entire market was willing to bet on. However, in the last three months CHF and JPY broke below these levels and have been making historical highs every second day. The embedded protections in many cases have collapsed, and some of the options that were sold have exploded; however, the options are still live and will not expire for another six months on average. If these levels hold till expiry or worsen, will the companies have much to worry about, so everything is notional, right? Wrong. Because the currency movements are killing them softly by way of MTM margin calls.

MTM - Mark-to-market vs. mark-to-model

Mark-to-market positions on the exotic structures can only be estimated using mark-to-model approaches. This creates a problem, as the companies cannot track their own positions on a daily basis. Complicating the situation further is the fact that the payoffs are non-linear, making it impossible to predict the 'loss' probabilities at various currency levels at the beginning of the transaction. The levels at which the blowout barriers were placed were beyond historical precedent. USD/CHF had not traded below 1.10 in over 20 years and USD/JPY had remained strong at ~110 consistently.

Potential Red Flags - How to tell if the company in front of you might be suffering?

The companies on the watch list would show one or more of these characteristics - Forex receivables, but maintaining margins; high extra-ordinary gains/other income/forex gains; interest costs at extant or lower levels; dramatic increase in cash with large fixed deposits maintained with the bank; and uncharacteristic reduction in working capital borrowings. RBI and accounting bodies are pressing for disclosure of MTM losses by corporates, which is not mandatory as per existing Indian GAAP.

For example

A simplistic explanation of the logic of high leverage derivatives (HLD) USD/INR has depreciated from INR 46.50/USD to INR 40/USD. If a majority of a company's revenues are from exports, it translates into an 11% drop in gross margins, assuming the rest of the P&L is in INR. To restore the margins, an export hedging structure has to be constructed that gives a benefit of 11% over-and-above a risk neutral hedge. The only way to get this benefit is to leverage the position and enter into a high-leverage derivative (HLD).

$$\text{Cost (HLD)} = \text{Cost (Hedge)} - \text{Cost (Payout)}$$

Assuming that the bank makes no money on the transaction, $\text{cost(HLD)} = 0$

Then,

$$\text{Cost (hedge)} = \text{Cost (payout)}$$

Cost of a hedge is proportional to the benefit one can realise from the hedge and the probability that the hedge will be live at the time of exercise, hence:

$$\text{Benefit (hedge)} \times \text{Probability (hedge)} = \text{Amount (payout)} \times \text{Probability (payout)}$$

Let us say, a company wants to sell USD 1 mn @ INR 46.50 every month for five years and the average forward price is INR 41.50. $\text{Benefit (hedge)} = \text{INR } 5/\text{USD} \times 1 \text{ mn USD} \times 60 \text{ months} = \text{INR } 300 \text{ mn}$. Given that the hedge is not contingent on any market parameter, $\text{probability (hedge)} = 1$.

Now, let's say the payout is to happen only if USD/CHF goes below 1.10. In July 2007, with USD/CHF the lowest it has ever been in the last 20 years (1.11), made the payout situation a 3-sigma event with a probability of less than 4.5%. Doing the math:

$$\text{INR } 300 \text{ mn} \times 1 = \text{Amount (payout)} \times 4.5\%$$

$$\text{Amount (payout)} = \text{INR } 6.66 \text{ bn.}$$

In the above example, the company would be actually risking INR 6.66 bn (which it does not realise in the beginning) in order to save/earn INR 300 mn.

What would it mean for banks and corporate India

Based on our discussions with the treasuries of foreign and private banks, and companies (with positions), we believe MTM losses (due to exotic derivatives) could be ~USD 4-5 bn. Given the prominence of foreign banks in these products, roughly two-third of this exposure is likely to be with foreign banks, and the remaining with Indian banks. Large corporate houses, with the ability to feed MTM margin calls, are likely to account for ~70-80% of these losses; the small and medium enterprises (SMEs) will incur the remaining.

The jury is still out on who would finally bear the loss (legally), given the current debate on "inappropriateness of the structure". Banks' managements have, however, strongly

maintained that MTM is recoverable. From our discussions with industry participants, we believe, banks are likely to take hits on SME clients, while large corporates will fulfill most of their MTM commitments. Considering the forex revenues earned by private banks, ICICI Bank, Kotak, Axis Bank, HDFC Bank, and Yes Bank are likely to be impacted, though in varying degrees. Large state-owned banks like State Bank of India and Punjab National Bank, which have taken credit exposures on clients for products structured by their allied foreign banks, are also likely to be affected by MTM losses.

We believe, due to the blowout of exotic structures, incremental revenues from the derivative products will substantially reduce, going forward, affecting the profitability of private banks.

Triggers to watch out for are MTM loss disclosures by corporates (most likely forced by Institute of Chartered Accountants of India); stern margin calls by banks, which may lead to litigations; and RBI needing additional disclosures.

Unevaluated potential blowout losses of Indian corporates on exotic forex derivatives

Hexaware (HEXW IN), on November 26, created a provision for USD 20–25 mn to reserve for potential losses on exotic forex options. For all practical purposes, this might just be a teaser for an entire show to come over the coming months.

Today, companies in India of all sizes across industries are watching the USD/JPY (dollar–yen) and USD/CHF (dollar–Swiss franc) charts on a daily basis. While there is no scientific way to quantify the risk, as per our discussions with various industry participants, MTM losses of corporate India under forex derivatives could be around USD 4 bn.

Given that very few of these companies have any transaction in JPY or CHF, why have these exotic option structures found such favour with the otherwise astute finance teams? The answer is:

- The same exotic options exploding today had been boosting bottomlines for these companies consistently in the previous quarters. Trading in these options has become a popular tool for profit management in these companies' treasuries.

The exotic options entered into require a strong understanding of highly correlated international macro-economics. Understanding the possible blowout risks is difficult and in many cases, difficult to quantify. This gives rise to the undesirable position where the best case profit is known, while the worst case loss is unknown, possibly even to the market maker.

Mark-to-market positions on the exotic structures can only be estimated through mark-to-model approaches. This creates a problem, as the companies cannot track their own positions on a daily basis. Complicating the situation further is the fact that the payoffs being non-linear, it is impossible to predict the 'loss' probabilities at various currency levels at the beginning of the transaction.

The levels at which the blowout barriers were placed were beyond historical precedent. USD/CHF had not traded below 1.10 in over 20 years and USD/JPY had remained strong at ~110 consistently.

So, what are we saying? Possibly, that the worst case scenarios were difficult to envision upfront and quantify. To begin to appreciate the structures entered, we need to delve into the motivations of the companies to take up these positions in the first place.

Genesis – High interest rates and an appreciating INR were looking to severely impact earnings

Indian companies were faced with a two-pronged problem over the past years that were looking to adversely affect their financials:

- Unprecedented appreciation of INR against USD
- Increase in domestic interest rates

These two factors, though distinct in their effect, are closely tied in their causes. With USD tending to depreciate against most Asian currencies, INR was no exception. However, to maintain the strong focus that India has on promoting exports, the Reserve Bank of India (RBI) worked to support the USD/INR pair, whenever it looked to depreciate. With the gargantuan inflows India received over 2005-2007 by way of FDI, ECB, and FII inflows, this proved to be expensive. Every time a USD/INR down move was supported, RBI bought dollars from the market by paying with INR, which dramatically increased the monetary liquidity in the system. This increased liquidity started to lead towards runaway inflation that threatened the economy at large.

In response, RBI consistently prodded the interest rates in the market higher over the later part of 2006-07. By beginning 2007, on an average, corporates were paying 3.5% higher on their borrowing programs than in 2005.

All through this, offshore dollars relentlessly flowed into the Indian market. With the interest rates having already increased sharply and the sword of inflation still hanging over their heads, there was little option left for the regulators to support the dollar. USD went into a free fall against the rupee and started hurting those companies dependant on good forex rates for their INR topline.

To counter the losses being suffered on the above market situations, four breeds of products were developed in the market:

- ECBs denominated in JPY, to be hedged with barrier options (to access lower JPY interest rates).
- Cross currency swaps from INR loans into CHF, again hedged with barrier options (to access lower CHF interest rates).
- USD/INR export hedging 'strips' to allow the corporate to sell their export receivables at rates significantly higher than market. These were in some cases, financed by the companies selling back high-value USD/CHF & USD/JPY blowout risk options with a 'perceived' low probability of getting exercised.
- Purely speculative products that allowed various payout strategies, depending on short-term calls on the international currency markets. A large part of these were breakout or mean reverting strategies encouraged by the low volatilities prevalent in the international currency markets earlier this year.

The yen ECB - The interest rate on a partially hedged ECB was as low as 6%, as against 12% on a similar INR borrowing

A company will raise funds through an ECB with an average tenor of three years at a cost of LIBOR +3%. The choice of currency is left to the company with a strong justification given for denominating the loan in JPY. The underlying risk on the loan is that, since the borrowing is in JPY, the loan has to be repaid in JPY for which the company will have to pay INR to buy JPY at the then prevalent rate.

Table 1: Interest rate differentials in INR and JPY/CHF created cost saving opportunities

	INR loan	USD ECB	JPY ECB
Base cost of funds (3-year average tenor)	9% (FD interest rate used as a surrogate for cost of funds).	5% (3-year USD IRS)	1.5% (3-year JPY IRS)
Risk premium	3%	3%	3%
Final interest rate	12%	8%	4.5%
Open risks	None	Repayments in USD. USD/INR conversion risk un-hedged.	Repayments in JPY. USD/JPY and USD/INR conversion risk un-hedged.

IRS: Interest Rate Swap

If one purchases hedges for the open risks through forward covers (fully hedged), the realised interest rates work out at par. i.e. cost of a JPY/INR 3-year average tenor forward cover is 7.5%. With a depreciating USD/INR and a possible natural hedge through export receivables, most companies preferred to leave the USD/INR leg open.

Cost of a USD/JPY forward cover by the same logic is 3.5%. However, if this leg is hedged with an option costing only 1.5% (to arrive at target loan cost of 6%), there are two benefits illustrated to the company:

- Participation (full or partial) in favourable movements in USD/JPY.
- Protection such that USD/JPY risk is hedged as long as USD/JPY does not depreciate to a much lower knockout level (says USD/JPY = 100).

Various combinations of the two benefits are packaged to suit the company's appetite and a loan of 6% cost is designed with only one predominant risk - USD/JPY must not go to the knockout level during the loan tenor.

The CHF Swap - A benefit of ~2.75% could be realised by swapping INR loans into CHF loans

A company with an existing INR loan could re-denominate the loan into CHF and receive the 'carry' (part of the differential between the CHF LIBOR and INR MIFOR). These swaps were typically of a tenor of 1-2 years and completely off-balance sheet.

Again, the underlying risk on the swap was that now a payment had to be made in CHF, for which, the company will have to pay INR to buy CHF at the then prevalent rate. This risk is partially hedged with an embedded option with two benefits illustrated to the company:

- Participation (full or partial) in favourable movements in USD/CHF.
- Protection such that USD/CHF risk is hedged as long as USD/CHF does not touch a knockout level (says USD/CHF = 1.10).

This structure was primarily resting on the premise that USD/CHF had not traded at 1.10 in 20 years, and hence, was a level for significant global option congestion. Again barring the blowout risk of USD/CHF defying history, the structure was sound.

USD/INR strips - Long forward premiums were averaged to yield better export realisations and once these proved insufficient , additional value was derived by selling blowout options.

As the USD/INR spot slipped from INR 46+ levels down to INR 42, a lot of companies found that their benchmark realisation rates were being busted. To maintain the realisation, some companies entered into forward strips where they contracted to sell a fixed number of dollars every month for the next five years at a higher rate than spot (say INR 44). This was possible by averaging out the forward premiums i.e. subsidising the closer forwards by the higher longer forwards. For instance, if 5-year forward premium was INR 5 per USD, then one can have an average higher realisation of INR 2.5.

The risk on this structure is that if USD/INR appreciates to above INR 44, the company would have to convert its USD at INR 44 instead of a higher spot rate. The blowout risk on the structure devolves if USD/INR goes above INR 50 in the next five years.

This was an acceptable risk for most companies and the market was flooded with such deals. As a result, the forward premiums contracted such that these 'par' forward structures started yielding only ~INR 42.50, making it unviable.

At this stage, companies had to resort to complex structures to raise the levels higher. The companies sold options in CHF and JPY to finance these higher realisations for their receivables. Once again, the structures would be protected as long as USD/CHF does not trade below 1.10 consistently or USD/JPY below 105 or so.

Truly speculative - Short-term structures were entered into with high payoffs and high blowouts in the belief that the market was predictable in the short term.

A segment of the market entered into complex exotics with a life span of 1 year or less. These had no direct correlation to their books, except that underlying exposures existed, albeit in a different currency. The payoff was received as single barrier knockouts, monthly accruals, or in extreme cases as geometrically increasing monthly realisations.

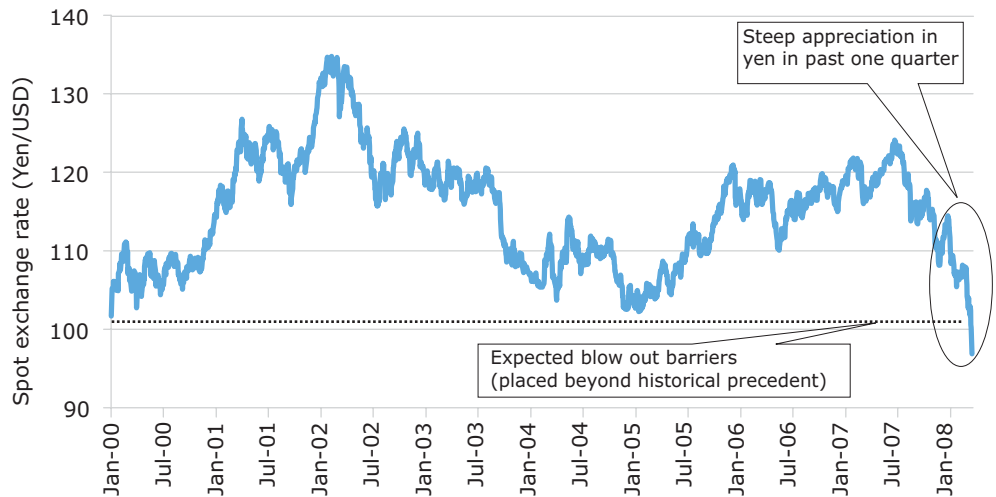
Most of these structures relied on the currencies remaining within stable ranges or at worst, not breaching historical extremes definitively. The logic of these structures were simple, get in, make money, and get out before the markets move. With low volatilities in the currency market holding sway, the predictability was perceived high in the extreme short term and the speculative plays relied on a low likelihood of sudden dramatic movements.

What has gone wrong? - The currency movements that are hurting the companies

Over the past few years, companies have aggressively entered into derivative contracts to generate lower interest costs. These have given annual benefits of upwards of 2% in interest cost reductions and created an impression of a strong understanding of the currency markets. USD/JPY at 110 and USD/CHF at 1.10 became sacred cows, which the entire market was willing to bet over.

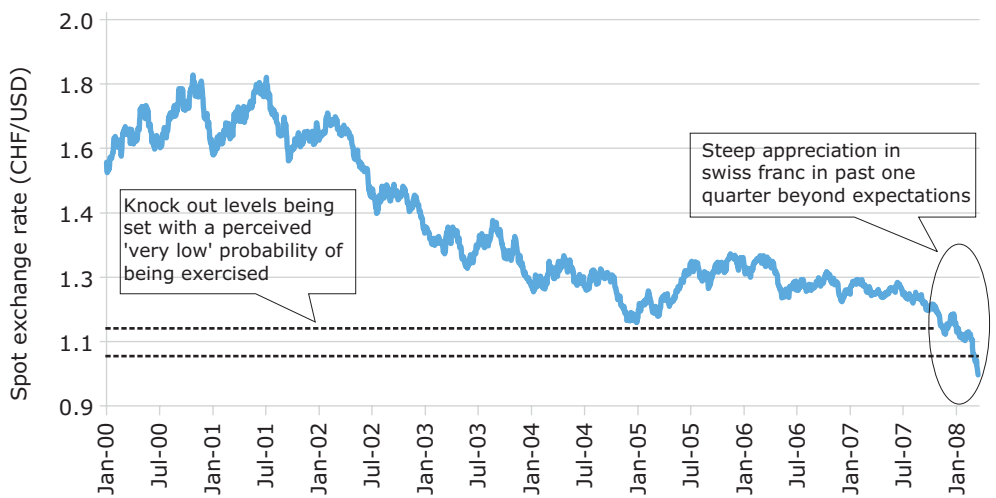
USD/CHF in the last month broke below 1.10, USD/JPY broke below 110, and EUR/USD and GBP/USD have been making historical highs every second day. The embedded protections in a lot of the cases have collapsed, and some sold options have exploded; however the options are still live and will not expire for the next six months on an average. Only if these levels hold till expiry or worsens, will the companies have much to worry about, everything is notional, right? Wrong. Because the currency movements are killing them softly by way of MTM margin calls.

Chart 1: USD/CHF movements



Source: Federal reserve

Chart 2: USD/JPY movements



Source: Federal reserve

MTM - Mark-to-market vs. mark-to-model

The chief market makers in the exotic options markets are the banks. The credit approval processes in banks allow for off-balance sheet exposures on an unsecured basis against a maximum mark-to-market position. To stress the point, exposures under the companies' options being carried on the banks' books are unsecured and supposed to be limited to a maximum of the MTM limit preset for the client.

In case, the companies' option book MTM with the bank exceeds the prescribed limit, a margin call is made and cash margin has to be provided. Here's the catch. How does one calculate the mark-to-market on an exotic option? The intrinsic value is calculated by way of the actual loss if the structure was expiring today. The time value of the structure is calculated by way of models, most of which are proprietary and opaque to all, except to the market makers based out of Singapore and London.

With dramatic increase in volatilities and a sudden movement in the currencies, the time value of the structure has exploded, while the intrinsic value of the option remains low. To give an example, assume a company has contracted to buy 1 USD/CHF at 1.11, and sell it to the bank at spot rate on the expiry date six months later, and the USD/CHF has dropped from 1.20 to 1.00 at the end of six months. In this case, the intrinsic mark-to-market loss to the company ($= 1.11 - 1.00$) is 0.11 CHF (11% loss on notional).

However, how does one assess if it is going to stop at 1.00 or drop further in six months time. It is assessed by complex simulation models that incorporate direction, interest rates, volatility, etc. Given the sharp drop that has been witnessed and historical supports that have been breached, let us say a model ascribes a 50% possibility to ending at 0.80 and 50% to ending at 1.00 - the time value MTM on the structure would be 0.21 CHF, (21% loss on notional) a number which is hypothetical in the real world, but soundly justified in the model.

This mark-to-model of the structures is possibly creating severe margin calls that leave the companies with little choice. In case they do not furnish the margin, they stand in default and the structure is unwound after paying the large sum prescribed by the model. In case they do pay the margin, they enter into a vicious circle, wherein if tomorrow USD/CHF drops to 0.95, there will be further margin calls. The circle will end either once the structure expires or the company no longer has money to fund the margins.

Stuck between the fat and the fire, a lot of the companies are already responding to the margin calls and praying for the currencies to not break out further.

Implications - Who is affected and how badly?

While it can be inferred that companies with high debt and high forex flows are the most affected, such does not seem to be the exclusive cases. A cross-section of small, mid, and large cap companies have been spoken to, which suggests that the occupation with forex trading is endemic across geography, industry, and size. An INR 500 mn turnover transport company out of Panipat is as likely to have entered such structures as a large INR 50 bn pharmaceutical company out of Mumbai.

Some of the more virulent exotic structures are only designed and hedged offshore. Banks that sell these structures run dynamic hedging books which might reduce the impact of the credit default from the clients by unwinding the positions at lesser loss. The other category of banks affected is the one that purchases these exotics from the market maker and sells to corporates. The credit default will have to be absorbed entirely by the bank, with no possibility of hedging or mitigating.

Potential Red Flags - How to tell if the company in front of you might be suffering?

- Companies with forex receivables maintaining margins at extant levels. With the USD/INR depreciation, the realisations should have suffered. In case they do not, hedges have been taken, which need to be analysed for blowout risks.
- High extraordinary gains/other income/forex gains. In case the financials incorporate large revenues from forex option and spot trading, the likelihood of blowout risks are imminent.
- Interest costs at extant or lower levels year-on-year on an equivalent debt book. Over the past three years, any company that has shown an uncharacteristic decrease or maintenance of its interest cost in the face of an increasing interest rate regime, has entered into cost reduction swaps.
- Dramatic increase in cash with large fixed deposits (FDs) maintained with the bank. These would highlight an accurate position of the MTM losses the company is running. This item should be watched out for, especially if the company has high utilisation of short-term financing limits or overdrafts, while still maintaining the FDs.
- Uncharacteristic reduction in working capital borrowings, which is an indicator that the dealer bank is managing exposure by earmarking the existing credit limits.

Questions to be asked - How to discover these off-balance sheet items?

- Has the company had any historical exposures to debt swaps in low-yielding currencies?
- Does the company have any outstanding ECBs in JPY?
- Has the company hedged import exposures?
- Does the company have any conditional commitments to sell a cross currency pair to the bank over the next year?
- Does the company have a benchmark rate for its forex receivables and what is the realisation expected over the next year at current spot-forward levels?
- What is the current mark-to-market position of all its open forwards and options?
- Who in the company is responsible for entering into forex hedges and how is the authorised limit of transaction decided?

Annexure – Excerpts from recent news article on forex derivatives

Forex derivative losses likely to touch \$3-5 bn

Business standard – 13/03/2008

Corporate India may be sitting on a \$3 billion to \$5 billion (Rs 12,000 crore - Rs 20,000 crore) notional loss on its exposure to foreign exchange derivatives.

“It’s difficult to estimate the losses. But if you were to ballpark it, the extent of mark-to-market losses could be \$3 billion to \$5 billion,” said Jamal Mecklai, CEO of risk management firm Mecklai Financial.

That doesn’t mean that companies will report this level of losses. “Companies could cover up their positions by the time these trades mature, offset losses on some trades with profits on others, or carry-forward them,” said a forex expert.

When the price of the underlying asset (derivatives in this case) depreciates, companies that have invested in these derivatives have to account for the loss in their books. This process is called marking to market. On Tuesday, Finance Minister P Chidambaram said in a statement in the Rajya Sabha that banks operating in India had an exposure of Rs 127.86 trillion (\$3.16 trillion) of derivatives on their books on December 31, 2007.

While that appears huge by any standards, experts said that the number does not mean much.

“It doesn’t reveal the mark-to-market value of each bank or the amount of risks they are carrying,” said Mumbai-based risk-management consultant AV Rajwade.

Experts said the figure of Rs 127.86 trillion reflects the trading book while “the customer transactions would not be more than 10 per cent of that,” added Rajwade.

Other forex experts, however, felt the government’s estimate looked high because of possible double-counting of trades.

If customer transactions are a tenth of the derivatives trading book, the actual transactions could be \$316 billion.

Experts said that a majority of the trades (around two-thirds) are plain vanilla hedges while a third of the trade could involve knock-outs, where losses could be very large.

“If one assumes just one per cent of the trade have a problem, the mark-to-market losses would be around \$3.16 billion. That’s a highly conservative estimate,” said a forex consultant, who advises mid-size companies, but requested anonymity.

Declining dollar to pinch corporates

NDTV – 14/03/2008

As the dollar continues to slip sharply against global currencies, it’s not just traders but also the country’s large and mid-sized corporate who need to worry.

Large numbers of corporate are facing mark-to-market losses on complex forex derivative products that they have bought on the advice of their bankers.

These losses could now spiral as the dollar drops even further against major currencies.

Many of the complex derivative products sold in India have inbuilt option protections linked to specific levels of yen and the Swiss franc. Once these levels are broken or "knocked out", the corporate are faced with higher payment obligations.

They could face losses once the product matures. On the yen, the knockout level for many derivative products was 100 yen / \$ and on the Swiss franc, that level was 1.10 franc /\$.

But now both these crucial levels are broken and the dollar is showing no signs of bottoming out, the losses for corporate on account of forex derivatives could start to mount. Some estimates suggest mark-to-market losses as high as \$3 billion.

As the worries mount, many companies have started combing through their derivative contracts to look for exit options. Bankers who had earlier aggressively pushed these products have now started advising smaller and mid-sized corporate to exit these derivative products.

The issue has also been consistently on the RBI's risk radar. After warning about forex exposures in the third quarter monetary policy, Reserve Bank of India Governor YV Reddy had highlighted the problem again in a recent speech.

"The RBI has been urging the banks to also monitor carefully larger unhedged foreign exchange exposures of their corporate clients," the RBI Governor said.

Most people agree that losses related to forex derivatives could end up being a problem for the corporate sector and in turn a credit risk for the banking sector. But no one can yet say what the size of the problem could be. But forex experts say the losses could start to show up in the next few quarters when many of these derivative products start to mature.

RBI worried over forex derivative losses

NDTV Profit – 16/03/2008

Indian corporates have been worrying about losses in forex derivatives and finally the Reserve Bank of India (RBI) seems to be just as concerned but can we expect a tweaking of the forex derivative policy or some other measures?

RBI Governor Y V Reddy has finally addressed the fears that turmoil in global currency markets could throw up forex derivative related losses for Indian corporates.

Fear of losses intensifies

As NDTV has been reporting the fear of losses has intensified in recent days following a steep decline in the value of the US Dollar against the Japanese Yen and the Swiss Franc – two currencies that Indian corporates have used extensively to swap their rupee denominated debt.

The fear is that with the dollar now trading close to a 100 yen and Swiss Franc dangerously close to breaking the 1 franc to a dollar level, the derivative products that had so

far helped corporates reduce their cost could turn bad and lead to substantial mark to market losses.

Credit risk

But the RBI says it has been keeping a close eye on the situation and is ensuring that these losses don't end up posing a credit risk to the country's banks.

"We have been warning about the risks of these products and we have been active in supervisory reviews as well," said Reddy.

While the RBI has so far not recommended any drastic changes in its forex derivative policy, a number of measures are being talked about behind the scenes.

One measure being considered is a standard provisioning requirement on derivative portfolios, which would help protect the banks against any credit risk arising from derivative related losses incurred by corporate clients.

Even if the RBI doesn't insist on provisioning, they may require banks to be more transparent in disclosing any potential risk.

At the same time, the Institute of Chartered Accounts and the Forex Association are both working on ways to improve accounting and reporting of derivative exposures.

Bankers dismissing risks

Bankers who have so far been dismissing any risk from corporate losses related to forex derivatives may not sit up and take notice.

Not only are corporate clients becoming more cautious in the use of such products even the regulator is keeping a keen eye to ensure that aggressive marketing of these derivative products does not end up posing a systemic risk to the banking sector.

RS128 TRILLION DERIVATIVES ON BANKS' BOOKS

Mint 12/03/2008

Indian banks and companies may have become more vulnerable to risks, especially those arising from innovative foreign exchange and interest rate hedges, over the past two years.

Banks operating in India had Rs127.86 trillion (\$3.16 trillion) of derivatives on their books as on 31 December 2007, according to a statement tabled on Tuesday in the Rajya Sabha by the country's finance minister P. Chidambaram. That number, which refers to the "outstanding notional principal amount of derivatives" according to the statement, was 291% higher than the corresponding number on 31 December 2005. Foreign banks operating in India, as a group, accounted for an exposure of Rs98.91 trillion, a growth of 389% over the 2005 number. This number also translates into 77% of derivatives exposure among banks operating here. It is almost five times the bank credit in early March.

A senior executive at a large private bank said that the growth in the exposure to derivatives signalled three trends: increasing globalization of the economy which makes companies hedge their foreign currency exposure; the willingness of companies to try

new risk hedging tools; and the ability of foreign banks, which have experience in selling and managing such instruments, to scale up their derivatives business here. The executive, who did not wish to be identified, said that the exposure of banks to derivatives is largely on account of their clients' exposure to foreign exchange risks.

By itself, a number such as Rs127.86 trillion does not mean much. On the positive side, it reflects a growing maturity in the Indian market as appetite for sophisticated derivatives increases. But, some firms could well be buying such derivatives without understanding the risks involved. Derivatives include all manner of tools that allow companies to hedge their foreign currency exposure and interest rate risks. Forex hedges help companies that have significant cross-currency transactions to cope with exchange risks. The data presented by the minister's statement does not include or refer to exposure to equity derivatives or collateralized debt obligations, or CDOs.

The foreign exchange risks are likely to involve straight dollar-rupee (or rupee-dollar hedges) or more complex multi-currency hedges. Between April and now, the rupee has appreciated 6.16% against the dollar. Exporters typically hedge against an appreciation in the local currency against the one in which they bill.

The local arm of Citibank NA had an exposure to derivatives of Rs16.30 trillion at the end of December, the minister's statement said, reflecting a 600% increase over two years. On that date, the bank had the largest derivatives exposure among all banks licensed to operate in India.

Among Indian banks, ICICI Bank had the largest exposure of Rs7.67 trillion. HDFC Bank had an exposure of Rs5.04 trillion and State Bank of India; Rs4.68 trillion.

Mint couldn't immediately ascertain how the Rs127.86 trillion breaks up into exposure in forex hedges, and other derivative instruments. But, experts say that within hedges, the usual split between direct dollar-rupee hedges and more complex multi-currency ones would be around 85:15. One of these experts, who did not wish to be identified, also cautioned that while the overall exposure related to derivatives may seem large, the actual money changing hands would be much lower.

A BETTER SYSTEM OF CONTROLS NEEDED

Economic times - 13/03/2008

The government says Indian banks had a Rs 127 lakh crore exposure to derivatives as on December 2007. This is sure to set alarm bells ringing, coming close to ICICI Bank declaring mark-to-market losses on foreign credit derivatives and fixed income investments and L&T declaring that it could be taking a Rs 200 crore hit on its commodity hedges.

Quantifying the exact risk is difficult, but it's certain that the entire amount is not at risk. A substantial portion of the reported Rs 127 lakh crore exposure is likely to be plain forex hedges.

A large chunk of the headline figure is bank-to-bank derivatives, i.e., a bank writing a derivative contract for a corporate does a back-to-back contract with another bank.

However, there is no denying that currency gyrations and widening credit spreads could cause serious problems with a non-trivial percentage of this exposure.

Credit derivatives and fixed income investments, for instance, are sure to yield mark-to-market losses because of widening international credit spreads even when there may not be any deterioration in the underlying asset quality. Similarly, speculative currency or commodities exposure could have singled some players given the sudden recent movement in commodity prices and weakening of the dollar against most currencies.

Corporate profit growth may take a hit in coming quarters, as non-operating income falls because of derivatives losses. The silver lining, if one can call it that, is that corporate balance sheets are strong and in most cases losses won't be crippling. Banks and corporates should be more circumspect next time, as the reality of overseas derivatives cannot be wished away.

India's increasing integration with global markets — through trade, global sourcing of inputs, overseas investments by corporates foreign borrowing and expansion of Indian banks overseas — means that exposure would have to be hedged. What is needed is a better system of controls. Banks should think twice before selling exotic derivatives to customers who have no clue about the risks. Companies need to put in place systems to ensure speculative investments are authorised and within prudent limits.

BANKS NOW USE VRMs TO SPELT OUT RISKS TO CORPORATES

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Amid mounting tension in the currency market over more and more corporates taking banks to court for derivatives losses, banks are pinning their hopes on voice recording machines (VRMs), which have stored the conversations made when they were selling the sophisticated, and often exotic, financial products.

Word is already out that five more corporates — which will take the total number to six — have either already moved the court or are in the final stages of filing suits to argue that they had entered into derivatives contracts where the banks never quite disclosed the risks.

Interestingly, some of these companies belong to large corporate groups with comparatively sophisticated treasuries. Banks are confident that the consensual recording of conversations with the client will help them build a cast-iron case.

Moreover, banks feel that a certified copy of the resolution passed by the board of the corporate to authorise the transaction and nominating a person to deal with banks will strengthen their argument. The brewing disputes and their outcome could serve as benchmarks in the local financial market.

"Our VRMs have caught discussions where we told the client what the loss will be for every point change in the exchange rate, say dollar-yen or dollar-Swiss franc. We closed the deal only after they said OK," said the legal head of a private bank. However, not all disputes would turn out to be such an open-and-shut case.

In some cases, in their rush to cut deals and pump up derivatives volumes, banks may have sidestepped some of the RBI guidelines like knowing the risk management policy of the corporate, profiling customers (to assess whether it has the appetite and where-withal to manage the risks) or ensuring that the client is not violating rules to over leverage itself.

These currency movements have led to a situation where several corporates are forced to make weekly or fortnightly or monthly payments (depending on the contract) to banks. This is because corporates had felt that yen and Swiss franc would never breach 100 and 1 — bets that have gone horribly wrong.

Besides these currency knock-in options — where the contracts starts ticking in after exchange rate crosses a pre-agreed level — banks said that some of the bets on Libor have also turned sour. Libor, or London Inter-Bank Offered Rate, is the benchmark bulk money rate in international markets. Here, the corporates had bought a product called 'Range Accrual Swap', where the basic bet was that Libor will stay within a range. Say, a company is paying 8 percent on a Rs 500-crore borrowing.

Glossary

All or Nothings

An option whose payout is fixed at the inception of the option contract and for which the payout is only made if the strike price is in-the-money at expiry. If the strike price is out-of-the-money at expiry, there is no payout made to the option holder.

American Style Option

An option that can be exercised at any time from inception as opposed to a European Style option which can only be exercised at expiry. Early exercise of American options may be warranted by arbitrage. European Style option contracts can be closed out early, mimicking the early exercise property of American style options in most cases.

Accreting Swap

An exchange of interest rate payments at regular intervals based upon pre-set indices and notional amounts in which the notional amounts decrease over time.

Arbitrage

The act of taking advantage of differences in price between markets. For example, if a stock is quoted on two different equity markets, there is the possibility of arbitrage if the quoted price (adjusted for institutional idiosyncrasies) in one market differs from the quoted price in the other. The term has been extended to refer to speculators who take positions on the correlation between two different types of instrument, assuming stability to the correlation patterns. Many funds have discovered that correlation is not as stable as it is assumed to be.

Average Rate Options

An option whose payout at expiry is determined by the difference between its strike and a calculated average market rate where the period, frequency and source of observation for the calculation of the average market rate are specified at the inception of the contract. These options are cash settled, typically.

Average Strike Options

An option whose payout at expiry is determined by the difference between the prevailing cash spot rate at expiry and its strike, deemed to be equal to a calculated average market rate where the period, frequency and source of observation for the calculation of the average market rate are specified at the inception of the contract. These options are cash settled, typically.

Backwardation

A term often used in commodities or futures markets to refer to markets where shorter-dated contracts trade at a higher price than longer-dated contracts. Plotting the prices of contracts against time, with time on the x-axis, shows the commodity price curve as sloping downwards as time increases.

Barrier Options

An option contract for which the maturity, strike price and underlying are specified at inception in addition to a trigger price. The trigger price determines whether or not the option actually exists. In the case of a knock-in option, the barrier option does not exist until the trigger is touched. For a knock-out option, the option exists until the trigger is touched.

Black-Scholes

A closed-form solution (i.e. an equation) for valuing plain vanilla options developed by Fischer Black and Myron Scholes in 1973 for which they shared the Nobel Prize in Economics.

Chooser Option

An option that gives the buyer the right at the choice date (before the option's expiry) to choose if the option is to be a call or a put.

Collar

A combination of options in which the holder of the contract has bought one out-of-the-money option call (or put) and sold one (or more) out-of-the-money puts (or calls). Doing this locks in the minimum and maximum rates that the collar owner will use to transact in the underlying at expiry.

Contango

A term often used in commodities or futures markets to refer to markets where shorter-dated contracts trade at a lower price than longer-dated contracts. Plotting the prices of contracts against time, with time on the x-axis, shows the commodity price curve as sloping upwards as time increases.

Convexity

A financial instrument is said to be convex (or to possess convexity) if the financial instrument's price increases (decreases) faster (slower) than corresponding changes in the underlying price.

Covered Call Option Writing

A technique used by investors to help fund their underlying positions, typically used in the equity markets. An individual who sells a call is said to "write" the call. If this individual sells a call on a notional amount of the underlying that he has in his inventory, then the written call is said to be "covered" (by his inventory of the underlying). If the investor does not have the underlying in inventory, the investor has sold the call "naked".

Currency Swap

An exchange of interest rate payments in different currencies on a pre-set notional amount and in reference to pre-determined interest rate indices in which the notional amounts are exchanged at inception of the contract and then re-exchanged at the termination of the contract at pre-set exchange rates.

Delta

The sensitivity of the change in the financial instrument's price to changes in the price of the underlying cash index.

Documentation Risk

The risk of loss due to an inadequacy or other unforeseen aspect of the legal documentation behind the financial contract.

Embedded Derivatives

Derivative contracts that exist as part of securities.

Equity Swap

A contract in which counterparties agree to exchange payments related to indices, at least one of which (and possibly both of which) is an equity index.

European Style Option

An option that can be exercised only at expiry as opposed to an American Style option that can be exercised at any time from inception of the contract. European Style option contracts can be closed out early, mimicking the early exercise property of American style options in most cases.

Exotic Derivatives

Any derivative contract that is not a plain vanilla contract. Examples include barrier options, average rate and average strike options, lookback options, chooser options, etc.

Floor

A floor is a financial contract giving the owner the right but not the obligation to lend a pre-set amount of money at a pre-set interest rate with a pre-set maturity date.

Forward Contracts

An over-the-counter obligation to buy or sell a financial instrument or to make a payment at some point in the future, the details of which were settled privately between the two counterparties. Forward contracts generally are arranged to have zero mark-to-market value at inception, although they may be off-market. Examples include forward foreign exchange contracts in which one party is obligated to buy foreign exchange from another party at a fixed rate for delivery on a pre-set date. Off-market forward contracts are used often in structured combinations, with the value on the forward contract offsetting the value of the other instrument(s).

Forward or Delayed Start Swap

Any swap contract with a start that is later than the standard terms. This means that calculation of the cash flows does not begin straightaway but at some pre-determined start date.

Forward Rate Agreements (FRAs)

A forward rate agreement is a cash-settled obligation on interest rates for a pre-set period on a pre-set interest rate index with a forward start date. A 3x6 FRA on US dollar

LIBOR (the London Interbank Offered Rate) is a contract between two parties obliging one to pay the other the difference between the FRA rate and the actual LIBOR rate observed for that period. An Interest Rate Swap is a strip of FRAs.

Gamma

Gamma (or convexity) is the degree of curvature in the financial contract's price curve with respect to its underlying price. It is the rate of change of the delta with respect to changes in the underlying price. Positive gamma is favourable. Negative gamma is damaging in a sufficiently volatile market. The price of having positive gamma (or owning gamma) is time decay. Only instruments with time value have gamma.

Historical Volatility

A measure of the actual volatility (a statistical measure of dispersion) observed in the marketplace.

Hybrid Security

Any security that includes more than one component. For example, a hybrid security might be a fixed income note that includes a foreign exchange option or a commodity price option.

Implied Volatility

Option pricing models rely upon an assumption of future volatility as well as the spot price, interest rates, the expiry date, the delivery date, the strike, etc. If we are given simultaneously all of the parameters necessary for determining the option price except for volatility and the option price in the marketplace, we can back out mathematically the volatility corresponding to that price and those parameters. This is the implied volatility.

Index-Amortizing Swaps

An interest rate swap in which the notional amount for the purposes of calculating cash flows decreases over the life of the contract in a pre-specified manner.

International Swaps Dealers' Association (ISDA) Agreements

In order to minimize the legal risks of transacting with one another, counterparties will establish master legal agreements and sidebar product schedules to govern formally all derivatives transactions into which they may enter with one another.

Knock-in Option

An option the existence of which is conditional upon a pre-set trigger price trading before the option's designated maturity. If the trigger is not touched before maturity, then the option is deemed not to exist.

Knock-out Option

An option the existence of which is conditional upon a pre-set trigger price trading before the option's designated maturity. The option is deemed to exist unless the trigger price is touched before maturity.

Look-Back Options

An option which gives the owner the right to buy (sell) at the lowest (highest) price that traded in the underlying from the inception of the contract to its maturity, i.e. the most favourable price that traded over the lifetime of the contract.

Mark to Market Accounting

A method of accounting most suited for financial instruments in which contracts are revalued at regular intervals using prevailing market prices. This is known as taking a "snapshot" of the market.

Naked Option Writing

The act of selling options without having any offsetting exposure in the underlying cash instrument.

Netting

When there are cash flows in two directions between two counterparties, they can be consolidated into one net payment from one counterparty to the other thereby reducing the settlement risk involved.

Path-Dependent Options

Any option whose value depends on the path taken by the underlying cash instrument.

Potential Exposure

An assessment of the future positive intrinsic value in all of the contracts outstanding with an individual counterparty who may choose (or may be unable) to make their obligated payments.

Put-Call Parity Theorem

A long position in a put combined with a long position in the underlying forward instrument, both of which have the same delivery date has the same behavioral properties as a long position in a call for the same delivery date. This can be varied for short positions, etc.

Quanto Option

An option the payout for which is denominated in an index other than the underlying cash instrument.

Risk Metrics

A parametric methodology for calculating Value-at-Risk using data conditioned by JP Morgan's spinoff company RiskMetrics that is most useful for assessing portfolios with linear risks.

Stress Testing

The act of simulating different financial market conditions for their potential effects on a portfolio of financial instruments.

Structured Notes

Fixed income instruments with embedded derivative products.

Swap Spread

The difference between the swap yield curve and the government yield curve for a particular maturity, referring to the market prices for the fixed rate in a plain vanilla interest rate swap.

Value at Risk or VaR

The calculated value of the maximum expected loss for a given portfolio over a defined time horizon (typically one day) and for a pre-set statistical confidence interval, under normal market conditions

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