

## CHAPTER – 04

# INTEREST RATE RISK MANAGEMENT

### **PART 1: FORWARD RATE AGREEMENT (FRA)**

#### **Question – 01**

M/s. Parker & Co. is contemplating to borrow an amount of ₹ 60 crores for a Period of 3 months in the coming 6 month's time from now. The current rate of interest is 9% p.a., but it may go up in 6 month's time. The company wants to hedge itself against the likely increase in interest rate.

The Company's Bankers quoted an FRA (Forward Rate Agreement) at 9.30% p.a.

What will be the Final settlement amount, if the actual rate of interest after 6 months happens to be

- (i) 9.60% p.a. and
- (ii) 8.80% p.a.?

**(Exam May – 2013, SM TYK – 01) (8 Marks)**

#### **Solution:**

M/s Parker & Co. Buy FRA 6 × 9 at 9.30% because it afraid of interest rate rising

**(i) Rate of Interest = 9.60%**

FRA bank will pay to Parker & Co.

$$\begin{aligned} \text{Net settlement amount} &= \frac{N (RR - FR) Dtm/DY}{1 + (RR \times Dtm/DY)} \\ &= \frac{\text{₹ } 60,00,00,000 \times (9.60\% - 9.30\%) \times 3/12}{1 + (9.60\% \times 3/12)} \end{aligned}$$

$$\begin{aligned} &= \frac{\text{₹ } 60,00,00,000 \times 0.075\%}{1.024} \\ &= \text{₹ } 4,39,453 \end{aligned}$$

**(ii) If Rate of Interest = 8.80%**

In this situation Parker & Co. will pay to FRA bank

$$\begin{aligned} \text{Net settlement amount} &= \frac{\text{₹ } 60,00,00,000 \times (9.3\% - 8.80\%) \times 3/12}{1 + (8.80\% \times 3/12)} \\ &= \frac{\text{₹ } 60,00,00,000 \times 0.125\%}{1.022} \\ &= \text{₹ } 7,33,855 \end{aligned}$$

**Question – 02**

P Ltd. is contemplating to borrow an amount of ₹ 50 crores for a period of 3 months in the coming 6 months time for now. The current rate of interest is 8% per annum but it may go up in 6 months time. The company wants to hedge itself against the likely increase in interest rate.

The Company's Bankers quoted an FRA (Forward Rate Agreement) at 8.30% per annum.

Compute the effect of FRA and actual rate of interest cost to the company, if the actual rate of interest during consideration period happens to be

- (i) 8.60% p.a., or
- (ii) 7.80% p.a.

(Show your working on the basis of months)

**(Exam November – 2019) (8 Marks)**

**Solution:**

**(1) Actual Rate of Interest 8.60%**

In this situation FRA bank will pay to P Ltd.

**Effect of FRA**

$$\begin{aligned}
 \text{Net settlement amount} &= \frac{(N)(RR-FR) \times (Dtm/Dy)}{1 + (RR \times Dtm/Dy)} \\
 &= \frac{50 \text{ Cr.}(8.60\%-8.30\%) \times 3/12}{1 + (8.60\% \times 3/12)} \\
 &= \frac{\text{₹ } 3,75,000}{1.0215} \\
 &= \text{₹ } 3,67,107
 \end{aligned}$$

**Effective Rate of Interest**

$$\begin{aligned}
 \text{Interest paid on loan } (50 \text{ Cr} \times 8.6\% \times \frac{3}{12}) &= \text{₹ } 1,07,50,000 \\
 \text{Net settlement } (\text{₹ } 3,67,107 \times 1.0215) &= \text{₹ } 3,75,000 \\
 \text{Effective Cost} &= \text{₹ } 1,03,75,000 \\
 \text{Effective rate} &= \frac{1,03,75,000}{50 \text{ Cr.}} \times 100 \times \frac{12}{3} \\
 &= 8.30\% \text{ p.a.}
 \end{aligned}$$

**(2) If Rate 7.8%**

In this situation P Ltd. will pay to FRA bank

**Effect of FRA**

$$\begin{aligned}
 \text{Final settlement} &= \frac{50 \text{ Cr.}(7.8\%-8.30\%) \times 3/12}{1 + (7.8\% \times 3/12)} \\
 &= \frac{\text{₹ } 6,25,000}{1.0195} \\
 &= \text{₹ } 6,13,046
 \end{aligned}$$

**Effective Rate of Interest**

$$\begin{aligned}
 \text{Interest paid on Loan } (50 \text{ Cr.} \times 7.8\% \times 3/12) &= \text{₹ } 97,50,000 \\
 (+) \text{ Net Settlement } (\text{₹ } 6,13,046 \times 1.0195) &= \text{₹ } 6,25,000 \\
 &= \text{₹ } 1,03,75,000
 \end{aligned}$$

$$\begin{aligned}\text{Effective Rate} &= \frac{1,03,75,000}{50 \text{ Cr.}} \times 100 \times \frac{12}{3} \\ &= 8.30\% \text{ p.a.}\end{aligned}$$

**Question – 03**

TM Fincorp has bought a 6 × 9 ₹ 100 crore Forward Rate Agreement (FRA) at 5.25%. On fixing date reference rate i.e. MIBOR turns out be as follows:

| Period   | Rate (%) |
|----------|----------|
| 3 Months | 5.50     |
| 6 Months | 5.70     |
| 9 Months | 5.85     |

You are required to determine:

- (a) Profit/Loss to TM Fincorp. in terms of basis points.
- (b) The settlement amount.

(Assume 360 days in a year)

**(SM TYK – 02)**

**Solution:**

**(i) Calculation of profit/Loss to TM Fincorp.**

TM bought FRA 6 × 9 at 5.25%. On maturity 3 months MIBOR is 5.50% hence TM will Make profit (5.50% – 5.25%) i.e., 0.25% on 25 basic.

**(ii) Settlement Amount**

$$\begin{aligned}\text{Settlement Amount} &= \frac{N (RR-FR) DT_m/360}{1 + (RR \times DT_m/360)} \\ &= \frac{1,00,00,00,000 (5.50\% - 5.25\%) 90/360}{1 + (5.50\% \times 90/360)} \\ &= \frac{1,00,00,00,000 \times 0.0625\%}{1.01375} \\ &= ₹ 6,16,523\end{aligned}$$

**Question – 04**

The following market data is available:

Spot USD/JPY 116.00

| Deposit Rates p.a. | USD   | JPY   |
|--------------------|-------|-------|
| 3 Months           | 4.50% | 0.25% |
| 6 Months           | 5.00% | 0.25% |

Forward Rate Agreement (FRA) for Yen is Nil.

1. What should be 3 months FRA rate at 3 months forward?
2. The 6 & 12 months LIBORS are 5% & 6.5% respectively. A bank is quoting 6/12 USD FRA at 6.50 – 6.75%. Is any arbitrage opportunity available?

Calculate profit in such case.

**Solution:**

**(i) Calculation of FRA 3 × 6**

$$\begin{aligned}
 1 + (5\% \times 6/12) &= [1 + (4.5\% \times 3/12)] \times (1 + r) \\
 1.025 &= 1.01125 \times (1 + r) \\
 r &= \left( \frac{1.025}{1.01125} \right) - 1 \times 100 \\
 &= 1.3595\% \\
 \text{FRA } 3 \times 6 &= 1.3597 \times \frac{12}{3} \\
 &= 5.44\% \text{ P.a.}
 \end{aligned}$$

**(ii) Calculation of Theoretical 6 × 12 FRA**

$$\begin{aligned}
 1 + \left( 6.5\% \times \frac{12}{12} \right) &= \left[ 1 + \left( 5\% \times \frac{6}{12} \right) \right] \times (1 + r) \\
 1.065 &= (1.025) (1 + r) \\
 r &= \left( \frac{1.065}{1.025} - 1 \right) \times 100 \times \frac{12}{6}
 \end{aligned}$$

= 7.80% p.a

**Arbitrage:**

**Action:** Since Actual FRA is less than theoretical FRA, it means FRA is underpriced, hence buy FRA 6.75% p.a. i.e. contract to borrow.

**Process:**

**Today**

- Borrow \$ 1 @ 5% p.a. for 6 months
- Invest \$ 1 @ 6.5% p.a. for 12 Months
- Contract to borrow @ 6.75% p.a. after 6 months for 6 months

**After 12 Months**

Cash Inflows

\$ 1 (1.065) = \$ 1.065

Cash outflows

\$ 1 (1.025) (1.03375) = \$1.060

Arbitrage = \$ 0.005

**PART 2: INTEREST RATE GUARANTEE**

**Question – 05**

Two companies ABC Ltd. and XYZ Ltd. approach the DEF Bank for FRA (Forward Rate Agreement). They want to borrow a sum of ₹ 100 crores after 2 years for a period of 1 year. Bank has calculated Yield Curve of both companies as follows:

| Year | XYZ Ltd. | ABC Ltd. |
|------|----------|----------|
| 1    | 3.86     | 4.12     |
| 2    | 4.20     | 5.48     |
| 3    | 4.48     | 5.78     |

\*The difference in yield curve is due to the lower credit rating of ABC Ltd. compared to XYZ Ltd.

- (i) You are required to calculate the rate of interest DEF Bank would quote under 2V3 FRA, using the company's yield information as quoted above.
- (ii) Suppose bank offers Interest Rate Guarantee for a premium of 0.1% of the amount of loan, you are required to calculate the interest payable by XYZ Ltd. if interest rate in 2 years turns out to be
- (a) 4.50%                      (b) 5.50%

**(RTP November – 2020)**

**Solution:**

**(i) Calculation of Theoretical FRA 2 × 3**

**XYZ**

$$(1.0448)^3 = (1.0420)^2 (1 + r)$$

$$1.14057 = 1.08576 (1 + r)$$

$$r = \left( \frac{1.14051}{1.08576} \right) - 1 \times 100$$
$$= 5.04\% \text{ p.a.}$$

**ABC**

$$(1.0578)^3 = (1.0548)^2 (1 + r)$$

$$1.1836 = 1.1126 (1 + r)$$

$$r = \left( \frac{1.1836}{1.1126} - 1 \right) \times 100$$
$$= 6.38\% \text{ p.a.}$$

**(ii) Calculation of Interest payable by XYZ:** XYZ buys interest rate guarantee for 1 year after 2 years @ 5.04% & paid premium ₹ 100 Cr. × 0.1% = ₹ 0.1 Cr. (Call Option)

**(a) 4.5% p.a.**

Interest paid on loan (₹ 100 Cr. × 4.5%) = ₹ 4.50 Cr.

Interest rate guarantee payoff = Lapsed



**Solution:**

**(I) FRA Hedging:**

Electra space wants to borrow after 3 months for 6 months & afraid from interest rate rising. In order to hedge risk, it should take long position (Buy FRA) 3 × 9 @ 5.94% p.a.

**Calculation of Interest payable**

**(i) Rate 4.5%**

Interest paid on loan (€ 5,00,00,000 × 4.5% × 6/12) = € 11,25,000

Electra space paid to FRA  
[5.94% – 4.5%] × € 5,00,00,000 × 6/12 = € 3,60,000

Interest payable = € 14,85,500

**(ii) Rate 6.5%**

Interest paid on loan (€ 5,00,00,000 × 6.5% × 6/12) = € 16,25,000

Electra space will receive  
[0.065 – 0.0594] × € 5,00,00,000 × 6/12 = € 1,40,000

Interest payable = € 14,85,000

Effective Cost =  $\frac{€ 14,85,000}{€ 5,00,00,000} \times 100 \times \frac{12}{6} = 5.94\% \text{ p.a.}$

**(II) Interest Rate Future**

\* Electra space should take short position at 94.15 on IRF

\* No. of contracts =  $\frac{\text{Borrowing Amount}}{\text{Contract Size}} \times \frac{\text{Duration of Loan}}{3 \text{ Months}}$   
 $= \frac{€ 5,00,00,000}{€ 50,000} \times \frac{6 \text{ Months}}{3 \text{ Months}}$   
 = 2,000 Contract short

**Interest Payable**

**(i) Rate 4.5% (100 – 4.5 = 95.50)**

## INTEREST RATE RISK MANAGEMENT

Interest paid on loan ( $€ 5,00,00,000 \times 4.5\% \times 6/12$ ) = € 11,25,000

Loss on IRF (94.15 – 95.50) = 1.35%

$(1.35\% \times 2,000 \times € 50,000 \times 3/12)$  = € 3,37,500  

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= € 14,62,500  

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### **(ii) Rate 6.5% (100 – 6.5 = 93.50)**

Interest paid on loan ( $€ 5,00,00,000 \times 6.5\% \times 6/12$ ) = € 16,25,000

Gain on IRF (94.15 – 93.50) = 0.65%

$(0.65\% \times 2,000 \times € 50,000 \times 3/12)$  = (€ 1,62,500)  

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= € 14,62,500  

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Effective Cost =  $\frac{€ 14,62,500}{€ 5,00,00,000} \times 100 \times \frac{12}{6} = 5.85\% \text{ p.a.}$

## **PART 4: FINANCIAL SWAP**

### **(I) EQUITY SWAP**

#### **Question – 07**

CMT Pension Fund has a portfolio of shares of diversified companies valued at ₹ 800 crore enters into a swap arrangement with Boom Bank on the terms that it will get 1.15% quarterly on notional principal of ₹ 800 crore in exchange of return on portfolio which is exactly tracking the Sensex which is presently 43,200.

You are required to determine the net payment to be received/ paid if Sensex turns out to be 43,720, 43,560, 44,160 and 43,920 at the end of each quarter.

Note: Make calculation in ₹ crore and round off calculations upto 4 decimal points.

**(MTP October – 2021)**

#### **Solution:**

#### **(i) Calculation of net settlement in each quarter**

| Quarter | Sensex Return (%)   | Sensex Return (₹) | Fixed return (₹) (1.15%) | Net payable/receivable |
|---------|---|-------------------|--------------------------|------------------------|
| I       | $\frac{43,720 - 43,200}{43,200} \times 100$<br>= 1.2037%  | 9.6296            | 9.20 Cr.                 | - 0.4296 Paid          |
| II      | $\frac{43,560 - 43,720}{43,700} \times 100$<br>= -0.3660% | -2.9280           | 9.20 Cr.                 | 12.128 Received        |
| III     | $\frac{44,160 - 43,560}{43,560} \times 100$<br>= 1.3774%  | 11.0192           | 9.20 Cr.                 | -1.8192 Paid           |
| IV      | $\frac{43,920 - 44,160}{44,160} \times 100$<br>=-0.5435%  | -4.3480           | 9.20 Cr.                 | 13.5480 Received       |

**(II) PLAIN VANILLA SWAP**

**Question – 08**

Suppose a dealer quotes 'All-in-cost' for a generic swap at 8% against six month LIBOR flat. If the notional principal amount of swap is ₹ 5,00,000.

- (i) Calculate semi-annual fixed payment.
- (ii) Find the first floating rate payment for (i) above if the six month period from the effective date of swap to the settlement date comprises 181 days and that the corresponding LIBOR was 6% on the effective date of swap.

In (ii) above, if the settlement is on 'Net' basis, how much the fixed rate payer would pay to the floating rate payer?

Generic swap is based on 30/360 days basis.

**(SM TYK – 04, Exam November – 2018) (8 Marks)**

**Solution:**

- (i) Calculation of semi Amount fixed payment  
= ₹ 5,00,000 × 8% × 6/12  
= ₹ 20,000

- (ii) Calculation of floating rate payment

$$= ₹ 5,00,000 \times 6\% \times 181/360$$

$$= ₹ 15,083$$

**(iii)** Calculation of Net settlement

$$\text{Net Amount paid by fixed rate payer} = 20,000 - 15,083$$

$$= ₹ 4,917$$

**Question – 09**

Suppose a dealer bank quotes for a generic swap "AIC 8%/8.20% vs. 6M LIBOR Flat". Notional principal amount of swap is ₹ 1 Million, and the same is for a period of three years, reset after every six months.

In this context, answer the following questions:

- (1) Interpret the dealer bank quote.
- (2) If a firm is buying a swap, what is the nature of cash flows?
- (3) If a firm is selling a swap, what is the nature of cash flows?
- (4) Calculate semi-annual fixed payment for the buyer of swap at the end of every six months.
- (5) If the six month period from the effective date of swap to the settlement date comprises of 181 days and that the corresponding LIBOR was 5% on the effective date of swap, then what will be the first floating rate payment for the buyer?
- (6) If the settlement is on "Net Basis", how much the buyer of swap has to pay or receive at the end of first six months? [Assume 30/360 days basis]

**(Exam November – 2023) (8 Marks)**

**Solution:**

**(1)** Interpretation of dealer bank quote:

- Ø AIC in the dealer bank quote refers to 'All in cost' i.e. cost of swap all inclusive.

- Ø First part of the quote i.e. '8%/8.20%' refers to the fixed leg part and the second part of the quote i. e. '6m LIBOR Flat' refers to the floating leg part.
  - Ø The difference in the fixed rates i.e. 20 bps refers to the margin charged by the Bank on the fixed leg of transactions.
  - Ø The term 'flat' on the floating leg quote, indicates that the Bank does not charge any commission on the floating leg. Therefore, bank charges 20 bps for transacting swap as a whole.
- (2) A buyer of swap pays 'Fixed' cash flows and receives 'Floating'. As per the quote, the buyer would pay 8.2% (higher of 8%, 8.2%) to the Bank and would receive '6M LIBOR' against it.
- (3) A seller of swap pays 'floating' cash flows and receives 'fixed'. As per the quote, the seller would pay '6M LIBOR' to the bank and would receive 8% (lower of 8%, 8.2%) against it.
- (4) Semi-annual Payment every six-month for buyer of Swap:

$$₹ 10,00,000 \times 8.20\% \times \frac{1}{2} = ₹ 41,000$$

- (5) Floating Rate Payment

$$\begin{aligned} &= N (\text{LIBOR}) \left( \frac{dt}{360} \right) \\ &= 10,00,000 \times 0.05 \times \frac{181}{360} \\ &= ₹ 25,138.89 \end{aligned}$$

- (6) Net Settlement

$$\text{Or, } ₹ 41,000 - ₹ 25,138.89 = ₹ 15,861.11$$

### **(III) OVERNIGHT INDEX SWAP**

#### **Question – 10**

Derivative Bank entered into a swap arrangement on a principal of ₹ 10 crores and agreed to receive MIBOR overnight floating rate for a fixed payment on the

principal. The swap was entered into on Monday, 19<sup>th</sup> August, 2019 and was to commence on 20<sup>th</sup> August, 2019 and run a period of 7 days.

Respective MIBOR rates for Tuesday to Monday were:

8.15%, 7.98%, 7.95%, 8.12%, 8.15%, 7.75%.

If Fixed Rate of Interest is 8%, then evaluate

- (i) The nature of this swap arrangement.
- (ii) The Net Settlement amount.

**Note:**

- (1) Sunday is Holiday.
- (2) Work in rounded rupees and avoid decimal working.
- (3) Consider 365 days in a year.

**(RTP November – 2021)**

**Solution:**

**(I) Nature of Swap**

This swap is Plain Vanilla Overnight Index swap.

**(II) The Net Settlement Amount**

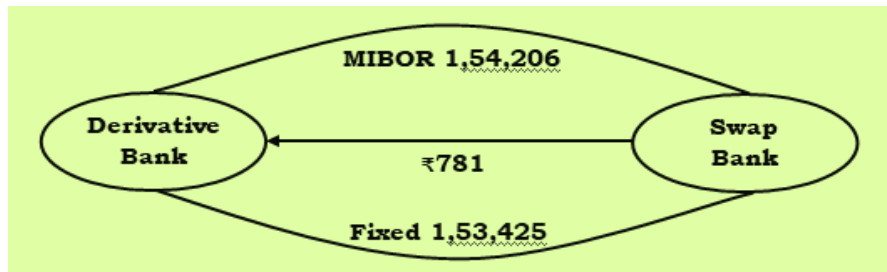
Fixed Rate Payment

$$= 10,00,00,000 \times 8\% \times 7/365$$

$$= ₹ 1,53,425$$

Floating Rate (MIBOR) Payment

| Day         | MIBOR  | Calculation                               | Interest |
|-------------|--------|---|----------|
| Tuesday     | 8.15 % | $10,00,00,000 \times 8.15\% \times 1/365$ | 22,329   |
| Wednesday   | 7.98 % | $10,00,22,329 \times 7.98\% \times 1/365$ | 21,868   |
| Thursday    | 7.95 % | $10,00,44,197 \times 7.95\% \times 1/365$ | 21,790   |
| Friday      | 8.12 % | $10,00,65,987 \times 8.12\% \times 1/365$ | 22,261   |
| Sat. & Sun. | 8.15 % | $10,00,88,248 \times 8.15\% \times 2/365$ | 44,697   |
| Monday      | 7.75 % | $10,01,32,945 \times 7.75\% \times 1/365$ | 21,261   |
|             |        |   | 1,54,206 |



In Settlement, ₹ 781 will be paid by swap bank to Derivative Bank  $(1,54,206 - 1,53,425) = 781$ .

**Note:** Saturday को (SATURDAY & SUNDAY) दो दिनों का INTEREST लेना है।

**Question – 11**

Derivative Bank entered into a plain vanilla swap through on OIS (Overnight Index Swap) on a principal of ₹ 10 crores and agreed to receive MIBOR overnight floating rate for a fixed payment on the principal. The swap was entered into on Monday, 2<sup>nd</sup> August, 2010 and was to commence on 3<sup>rd</sup> August, 2010 and run for a period of 7 days.

Respective MIBOR rates for Tuesday to Monday were:

7.75%,      8.15%,      8.12%,      7.95%,      7.98%,      8.15%.

If Derivative Bank received ₹ 317 net on settlement, calculate Fixed rate and interest under both legs.

**Notes:**

- (i) Sunday is Holiday.
- (ii) Work in rounded rupees and avoid decimal working.

**(Exam November – 2010, SM TYK – 05) (8 Marks)**

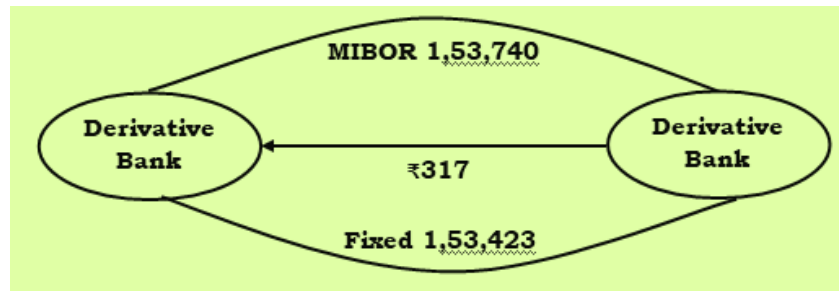
**Solution:**

**(i) Calculation of floating Rate payment (MIBOR)**

| Days      | MIBOR  | Calculation                                | Interest |
|-----------|--------|--|----------|
| Tuesday   | 7.75 % | $10,00,00,000 \times 7.75 \% \times 1/365$ | 21,233   |
| Wednesday | 8.15 % | $10,00,21,233 \times 8.15 \% \times 1/365$ | 22,333   |
| Thursday  | 8.12 % | $10,00,43,567 \times 8.12 \% \times 1/365$ | 22,256   |

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|             |        |  |          |
|-------------|--------|--|----------|
| Friday      | 7.95 % | $10,00,65,823 \times 7.95 \% \times 1/365$ | 21,795   |
| Sat. & Sun. | 7.98 % | $10,00,87,618 \times 7.98 \% \times 2/365$ | 43,764   |
| Monday      | 8.15 % | $10,01,31,382 \times 8.15 \% \times 1/365$ | 22,358   |
|             |        |  | 1,53,740 |



$$\begin{aligned} \text{Fixed Rate Payment} &= 1,53,740 - 317 \\ &= 1,53,423 \end{aligned}$$

$$\begin{aligned} \text{Rate of Interest} &= \frac{1,53,423}{10,00,00,000} \times 100 \times \frac{365}{7} \\ &= 8\% \text{ p.a.} \end{aligned}$$

### (IV) TWO PARTY SWAP

#### Question – 12

IB an Indian firm has its subsidiary in Japan and Zaki a Japanese firm has its subsidiary in India and face the following interest rates:

| Company           | IB           | Zaki         |
|-------------------|--------------|--------------|
| INR floating rate | BPLR + 0.50% | BPLR + 2.50% |
| JPY (Fixed rate)  | 2%           | 2.25%        |

Zaki wishes to borrow Rupee Loan at a floating rate and IB wishes to borrow JPY at a fixed rate. The amount of loan required by both the firms is same at the current exchange rate. A financial institution may arrange a swap and requires 25 basis points as its commission. Gain, if any, is to be shared by the firms equally.

You are required to find out:

- (i) Whether a swap can be arranged which may be beneficial to both the firms?

(ii) What rate of interest will the firms end up paying?

**(Exam November – 2020) (8 Marks)**

**Solution:**

(i) IB has absolute advantage in floating rate as well as fixed rate but it has comparative advantage in floating rate.

Hence,

\* IB should borrow at floating rate.

\* ZAKI should borrow at fixed rate.

Total potential gain

$$\begin{aligned} &= \text{Difference in floating rate} - \text{Difference in fixed rate} \\ &= 2\% - 0.25\% = 1.75\% \end{aligned}$$

$$\begin{aligned} (-) \text{ Commission} &= 0.25\% \end{aligned}$$

$$\begin{aligned} \text{Net gain} &= \underline{1.50\%} \end{aligned}$$

**Effective Cost**

$$\text{IB} = 2 - (1.5 \times 1/2) = 1.25\%$$

$$\text{ZAKI} = \text{BPLR} + 2.5 - (1.5 \times 1/2) = \text{BPLR} + 1.75$$

(ii) Interest Rate Payable [Process]

**IB**

|                              |               |
|------------------------------|---------------|
| Interest paid on loan        | BPLR + 0.5%   |
| Commission (0.25 × 1/2)      | 0.125%        |
| Received from Zaki           | - BPLR + 0.5% |
| Paid to ZAKI (1.25 - 0.125%) | 1.125%        |
| Effective Cost               | <u>1.25%</u>  |

**ZAKI**

|                       |       |
|-----------------------|-------|
| Interest paid on loan | 2.25% |
|-----------------------|-------|

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|                  |                    |
|------------------|--------------------|
| Commission       | 0.125%             |
| Paid to IB       | BPLR + 0.50%       |
| Received from IB | - 1.125%           |
| Effective Cost   | <u>BPLR + 1.75</u> |

### **Question – 13**

IF an Indian firm has its subsidiary in Singapore and SF a Singapore firm has its subsidiary India and face the following interest rates:

| Company           | IF          | SF          |
|-------------------|-------------|-------------|
| INR Floating Rate | BPLR + 0.5% | BPLR + 1.5% |
| SGD (Fixed Rate)  | 3%          | 3.50%       |

SF wishes to borrow Rupee loan at a floating rate and IF wishes to borrow SGD at a fixed rate. The amount of loan required by both the companies is same at the current exchange rate. A Bank arranges a swap and requires 50 basis points as its commission, which is to be shared equally. IF requires a minimum gain of 20 basis points and SF requires a minimum gain of 10 basis points for structuring the deal. The Bank is very keen to structure the deal, even if, it has to forego a part of its commission.

You are required to find out

- (i) Whether there are any advantages available to IF and SF?
- (ii) Whether a swap can be arranged which may be beneficial to both the firms?
- (iii) What rate of interest will they end up paying? Show detailed working.

**(Exam May – 2023) (8 Marks)**

### **Solution:**

- (i) IF has absolute advantage in floating rate as well as fixed rate but it has comparative advantage in floating rate.

Hence,

- \* IF should borrow at floating rate.
- \* SF should borrow at fixed rate.

Total potential gain

= Difference in floating rate – Difference in fixed rate

= 1% – 0.5% = 0.5%

(–) Commission = 0.2%

Net gain = 0.3%

Effective Cost

IF = 3% – 0.20%

= 2.8%

SB = BPLR + 1.5% – 0.10%

= BPLR + 1.4%

**(ii) Design**

**IF**

Interest paid on loan BPLR + 0.5%

Commission 0.10%

Received from SF – BPLR + 0.5%

Paid to SF (2.8% – 0.10%) 2.7%

Effective Cost 2.8%

**SF**

Interest paid on loan 3.5%

Commission 0.10%

Paid to IF BPLR + 0.5%

Received from IF – 2.7%

BPLR + 1.4%