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Mumbai
July 28, 1999

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Discussion Paper

For private circulation only

The Emerging Market For Interest Rate Swaps

- **The current swap curve is below the short-term gilt yield curve. In a deep swap market, we would expect the swap term structure to reflect the credit quality of the counterparties.**
- **The overnight inter bank call money rate has evolved as the only transparent floating benchmark. A significant proportion of overnight borrowing is used to fund market's holding of sovereign securities.**
- **Do we therefore assume that there is significant pent-up demand in the market for the conversion of floating short-term liabilities into fixed term rates ?**
- **Does the current spread profile (funding gilts from overnight funds) in the market support the development of a liquid and deep swap curve, or do we expect certain realignments in the risk-return profile ?**
- **Observed volatility in overnight rates alongwith refinance facilities provided by RBI seem to support a significant duration mismatch. The demand for fixed-paying swaps, therefore, appear limited.**

Market participants have been eagerly awaiting the introduction of interest rate swaps / forward rate agreements (IRS / FRA) since the announcement in the October - 1998 Credit Policy. The introduction to the final policy document released by the Reserve Bank of India (RBI) on July 7, 1999 explains " … with a view to further deepening the money market as also to enable banks, primary dealers and all-India financial institutions to hedge interest rate risks…". The need for a liquid inter bank term money market has been long-felt, and in fact it has been argued in many quarters that it would be a necessary pre-condition for the success of the interest rate swap market. The sovereign debt market has recorded significant growth in recent years, the outstanding figure having increased 57% over the last two fiscal years. Average daily call borrowing in the inter bank market, currently in the region of Rs 15,000 crore - Rs 17,000 crore is largely used to fund positions in gilts. The volatility observed in overnight rates, can to a large extent, be attributed to this duration mismatch. The term money market has not developed to bridge this gap. In its absence, the overnight call money rate has emerged as the most transparent floating index in the market.

Considering the above mismatch, demand for paying fixed in an interest rate swap market is expected to arise from call money borrowers in the inter bank market, mainly primary dealers and foreign and private banks. The counterparty (receiving the fixed leg) will be call surplus banks and financial institutions. The demand from corporates is expected to be based on existing liability profile and the short -to - medium term interest rate view.

Current status of the IRS / FRA market

The current swap curve is broadly pegged to the sovereign t-bill yield curve. In the absence of a liquid inter bank term money market, t-bill rates have emerged as term benchmarks, particularly for short tenure swaps.

	Swap quotes	T-bill yields
1 month	8.85% - 9.00%	9.00%
3 months	9.15% - 9.50%	9.40%
6 months	9.65% - 10.00%	10.10%
12 months	10.15% - 10.45%	10.45%

The forward rate market is also pegged to t-bill yields. The initial market quotes are for 3 month forwards, the floating leg benchmarked to the 91 day t-bill auction.

Tenor	Bid - Offer	Benchmark
1 X 4	9.00% - 9.20%	91 day t-bill
2 X 5	9.20% - 9.40%	91 day t-bill
3 X 6	9.30% - 9.50%	91 day t-bill
6 X 12	9.70% - 10.00%	182 day t-bill

Let us extract the 'implied forward' rates from the t-bill cash market and compare them with rates quoted in the FRA market.

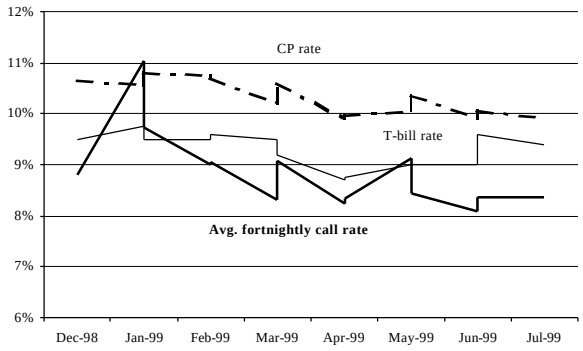
T-bill yields	Implied forwards	Spread in the forward market
1 month - 9.00%	1 X 4 = 9.92%	0.92% - 0.72%
3 month - 9.40%	2 X 5 = 10.17%	0.97% - 0.77%
6 month - 10.10%	3 X 6 = 10.54%	1.24% - 1.04%
12 month - 10.45%	6 X 12 = 10.28%	0.58% - 0.28%

The three month forward quotes are 70 - 120 basis points lower than the forwards implied by the t-bill cash market. Considering that we are comparing forward swap rates (in most cases rates offered by banks / primary dealers to corporates), with forward rates implied by the sovereign yield curve, the 'discrepancy' is further enhanced. We also consider the implied forwards in the rupee/USD forward market in a later section.

Depending on counterparty risk profiles, one would expect the swap curve to lie above the sovereign yield

curve, adjusted for the fact that one is comparing cash yields with swap rates wherein funding implications are considerably lower. We believe, the above rate structure is more symptomatic of eagerness to strike early deals in a nascent market, backed by the expectation that RBI would not allow t-bill auction cut-offs to increase sharply during situations of short-term tightness. Most initial deals have been for small quantum and short duration, and to that extent credit quality has not been of much concern.

Movement in short-term rates



The interesting question to ask is whether the 'steepness' of the t-bill yield curve, reflected in 'high' implied forward yields, a product of expected volatility in the overnight rate, or is it a consequence of illiquidity in the medium-end term money market, or both. Therefore, can we expect implied forwards (the steepness of the underlying curve) to reduce with the emergence of a liquid swap market, providing an indirect route to term exposure. The other possible outcome to ponder is the impact on the overnight inter bank market itself.

To begin with we attribute the non-development of the inter bank term money market to lack of liquidity, which is a significant determinant of short-term financing decisions. The inability to accurately assess short-term liquidity for call surplus banks on a real time basis further militates against a deep term money market. Further, RBI aims at broadly restricting the movement of the overnight rate within the repo-rate-bank-rate band. In addition, to absorb temporary imbalances, various categories of refinance facilities pegged to the bank rate, are available to banks and primary dealers. Consequently, the overnight inter bank rate has been established as the reference rate for financing positions in gilt edged securities, and hence forms the basis for the entire sovereign term structure.

Fixed versus floating - the corporate case study

Corporates have also used the overnight inter bank rate as the benchmark for their floating rate issuances. In April - 1999 there were two AAA rated corporate issuances pegged to MIBOR for 3 and 5 year maturities, with put/call option at the end of each year. The amounts raised were Rs 50 crore each and the rates were pegged at 200/300 basis points plus MIBOR. The fortnightly average call money rates were 8.30%, 9.30% and 7.20% during the first half of March, second half of March and the first half of April respectively. The effective floating rate therefore worked out in the 9% - 11% range for a 200 basis point spread. If we refer to the one year Valucorp rate for AAA corporates during the same period (12%, refer table below), the 'effective' floating yield at the time of issuance was below the one year fixed reference rate.

The above characteristics may be considered quite typical of floating issuances by corporates. To begin with, market appetite is limited (low liquidity, valuation issues) and issuances above Rs 50 crore, even by AAA rated corporates would not be easily absorbed. At the time of issuance the 'effective' floating rate would be below the corresponding fixed rate, the future upside (relative to the corresponding fixed rate) to the investor being attributed to expected volatility of the overnight rate. Investors would in most cases be borrowers in the call money market, looking to lock-in a spread on the asset side, for instance foreign / private banks. The volatility observed in the average overnight rates during the time of the issuances (second half of March) may have prompted the issuance.

Spreads of Valucorp one year rate over sovereign

1999	AAA 1 yr. *(p.a.)*	Spread over 1 yr. GoI Sec
Mid March	12.00%	0.96%
End March	12.00%	0.91%
Mid April	12.00%	1.22%
End April	12.00%	1.12%
Mid May	11.85%	1.02%
End May	11.25%	0.32%
Mid June	11.25%	0.31%
End June	11.25%	0.30%
Mid July	11.25%	0.47%

Subsequently, over the next two months borrowing rates for top rated corporates and their spread over sovereign crashed to historical lows. Assuming current levels in the call money market in the region of 8.30% - 8.50%, a 200 basis point spread would equate to an equivalent fixed rate of 10.70% - 10.90%, while the current one year AAA fixed rate would be 11.20% - 11.25% p.a..

We can therefore say the following of the market for floating issuances by corporates. The market size is limited for perceived lack of tradeability. The floating rate is almost always based on the assumption of three / four periods of extreme volatility in the call money market, while the possibility of the call rate to fall below the then current levels is limited. This bias arises due to the non-existence of transparent term benchmarks, thereby forcing the use of overnight indices with 'higher' volatility to price longer term instruments.

In our opinion it is this upward bias predicated on expected short-term volatility of the overnight rate which 'steepens' the short-end of the sovereign curve. The resultant spread of sovereign over the overnight funding rate further militates against a term money market - in other words there is greater demand to receive fixed and pay floating, using interest rate swap terminology.

Let us look at corporate borrowing and the current swap

curve. The one year swap quotes are in the region 10% - 10.30%. Assuming that AAA corporates have borrowed at MIBOR + 200 basis points, the current swap curve provides further incentive to pay floating. A MIBOR + 200 basis point spread works out to a fixed rate of 12%, close to 100 basis points above the expected one year AAA fixed borrowing rate. The reason again is that the swap curve is being priced off the sovereign short-term yield curve, as well as an 'overestimation' of call rate volatility.

We started off by describing an inter bank market scenario wherein a significant amount of duration mismatch was being sustained in the absence of a term money market. The demand for swapping floating to fixed on the liability side should therefore have been substantial. We are now faced with a situation wherein the current market spread structure seems to indicate otherwise.

If we look back to the previous two fiscal years, 1997-1998 and 1998-1999, average call annual call rates were 7.93% and 7.97% respectively. During these two years the number of days on which daily call rates exceeded 10% levels were 22 and 11. We can reach a tentative conclusion that the overnight market has not been subject to protracted periods of high volatility, thereby providing justification for a higher degree of duration mismatch among market participants.

Interest rate swaps and the forex market

To a limited extent, the rupee/USD forward market can also be used to extract implied forwards. Market participants who have funded dollar assets in the forward market out of overnight rupee funds can quote forward starting swaps at rates implied by the rupee/USD forward yield curve for hedging. Though there should not be significant differences, adjusted for liquidity in the spot and forward markets, the near term forward rates quoted by banks (upto six months) are closer to rates implied by the rupee/USD forward curve. Currently the three and six month LIBOR is 5.29% and 5.58%, while the respective forward premia are 3.77% and 4.20%. Therefore the approximate 3X6 implied forward is 10.27%. The 3X6 being quoted in the FRA market is 9.15% - 9.45%.

In our opinion, the forex forward curve would be a reference for a very limited segment of the IRS market. However, the FRA market would provide a further instrument for arbitraging significant differentials.

To conclude….

The existing risk-return trade-off profile in the inter bank market promotes a relatively high extent of duration mismatch in sovereign portfolios. The 'volatile' call money market is not volatile enough so as to compel market participants to 'lock into' fixed cost term liabilities. Thus to begin with we expect the swap curve to stay very close to the sovereign short-term yield curve, with term quotes being benchmarked off t-bill yields. Going forward, the entry of large call-surplus nationalised banks should increase the demand for receiving fixed rates.

Further, a deep repo market would have far reaching implications for the degree of leverage available in the gilts market. A liquid repo market is also expected to remove the short-term surplus of financial institutions currently deployed in the overnight inter bank market. With increased leveraging we expect greater demand for term liabilities.