

Calculation of Cash outflows

£ 70.25 ↑

Market price	Action	Cost per \$	Premium	Total cost per \$	£ payable on \$10000	prob.	Pay. x P
70.10	Lapsed	70.10	0.45	70.55	7055000	0.3	2116500
71.50	Exercised	70.25	0.45	70.70	7070000	0.2	1414000
72.25	Exercised	70.25	0.45	70.70	7070000	0.5	3535000

Cash outflow 7065500 ✓

(+) opp. cost $(45000 \times 12\% \times \frac{3}{12})$ 1350
 Total C.O. 7066850

Better ✓

forward cover = \$100000 × 72.75 = 7275000

QUESTION - 76

XYZ Ltd. a US firm will need £ 3,00,000 in 180 days
In this connection, the following information is available:

Spot rate 1 £ = \$ 2.00

180 days forward rate of £ as of today = \$1.96

Interest rates are as follows:

	U.K.	US
180 days deposit rate	4.5%	5%
180 days borrowing rate	5%	5.5%

A call option on £ that expires in 180 days has an exercise price of \$ 1.97 and a premium of \$ 0.04.

XYZ Ltd. has forecasted the spot rates 180 days hence as below.

Future rate	Probability
\$ 1.91	25%
\$ 1.95	60%
\$ 2.05	15%

① Forward Cover

$$\begin{aligned}\text{Cash Outflows} &= \text{£}300000 \times 1.96 \\ &= \$588000\end{aligned}$$

② MMC

Step 1 Amount to be invested in UK money market @ 4.5% for 6 months

$$\text{Amt} = \frac{\text{£}300000}{1.045} = \text{£}287081$$

Step 2 Buy £ 287081 at SR

$$\text{£}287081 \times 2 = \$574162$$

Step 3 Borrow \$ 574162 from US money market @ 5.5%

$$\begin{aligned}\text{Cash outflows} &= \$574162 \times 1.055 \\ &= \$605741\end{aligned}$$

3. option contract

- Buy call option at £ \$1.97 & paid premium \$0.04
£300,000

Market	Action	Cost/£	premium	Total cost per £	payable(\$)	prob.	Expected payable
\$1.91	Lapsed	\$1.91	\$0.04	\$1.95	\$585,000	25%	\$146,250
\$1.95	Lapsed	\$1.95	\$0.04	\$1.99	\$597,000	60%	\$358,200
\$2.05	Exercised	\$1.97	\$0.04	\$2.01	\$603,000	15%	\$90,450
						Total	\$594,900

(+) opp. cost on premium
 $(£300,000 \times \$0.04) \times 5.5\% = \660
 Cash outflow = \$595,560

4. No Hedging

$$\begin{aligned}\text{Expected SR} &= (1.91 \times 25\%) + (1.95 \times 60\%) + (2.05 \times 15\%) \\ &= \$1.955\end{aligned}$$

$$£ 300000 \times \$1.955 = \$586500$$

No Hedging is the best Strategy
due lower cash outflows.

Which of the following strategies would be most preferable to XYZ Ltd.?

- (a) A forward contract;
- (b) A money market hedge;
- (c) An option contract;
- (d) No hedging.

Show calculations in each case

(Study Material, PM & Exam November - 2015)

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QUESTION - 77

Sun Limited, an Indian company will need \$ 5,00,000 in 90 days. In this connection, following information is given below:

Spot Rate - \$ 1 = ₹ 71

90 days forward rate of \$ 1 as of today = ₹ 73

Interest Rates are as follows:

Particulars	US	India
90 days Deposit Rate	2.50%	4.00%
90 days Borrowing Rate	4.00%	6.00%

A call option on \$ that expires in 90 days has an exercise price of ₹ 74 and a premium of Re. 0.10. Sun Limited has forecasted the spot rates for 90 days as below:

Future Rate	Probability
₹ 72.50	25%
₹ 73.00	50%
₹ 74.50	25%

Which of the following strategic would be the most preferable to Sun Limited :

H.W.

H.W.
COPY

- (i) A Forward Contract;
- (ii) A Money Market Hedge;
- (iii) An Option Contract;
- (iv) No Hedging.

Show your calculation in each case.

(Exam May – 2019)

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EXAMPLE - 75

[Type - B] ✓

\$ Payables = \$ 100000 ✓

(3 month)

SR ₹/\$ = ₹ 70.50/70.85

3 months FR = 72.50/72.75

Currency option

Contract size = \$ 9000

Strike price = ₹ 71.00

Premium

Call = ₹ 0.60 per \$

Put = ₹ 0.45 per \$

Which option is better

✓ (i) Currency option.

✓ (ii) Forward cover.

\$ 9000 × 11
= \$ 99000

\$ 100000

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option 1 Currency option

Step 1 Since \$ payable & we are afraid from \$ rising, hence we buy call option at ₹ 71 & pay premium ₹ 0.60 per \$

Step 2 No. of Contracts

$$\text{No.} = \frac{\$100000}{\$9000} = 11.11 \\ = 11 \text{ contracts}$$

Step 3 Cash Outflows

- Cover through option
 $(\$9000 \times 11) = \$99000 \times 71 = ₹7029000$
 - Uncovered portion hedge
by forward cover
 $(\$100000 - \$99000) = \$1000 \times 72.75 = ₹72750$
 - premium $(\$99000 \times ₹0.60) = ₹59400$
- Cash outflows = ₹7161150

Option 2 forward cover

Cash outflows

$$\$100000 \times 72.75$$

$$= ₹7275000$$

Currency option is better
due to lower C.O.

EXAMPLE - 76

\$ Receivables = \$ 1,00,000 in 3 months

SR \$/₹ = \$ 0.0142/\$ 0.0143

3 months FR \$/₹ = \$0.0146, \$0.0147

Currency Option

Strike price \$/₹ \$0.0145

Contract size = ₹ 620000

Premium

Call = \$ 0.0008 per ₹

Put = \$ 0.0005 per ₹

Which option is better?

(i) Currency option.

(ii) Forward cover.

Option 1 Currency option

Step 1 Since \$ receivable & we are afraid from \$ falling but options are available for ₹, hence we buy call option at E \$/₹ 0.0145 & paid premium \$0.0008 per ₹

Step 2 No. of Contracts

\$ Receivable = \$100000

Contract size = ₹ 620000

Contract size (\$) = ₹ 620000 × 0.0145
= \$ 8990

No. = $\frac{\$100000}{\$8990} = 11.12$
11 contracts

Step 3 Cash Inflows

$$\begin{aligned} \bullet \text{ Option Hedging} &= (\$8990 \times 11) \\ &= \frac{\$98890}{0.0145} \\ &= ₹6820000 \text{ CI} \end{aligned}$$

$$\begin{aligned} \bullet \text{ Forward Cover } (\$100000 - \$98890) \\ &= \frac{\$1110}{0.0147} \\ &= ₹75510 \text{ CI} \end{aligned}$$

$$\begin{aligned} \bullet \text{ Premium} &= \$0.0008 \times (₹620000 \times 11) \\ &= \frac{\$5456}{0.0142} \\ &= ₹384225 \text{ C.O.} \end{aligned}$$

$$\underline{\underline{₹6511285}}$$

Option 2
Forward Cover

$$\begin{aligned} \text{CI} &= \frac{\$100000}{0.0147} \\ &= ₹6802721 \end{aligned}$$

FC is better
due to higher
CI