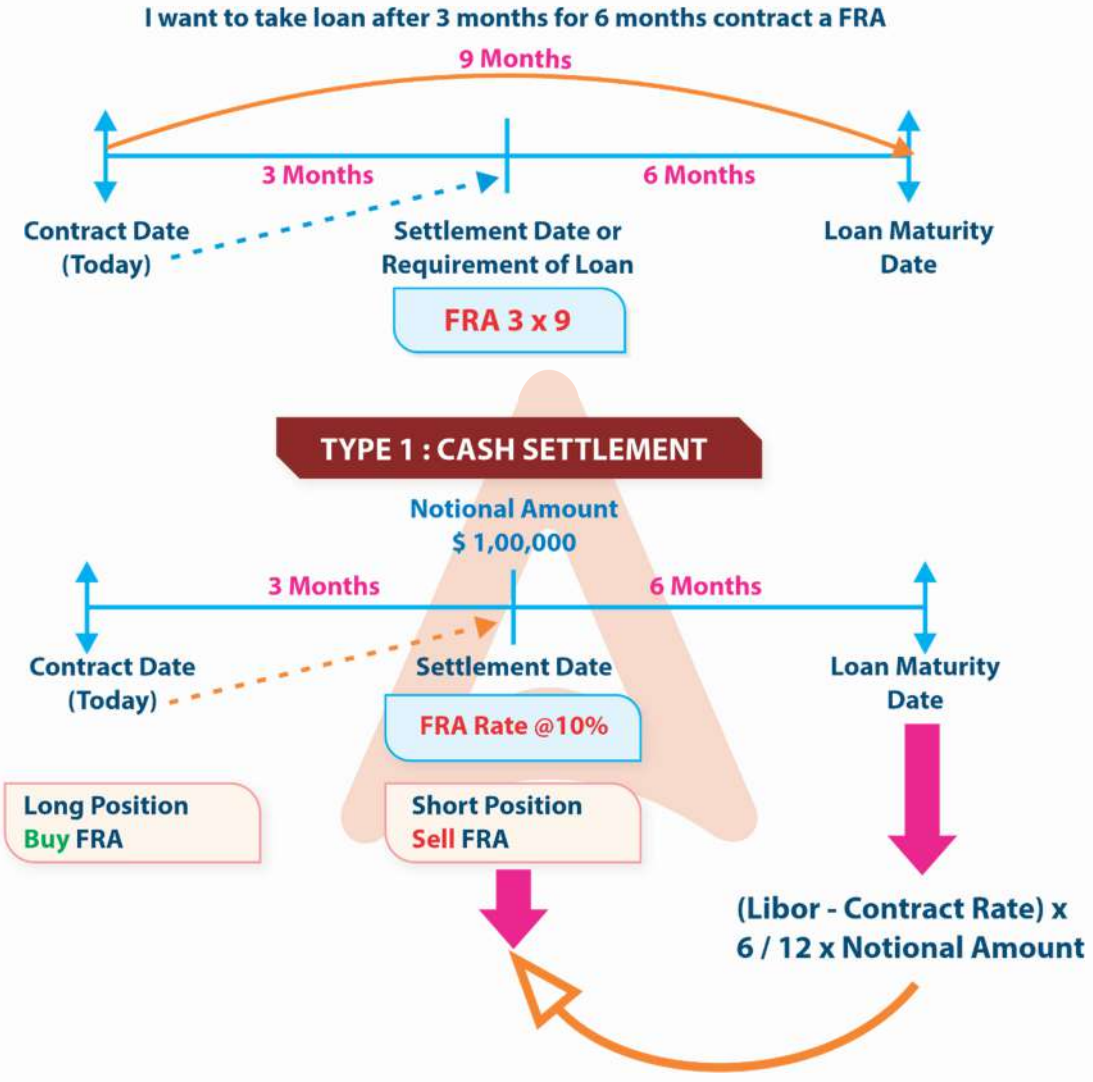
Interest Rate Risk Management

Study Session 9

LOS 1: Forward Rate Agreement (FRA)



- A forward rate Agreement can be viewed as a forward contract to borrow/lend money at a certain rate at some future date.
- These Contracts settle in cash.
- The long position in an FRA is the party that would borrow the money. If the floating rate at contract expiration is above the rate specified in the forward agreement, the long position in the contract can be viewed as the right to borrow at below market rates & the long will receive a payment.
- If reference rate at the expiration date is below the contract rate, the short will receive a cash from the long.
- FRA helps borrower to eliminate interest rate risk associated with borrowing or investing funds.
- Adverse movement in the interest rates will not affect liability of the borrower.

Payment to the long at settlement is:

$$\text{Notional Principal} \times \frac{[\text{Floating (LIBOR)} - \text{Forward Rate}] \times \frac{\text{days}}{360}}{1 + \text{Floating rate (LIBOR)} \times \frac{\text{days}}{360}}$$

Example:

Consider an FRA that:

- Expires/Settles in 30 days.
- Is based on notional principal amount of $ 1 million.
- Is based on 90 days LIBOR.
- Specifies a forward Rate of 5%

Assume that actual 90 days LIBOR 30 days from now (at expiration) is 6%. Compute the cash settlement payment at expiration and identify at which party makes the payment.

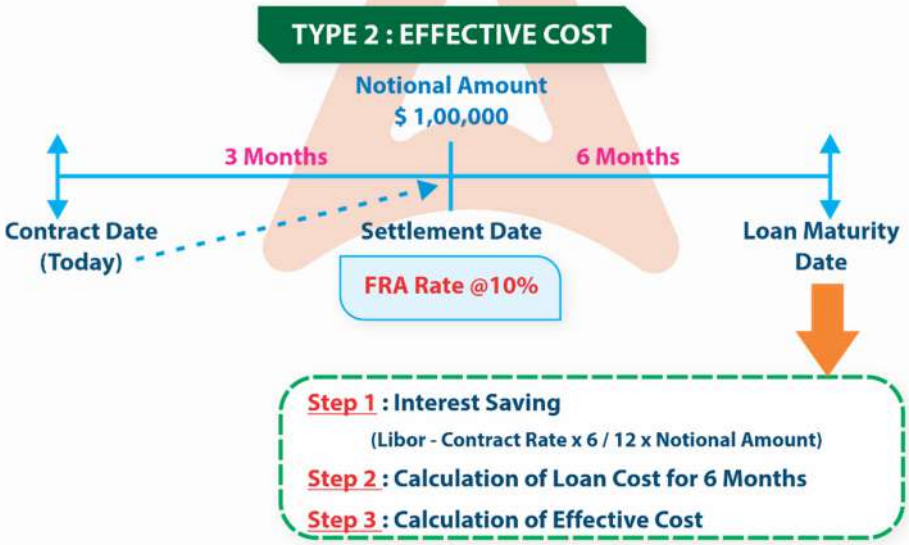
Solution:

If the long could borrow at contract rate of 5% rather than the market rate of 6%, the interest saved on a 90 day $ 1 million loan would be:

(0.06 – 0.05) (90 / 360) × 1 million = 0.0025 × 1 million = $ 2,500

The $ 2,500 in interest savings would not come until the end of the 90 days loan period. The value at settlement is the present value of these savings. The correct discount rate to use is the actual rate at settlement, 6%, not the contract rate of 5%.

The payment at settlement date from the short to the long is: $\frac{2500}{1+\left[(0.06)\times\frac{90}{360}\right]}$ = $ 2,463.05.



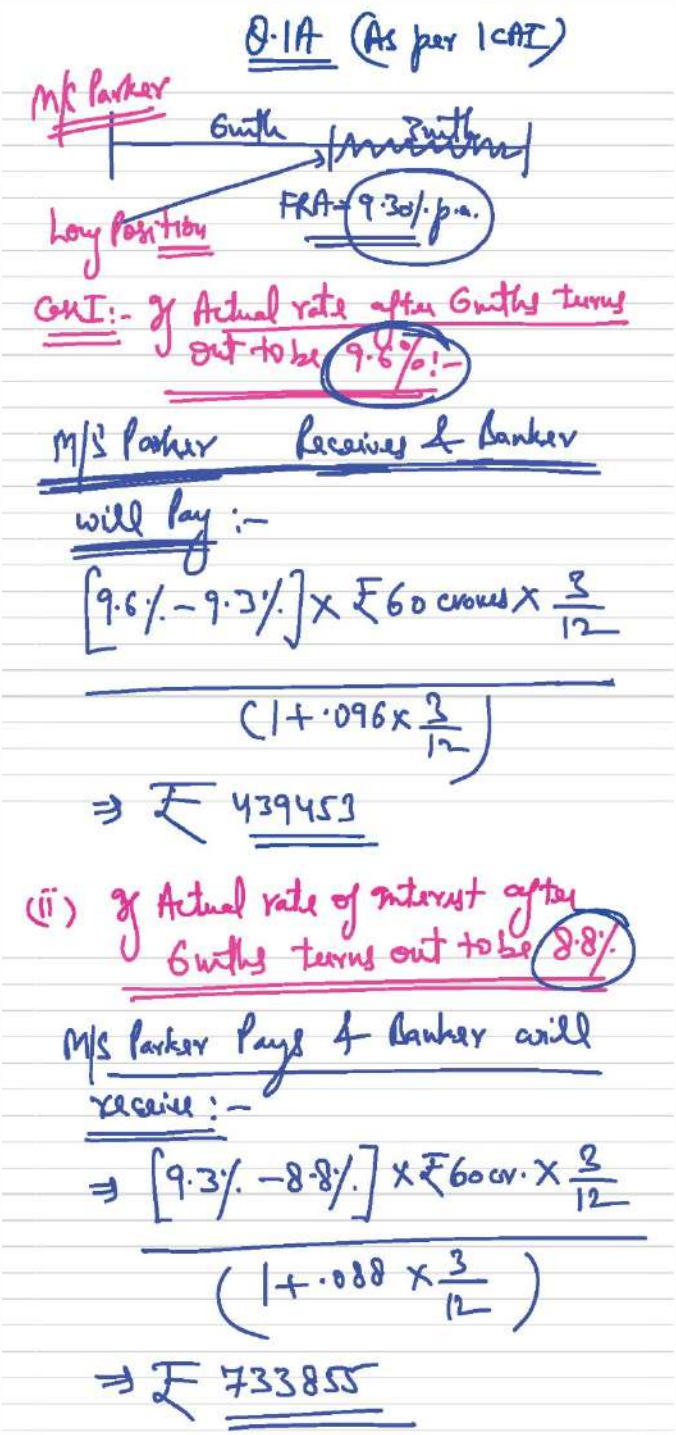
QUESTION NO. 1A

M/s. Parker & Co. is contemplating to borrow an amount of ₹ 60 crores for a period of 3 months in the coming 6 months' time from now. The current rate of interest is 9% p.a., 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 9.30% p.a.

What will be the effect of FRA and actual rate of interest cost to the company, if the actual rate of interest after 6 months happens to be (i) 9.60% p.a. and (ii) 8.80% p.a.?

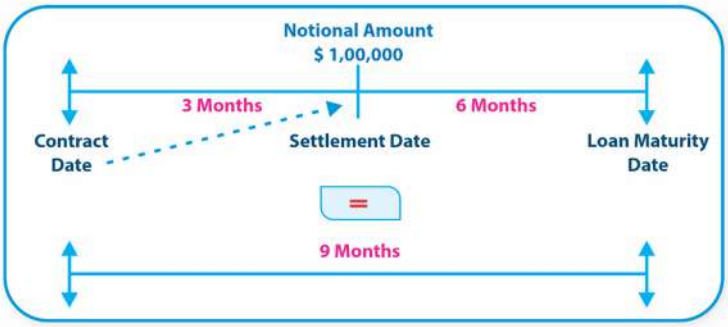
Solution :


Q.1A (As per ICAI)
M/s Parker
6 with
Long Position
FRA @ 9.30% p.a.
CaseI:- If Actual rate after 6 mths turns out to be 9.6%:-
M/S Parker Receives & Banker will Pay :-
[9.6% - 9.3%] × ₹60 crores × 3/12
(1 + .096 × 3/12)
⇒ ₹ 439453
(ii) If Actual rate of interest after 6 mths turns out to be 8.8%
M/s Parker Pays & Banker will receive :-
⇒ [9.3% - 8.8%] × ₹60 cr. × 3/12
(1 + .088 × 3/12)
⇒ ₹ 733855

FRA ARBITRAGE

Step 1 : Calculation of Fair Forward Rate

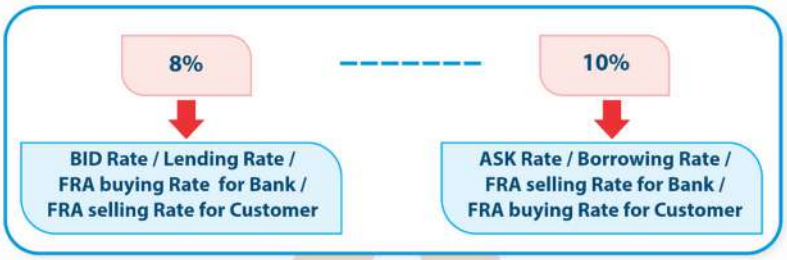
6 Months Forward rate 3 months from now



Step 2 : Decide from where we should borrow and where should we invest

Step 3 : Calculation of Arbitrage Profit

FRA Quotation: Suppose 3 × 9 FRA (Quoted by Bank)



QUESTION NO. 1C

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%

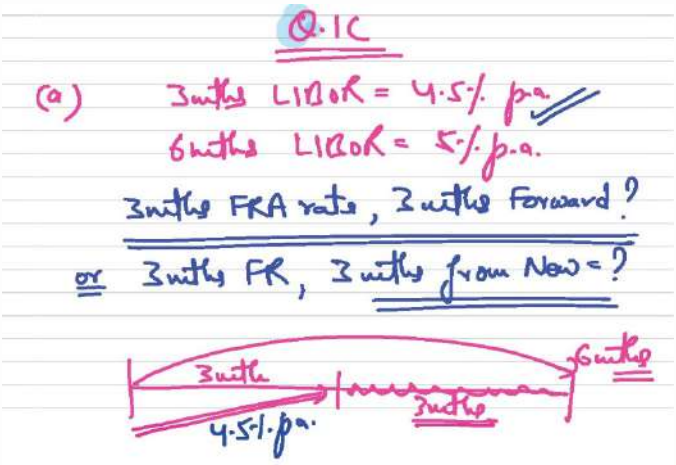
Forward Rate Agreement (FRA) for Yen is Nil.

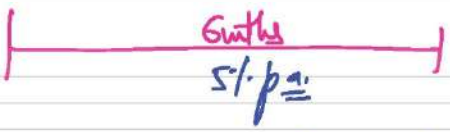
a) What should be 3 months FRA rate at 3 months forward?

b) The 6 & 12 months LIBORS are 5% & 6.5% respectively.

c) A bank is quoting 6/12 USD FRA at 6.50 - 6.75%. Is any arbitrage opportunity available? Calculate profit in such case.

Solution :





$(1+.045\times\frac{3}{12})(1+x\times\frac{3}{12}) = (1+.05\times\frac{6}{12})$

$(1.01125)(1+x\times\frac{3}{12}) = (1.025)$

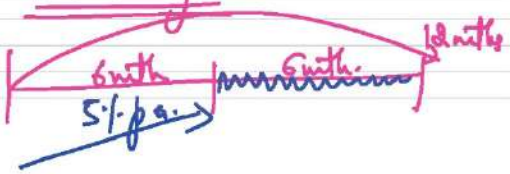
$x \Rightarrow 5.44\%$ p.a.

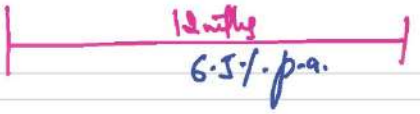
(b) 6 mths LIBOR = 5% p.a.

12 mths LIBOR = 6.5% p.a.

6/12 FRA ⇒ 6.50 — 6.75 %

Step 1:- FRA Pricing:-





6 mths FRA rate, 6 mths from Now = ?

$(1+.05\times\frac{6}{12})(1+x\times\frac{6}{12}) = (1+.065\times\frac{12}{12})$

$(1.025)(1+x\times\frac{6}{12}) = (1+.065)$

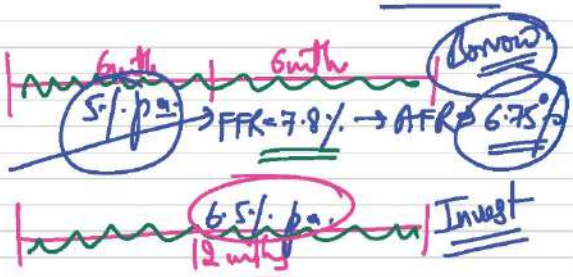
$x \Rightarrow 7.80\%$ p.a.

FFR 6×12 FRA = 7.80% p.a. (Valuation)

Step 2:-

FFR = 7.8% p.a. ⟹ AFR ⇒ 6/12 FRA Quotation

6.50% — 6.75%
Bid Ask
Under-Valued
Buy → FRA Buy
Borrow



Arbitrage Process:-

Notional Amt = $1000

Borrow $1000 @ 5% p.a. for 6 mths
& further Borrow @ 6.75% for 6 mths
and Invest $1000 @ 6.5% p.a. for 12 months

Step 3: Cal. of Arbitrage Profit:-

Amt received after 12 mths:-

$1000 $\left(1+.065\times\frac{12}{12}\right)$ ⇒ $1065

Repayment to Bank with 9 mth. ⇒ $1059.59

$1000 $\left(1+.05\times\frac{6}{12}\right)\left(1+.0675\times\frac{6}{12}\right)$

Arbitrage Profit $5.41

QUESTION NO. 1F

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

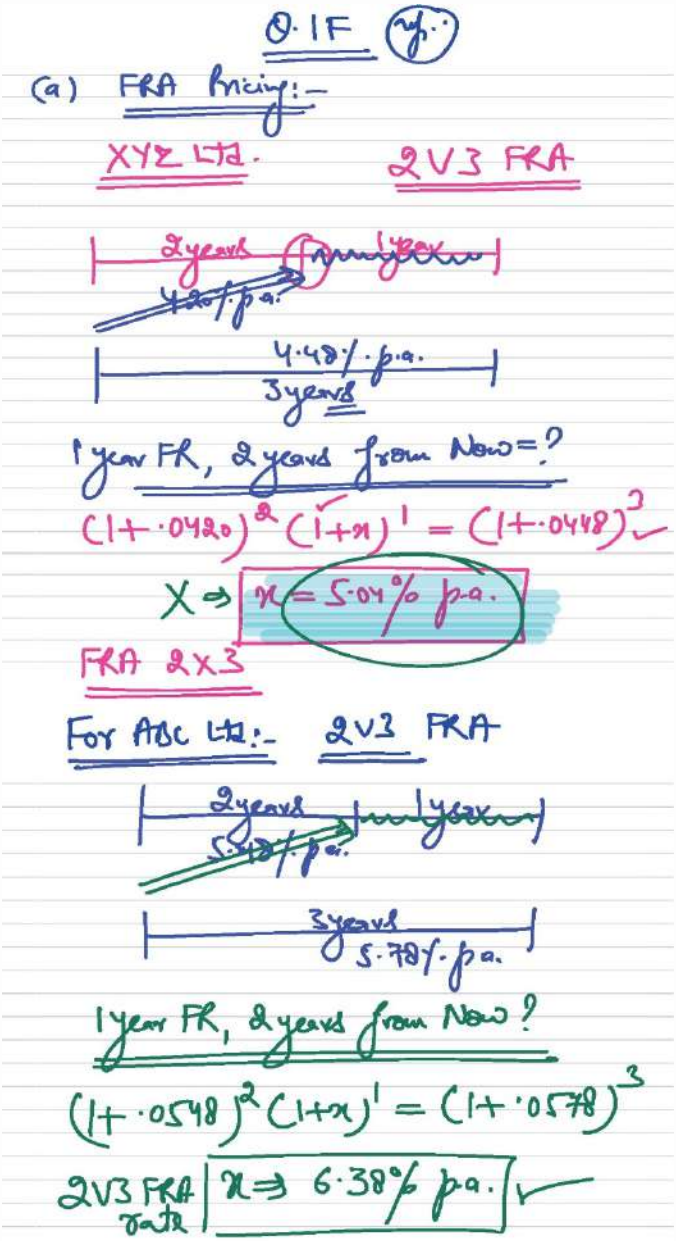
Year	XYZ Ltd.	ABC ltd.*
1	3.86	4.12
2	4.20	5.48
3	4.48	5.78

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

a) 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.

b) 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 (i) 4.50%, (ii) 5.50%

Solution :



(b) XYZ Ltd:-

Buys a Interest rate guarantee at X = 5.04% p.a.
i.e. buy Call (right to borrow) at X = 5.04%
Premium paid = 0.10%

Cal. of option premium:-

⇒ 100 cr. × 0.10%

⇒ ₹ 10,00,000 or

Case I: After 2 years, 1 year mkt. rates turns out to be 4.5% p.a:-

buy Call S − X

4.5% − 5.04% < 0

Call option will be lapse & the firm will borrow from the MKt. at 4.5%

mkt. Cost ⇒ 4.5% of 100 cr.

⇒ 4.5 cr.

(+) option Premium ⇒ 0.10 cr.
@ 1%

Net Cost ₹ 4.60 cr. or

% Annualized Cost

4.5% + 1% ⇒ 4.6% p.a.

or $\frac{4.6 \text{ cr.}}{100 \text{ cr.}} \times 100$ ⇒ 4.6% p.a.

Case II: If After 2 years, 1 year rates turns out to be 5.5% :-

S − X

5.5% − 5.04% > 0

Call option will be exercised i.e. the firm will borrow at 5.04% p.a.

Interest Cost p.a.:-

100 Cr. × 5.04% p.a. ⇒ 5.04 Cr.

+ Option Premium @ 1% ⇒ .10 Cr.

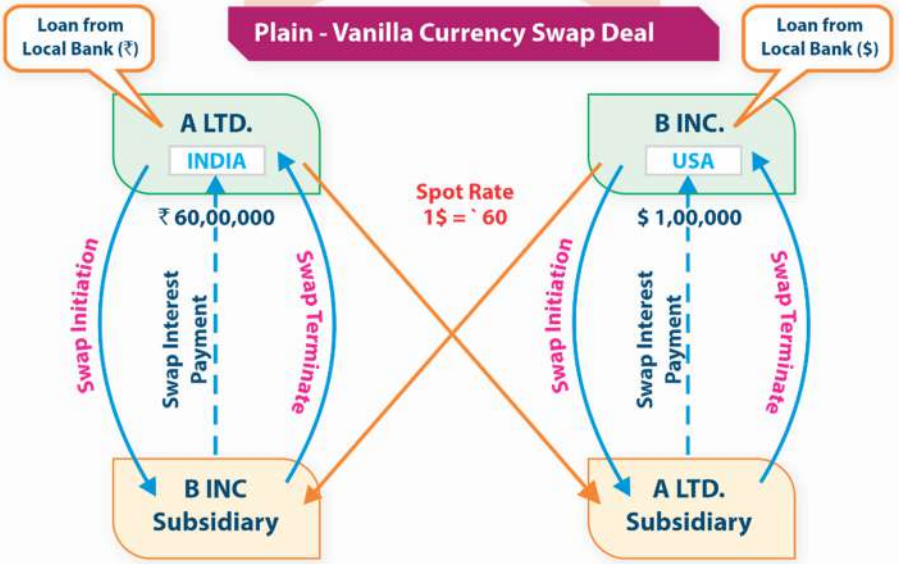
Net Cost ₹ 5.14 Cr.

% Cost ⇒ 5.04% + 1% ⇒ 5.14% p.a.

OR

$\frac{5.14 \text{ Cr.}}{100 \text{ Cr.}} \times 100 \Rightarrow$ 5.14% p.a.

LOS 2 : Currency SWAP



QUESTION NO. 2B

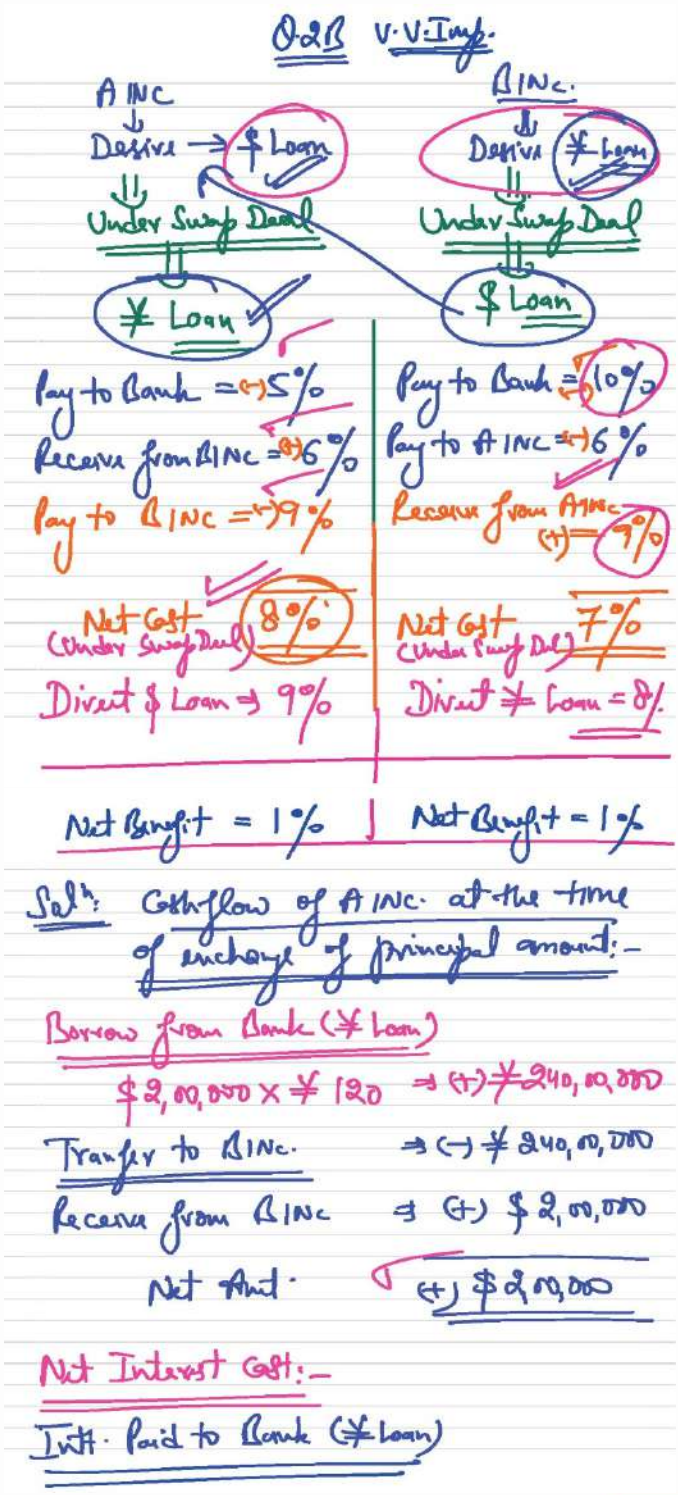
A Inc. and B Inc. intend to borrow $ 200,000 and $ 200,000 in ¥ respectively for a time horizon of one year. The prevalent interest rates are as follows:

Company	¥ Loan	$ Loan
A Inc	5%	9%
B Inc	8%	10%

The prevalent exchange rate is $1 = ¥120.

They entered in a currency swap under which it is agreed that B Inc will pay A Inc @ 1% over the ¥ Loan interest rate which the later will have to pay as a result of the agreed currency swap whereas A Inc will reimburse interest to B Inc only to the extent of 9%. Keeping the exchange rate invariant, quantify the opportunity gain or loss component of the ultimate outcome, resulting from the designed currency swap.

Solution :



¥2,00,00,000 × 5% ¥12,00,000

Int. received from BINC. ¥14,40,000
¥240,00,000 × 6%

Net Savings ¥2,40,000

Equivalent $'

⇒ ¥ 2,40,000 × 1/120 $ ⇒ (+) $2000
Savings

⇒ Interest paid to BINC. ⇒ (-) $18000
$2,00,000 × 9%

Net Cost under Swap Deal. $ 16000 (-)

% Cost under Swap Deal:-

(-) $16000 / $2,00,000 × 100 = 8%

Decision:

A INC. used $2,00,000 @ 8% under Swap Deal, if he had not opted for Swap Deal, the borrowing cost would be 9%. Thus, there is a savings of 1%

BINC

Cash flow of BINC at the time of exchange of principal amount :-

Borrow from Bank ⇒ + $2,00,000
Transfer to AINC ⇒ (-) $2,00,000
Rec. from AINC ⇒ (+) ¥240,00,000

Net Amount (+) ¥ 240,00,000

Net Amt. Cost:-

Paid to Bank
$2,00,000 × 10% ⇒ $ 20,000

Received from A Inc
$2,00,000 × 9% ⇒ $ 18,000

Net Cost $2000

Equivalent Yen:-
$2000 × ¥ 120 ⇒ ¥ 2,40,000

Amt. paid to A Inc.
¥ 240,00,000 × 6% ⇒ ¥ 14,40,000

Net Cost under Swap ¥ 16,80,000

% Cost ⇒ ¥ 16,80,000 / ¥ 240,00,000 × 100

⇒ 7% p.a.

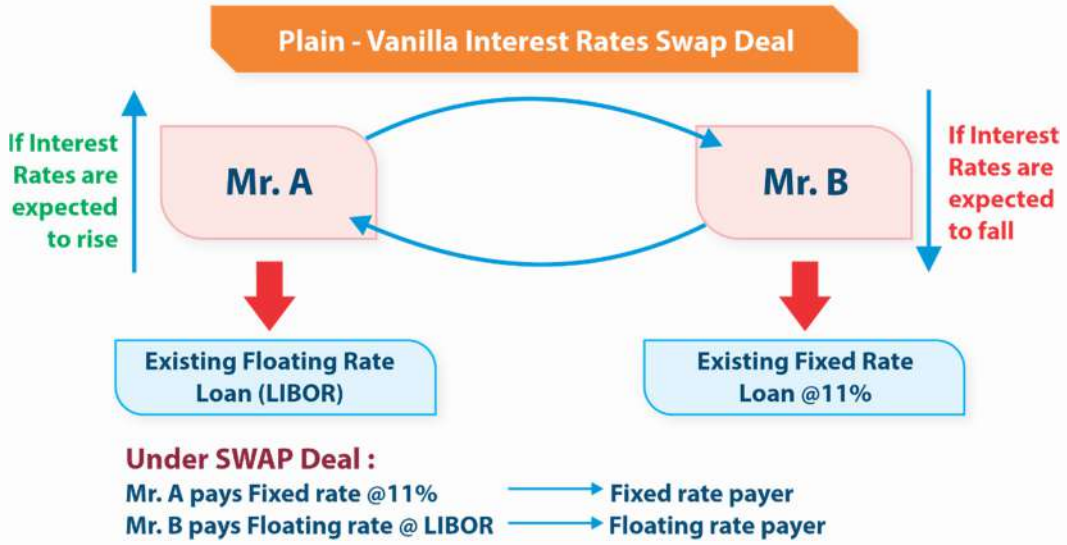
Net Cost under Swap Deal.

Decision:-

B Inc used ¥ 240,00,000 @ 7% p.a. under Swap Deal, if he had not opted for the swap deal the borrowings cost would be 8%.

Thus, there is a Saving of 1%.

LOS 3 : Interest Rate Swap [Two Party]



- Two parties exchange their interest rate obligation.
- The plain vanilla interest rate swap involves trading fixed interest rate payments for floating rate payments.
- The party who wants fixed-rate interest payments agrees to pay fixed-rate interest.
- The Counter party, who receives the fixed payments agrees to pay variable-rate interest/floating rate interest.
- The difference between the fixed rate payment and the floating rate payment is calculated and paid to the appropriate counterparty.
- Net interest is paid by the one who owes it.
- Swaps are zero-sum game. What one party gains, the other party losses.

The Net formulae for the Fixed-Rate payer, based on a 360-day year and a floating rate of LIBOR is:

$$(\text{Net Fixed Rate Payment})_t = [\text{Swap Fixed Rate} - \text{LIBOR}_{t-1}] \left[\frac{\text{No.of Days}}{360}\right] [\text{National Principal}]$$

Note:

- If this number is positive, fixed-rate payer pays a net payment to the floating-rate party.
- If this number is negative, then the fixed-rate payer receives a net flow from the floating rate payer

QUESTION NO. 3A

A Dealer quotes "All-in-Cost" for a generic swap at 8% against six months LIBOR flat. If the notional principal amount of swap is ₹ 6,00,000 :

a) Calculate semi-annual fixed payment.
b) 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.
c) 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.

Solution :

Q.3A

Note:- Days count Rule in a Generic Swap:-

For the fixed leg, we assume 30 Days in a month & 360 Days in a year i.e. 30/360 Days count Rule

However, for the floating rate, we use actual count days count rule.

In the last, the payments are to be netted off.

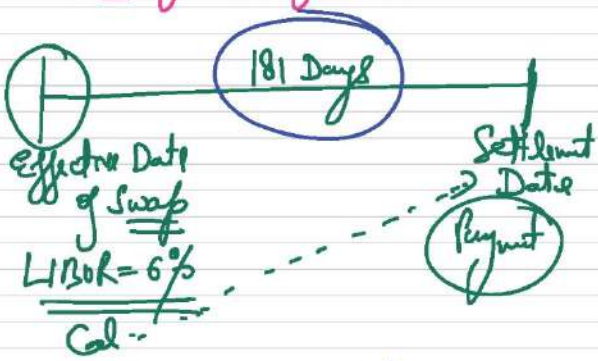
(a) Semi-annual fixed Payment:-

Fixed Rate = 8%

$\Rightarrow ₹ 6,00,000 \times 8\% \times \frac{180}{360}$

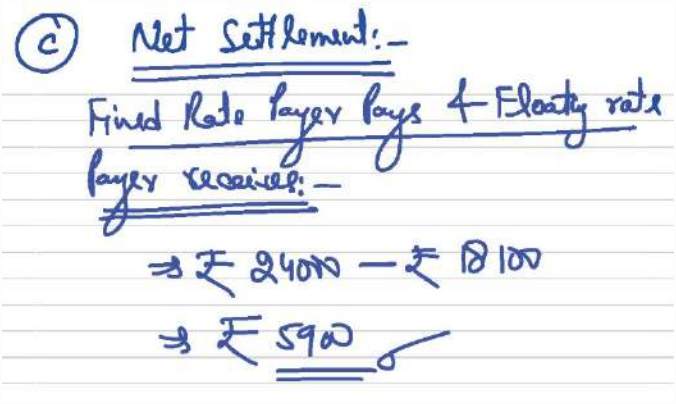
$\Rightarrow ₹ 24000$ ✓

(b) Floating Rate Payment:-



$\Rightarrow ₹ 6,00,000 \times 6\% \times \frac{181}{360}$

$\Rightarrow ₹ 18,100$ ✓



QUESTION NO. 3B

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, 2nd August, 2010 and was to commence on 3rd August, 2010 and run for a period of 7 days.

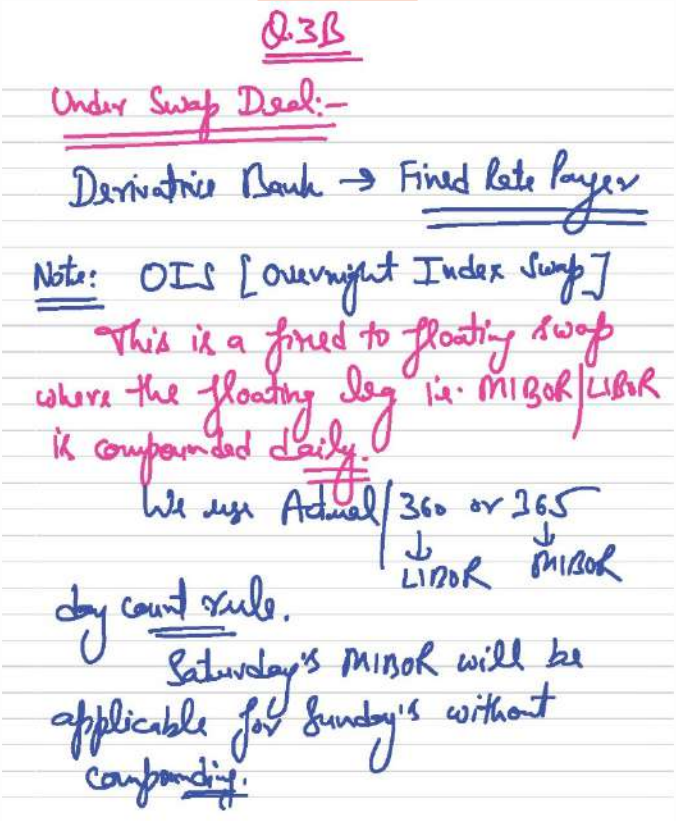
Respective MIBOR rates for Tuesday to Monday were:

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.

Solution :



(i) Interest under Floating Rate Payment:-

Days	Principal	MIBOR	Interest Gst
Tuesday	10,00,00,000	7.75%	21233
Wednesday	10,00,21,233	8.15%	22334 (10,00,21,233 x 8.15% / 365)
Thursday	10,00,43,567	8.12%	22256
Friday	10,00,65,823	7.95%	21795
Saturday / Sunday	10,00,87,618	7.98%	43764
Monday	10,01,31,382	8.15%	22358

Total Interest payment under floating rate ₹ 153740

Less Net Settlement ₹ 317

Total Interest under fixed rate ₹ 153423

(ii) Cal. of Fixed Rate:-

₹ 10,00,00,000 x r% x 7/365 = 153423

r = 8% p.a. approx.

QUESTION NO. 3C

IF an Indian firm has its subsidiary in Singapore and SF a Singapore firm has its subsidiary in 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.

Solution :

Q.3C

(i) Firm IF has an advantage in both the markets but it has comparatively more advantage in INR Floating Rate Market.

Firm SF has a comparatively less disadvantage in SAD fixed rate market.

However, Firm IF wants to borrow in the SAD fixed rate MKt. & Firm SF wants to borrow in the INR floating rate market.

This gives to the swap opp. :-

The Differential between the INR floating rate is 1% & differential between the SAD fixed rate is .50%

Effective Cost without Swap:-

⇒ 3% + BPLR + 1.5%

⇒ BPLR + 4.5%

Effective Cost with Swap:-

⇒ BPLR + .50 + 3.5%

⇒ BPLR + 4%

Difference:- BPLR + 4.5%

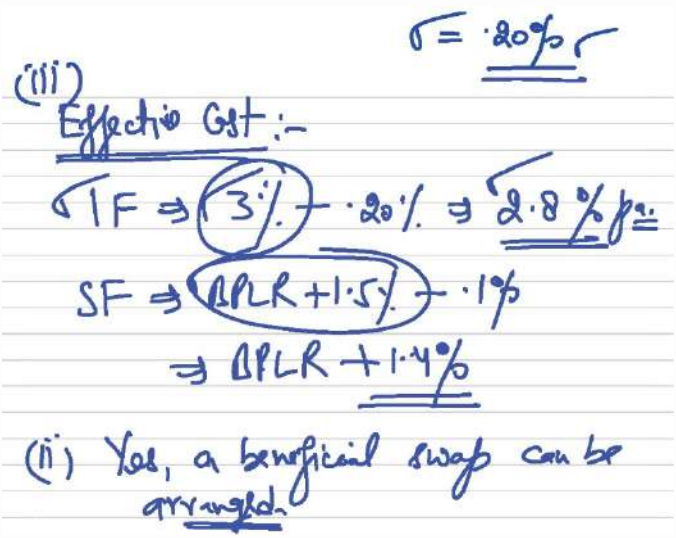
(-)

BPLR + 4%

overall gain ⇒ .50%

IF = .20% | SF = 10%

Banker Commission ⇒ .50 − .20 − .10



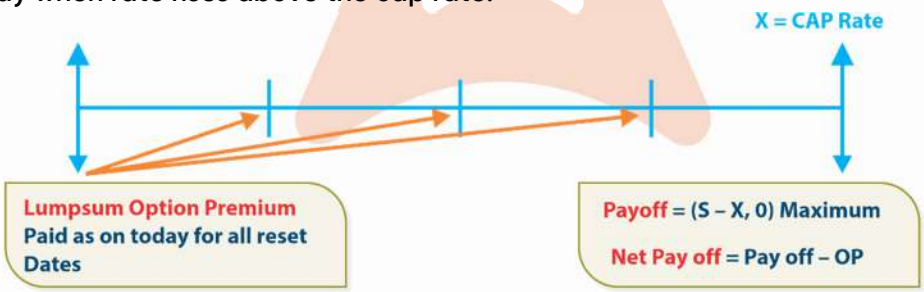
LOS 4 : Interest Rate Caps, Floor & Collar

CAP →	Maximum Rate →	Borrowings →	Floating Rate
FLOOR →	Minimum Rate →	Investments →	Floating Rate

Interest Rate Cap : (Maximum Rate For Borrowing @ Floating)

If a firm borrows at floating rate, it is afraid of interest rate rising, to hedge against the same, it will buy an interest rate cap i.e. Long call at X=Cap rate

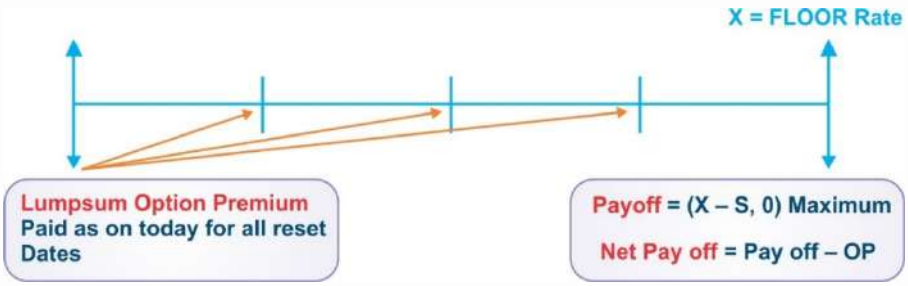
- It is a series/portfolio of interest rate Call option on interest rates.
- Each particular call option being called a CAPLET.
- Caps pay when rate rises above the cap rate.



Interest Rate Floor : (Minimum Rate For Investment @ Floating)

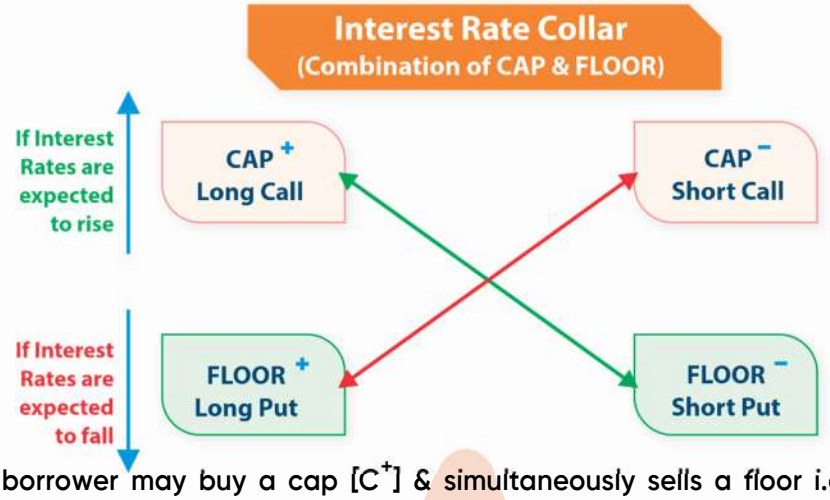
If a firm invest at floating rate, it is afraid of interest rate falling, to hedge against the same, it will buy an interest rate Floor i.e. Long put at X=Floor rate

- It is a series/portfolio of Interest rate put Option on interest rate. Such particular put option being called a FLOORLET
- Floor pays when rate falls below the Floor Rate.



Interest Rate Collar:

- It is a combination of a Cap and a Floor.
- Premium paid on one option would be compensated with the premium received on selling another option.
- If premium paid on caps is equal to the premium received on floor, then it would be called Zero Cost Collar.



A floating rate borrower may buy a cap [C^+] & simultaneously sells a floor i.e.[P^-].Initial outflow will reduce.(C^+ =Long Call & P^-=Short Put)

Similarly, a floating rate investor may buy a Floor (P^+) & simultaneously sell a Cap (C^-). Initial outflow will reduce.(P^+=Long Put & C^-=Short Call)

QUESTION NO. 4B

XYZ Limited borrows £ 15 Million of six months LIBOR + 10.00% for a period of 24 months. The company anticipates a rise in LIBOR, hence it proposes to buy a Cap Option from its Bankers at the strike rate of 8.00%. The lump sum premium is 1.00% for the entire reset periods and the fixed rate of interest is 7.00% per annum. The actual position of LIBOR during the forthcoming reset period is as under:

Reset Period	LIBOR (%)
1	9.00
2	9.50
3	10.00

You are required to show how far interest rate risk is hedged through Cap Option.

For calculation, work out figures at each stage up to four decimal points and amount nearest to £. It should be part of working notes.

Solution :

Q4B (a) (MCQ)

Firm has borrowed £15 million for 2 years i.e. 24 months at 6 mth LIBOR + 10%.

It is afraid of interest rate rising. To Hedge itself, firm has bought an Interest rate Cap at X = 8%

i.e. Long call at X = 8%

Premium = 1% of £150 lakhs

⇒ £1,50,000

Amortization Rate = 7% p.a.

$\frac{7\%}{2}$ = 3.5% for 6 mths

n = 2 × 2 = 4 terms

Amortized Premium:-

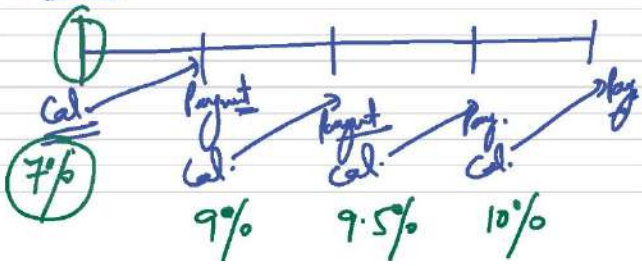
⇒ $\frac{£1,50,000}{PVAF@\frac{8\%}{2}, n \times 2 \text{ terms}}$

⇒ $\frac{£1,50,000}{PVAF@3.5\%, 4 \text{ terms}}$

⇒ $\frac{£1,50,000}{3.6731}$

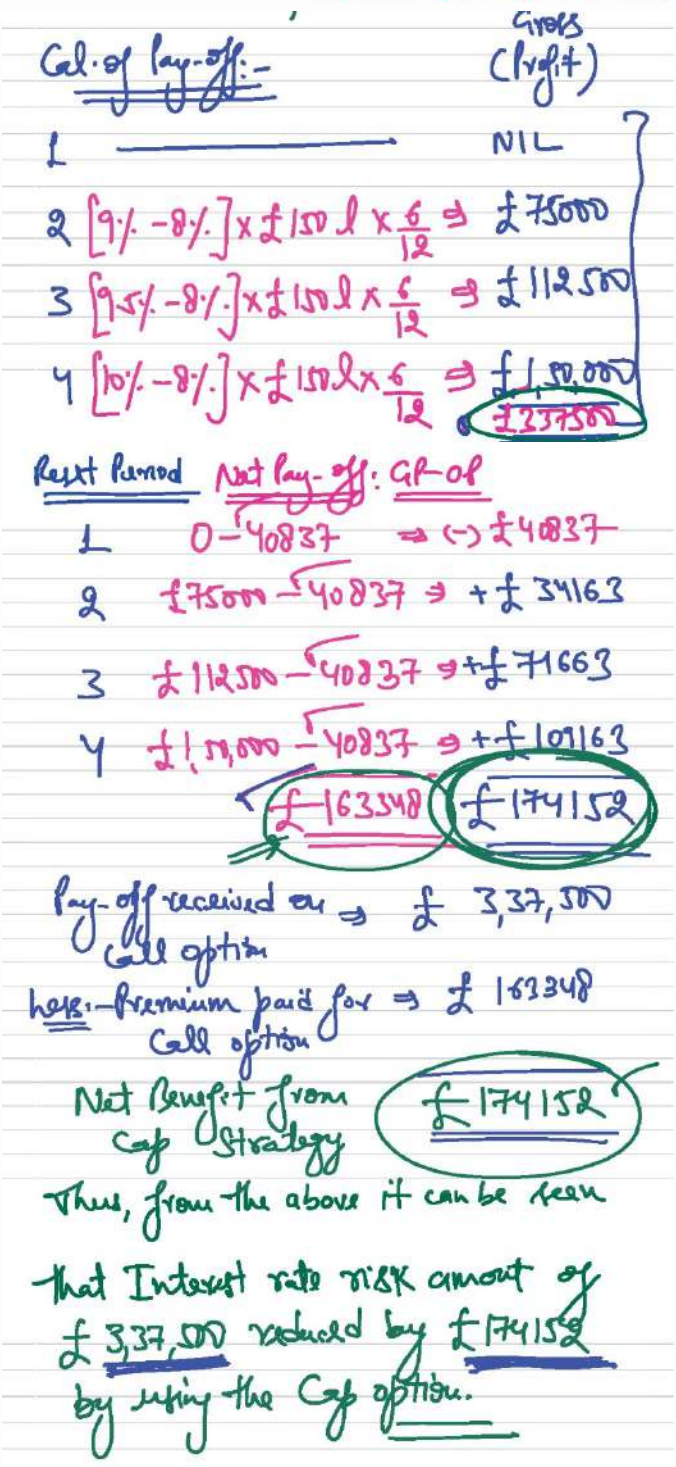
⇒ £40,837

Hint:-



Cal. of Pay-off & Net Pay-off:-

Exercise period	Rates	Long Call (S-X) at X=8%	
1	7%	7% − 8% < 0	Not Exercise
2	9%	9% − 8% > 0	Exercise
3	9.5%	9.5% − 8% > 0	Exercise
4	10%	10% − 8% > 0	Exercise



QUESTION NO. 4C

XYZ Inc. having a £ 10 million floating rate loan on July 1, 2013 with resetting of coupon rate every 6 months equal to LIBOR + 50 bp. XYZ is interested in a collar strategy by selling a Floor and buying a Cap. XYZ buys the 3 years Cap and sell 3 years Floor as per the following details on July 1, 2013:

Notional Principal Amount	$ 10 million
Reference Rate	6 months LIBOR
Strike Rate	4% for Floor and 7% for Cap
Premium	0*

*Since Premium paid for Cap = Premium received for Floor

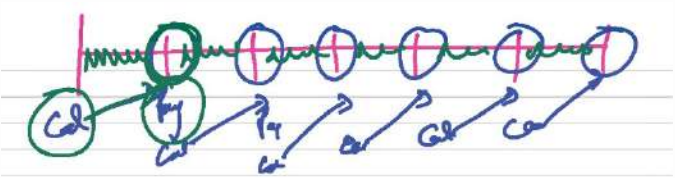
Using the following data you are required to determine:

(i) Effective interest paid out at each reset date,

(ii) The average overall effective rate of interest p.a.

Reset Period	LIBOR (%)
31-12-2013	6.00
30-06-2014	7.50
31-12-2014	5.00
30-06-2015	4.00
31-12-2015	3.75
30-06-2016	4.25

Solution :



W. No:-

1) $[7.5\% - 7\%] \times £100 \text{ lakh} \times \frac{181}{365}$

2) $[4\% - 3.75\%] \times £100 \text{ lakh} \times \frac{184}{365}$

(ii) Average overall effective Rate of Interest:-

$$\frac{£1663698}{£100,00,000} \times \frac{365}{1096} \times 100$$

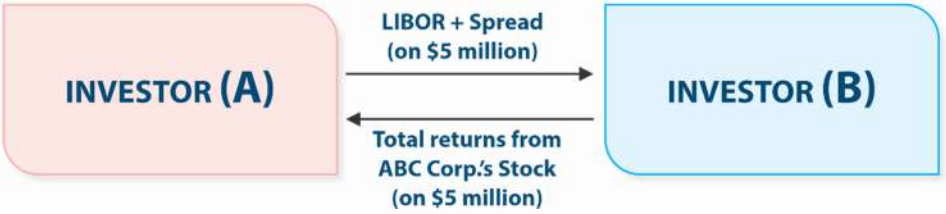
$\Rightarrow$ 5.54% p.a.

Cap Rate ⟷ Floor Rate
7% 4%

Always between Cap Rate & Floor Rate

LOS 5 : Equity Swap

An equity swap is an exchange of future cash flows between two parties that allows each party to diversify its income for a specified period of time while still holding its original assets. An equity swap is similar to an interest rate swap, but rather than one leg being the "fixed" side, it is based on the return of an equity index. The two sets of nominally equal cash flows are exchanged as per the terms of the swap, which may involve an equity-based cash flow (such as from a stock asset, called the reference equity) that is traded for fixed-income cash flow (such as a benchmark interest rate).



QUESTION NO. 5

TMC Holding Ltd. has a portfolio of shares of diversified companies valued at ₹ 400 crore enters into a swap arrangement with None Bank on the terms that it will get 1.15% quarterly on notional principal of ₹ 400 crore in exchange of return on portfolio which is exactly tracking the Sensex which is presently 21600.
You are required to determine the net payment to be received/ paid at the end of each quarter if Sensex turns out to be 21860, 21780, 22080 and 21960.

Solution :

Q.5 :-

TMC Holding → None Bank

Equity Portfolio (400 cr.) → Track → Sensex

None Bank → 1.15% quarterly on 400 cr

Under Swap Deal :-

TMC Holding Co. Pays → Equity Return

Receives → Bond Return

W.No.1 Cal. of Return of each quarter from Sensex :-

Qtr.1 $\frac{21860 - 21600}{21600} \times 100 \Rightarrow 1.2037\%$

Qtr.2 $\frac{21780 - 21860}{21860} \times 100 \Rightarrow (-) 0.3660\%$

Qtr.3 $\frac{22080 - 21780}{21780} \times 100 \Rightarrow 1.3774\%$

Qtr.4 $\frac{21960 - 22080}{22080} \times 100 \Rightarrow (-) 0.5435\%$

Amt. Payable on Sensex :-

1) 400 cr. × 1.2037% ⇒ 4.8148 cr.

2) 400 cr × (-) 0.3660% ⇒ (-) 1.464 cr

3) 400 cr. × 1.3774 % ⇒ 5.5096 cr.

4) 400 cr. × (−) 0.5435% ⇒ (−) 2.174 cr

Amt. Receivable @ fixed return:-

1) 400 cr. × 1.15% ⇒ 4.6 cr.

2) 400 cr. × 1.15% ⇒ 4.6 cr.

3) 400 cr. × 1.15% ⇒ 4.6 cr.

4) 400 cr. × 1.15% ⇒ 4.6 cr.

Cal. of net-pay-off for each quarter

For Tmc Holdings:-

1) −4.8148 cr. + 4.6 cr. ⇒ Pay (−) 0.2148 cr.

2) + 1.461 cr. + 4.6 cr. ⇒ Receive 6.061 cr.

3) −5.5091 + 4.6 cr. ⇒ Pay (−) 0.9091 cr.

4) (+) 2.174 + 4.6 cr. ⇒ Receive 6.774 cr.

QUESTION NO. 8

Drilldip Inc. a US based company has a won a contract in India for drilling oil field. The project will require an initial investment of ₹ 500 Crores. The oil field along with equipments will be sold to Indian Government for ₹ 740 Crores in one year time. Since the Indian Government will pay for the amount in Indian Rupee (₹) the company is worried about exposure due exchange rate volatility.

You are required to:

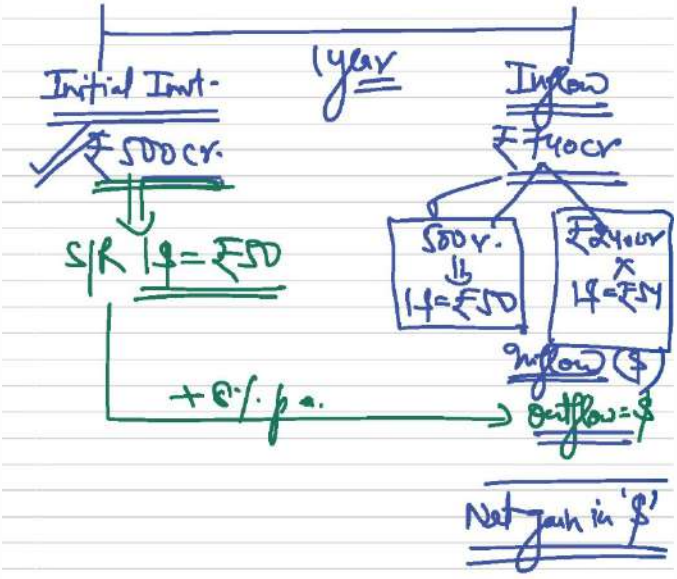
a) Construct a swap that will help the Drilldip to reduce the exchange rate risk.

b) Assuming that Indian Government offers a swap at spot rate which is 1US$ =₹ 50 in one year, then should the company should opt for this option or should it just do nothing. The spot rate after one year is expected to be 1US$ =₹ 54. Further you may also assume that the Drilldip can also take a US$ loan at 8% p.a.

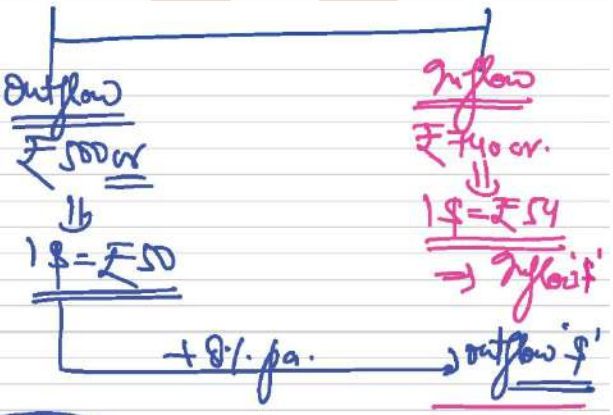
Solution :

Q.8 Imp. (RTP)

Swapping :-



Case II : No Swapping :-



Case I

⇒ Drilldrip should enter into a Buy-Sell Swap for ₹500 cr. @ 1$=₹50

i.e. He will Buy ₹500 cr. @ S/R & Sell ₹500 cr @ ₹50/$ under

Swap Deal.

The remaining amount is ₹240 cr will remain unhedged.

With the Swap:-

1) Outflow today:-

₹500 cr. × 1/50 $ ⇒ $100 million

S/R 1$ = ₹50

1₹ = 1/50 $

Add: Int @ 8% p.a. ⇒ $8 million

Total outflow at Year 1 $108 million

2) Inflow of ₹740 cr.

(i) ₹500 cr. is sold at Swap rate

i.e. @₹50/$ & Balance:-

(ii) ₹240 cr. at the Expected rate

i.e. ₹54/$

Inflow @ after 1 year:-

1) ⇒ ₹500 cr. × 1/50 $ ⇒ $100 million

2) ₹240 cr. × 1/54 $ ⇒ $44.44 million

$144.44 mill

Less: Outflow @ 1 year end $108.00 mill

Over-all Profit in Swapping $36.44 million

Case II: Without Swapping:-

1) Outflow = $108 million

2) Inflow:-

£740 cr × 1/54 $ = $ 137.04 million

Overall Profit without swapping = $ 29.04 million

Decision: The Project + Swap proposal should be selected / accepted as it seems to be viable.