

FX : L24 - Part 1

Q.91 pg
 w. 39

(i) Net Exposure of each foreign currency in term of £
 (amt. in millions)

Currency	Inflow (a)	Outflow (b)	Net Inflow (c) = (a - b)	F-S (d)	Net Exposure (c) x (d) = (e)
UK £	80	40	40	0.44	17.6
CHF	40	16	24	0.05	1.2
US \$	60	40	20	0.38	7.6
Ind. Ru.	30	50	-20	-0.40	8.0

(ii) Only the Indonesian Rupiah is off-setting as we have a net outflow offset by forward discount.

Self practice : HW. Q.621 pg. 27

Q.90 pg
 w. 39

• Alt 1: Forward Cover :-

Particulars	Japan	US	Europe	Total
a) Variable cost p.u.	¥225	£395	£510	
b) Export sale price p.u.	¥650	\$10.23	€11.99	
c) Receipts from sales in 90 days	¥1800000	\$102300	€95920	

d) No. of units ($c \div b$)	12000	10000	8000	
e) Relevant forward rate for selling F. currency	¥ 2.427/₹	\$ 0.0216/₹	€ 0.0178/₹	
f) Rupee Inflow from forward sale ($c \div e$)	₹ 3213844	₹ 4736111	₹ 5388764	₹ 13338719
g) Total Variable cost ($a \times d$)	₹ 2700000	₹ 3950000	₹ 4080000	₹ 10730000
h) Contribution ($f - g$)	₹ 513844	₹ 786111	₹ 1308764	₹ 2608719
i) Average Contribution to sales ratio ($h \div f$) $\times 100$				19.56%
• Alt 2: No Hedge				
j) Relevant spot rate after 3 months for selling Foreign currency	¥ 2.459/₹	\$ 0.02156/₹	€ 0.0179/₹	
k) ₹ Inflow ($c \div j$)	₹ 3172021	₹ 4744898	₹ 5358659	₹ 13275578
l) Contribution ($k - g$)	₹ 472021	₹ 794898	₹ 1278659	₹ 2545578
m) Average contribution to sales ratio ($l \div k$) $\times 100$				19.17%

∴ Company should hedge currency risk.

Self practice : Extra Q.3] Hw. soln. pg. 81

Part-2
 :- International Capital Budgeting :-

Eg: Indian Co. → US project.

Year	0	1	2	3
Net CF (\$ million)	(600)	220	280	350
R_f : India → 8%		R_e : ₹ → 19%	$S_0 = ₹ 84.40/\$$	
US → 5%		\$ → ?		

Calculate NPV of the project

a) Domestic currency approach

b) Foreign currency approach

Risk free rate is currency specific & Risk premium is project specific....

Soln:-

(a) Step 1 - Calculation of expected spot rate as per IRP

$$\frac{E(S_1)}{S_0} = \frac{1 + r_{\text{₹}}}{1 + r_{\$}}$$

$$E(S_1) = 84.40 \times \frac{1.08}{1.05} = ₹ 86.81 / \$$$

$$E(S_2) = 86.81 \times \frac{1.08}{1.05} = ₹ 89.29 / \$$$

$$E(S_3) = 89.29 \times \frac{1.08}{1.05} = ₹ 91.84 / \$$$

Step 2 - Calculation of NPV

(amt. in millions)

Years	NCF (\$)	E(S)	NCF (₹)	DF @ 19%	Present Value
0	(600)	84.40	(50640)	1	(50640)
1	220	86.81	19098.20	0.8403	16048.22
2	280	89.29	25001.20	0.7062	17655.85
3	350	91.84	32144.00	0.5934	19074.25
					2138.32

$$NPV = ₹ 2138 \text{ million}$$

(b) Step 1: Risk premium = $\frac{1.19}{1.08} - 1 = 10.1852\%$

Step 2: Required return in \$ terms = $(1.05)(1.101852) - 1 = 15.6945\%$

Step 3: Calculation of NPV

Year	NCF (\$ million)	DF @ 15.6945%	Present Value (\$ million)
0	(600)	1	(600)
1	220	0.8643	190.15
2	280	0.7471	209.19
3	350	0.6457	225.96
			25.30

$$NPV = \$ 25.30 \text{ millions}$$

$$S_0 = ₹ 84.40 / \$$$

$$\therefore NPV = 25.30 \times 84.40 = ₹ 2135 \text{ millions} \approx ₹ 2138$$

Since NPV is positive, project is viable.

Part - 3

Q.71 pg

Q.29

Alt 1: Money Market Hedge

Foreign currency (€250000) payable IBB

Step 1 - Invest present value of €250000 @ 3.5% p.a. for 6m

$$\text{i.e. } \frac{250000}{1.0175} = € 245700$$

Step 2 - Buy €245700 spot @ 1.998 - 0.002 = €1.996/£

$$£ \text{ required} = \frac{245700}{1.996} = £ 123096$$

Step 3 - Borrow £123096 @ 6.1% for 6m

$$£ \text{ outflow after 6m} = 123096 (1.0305) = £ 126850$$

Alt 2: Forward cover

Buy 6m forward cover @ 1.979 - 0.004 = €1.975/£

$$£ \text{ outflow after 6m} = \frac{250000}{1.975} = £ 126582$$

Alt 3: Lead Payment

$$\text{Step 1 - } £ \text{ outflow for spot payment} = \frac{250000}{1.996} = £ 125250.50$$

Step 2 - Borrow £125250.50 @ 6.1% p.a. for 6m

$$£ \text{ outflow after 6m} = 125250.50 (1.0305) = £ 129071$$

$\therefore$ Forward cover is preferred.

Self practice: Extra Q.1] HW. soln. pg. 79

Q.89 cw
 pg. 38

1) Proceeds in different currencies for ₹10 million receivable after 3 months -

(a x b)

Currency	Invoice @ spot rate (a)	E(S) (b)	₹ inflow after 3m
\$	10000000 / 67.10 = \$149031.297	67.10 (1.0175) = 68.27 ₹/\$	₹10174367
€	10000000 / 63.15 = €158353.127	63.15 (1.015) = 64.10 ₹/€	₹10150435
£	10000000 / 88.65 = £112803.158	88.65 (1.0125) = 89.76 ₹/£	₹10125211

∴ XP Pharma Ltd. should invoice in \$ for exports.

2) Payment in different currencies for ₹5 million payable after 6 months -

Currency	Invoice @ spot rate (a)	E(S) (b)	₹ Outflow after 6m (a x b)
\$	5000000 / 67.20 = \$74404.762	67.20 (1.035) = 69.55 ₹/\$	₹5174851
€	5000000 / 63.20 = €79113.924	63.20 (1.03) = 65.10 ₹/€	₹5150316
£	5000000 / 88.75 = £56338.028	88.75 (1.025) = 90.97 ₹/£	₹5125070

∴ XP Pharma Ltd. should invoice in £ for imports.

Self practice: Extra Q.1] Hw. soln. pg. 80

Note: Money Market cover se solve nhi kr skte q k interest rates nahi diye h @ me

Q.93	Pg	Buy CHF 125000 @ \$1.0802 / CHF	\$ 135025
W. 40		Sell CHF 125000 @ \$1.0816 / CHF	\$ 135200
		Gain	\$ 175

Self practice : HW. Q.63] pg. 27

Q.79	Pg	a) Domestic currency approach -
W. 33		(not asked in Q.)

b) Foreign currency approach -

(i) Step 1: Risk premium = $\frac{1.14}{1.12} - 1 = 1.785\%$

Step 2: Required return in \$ terms = $(1.08)(1.01785) = 9.9\%$

Step 3 : Calculation of NPV -

Year	NCF (\$ million)	DF @ 9.9%	Present value
0	(16.50)	1	(16.50)
1	3.00	0.9099	2.7297
2	3.75	0.8279	3.1046
3	4.50	0.7534	3.3903
4	6.00	0.6855	4.1130
5	7.50	0.6238	4.6785
			\$ 1.5160

NPV of project in ₹ terms = $1.5160 \$ \times ₹ 72/\$$
 = ₹ 109.15 million

(ii) Total PV of cash Inflow	\$ 18.0160
(-) withholding tax @ 10%	\$ (1.8016)
PV of cash inflow after tax	\$ 16.2144
(-) Initial Investment	\$ (16.50)
NPV	\$ -0.2856 million

NPV in ₹ terms = $0.2856 \times ₹ 72/\$ = -₹ 20.56 \text{ million}$

Self practice : HW. Q.56] pg. 24