Interest Rates – A New Facet: Time to Dodge the Market

When we compare loan rates offered by various lenders including banks, our motive basically is to get the lowest fixed or floating interest rates. We decide our loans normally by calculating the options based on the loan amount we want and on the amount we might afford to pay back each month towards the amount of our loan. Interest rate is the most fundamental and crucial factor that lets us decide our favoured lender or bank. The author in this article practically presents various aspects of interest rates from a consumer perspective. Read on…

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Background

Indian economy is in a growth phase which may bring extremely exciting times in the years ahead, unless it is dampened by the rampant corruption in future. People's purchasing power goes up in such times resulting in more demand and if the supply does not match the demand, this situation would lead to inflation. However, the Government's solution to combat inflation is to increase the interest rates, and the logic is that high interest rates would discourage people in borrowing money leading to less expenditure which would eventually reduce the effects of inflation. Repo and reverse Repo rates are important tools with the RBI to tackle inflation. We have witnessed many instances of increased interest rates in the past few months.

What are interest rates?

₹1 is more valuable today than it would be a year later, therefore any lending or borrowing of money would entail a charge known as interest rate as return on the investment, i.e. lending. Increase in the interest rate sensitive financial products in markets would develop the whole market of various entities that would want to hedge or bring down/up its interest rate liability/ asset to the lowest/highest possible levels as per each party's interest rate expectations.

We shall take a look at such hedging instruments which suits

If the interest rate in the market (Libor) goes up, the liability would increase, as the liability is tagged to Libor. However, Mr. X could be better off than Mr.Y, if interest rate is low. Mr. Y has no interest rate concerns, as the liability of the loan is fixed at the outset. Increase in interest rates would not affect his outflow of cash.

the expectation of interest rates of various counterparties/entities. Often investors and home-buyers complain that interest rates are too high for them to afford a house or repaying their loan. The article would focus on the issue where investors have a floating rate liability, e.g. concerns are on the rising interest rates. We would also look at banks' perspective on decreasing rates.

An example to understand the interest rate effects:

Mr. X takes a five-year loan from a bank for ₹50 lakh @ Libor +spread (Floating rate)

Mr. Y takes a five-year loan from a bank for ₹50 lakh @ 7% (Fixed rate)

Obviously, the main objective of an investor would be to reduce expenses and increase the income. Following deduction could be made in the light of inflation and increasing interest rates:

	Mr.X	Mr.Y	Bank
Floating	Int Rate concerns	NA	No Int rate Concerns
Fixed	NA	Int rate doesn't affect the Interest cash flow	Int Rate concerns

(Fig 1)

Let's think intuitively now.

Mr. X has high interest rate concerns. If the interest rate in the market (Libor) goes up, the liability would increase, as the liability is tagged to Libor. However, Mr. X could be better off than Mr.Y, if interest rate is low. Mr. Y has no interest rate concerns, as the liability of the loan is fixed at the outset. Increase in interest rates would not affect his outflow of cash. However, Mr. Y could also lose money, if the interest rate gets lowered in future, as he would continue paying on the fixed and higher interest rate, i.e. higher than the floating interest rate.

Bank's Perspective

No Interest Rate Concerns: In case of loan to Mr. X, the bank has no interest rate concerns as it would receive its payment from Mr. X on the market rate.

High Interest Rate Concerns: However, in case of the loan to Mr. Y, the bank has high interest concerns, since the payment would be based on a fixed rate which doesn't allow the bank to earn higher in case the interest rate goes up in the market.

Mr. X's options

Here, we would like to explore what the options are with Mr. X, when the interest rate keeps on increasing and he wants to limit his exposure. Let's assume the loan bears yearly reset with interest rates likely to rise every reset period.

Yr	Mr X's Libor Expectation
1	7.0%
2	7.5%
3	8.0%
4	8.5%
5	9.0%

(Fig 2)

Some of us may think if the expectation is about increasing interest rates, it would be sensible for Mr. X to go for a fixed rate loan and not for a floating rate one. This may be correct for the current example, but, in reality, house loans or business loans normally span up to 10 to 20 years where the interest rate might start rising at an increasing or decreasing rate from the fifth year, seventh year, or tenth year. So, at the time of entering into a loan agreement, Mr. X can have no inkling about the interest rate expectation in future. By entering into a floating rate loan scheme, we may like to take advantage of the decreasing interest rates, and, so on.

Any rational person would like to limit his/her cash outflow and increase his/her cash inflow. In times of increasing interest rate, there are some options Mr. X would have:

1) **Interest rate swap:** As the name suggests, the deal allows Mr. X to swap one interest rate for another. Here, he can convert his floating rate liability into a fixed rate liability by entering a "fixed-for-floating" IRS.

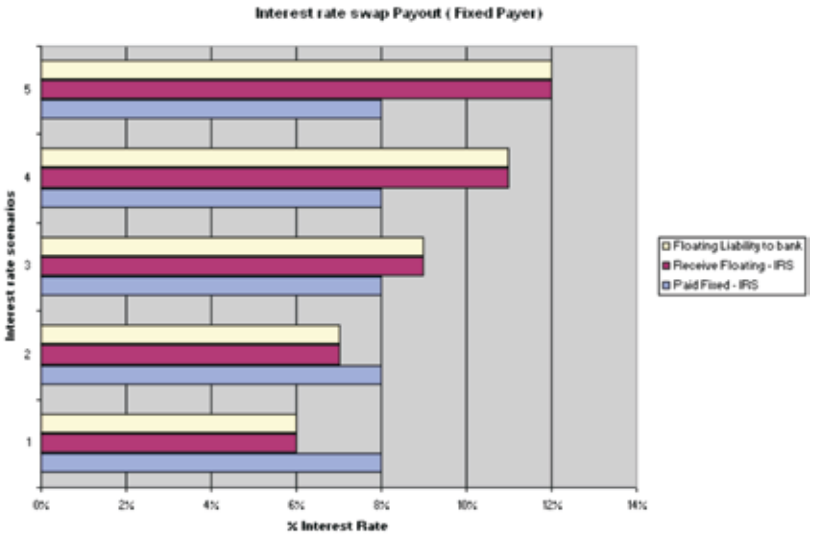
   Say, in the third year, if he fears that the interest rate would go up, he would rather lock his liability at the rate of 8%, e.g. fixed rate available at the third year. The counterparty would pay Mr. X "Libor" and Mr. X would pay 8% for next three years, i.e. third, fourth and fifth. Amount received under IRS from counterparty would then be diverted to the interest payment due on loan with the bank. Here, effectively Mr. X would be paying on 8% irrespective of the market rates.

   Valuation concepts of IRS, like any other financial instrument, will follow a "no-arbitrage price" principle, i.e. on the date of the contract both the parties have a value of "0" in the contract, which is on that date no party can earn by squaring off the transaction. Next day onwards, depending upon the interest rate movement, one party will have a +ve NPV and other with –ve NPV.

Interest Rates scenarios	Interest Rate swaps Paid Fixed(IRS)	Receive Floating(IRS)	Liability to bank	Net Liability
1	(8.0)%	6.0%	(6.0)%	(8.0)%
2	(8.0)%	7.0%	(7.0)%	(8.0)%
3	(8.0)%	9.0%	(9.0)%	(8.0)%
4	(8.0)%	11.0%	(11.0)%	(8.0)%
5	(8.0)%	12.0%	(12.0)%	(8.0)%

(Fig 3)

As per the above figure, the net liability is same as per the fixed rate paid under IRS. We may show the same in form of a chart:



(Chart 1)

In any of the above interest rate scenarios, floating amount received under IRS contract would be "diverted" towards floating rate liability of the loan, so we see both being equal under all scenarios, i.e. *Floating receipt under IRS = floating liability towards bank.* However, what we would pay is the fixed rate under IRS, e.g. 8%, under all scenarios, which eventually becomes Mr. X's net liability under the entire portfolio of loan and IRS contract.

Mr. Y's options

Interest rate swap: If the expectation is for rates to go down, Mr. Y can enter floating for fixed IRS, where net liability would be "Libor+Spread".

We shall also see another way of hedging our interest rate exposure.

2) **Interest Rate cap option – relief to the borrower**

This market is expected to grow in India in future, when the interest rate sensitivity measurement will be the driving force for economic health and people would enter into bigger deals to cover their interest rate exposure.

Concept:

(Fig 4)

Here, Mr. ABC can be viewed as the option seller, who is ready to protect Mr. X – the option buyer, for a premium. Here, Mr. X is entering into an interest rate cap option with Mr. ABC at a strike of 8%.

Scenario 1:

Say in the fourth year, interest rate actually meets the expectation and

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Libor is at 8.5%. Refer to Fig 2. What will be the payoff for Mr. X in the fourth year?

(Fig 5)

Since the strike price is 8%, as the interest rate increases above 8%, Mr. X will exercise the option and Mr. ABC, the option seller, is to make the differential payment to Mr. X. Mr. X's liability is capped, i.e. upper limit fixed, under any scenario fixed at 8% (8.5%-0.5%). Here, Mr. X is protected against the increasing interest rates.

Scenario 2:

Say in the fourth year, the interest rate is at 7.5%. What will be the payoff for Mr. X in the fourth year?

(Fig 6)

Mr. X would not exercise the option and pay 7.5% to the bank.

Payoff, in case interest rate expectations are met:

From Borrower's Perspective

From Borrower's Perspective

Yr	Cap / Strike Rate	Interest Rate	Payoff to bank	Received from Mr.ABC	Net Payable
1	8.0%	7.0%	(7.0)%	0.0%	(7.0)%
2	8.0%	7.5%	(7.5)%	0.0%	(7.5)%
3	8.0%	8.0%	(8.0)%	0.0%	(8.0)%
4	8.0%	8.5%	(8.5)%	0.5%	(8.0)%
5	8.0%	9.0%	(9.0)%	1.0%	(8.0)%

(Fig 7)

As we see, by entering into a cap option, we limit our maximum interest payment to 8%, which is the cap or strike rate in the agreement.

Though in this example, we have seen cap option with the counterparty, practically, these kinds of options are also present in the loan agreement wherein the cap is provided by the bank, where a premium needs to be paid to enter into such an agreement. There are more such examples under the conclusive heading in this article.

We have seen the option of getting into a floating rate loan. Now let us see the options a bank has when interest rates are decreasing in a floating rate loan agreement, as the banks will tend to be at a loss when interest rate keeps on decreasing.

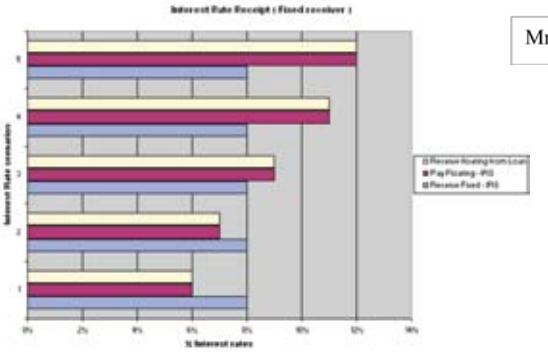
Bank's options

1) **Interest rate Swaps:** Similar to individuals, even a bank can enter into an IRS wherein it can swap its floating rate income for a fixed rate, if it's expecting the Libor to go down in future; future period could be three months, one year or three years as per the bank's expectation. The bank would not want to exchange its floating rate income for a fixed one, if it's expecting interest rates to go up as it would want to receive high floating. In case of fixed rate loan, it will try to exchange its fixed receipts with floating in case it expects interest rates to rise

Fundamentally, the IRS would work the same way as it worked for Mr. X and Mr. Y earlier. Most of the I-banks today enter into IRS contracts to suit their interest rate expectation and hedge their interest rates accordingly.

We shall use a similar chart as used earlier to explain a bank's perspective.

In this case, the bank will continue to receive at least 8% in each case irrespective of the existing market's interest rate.

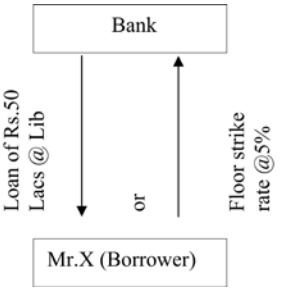


(Chart 2)

In this case, irrespective of the rates in the market, Bank will at least earn 8% (fixed). It will receive floating from loan and divert the same to the IRS contract.

We shall also see how banks can earn a minimum interest rate irrespective of the rates movement on the down side.

2) **Interest Rate Floor option – relief to the bank:** Conceptually exactly opposite of interest rate cap is interest rate floor. Here, the fear is with the Financial institution (bank) who has provided loan/lent money in the floating rate segment. Here, bank wants to earn a minimum percentage. To understand the concept, let us assume the "interest rate floor" option is present in the loan agreement itself, i.e. agreement between the bank and the borrower.



(Fig. 8)

The embedded floor option in the loan agreement makes the borrower a "by default" option writer and the bank is the option buyer who would have the right to exercise the option in case

Conceptually exactly opposite of interest rate cap is interest rate floor. Here, the fear is with the Financial institution (bank) who has provided loan/lent money in the floating rate segment. Here, bank wants to earn a minimum percentage. To understand the concept, let us assume the "interest rate floor" option is present in the loan agreement itself, i.e. agreement between the bank and the borrower.

the interest rates in the markets decrease below the floor rate. An example would explain the concept of a floor:

From Bank's perspective

Yr	Floor / Strike Rate	Interest Rate	Receive from Borrower(Loan)	Receive from Borrower(Floor)	Net Receivable
1	5.0%	7.0%	7.0%	0.0%	7.0%
2	5.0%	6.0%	6.0%	0.0%	6.0%
3	5.0%	5.5%	5.5%	0.0%	5.5%
4	5.0%	4.0%	4.0%	1.0%	5.0%
5	5.0%	3.5%	3.5%	1.5%	5.0%

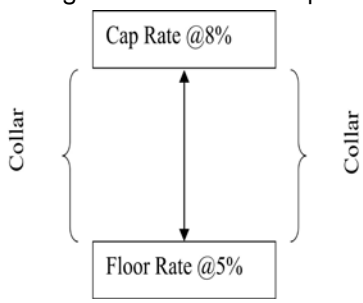
(Fig. 9)

In the example, if the bank's fear comes true, in the fourth and fifth year, it will exercise the floor option and ensure that it receives at least the floor rate from the entire deal.

Say if the interest rate is 7% in the first year, then it will receive Libor = 7%, but if the rate reaches 3.5% in the fifth year, the bank will exercise the floor option, as the rate has now gone below 5% (the floor rate) and the bank will recover the differential 1.5% from the borrower. In nutshell, the minimum interest expense for the borrower and the minimum income for the bank are locked at the rate of 5%. The bank will never receive less than 5% even if the interest rate goes down, hypothetically, to 0%, in case of presence of an interest rate floor option. (Such a floor option could be embedded in the loan agreement with the buyer as above or it could be separate agreement with a third party in which case the bank would have to incur a periodic cost to keep the floor agreement alive.)

A Collar

Presence of the cap and the floor in the loan agreement together between the bank and the borrower would give rise to the concept of a "collar".



(Fig. 10)

If there is a presence of both the cap at the rate of 8% and floor at the rate of 5%, the borrower will never pay above 8% and the bank would never receive below 5%.

If the rates go above the cap, the borrower will exercise and pay at the rate of a maximum 8%. Pay 10% to bank and receive 2% from bank under cap option. If the rates go below the floor, the bank exercises the options and receives at the rate of 5%. Pay 3% to the bank and additional 2% under floor option. The difference between 8% and 5% is a "collar".

So here are some of the ways in which interest rate hedging products can be used to manage the interest rate exposure on the basis of one's expectation on the interest rates in the short- and long-term. The market for these products is still at a nascent stage in our country and will inevitably grow due to the presence of huge debt capital on the balance sheet of the corporate houses. ■

Collar

Yr	Interest Rate	Cap /Strike rate	Floor /Strike rate	Payoff to bank	Receivable by Bank
1	10.0%	8.0%	5.0%	"10% - 2%" = (8.0)%	"10% - 2%" = 8.0%
2	8.0%	8.0%	5.0%	(8.0)%	8.0%
3	6.0%	8.0%	5.0%	(6.0)%	6.0%
4	5.0%	8.0%	5.0%	(5.0)%	5.0%
5	3.0%	8.0%	5.0%	"3%+2" = (5.0)%	"3%+2" = 5.0%

(Fig. 11)