

Chapter - 8

INTEREST RATE RISK MANAGEMENT

Learning Outcomes

After going through the chapter student shall be able to understand:

- ☐ Interest Rate Risk
- ☐ Hedging Interest Rate Risk
 - (a) Traditional Methods
 - (b) Modern Methods including Interest Rate Derivatives
 - FRA (Forward Rate Agreement)
 - IRF (Interest Rate Future)
 - Interest Rate Swap (IRS)
 - Interest Rate Option or, Interest Rate Guarantee
 - Cap, Floor and Collar
 - Swaption

Interest Rate Swap Notes

Full Video of this topic is available on YouTube



COVERAGE OF THIS TOPIC:

CA Exam (New):

May-2018-New-8M,
RTP-May-2018-New

CA Exam (old):

Nov-2017-8M, May-2015-8M,
Nov-2010-16M, May-2010-10M

RTP CA (old):

Nov-2008, Nov-2009,
May-2010, Nov-2011,
May-2012, Nov-2014,
May-2014, May-2018

CMA Exam:

June-2015-6M, Dec-2014-6M,
June-2014-15M, June-2015-10M,
June-2017-8M, Dec-2017-8M

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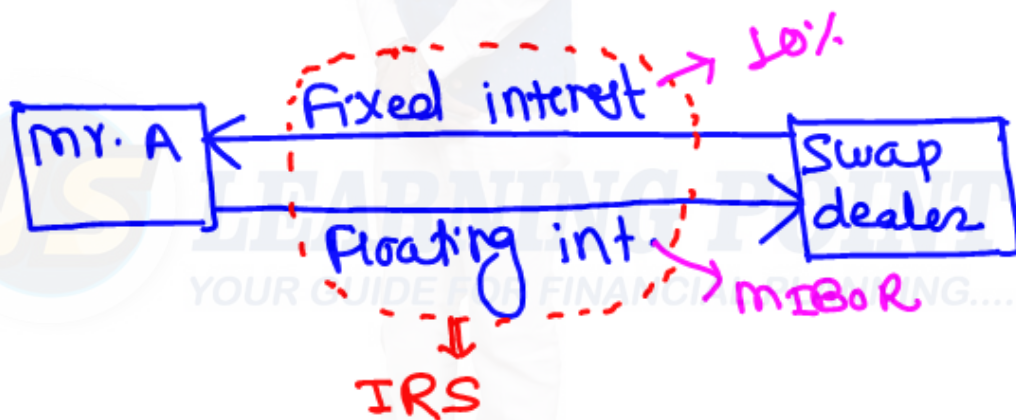
m. Important

Concept: Interest rate swap (IRS)

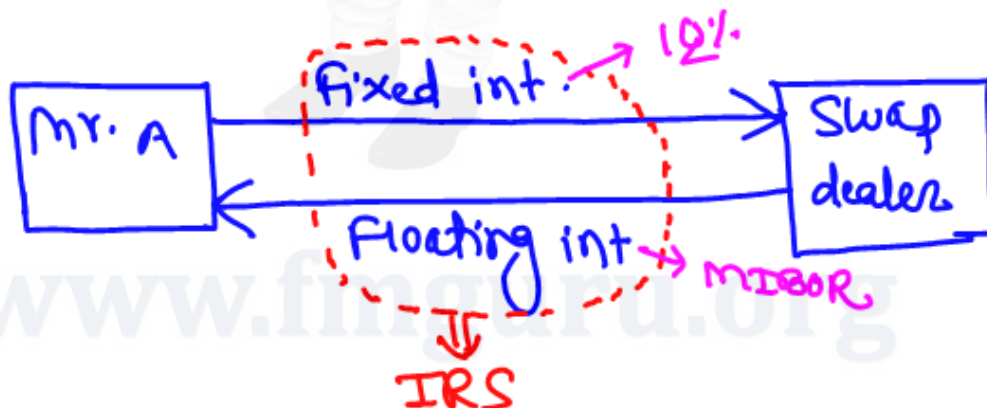
- Exchange of sequence of one interest payment for another interest payment is known as interest rate swap.
- Interest may be "fixed interest" or "Floating/variable interest"

Example:

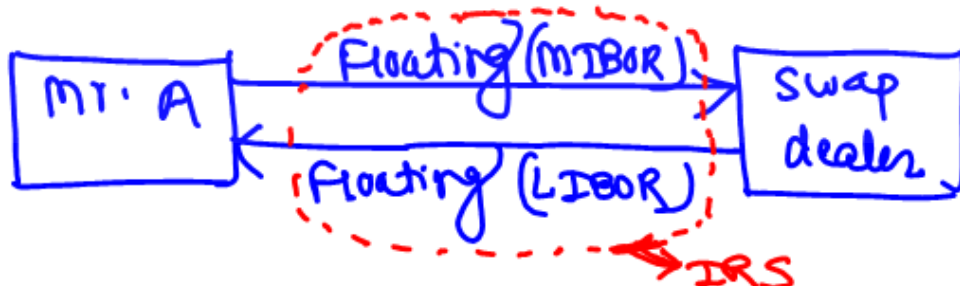
①



②



③



Concept: Calculation of fixed interest (or Interest on fixed leg)

→ Interest that remains same during whole life of swap is known as fixed interest.

Example: 10%, 12%, 8%.p.a. etc.

→ Fixed interest Amount

$$= (Np \times \text{Fixed interest} \times \text{period})$$

Where

Np = Notional principal

period = Duration of settlement period

Use period in days.

For 6 months:

Either $\left[\frac{180}{360} \right]$ or $\left[\frac{\text{Actual days}}{360 \text{ or } 365} \right]$

↓
[use it for
Generic
Swap]

↓
[use it for
Plain vanilla
Swap.]

Concept: Calculation of floating interest (or Interest on floating leg)

→ Interest that varies according to referred benchmark is known as floating interest rate.

Normally, floating interest rate is interest rate derived from money market instrument

Example:

(i) MIBOR = Mumbai Inter Bank offer rate
[Interest rate of Mumbai money market]

(ii) LIBOR = London Inter Bank offer rate

(iii) EURIBOR = Euro Inter Bank " "

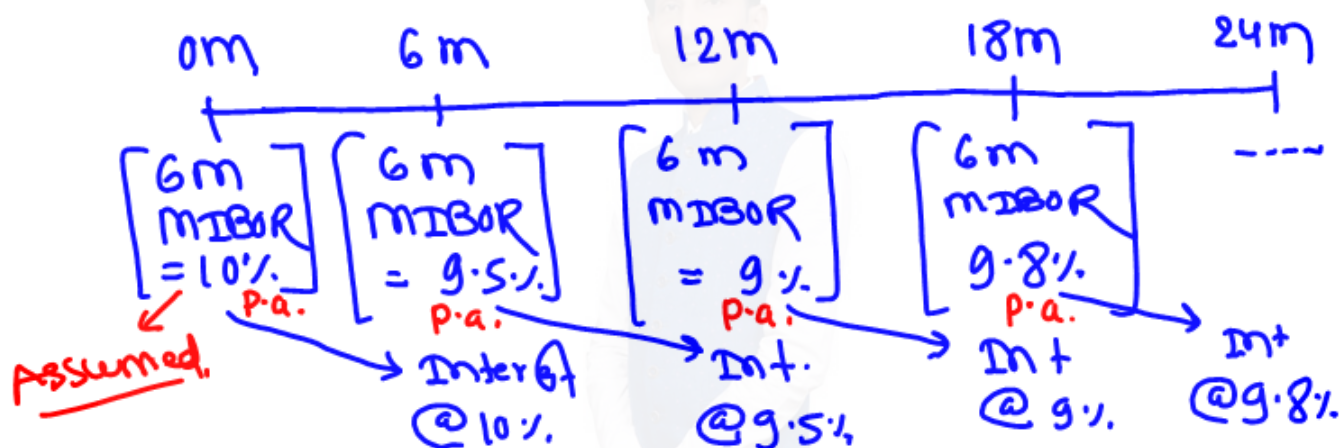
(iv) BR = Base rate
[Rate decided by Bank]

(v) CP = Commercial paper

(vi) T-bill = Treasury bill

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→ Floating interest rate decides at beginning of period but interest due at end of period



In above example, 6 months is reset period (or revision period of interest) and above MIBOR rate is based on "6 month instrument"

⇒ Floating interest amount

$$= [NP \times \text{Floating interest} \times \text{period}]$$

Where,

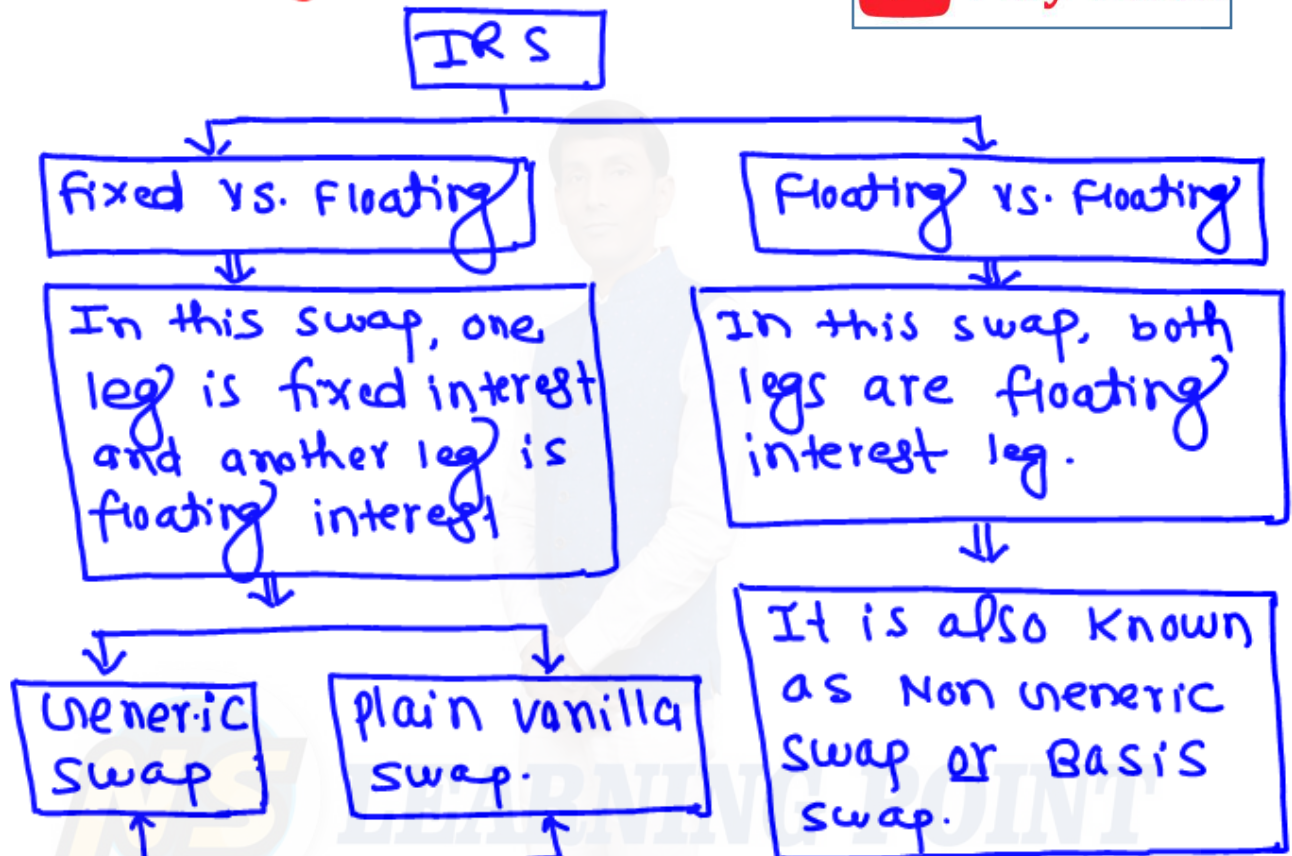
period ⇒ Duration of settlement period.

use period in days.

Here, period = $\frac{\text{Actual days}}{360 \text{ or } 365}$

For all swaps (Generic, Plain vanilla or Non Generic)

Concept: Types of IRS:



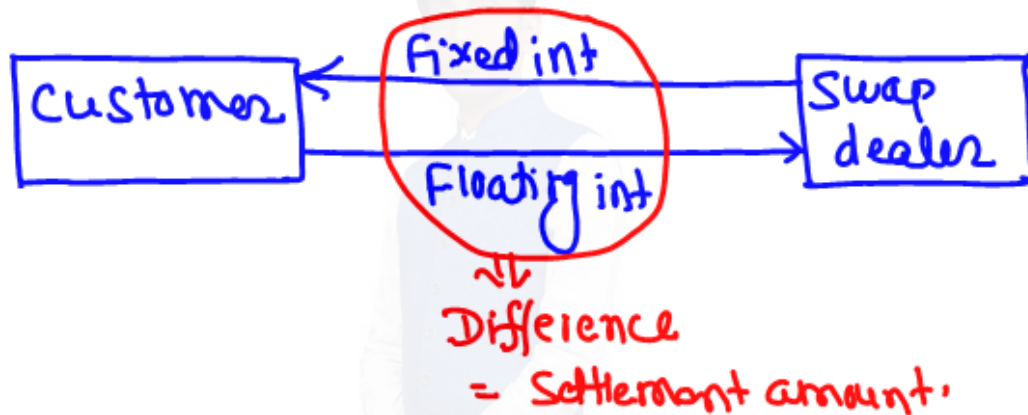
Both are conceptually same. Difference is in duration of period

Generic (fixed leg) $\Rightarrow \left[\frac{30}{360} \right] \rightarrow 30 \text{ days in a month}$
 $\rightarrow 360 \text{ days in a year,}$

Floating leg (generic, non generic, plain vanilla) $\Rightarrow \left[\frac{\text{Actual days}}{360 \text{ or } 365} \right]$

Concept: Settlement amount:

Difference between fixed leg interest and floating leg interest is settlement amount.



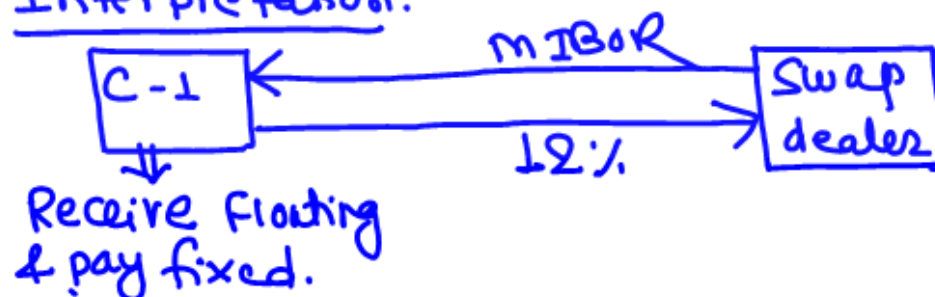
Concept: IRS quotation:

- Normally, swap dealer is bank. Swap dealer keeps margin in interest rate. It pays low interest and receives high interest.
- Swap dealer may quote fixed interest with margin or floating interest with margin.

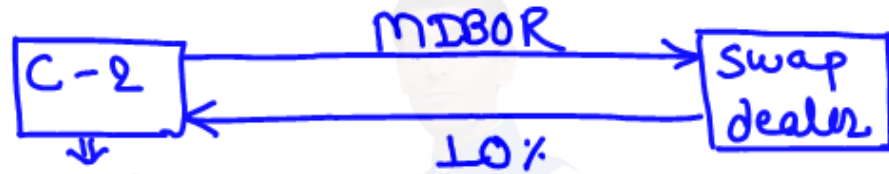
(i) Fixed rate quote:

① 10% / 12% against MIBOR

Interpretation:



↓
AS C1 thinks
floating rate
will increase,



↓
pay floating &
receive fixed

↓
AS C2 thinks
floating rate
will decrease

• It means, swap dealer is willing to pay 10% against MIBOR & willing to receive 12% against MIBOR.
Here, Benefit of Bank (swap dealer) = 2%

⑥ (9% nov. security rate + 50/125 bps)
against T-bill

Where,

bps = basis points

100 basis points = 1%

9% nov. security rate = 9%,
(Assumed)

∴ IRS rate

(9% + 50%) + (9% + 125%) against T-bill

∴ 9.5% / 10.25% against T-bill.

It means, swap dealer is willing to pay 9.5% against T-bill and receive 10.25% against T-bill.

Note: All-in cost (AIC):

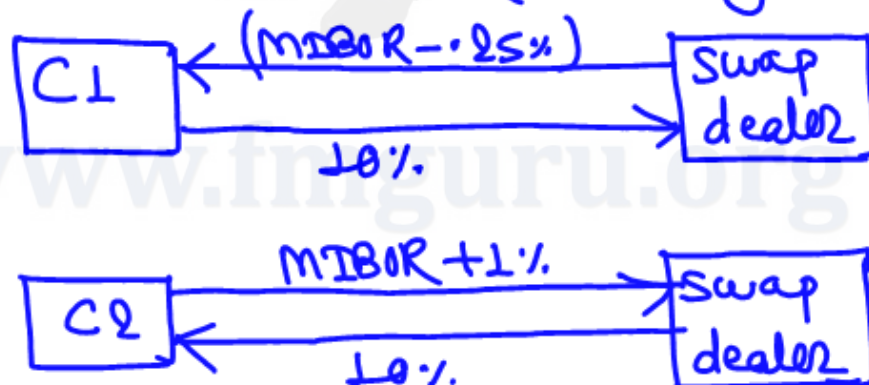
Fixed rate quote for floating flat is known as AIC. (i.e. No margin with floating)
Above quotes are AIC quote.

(ii) Floating rate quote:

In this quote, swap dealer keeps margin in floating rate

(a) $(\text{MTBOR} - 0.25\%) / (\text{MTBOR} + 1\%)$ against 10%.

It means, swap dealer is willing to pay $(\text{MTBOR} - 0.25\%)$ against 10% and receive $(\text{MTBOR} + 1\%)$ against 10%.



⑥ $(\text{LIBOR} + 25/75 \text{ bps})$ against 10%.

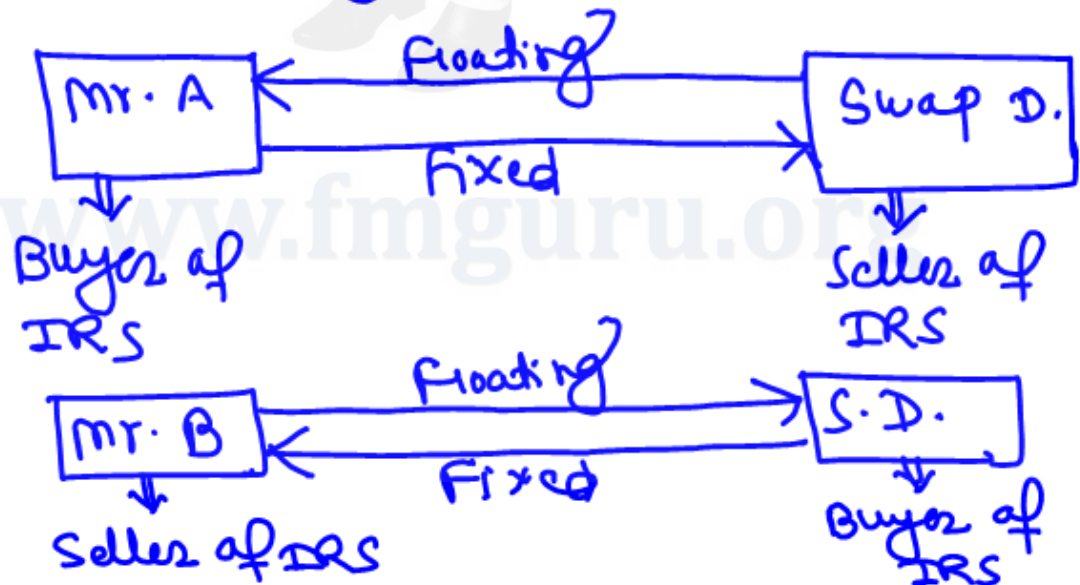
$\therefore (\text{LIBOR} + .25\%) / (\text{LIBOR} + .75\%)$
against 10%.

It means, Swap dealer is willing to pay $(\text{LIBOR} + .25\%)$ and willing to receive $(\text{LIBOR} + .75\%)$

Concept: Buyer / seller of IRS:

① Floating rate receiver is also known as buyer of IRS as buyer earns profit when floating rate moves up.

(ii) Floating rate payer is also known as seller of IRS as seller earns profit when floating rate moves down.



INTEREST RATE SWAP**Question No. 5A**

[\[SM-OLD\]](#) [\[May-2015-Nepal-8M\]](#) [\[Nov-10-8M\]](#) [\[RTP-Nov-2009\]](#) [\[RTP-May-2010\]](#)

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.

- (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
- (iii) 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.



[\[CMA-PTP-June-2015-6M\]](#) [\[CMA-PTP-Dec-2014-\(2+2+2\)=6M\]](#)

Ans: (i) Fixed Pmt = ₹24,000; (ii) floating rate pmt = 18,100; (iii) ₹5,900

Question no. 5B

[\[May-2018-New-8M\]](#) [\[SM-NEW\]](#) [\[SM-OLD\]](#) [\[Nov-2017-8M\]](#) [\[Nov-2010-8M\]](#) [\[RTP-May-2012\]](#)

[\[RTP-Nov-2014\]](#) [\[MTP-May-2014-8M\]](#)

Bharat Bank entered into a plain vanilla swap through on OIS (Overnight Index swap) on a principal of 1 crore and agreed to receive MIBOR overnight floating rate for a fixed payment on the principal. The swap was entered into on Monday, 10th July, 2017 and was to commence on and from 11th July, 2017 and run for a period of 7 days.

Respective MIBOR rates for Tuesday to Monday were:

8.75%, 9.15%, 9.12%, 8.95%, 8.98%, 9.15%

If Bharat bank received 417 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.

(iii) Consider 365 days in a year



Ans: Interest under floating leg = ₹17,294 ; Fixed leg = ₹16877; Fixed rate =

Question No. 5C [\[RTP-May-2018-New/Old\]](#)

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 ₹ 80 crore in exchange of return on portfolio which is exactly tracking the Sensex which is presently 21600

CALCULATE the net payment to be received/ paid at the end of each quarter if Sensex turns out to be 21,860, 21,780, 22,080 and 21,960

Ans: - 0.2148; 6.0640; - 0.9096; 6.7740

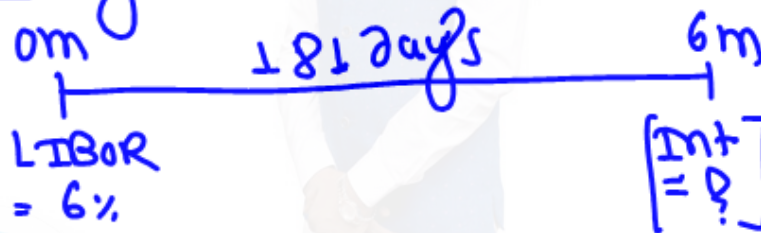
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Q-5A(i) semi-annual fixed payment:

$$= \left[\text{Notional principal} \times \text{Fixed interest} \times \text{period} \right]$$

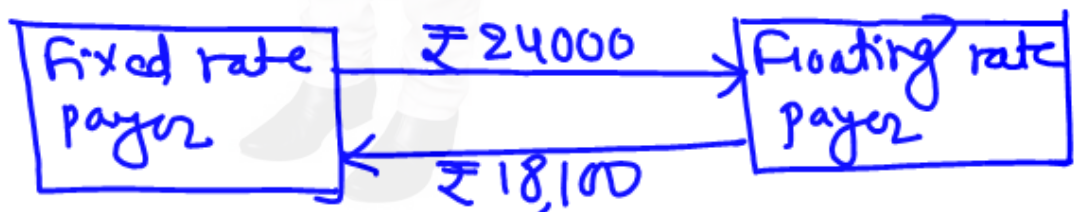
$$= \left(600000 \times 8\% \times \frac{180}{360} \right) = \boxed{\text{₹ } 24000}$$

Ans

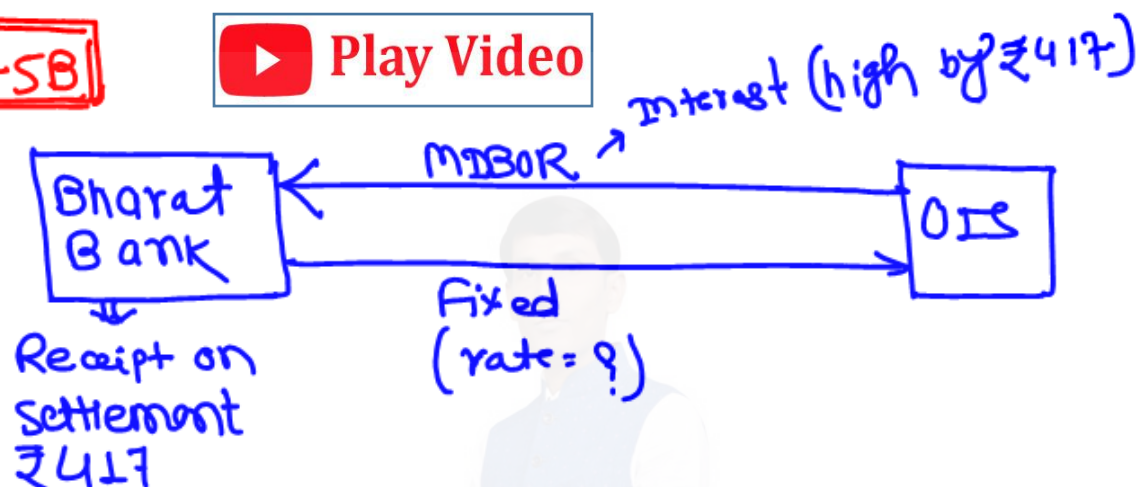
(ii) Floating interest:

$$\text{Floating int} = \left[600,000 \times 6\% \times \frac{181}{360} \right]$$

$$= \boxed{18,100} \text{ Ans}$$

(iii) Settlement Amount:

$$\text{Settlement amount} = 24000 - 18100 = \boxed{5,900} \text{ Ans}$$

Q-5B **Play Video**

(i) calculation of interest on floating leg:

Days	opening balance	mbor	period	Interest	Closing balance
Tue	1,00,00,000	8.75%	$\left(\frac{1}{365}\right)$	2397	10002397
Wed	10002397	9.15%	$\left(\frac{1}{365}\right)$	2507	10004904
Thu	10004904	9.12%	$\left(\frac{1}{365}\right)$	2500	10007404
Fri	10007404	8.95%	$\left(\frac{1}{365}\right)$	2454	10009858
Sat & Sun	10009858	8.98%	$\left(\frac{2}{365}\right)$	4925	10014783
Mon	10014783	9.15%	$\left(\frac{1}{365}\right)$	2511	10017294

$$\begin{aligned}\text{Interest on floating leg} \\ &= (100,17,294 - 100,00,000) \\ &= \boxed{17,294} \text{ Ans}\end{aligned}$$

$$\begin{aligned}\text{(ii) Interest on fixed leg} \\ &= [17,294 - 417] = 16,877\end{aligned}$$

$$\begin{aligned}\text{(iii) Fixed interest rate} &= \left[\frac{16,877}{100,00,000} \times 100 \right] \times \frac{365}{7} \\ &= \boxed{8.80\%} \text{ Ans}\end{aligned}$$

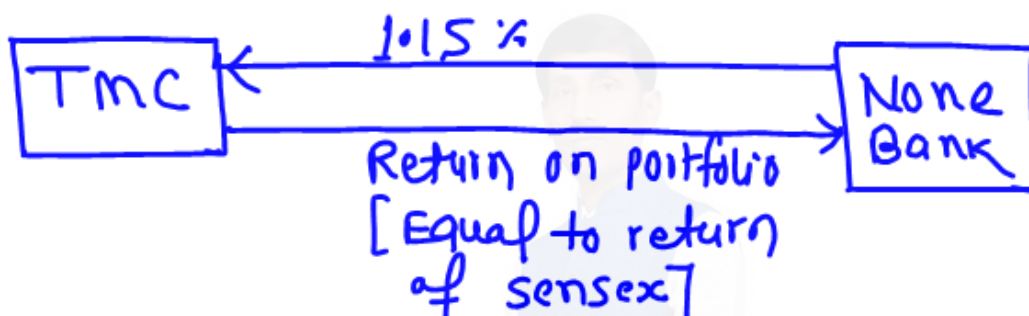


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Q-5C

Portfolio value = ₹ 400 cr.



Return from sensex/portfolio

Quarter end	Return = $\frac{\text{value at end} - \text{value at beg}}{\text{value at beg}} \times 100$
1	$\frac{21860 - 21600}{21600} \times 100$ $= 1.204\%$
2	$\frac{21780 - 21860}{21860} \times 100$ $= -0.366\%$
3	$\frac{22080 - 21780}{21780} \times 100 = 1.377\%$
4	$\frac{21960 - 22080}{22080} \times 100$ $= -0.543\%$

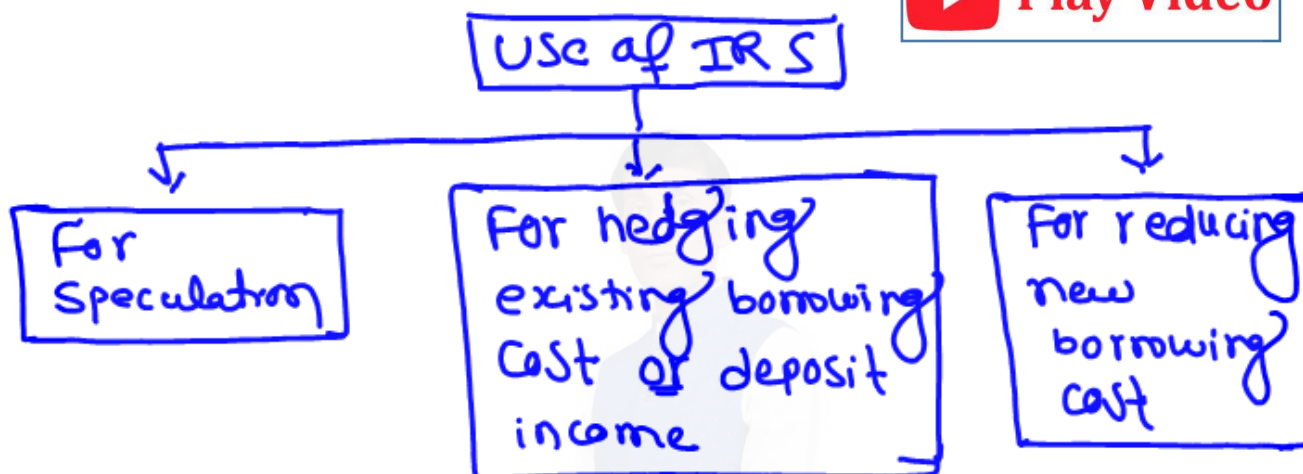
Net settlement amount:

$$\begin{aligned}\text{Fixed leg interest} &= 400 \text{ cr} \times 1.15\% \\ &= 4.60 \text{ cr. (Receivable)}\end{aligned}$$

Quarter end	Interest receivable	Interest payable [portfolio return]	Net settle-ment amt
1	4.60 cr.	$400 \times 1.204\% = 4.816 \text{ cr.}$	- 0.216 cr.
2	4.60 cr.	$[400 \times -0.366\%] = -1.464 \text{ cr.}$	+ 6.064 cr.
3	4.60 cr.	$400 \times 1.377\% = 5.508$	- 0.908 cr.
4	4.60 cr.	$400 \times -0.543\% = -2.172 \text{ cr.}$	+ 6.772 cr.

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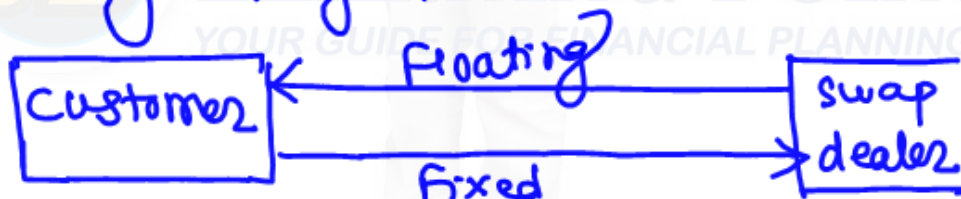
Concept: Use of IRS:



(A) For Speculation:

Case -(i): Floating rate is expected to more up.

Enter IRS agreement to receive floating & pay fixed.



Case -(ii) Floating rate is expected to more down

Enter IRS agreement to pay floating & receive fixed.



② Hedging existing borrowing cost & deposit income:



Existing position	Risk of loss/opportunity loss	Action to hedge risk [Action in IRS]
① Floating rate borrowing @ "BR + 2%". Where, BR = Base Rate. ← Interest "BR + 2%" C Where, C = Customer. Note: IRS is beneficial only when $BR > 11\%$	Rising floating interest rate.	Enter IRS agreement to receive floating and pay fixed Assume, swap dealer quotes following IRS rate 10%/11% against BR Net <u>cost</u> of customer after IRS. $= [BR + 2\%] - BR + 11\%$ Pay outside In IRS = 13% It doesn't matter, what will be BR rate, net cost should be 13%.

Continued...: Hedging:

Existing position	Risk of loss/opportunity loss	Action to hedge risk using IRS.
② Fixed rate borrowing Fixed Interest [say = 10.5%] ← C	Falling floating interest rate ↓ opportunity loss	Enter IRS agreement to receive fixed and pay floating. FX: 10% FL: BR C ↔ SD Suppose, swap dealer quoted following rate: 10%/11% against BR Net cost of customer after IRS. $[10.5 - 10\%] + BR = BR + 0.5\%$ ↓ pay ↓ Receive ↓ pay This agreement will be beneficial when $BR < 10\%$ (i.e. when customer will receive something from swap dealer)

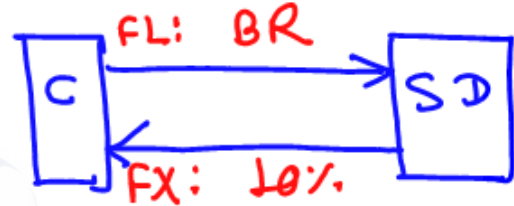
Here,

- Existing Cost → Fixed
- New cost → Floating

③ Floating Deposit
Interest → C
[BR - 1%]
Assumed

Falling Floating interest rate

Enter ^{IRS} agreement to pay floating and receive fixed.



Say SD quoted following rate:
10% / 11% against BR

Net income to customer after IRS.

$$[(BR - 1\%) - BR] + 10\%$$

↓
Receipt
↓
pay
↓
Receive

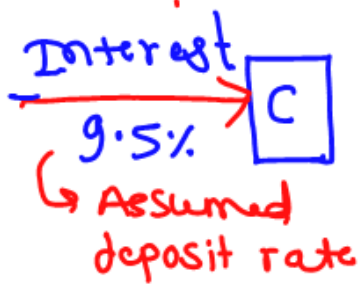
= 9%

- In all conditions net income of customer after IRS should be 9%.
- IRS is beneficial when $BR < 10\%$.

Here,
Existing income → Floating
New Income → Fixed

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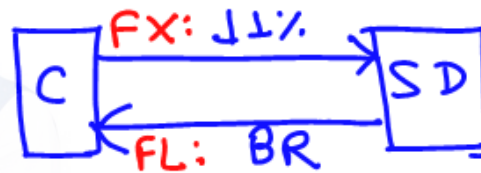
④ Fixed deposit.



Here,
 Existing income $\rightarrow$ Fixed
 New income $\rightarrow$ Floating

Rising floating interest rate
 $\downarrow$
 Risk of opportunity loss.

Enter IRS to pay fixed interest and receive floating interest



Suppose, SD quoted following rate:

10%/11% against BR

Net income of customer after IRS:

$$(9.5\% - 11\%) + BR \\ = [BR - 1.5\%]$$

IRS is beneficial when $BR > 11\%$

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Note:

from above four situations/examples it is cleared that IRS converts nature of existing interest from floating to fixed or vice versa.

HEDGING WITH THE HELP OF IRS

Question No. 6A

Cash Rich Ltd (CRL) has invested ₹50 crore in market linked securities providing it a current return of 8% with current MIBOR of 7.5%. Of late, yield in the market have started falling adversely affecting the income of CRL.

It needs to protect the same. Professional Bank Ltd, CRL's banker has offered a 3-year MIBOR based swap with rates at 7.30% - 7.40%. Should CRL accept the swap what income can it lock-in for next 3 years? What would be the advantage of the Swap? Depict the swap arrangement.



Ans: Agreement: Pay Floating and Receive Fixed;

Accept if MIBIR < 7.30%; Income that can be locked = 7.8%

Question No. 6B [RTP-May-2010]

9 year Government of India security is being quoting at 10.5%. The 364 T Bill (Treasury Bill) is being quoted at 11.25. Last year Indian National Bank had issued a fixed rate bond under statutory requirement at 15% coupon for a period of 10 year. Now when remaining 9 years are yet to expire the Bank wants to convert their fixed rate obligation to floating rate due to anticipation of decline in interest rates. Market quotation for fixed to floating rate swap is T-Bill rate is 75/85 bps over 9 year Government of India security. If T-Bill decline 20 bps over the current year and rises by 5 bps every year thereafter what is the effective cost of funds to Indian National Bank. To hedge interest rate Indian National Bank undertakes swap transaction every year.



Ans: 14.98%

TEST YOUR KNOWLEDGE

Question No. 6.1 [RTP-Nov-2011]

Euroloan Bank has a differential advantage in issuing variable-rate loans, but wishes to avoid the income risk associated with such loan. Currently bank has a portfolio €25,000,000 loans with PLR + 150bp, reset monthly PLR is currently 4%.

IB an investment bank has arranged for Euroloan to swap into a fixed interest payment of 6.5% on notional amount of loan for its variable interest income. If Euroloan agrees to this, what amount of interest is received and given in the first month? Further, assume that PLR increased by 200 bps.

Ans: Received = 135416.67; Given = 156,250

Question No. 6.2 [May-2010-10M]

ABC bank is seeking fixed rate funding. It is able to finance at a cost of six months LIBOR + .25% for ₹200 million for 5 years. The bank is able to swap into a fixed rate at 7.5% versus six month LIBOR treating six months as exactly half a year.

- What will be the "all in cost" funds to ABC Bank?
- Another possibility being considered is the issue of a hybrid instrument which pays 7.5% for first three years and LIBOR - 0.25% for remaining two years.

Given a three year swap rate of 8%, suggest the method by which the bank should achieve fixed rate funding.

Ans: (a) AIC fund = ₹77,50,000 (b) Arrangement in (b) compared to (a) saves 0.75% p.a. over the first three years and 0.5% pa over final two years.

Q-CA

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market linked security $\Rightarrow$ income is linked with market (i.e. floating)

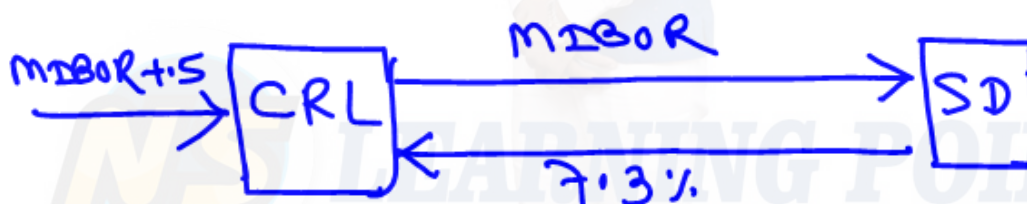
Deposit rate = $\text{MIBOR} + 0.5\%$

[Because, income is 8% and MIBOR is 7.5%]

IRS rate: $7.3\% / 7.40\%$ against MIBOR

(i) Swap arrangement:

Enter IRS agreement to pay floating & receive fixed.



(ii) Net income after IRS = $\left[(\text{MIBOR} + 0.5\%) - \text{MIBOR} \right] + 7.3$
 $= 7.8\%$

Income that can be locked = 7.8%

(iii) Advantage: Whether MIBOR move down or up net income should be 7.8% .

(iv) Advice: Accept this agreement when $\text{MIBOR} < 7.3\%$ Ans

Q 6B [Good question]



9Y NOI security rate = 10.5%

T-bill = 11.25%

Obligation of INB = 15%

(ie. interest cost of 9 year (remaining) borrowing)

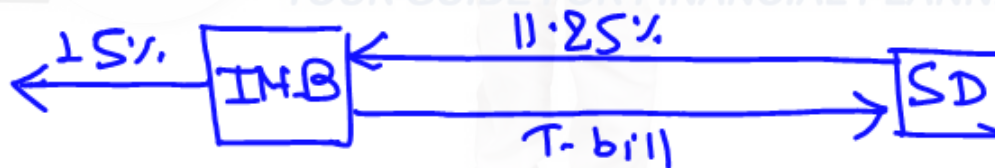
IRS rate: (9Y NOI + 75/85 bps) against T-bill

$$= (10.5\% + 0.75\%) / (10.5\% + 0.85\%)$$

$$= 11.25\% / 11.35\% \text{ against T-bill}$$

Swap agreement:

Enter IRS to receive fixed and pay floating to swap dealer.



$$\text{Net cost} = (15\% - 11.25\%) + \text{T-bill}$$

$$= \text{T-bill} + 3.75\%$$

Given for every year.

Concept: Reducing ^{new} Borrowing cost using IRS.

Let us consider following example/situation to understand entire concept of reducing borrowing cost.



Different types of borrowing & rates:	Different borrowers
(1) For high rating borrowers (i.e. strong financial position) (a) Fixed rate : 10%. (b) Floating rate = $BR + 1\%$.	<u>Borrower-1:</u> Mr. HFX Applicable rate = 10% <u>Borrower-2:</u> Mr. HFL Applicable rate = $BR + 1\%$. <u>Borrower-3:</u> Mr. LFX Applicable rate = 11% <u>Borrower-4:</u> Mr. LFL Applicable rate = $BR + 3.2\%$.



Here, H indicates "High rating"
 L indicates "Low rating"
 FX indicates fixed choice
 FL indicates floating choice.

Objectives:

Borrower-1: cost of borrowing less than 10%
but fixed cost (not floating).

Borrower-2: cost of borrowing less than
 $BR + 1\%$ but floating cost

Borrower-3: cost of borrowing less than 11%
but fixed cost

Borrower-4: cost of borrowing less than
 $BR + 3.2\%$ but floating cost.
swap dealer

All four approached for cost reduction.

Following two combinations possible:

Combination-1: Mr. HFX & LFL

Combination-2: Mr. HFL & LFX

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Swap deal for combination -1:

under swap deal, both parties have to take loan at "unwanted cost". After that enter swap agreement to convert unwanted cost into desired cost.

In our example:

→ HFX has to borrow fund at $BR+1\%$ and enter IRS to receive floating & pay fixed.

→ LFL has to borrow fund at 11% and enter IRS to receive fixed and pay floating.

Total saving:

Total own choice cost:

$$= \text{Fixed cost for HFX} + \text{Floating cost for LFL}$$

$$= 10\% + (BR + 3.2\%)$$

$$= BR + 13.2\%$$

Total swap deal cost:

$$= \text{Floating cost for HFX} + \text{Fixed cost for LFL}$$

$$= (BR + 1\%) + 11\% = [BR + 12\%]$$

$$\text{Total saving} = [BR + 13.2\%] - [BR + 12\%] = 1.2\%$$

Distribution of saving:

Assume, equal distribution among all.



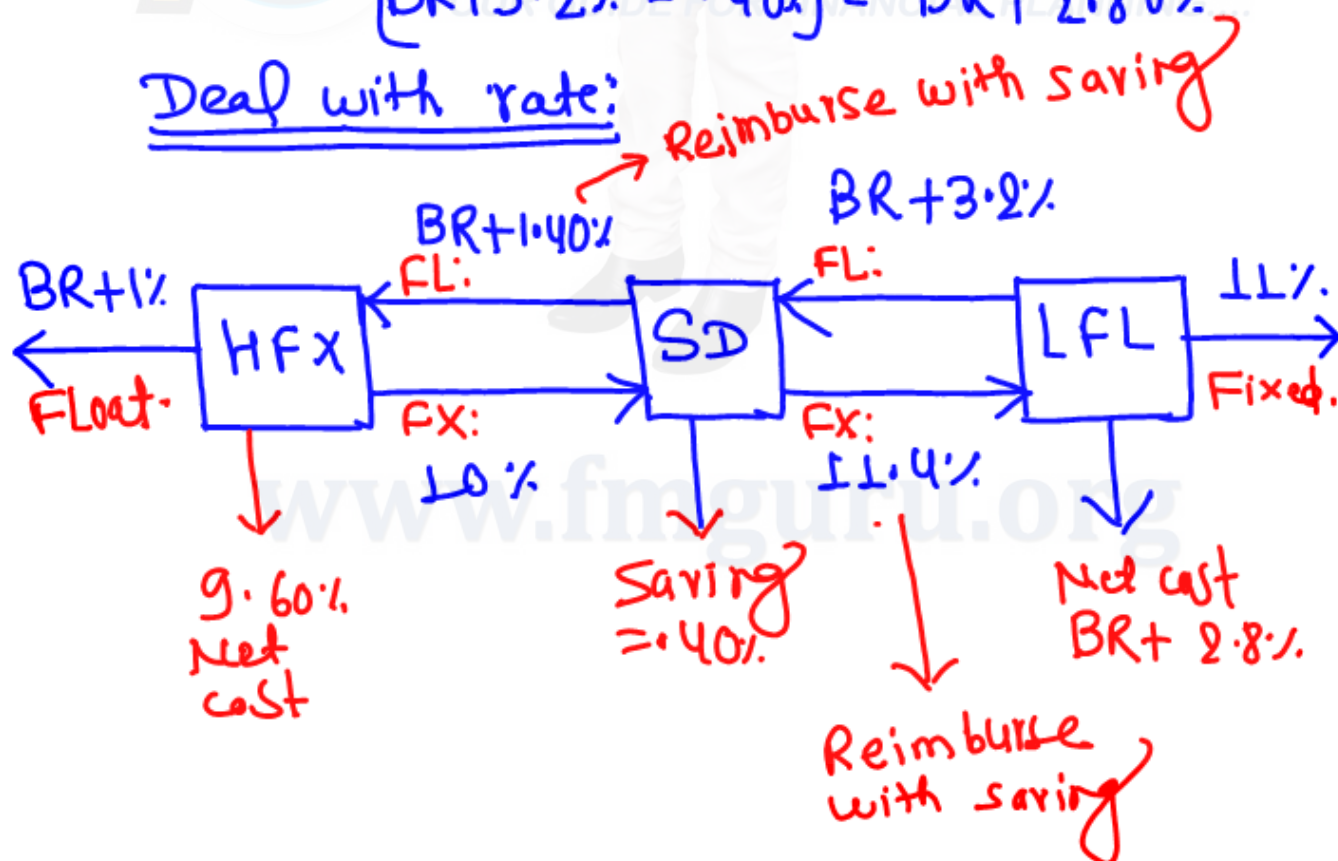
Net cost after swap deal (HFX)

$$\begin{aligned}
 &= [\text{own choice cost} - \text{saving}] \\
 &= [10\% - 40\%] = 9.60\%
 \end{aligned}$$

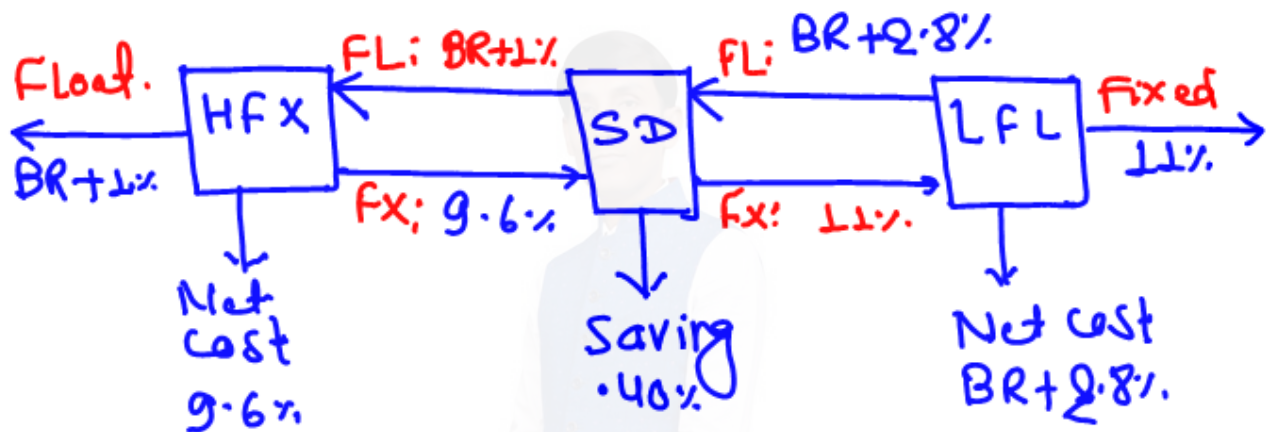
Net cost after swap deal (LFL)

$$= [BR + 3.2\% - 40\%] = BR + 2.80\%$$

Deal with rate:



Alternatively, Swap dealer may quote.
Other rates also.



Note: There are unlimited combinations of swap rates which swap dealer can quote to "HFX & LFL".

objective:
 Net cost of HFX = 9.6%
 Net cost of LFL = $BR + 2.8\%$
 saving of SD = 0.40%

Concept:

Cost reduction for combination - 2 [Mr. HFL & Mr. LFX]

Total own choice cost =

[Floating cost of HFL + Fixed cost of LFX]

$$= (BR + 1\%) + 11\% = BR + 12\%$$

Swap deal cost:

Fixed for HFL + Floating for LFX

$$= 10\% + (BR + 3.2\%)$$

$$= BR + 13.2\%$$

As own choice cost < swap deal cost,
Cost reduction is not possible.

REDUCING BORROWING COST WITH THE HELP OF IRS

Question No. 7A [RTP-Nov-2008-old]

Electrometric Limited enjoys a high rating in Indian money market due to its strong financials and track record. Tim Software Ltd., is a new but a growing company.

Electrometric and Tim Software Ltd., can obtain loans at the rate given below:



	CD (Company Deposit) with Fixed Rate	Mumbai Inter-bank money market with variable rate
Electrometric Ltd	$T^* + 0.50$	$MIBOR + 0.10$
Tim Software Ltd.	$T^* + 2.10$	$MIBOR + 0.60$

*Here T means the risk free 15 years Government Bonds.

Electrometric Ltd. wants to take a loan at variable rate, while Tim Software wants to take loan at fixed rate. The two companies approached a bank to design suitable swaps.

- If the bank wants to have a profit of 0.20% to be contributed from Tim Software's (out of total profits of Swap) share of Swap benefit, what would be the two agreements that the bank will enter with these two companies.
- What are the likely costs of debts to the two companies?

Ans: likely cost for Electrometric will be (MIBOR – 0.45%); The cost for Tim Software will be (T+1.75)%.

Question No. 7B

Company A has outstanding debt on which it currently pays fixed rate of interest at 9.5%. The company intends to refinance the debt with a floating rate interest. The best floating rate it can obtain is LIBOR + 2%. However, it does not want to pay more than LIBOR. **Another company B** is looking for a loan at a fixed rate of interest to finance its exports.

The best rate it can obtain is 13.5%, but it cannot afford to pay more than 12%. However, one bank has agreed to offer finance at a floating rate of LIBOR + 2%. Citibank is in the process of arranging an interest rate swap between these two companies.

- With a schematic diagram, show how the swap deal can be structured,
- What are the interest savings by each company?
- How much would Citi bank receive?



[CMA-June-2017-8M] [CMA-PTP-June-2014-(6+4+5)=15M]

Ans: (i) Diagram (ii) Saving: A = 200bps; B = 150bps; (iii) Citibank = 50bps

TEST YOUR KNOWLEDGE

Question No. 7.1

Company ABC and XYZ have been offered the following rate per annum on a \$200 million five year loan:

	Fixed	Floating
Company ABC	12	LIBOR + 0.1%
Company XYZ	13.4	LIBOR + 0.6%

Company ABC requires a floating-rate loan. Design a swap that will net a bank acting as intermediary at 0.1% per annum and be equally attractive to both the companies.

[\[CMA-PTP/MTP-Dec-2014-New-10M\]](#) [\[CMA-PTP-June-2015-New-10M\]](#)

Ans: Effective Cost to ABC = LIBOR - .30%; to XYZ = 13%

Question No. 7.2 [RTP-Nov-2011]

A Ltd. is considering a ₹50 crores 3 year interest rate swap. The company is interested in borrowing at floating rate however, due to its good credit rating, it has a comparative over lower rated companies in fixed rate market. It can borrow at fixed rate of 6.25% or floating rate MIBOR+0.75%.

Presently, MIBOR is 5.25% but is expected to change in 6 months due to political situation in the country. X Ltd. an intermediary bank agreed to arrange a swap. The bank will offset the swap risk with a counter party (B. Ltd.) a comparative lower credit rated company, which could borrow at a fixed rate of 7.25% and floating rate of MIBOR + 1.25%. X Ltd. would charge ₹ 12,00,000 per year as its fee from each party. Mr. Fin the CFO, of A Ltd. desires that A Ltd. should receive 60% of any arbitrage saving (before payment of fees) from the swap as A Ltd. enjoying high credit rating.

Any fees paid to the bank are tax allowable. The applicable tax rate is 30%.

You are required to:

- Evaluate whether the proposal is beneficial for both parties or not.
- Assuming that MIBOR was to increase to 5.75% immediately after political crisis over and shall remain constant for the period of swap. Evaluate the present value of savings from the swap for A Ltd., assuming that interest payment are made semi- annually in arrears.

Question No. 7.3

Union Bankers Ltd offer the following interest rates to two of its customers for a loan of ₹ 150 Crores, repayable in 7 years

Company	DHARAM Co.	SMOOTH-TECH Ltd.
Nature of activity	Supply and installation of security systems for homes, offices and corporate Surveillance	Providing IT support to various airlines, shipping Companies and Government Companies
Year in industry	25	1.5
Market position	Market leader	Market Extrants in fant
Rating by UBL	A + +	B +
Floating interest Rates	MIBOR -0.50%	MIBOR + 1%
Fixed interest rates	10%	12.50%
Share in the Net gain on account of interest Rate Swap	60%	40%

Assuming principle amount is repaid at the end of the seven years, what is the effective gain in % as well as in value for both companies, if they enter into a swap arrangement for reducing interest effect.

Also ascertain the interest cost (in %) for both companies.

[\[CMA-June-2017-New-8M\]](#) [\[CMA-June-2015-10M\]](#)

Q-7A

 Play Video

	E Ltd	T Ltd
Rating	High	Low
Fixed rate	$T + 0.50\%$	$T + 2.10\%$
Variable rate	$MTBOR + 1.10\%$	$MTBOR + 0.60\%$
own choice	variable	fixed

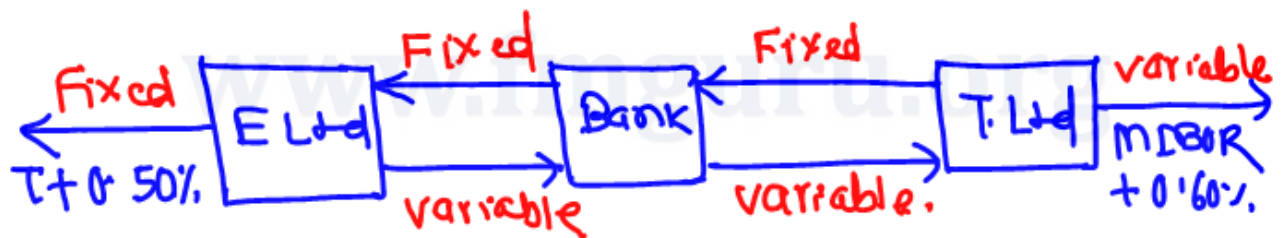
① Agreements:

(i) Bank & E Ltd:

E Ltd has to take loan at fixed rate (i.e. $T + 0.50\%$) and enter IRS to receive fixed int and pay floating interest/variable

(ii) BANK & T Ltd:

T Ltd has to take loan at variable rate (i.e. $MTBOR + 0.60\%$) and enter IRS to receive variable and pay fixed interest.



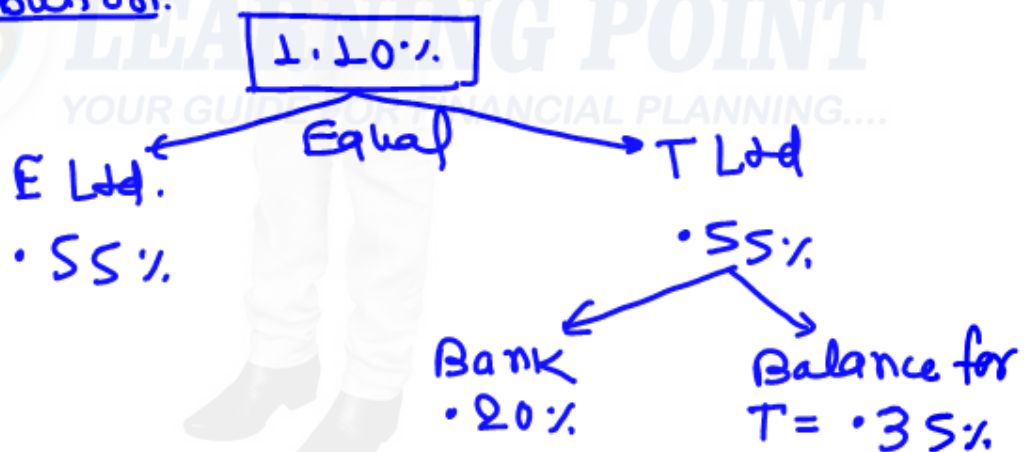
⑥ Likely costs of debts:

$$\begin{aligned}\text{Total own choice cost} &= (\text{MIBOR} + 10\%) \\ &\quad + (T + 2 \cdot 10\%) \\ &= [\text{MIBOR} + T + 2 \cdot 20\%]\end{aligned}$$

$$\begin{aligned}\text{Swap deal cost} &= (T + 0.50\%) + (\text{MIBOR} + 0.60\%) \\ &= [\text{MIBOR} + T + 1 \cdot 10\%]\end{aligned}$$

$$\begin{aligned}\text{Total saving} &= [\text{MIBOR} + T + 2 \cdot 20\%] \\ &\quad - [\text{MIBOR} + T + 1 \cdot 10\%] \\ &= 1 \cdot 10\%.\end{aligned}$$

Distribution:



$$\begin{aligned}\text{Net cost of E Ltd.} &= [\text{MIBOR} + 10\%] - 0.55\% \\ &= \text{MIBOR} - 0.45\% \quad \underline{\text{Ans}}\end{aligned}$$

$$\begin{aligned}\text{Net cost of T Ltd.} &= [T + 2 \cdot 10\%] - 0.35\% \\ &= [T + 1.75\%] \quad \underline{\text{Ans}},\end{aligned}$$

Q-7B[Play Video](#)

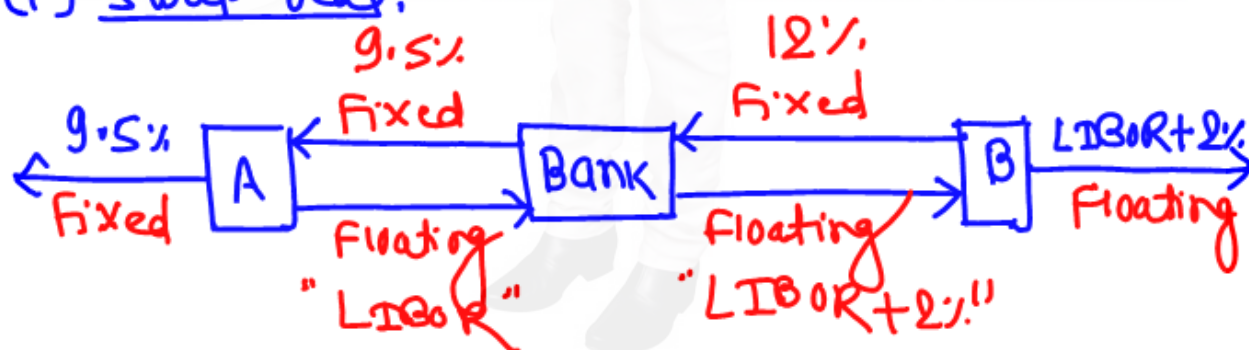
Company-A : current cost 9.5%.
 Refinance cost $LIBOR + 2\%$.

Objective: Max cost = $LIBOR$

Company-B : wants fixed loan
 F. Cost : 13.5% ; Floating = $LIBOR + 2\%$
 Objective max cost = 12%.

	A	B
Fixed	9.5%	13.5%
Floating	$LIBOR + 2\%$	$LIBOR + 2\%$
Own choice	Floating	Fixed

(i) Swap deal:



• Under swap deal A has to borrow fund at 9.5% and B has to borrow fund at $LIBOR + 2\%$.

(ii) Interest saving:

For A: Available cost - max desired cost

$$= (\text{LIBOR} + 2\%) - \text{LIBOR}$$

$$= 2\% \text{ (i.e. 200 basis point) } \underline{\text{Ans}}$$

For B: Available cost - max desired cost

$$= (13.5\% - 12\%) = 1.5\%$$

(i.e. 150 basis point)

Ans

(iii) Saving of citi bank:

Total own choice cost (i.e. available cost)

$$= \text{Floating cost of A} + \text{Fixed cost of B}$$

$$= (\text{LIBOR} + 2\%) + 13.5\% = \text{LIBOR} + 15.5\%$$

Total swap deal cost

$$= \text{Fixed cost of A} + \text{Floating cost of B}$$

$$= (9.5\% + \text{LIBOR} + 2\%) = \text{LIBOR} + 11.5\%$$

$$\text{Total saving} = [\text{LIBOR} + 15.5\%] - [\text{LIBOR} + 11.5\%]$$

$$= 4\%$$

$$\text{Saving of Bank} = [4\% - 2\% - 1.5\%]$$

↓
Saving of A

↘
Saving of B

$$= 0.5\% \text{ (i.e. 50 basis point)}$$