Money Market Cover is better due to higher cash Inflows.

Question – 38

Columbus Surgicals Inc. is based in US, has recently imported surgical raw materials from the UK and has been invoiced for £ 480,000, payable in 3 months. It has also exported surgical goods to India and France.

The Indian customer has been invoiced for £ 138,000, payable in 3 months, and the French customer has been invoiced for € 590,000, payable in 4 months.

Current spot and forward rates are as follows:

£ / US$

Spot:	0.9830 – 0.9850
Three months forward:	0.9520 – 0.9545

US$ / €

Spot:	1.8890 – 1.8920
Four months forward:	1.9510 – 1.9540

Current money market rates are as follows:

UK:	10.0% – 12.0% p.a.
France:	14.0% – 16.0% p.a.
USA:	11.5% – 13.0% p.a.

You as Treasury Manager are required to show how the company can hedge its foreign exchange exposure using Forward markets and Money markets hedge and suggest which the best hedging technique is.

(SM TYK – 38)

Solution:

- Import form UK & £ 4,80,000 payable in 3 months.
- Export to India & £ 1,38,000 receivable in 3 months hence netting is possible.

  Net £ Payable to UK party = (£ 4,80,000 – £ 1,38,000)

= £ 3,42,000

We have to hedge for £ 3,42,000

Payable £ 3,42,000

(i) Forward Cover

Buy £ 3,42,000 at 3 months FR

$$\frac{£\ 3,42,000}{0.9520} = \$\ 3,59,243.70$$

(ii) Money Market Cover

- Amount to be invested in UK money market @ 10% p.a. for 3 months

$$\frac{£\ 3,42,000}{1 + (0.10 \times 3/12)} = £\ 3,33,658.54$$

- $ required to buy £ 3,33,658.54 at SR

$$\frac{£\ 3,33,658.54}{0.9830} = \$\ 3,33,428.83$$

- Borrow $ 3,33,428.83 from US money market @ 13% p.a. for 3 months.

Cash Outflow

$$\$\ 3,33,428.83 \times \left[1 + 0.13 \times \frac{3}{12}\right] = \$\ 3,50,460.27$$

Money Market Cover in better due to lower cash outflow.

Hedging of receivable € 5,90,000

(i) Forward Cover

Sell € 5,90,000 at 3 months FR

Cash Inflows = € 5,90,000 × 1.9510

= $ 11,51,090

(ii) Money Market Cover

- Amount to be borrowed from France money market @ 16% p.a. for 4 months

$$\frac{€\ 5,90,000}{1+(0.16\times 4/12)} = €\ 5,60,126.58$$

- Sell € 5,60,126.58 at SR

€ 5,60,126.58 × 1.8890 = $ 10,58,079.11

- Invest $ 10,58,079.11 in US money market @ 11.5% for 4 months

Cash Inflows = $ 10,58,079.11 × [1 + (0.115 × 4/12)]

= $ 10,98,638.81

Forward cover is better due to higher cash inflows.

Question – 39

An Indian exporting firm, Rohit and Bros., would be covering itself against a likely depreciation of pound sterling. The following data is given:

Receivables of Rohit and Bros	:	£500,000
Spot rate	:	₹ 56.00/£
Payment date	:	3-months
3 months interest rate	:	India : 12 per cent per annum
	:	UK : 5 per cent per annum

What should the exporter do?

(SM TYK – 28)

Solution:

Exporter should hedge with money market cover

- Amount to be borrowed from UK money market @ 5% p.a. for 3 months

$$\frac{£\ 5,00,000}{1+(0.05\times 3/12)} = £\ 4,93,827.72$$

- Sell £ 4,93,827.72 at SR = £ 4,93,827.72 × 56 = ₹ 2,76,54,352

- Invest ₹ 2,76,54,352 in Indian money market @ 12% p.a for 3 months

  ₹ 2,76,54,352 × [1 + (0.12 × 3/12)] = ₹ 2,84,83,982.

Question – 40

H Ltd. is an Indian firm exporting handicrafts to North America. All the exports are invoiced in US$. The firm is considering the use of money market or forward market to cover the receivable of $ 50,000 expected to be realized in 3 months time and has the following information from its banker:

	Exchange Rates
Spot	₹/$ 72.65/73
3 – months forward	₹/$ 72.95/73.40

The borrowing rates in US and India are 6% and 12% p.a. and the deposit rates are 4% and 9% p.a. respectively.

(i) Which option is better for H Ltd?

(ii) Assume the H Ltd. anticipates the spot exchange rate in 3 – months time to be equal to the current 3 – months forward rate. After 3 – months the spot exchange rate turned out to be ₹/$: 73/73.42.

What is the foreign exchange exposure and risk of H Ltd.?

(Exam November – 2019)

Solution:

(i) Option 1: Forward Cover

Sell $ 50,000 at 3 months FR

Cash Inflows = $ 50,000 × 72.95

= ₹ 36,47,500

Option 2: Money Market Cover

- Amount to borrow from US Money market @ 6% for 3 months

$$\frac{\$\ 50,000}{1 + (0.06 \times 3/12)} = \$\ 49,261.08$$

- Sell $ 49,261.08 at SR = $ 49,261.08 × 72.65 = ₹ 35,78,817

- Invest ₹ 35,78,817 in Indian money market @ 9% p.a. for 3 months

Cash Inflows = ₹ 35,78,817 × [1 + (0.09 × 3/12)]

= ₹ 36,59,340

Money market cover is better due to higher cash Inflows.

(ii) Foreign Exchange Exposure = $ 50,000

Risk (Gain) due to anticipated exchange rate

= (73 – 72.95) × $ 50,000

= ₹ 2,500

(4) CURRENCY FUTURE

Question – 41

EFD Ltd. is an export business house. The company prepares invoice in customers' currency. Its debtors of US$. 10,000,000 is due on April 1, 2015.

Market information as at January 1, 2015 is:

Exchange rates US$/INR		**Currency Futures US$/INR**	
Spot	0.016667	Contract size:	₹ 24,816,975
1-month forward	0.016529	1-month	0.016519
3-months forward	0.016129	3-month	0.016118
	Initial Margin		**Interest rates in India**
1-Month	₹ 17,500		6.5%
3-Months	₹ 22,500		7%

On April 1, 2015 the spot rate US$/INR is 0.016136 and currency future rate is 0.016134.

Which of the following methods would be most advantageous to EFD Ltd?

(i) Using forward contract

(ii) Using currency futures

(iii) Not hedging the currency risk

(SM TYK – 25, MTP April – 2022 & Exam May – 2015)

Solution:

(i) Forward Contract

$$= \frac{\$\ 1,00,00,000}{0.016129} = ₹\ 62,00,01,240$$

(ii) Currency Future

Step 1: EFD Ltd. should long position on ₹ at $/₹ 0.016118

Step 2: No. of contracts

Exposure amount $= \frac{\$\ 1,00,00,000}{0.016118} = ₹\ 62,04,24,370$

No. of contracts $= \frac{\$\ 62,04,24,370}{2,48,16,975} = 25$ Contracts long

Step 3: Cash Flows

Variation margin

Gain on long position

($ 0.016134 – 0.016118) × ₹ 2,48,16,975 × 25 = $ 9,926.79

Total receipt ($ 1,00,00,000 + $ 9,926.79) = $ 1,00,09,926.79

Cash inflows (₹) $= \frac{\$\ 1,00,09,926.79}{0.016136} = ₹\ 6,20,34,7471$

(–) Interest on margin (₹ 22,500 × 25 × 7% × 3/12) = ₹ 9,844

= ₹ 62,03,37,627

(iii) No Hedging

$$\frac{\$\ 1,00,00,000}{0.016136} = ₹\ 61,97,32,276$$

Decision: Currency future is the best option due to highest cash inflows.

Question – 42

Nitrogen Ltd, a UK company is in the process of negotiating an order amounting to €4 million with a large German retailer on 6 months credit. If successful, this will be the first time that Nitrogen Ltd has exported goods into the highly competitive German market. The following three alternatives are being considered for managing the transaction risk before the order is finalized.

(i) Invoice the German firm in Sterling using the current exchange rate to calculate the invoice amount.

(ii) Alternative of invoicing the German firm in € and using a forward foreign exchange contract to hedge the transaction risk.

(iii) Invoice the German firm in € and use sufficient 6 months sterling future contracts (to the nearly whole number) to hedge the transaction risk.

Following data is available:

Spot Rate	€ 1.1750 - €1.1770/£
6 months forward premium	0.55-0.60 Euro Cents
6 months future contract is currently trading at	€1.1760/£
6 months future contract size is	£62500
Spot rate and 6 months future rate	€1.1785/£

Required:

(a) Calculate to the nearest £ the receipt for Nitrogen Ltd, under each of the three proposals.

(b) In your opinion, which alternative would you consider to be the most appropriate and the reason thereof.

(SM TYK – 41 & Exam November – 2011)

Solution:

(i) Invoicing

Invoicing the German firm in £ at current Exchange Rate

€/£ = 1.1770

Invoice amount in £ = $\frac{€\ 40,00,000}{1.1770}$ = £ 33,98,471

(ii) Forward Cover

Sell € 40,00,000 at 6 months FR

FR = (1.1770 + 0.0060) = 1.1830

Cash Inflows = $\frac{€\ 40,00,000}{1.1830}$ = £ 33,81,234

(iii) Currency Future

Step 1: € receivables & we afraid from € falling but rate is given of £ means afraid from £ rising hence we take long position of £ future at €/£ 1.1760

Step 2: No. of Contracts

£ Equivalent € 40,00,000 = $\frac{€\ 40,00,000}{1.1760}$

= € 34,01,360

No. of contracts = $\frac{€\ 34,01,360}{€\ 62,500}$ = 54 contract long

Step 3: Variation Margin

Currency future rate on settlement rate is € 1.1760/£, hence gain on long position (€ 1.1785 - € 1.1760) × 54 × € 62,500 = € 8,438

Cash inflows

Amount received	= € 40,00,000
(-) Gain on future	= € 8,438
	= € 40,08,438

Cash inflows in £ = $\frac{€\ 40,08,438}{1.1785}$

= £ 34,01,305

Currency future is the best option due to higher cash inflows.

Question – 43

ABC Technologic is expecting to receive a sum of US$ 4,00,000 after 3 months. The company decided to go for future contract to hedge against the risk. The standard size of future contract available in the market is $1000. As on date spot and futures $ contract are quoting at ₹ 44.00 &₹ 45.00 respectively. Suppose after 3 months the company closes out its position futures are quoting at ₹ 44.50 and spot rate is also quoting at ₹ 44.50. You are required to calculate effective realization for the company while selling the receivable. Also calculate how company has been benefitted by using the future option.

(SM TYK – 34)

Solution:

Currency Future

Step 1: Since $ is receivable, & we afraid from $ falling hence we should take short position of $ future at ₹/$ 45.

Step 2: No. of Contracts

$$\text{No. of Contracts} = \frac{\$\ 4,00,000}{\$\ 1,000} = ₹\ 400 \text{ Contract short}$$

Step 3: Variation Margin

$ future rate on settlement date is 44.50, hence gain on short position

Variation Margin = (₹ 45 – 44.50) × 400 × $ 1000

= ₹ 2,00,000

Step 4: Cash Inflows

Sell $ 4,00,000 at 3 months SR

($ 4,00,000 × 44.50) = ₹ 1,78,00,000

(+) Variation Margin = ₹ 2,00,000

Cash Inflows = ₹ 1,80,00,000

$$\text{Effective Realization per \$} = \frac{₹\ 1,80,00,000}{\$\ 4,00,000}$$

= ₹ 45

(5) CURRENCY OPTION

Question – 44

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%

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

(SM TYK – 39 & Exam November – 2015)

Solution: