

FOREX CLASS 24

HOME WORK SUPPORT

COVERAGE

Question			Answer			Lecture Time
Q. No	Page no.	Book	Q. No	Page no.	Book	
63	27	HW Q BOOK	63	47	HW ANS BOOK	00:00:30 - 00:03:22
EXTRA Q1	79	HW ANS BOOK	EXTRA Q1	79	HW ANS BOOK	00:03:23 - 00:06:03
EXTRA Q2	80	HW ANS BOOK	EXTRA Q2	80	HW ANS BOOK	00:06:04 – 00:09:10
EXTRA Q3	81	HW ANS BOOK	EXTRA Q3	81	HW ANS BOOK	00:09:11 – 00:10:31
62	27	HW Q BOOK	62	46	HW ANS BOOK	00:10:32 – 00:18:40
56	24	HW Q BOOK	56	41	HW ANS BOOK	00:18:41 – 00:19:58
79	33	CW Q BOOK	79	52	CW ANS BOOK	00:19:59 – 00:26:15

PART VI: RESIDUAL

Topic 31 FORWARD VS FUTURES ARBITRAGE

Question 63: SSEI HW Book Page No.27

In International Monetary Market an international forward bid for December, 15 on pound sterling is \$ 1.2816 at the same time that the price of IMM sterling future for delivery on December, 15 is \$ 1.2806. The contract size of pound sterling is £ 62,500. How could the dealer use arbitrage in profit from this situation and how much profit is earned?

(Source: ICAI)

ANSWER:

Buy £ 62500 × 1.2806	\$ 80037.50
Sell £ 62500 × 1.2816	\$ 80100.00
Profit	\$ 62.50

Alternatively, if the market comes back together before December 15, the dealer could unwind his position (by simultaneously buying £ 62,500 forward and selling a futures contract. Both for delivery on December 15) and earn the same profit of \$ 62.5.

PART IV: INTERNATIONAL PARITY CONDITIONS

EXTRA QUESTION

Topic 23 FC VS MMC VS LEADING AND LAGGING

Question 1: **HW ANS BOOK PAGE 79**

XYZ Ltd is an Indian company that sells goods solely within India. It has recently tried a foreign supplier from Australia for the first time and need to pay AUD 5,00,000 to the supplier in 90days time. You as financial manager are concerned that the cost of these supplies may rise in rupee terms and has decided to hedge the currency risk of this account payable. The following information has been provided by the company's bank:

Spot rate (INR per AUD): 55.30 ± 0.03

90 day forward rate (INR per AUD): 55.26 ± 0.04

Money market rates available to XYZ Ltd:

Borrowing Deposit

One year rupee interest rates: 7.2% 5.9%

One year AUD interest rates: 5.6% 4.6%

Assuming XYZ Ltd has no surplus cash at the present time you are required to evaluate whether a money market hedge, a forward market hedge or a lead payment should be used to hedge the foreign account payable.(Assume 360 days in an year)

(Source: FOD)

ANSWER:

XYZ Ltd should place sufficient AUD on deposit now so that, with accumulated interest, the 90 day liability of AUD 5,00,000 can be met. Since the company has no surplus cash at the present time, the cost of these AUD must be met by a short-term rupee loan.

90 day AUD deposit rate = $4.6/4 = 1.15\%$

Current spot buying rate = $AUD55.30 + 0.03 = 55.33 \text{ INR/AUD}$

90 DAY RUPEE borrowing rate = $7.2/4 = 1.80\%$

AUD deposited now = $5,00,000/1.0115 = AUD 4,94,315$

Cost of these AUD at spot = $4,94,315 * 55.33 = INR 2,73,50,449$

Rupee value of loan in 90 days time = $2,73,50,449 * 1.018 = INR 2,78,42,757$

Forward market hedge

90 days forward selling rate = $55.26 + 0.04 = 55.30 \text{ INR/AUD}$

Rupee cost using forward market hedge = $5,00,000 * 55.30 = INR 2,76,50,000$

Lead payment

Rupee cost now = $5,00,000 \times 55.33 = \text{INR} 2,76,65,000$

This cost must be met by a short-term loan at a 90 days interest rate of 1.8%

Rupee value of loan in 90 days time = $2,76,65,000 \times 1.018 = \text{INR } 2,81,62,970$

Evaluation of hedges

The relative costs of the three hedges can be compared since they have been referenced to the same point in time, i.e. 90 days in the future. The most expensive hedge is the lead payment, while the cheapest is the forward market hedge. Using the forward market to hedge the account payable currency risk can therefore be recommended.

PART VI: RESIDUAL

EXTRA QUESTION

Topic 28 CURRENCY OF INVOICING

Question 2: **HW ANS BOOK PAGE 80**

UC Ltd exported items worth 5 crore rupees to a UK company. It made imports amounting to 2.4 crore rupees from Germany. The proceeds of exports will be realized in 3 months from now and the payments for imports will be due after 6 months from now. The invoicing of these exports and imports can be done in any currency i.e. Dollar, Euro or Pounds sterling at company's choice. The following market quotes are available.

	Spot Rate	Annualised Premium
₹/\$	81.20/81.35	Dollar - 5%
₹/Euro	88.50/88.65	Euro - 6%
₹/Pound	101.30/101.50	Pound - 4%

Advice UC Ltd. about invoicing in which currency.

(Calculation should be upto three decimal places).

(Source: FOD)

ANSWER:

i. Proceeds of Exports in INR = 5 crores

Position of Inflow under three currencies will be as follows:

CURRENCY	INVOICE AT SPOT RATE	EXPECTED RATE AFTER 3 MONTHS	CONVERSION IN INR AFTER 3 MONTHS
USD	5,00,00,000/81.20 = 6,15,763.547 USD	81.2(1.0125) = 82.21	82.21×615763.547 5,06,21,921 INR
EURO	5,00,00,000/88.50 =5,64,971.751 EURO	88.50(1.015)= 89.83	89.83×564971.751 =5,07,51,412 INR
GBP	5,00,00,000/101.30 =4,93,583.416 GBP	101.30(1.01)= 102.31	102.31×493583.416 =5,04,98,519 INR

ii. Payment of Import in INR = 2.4 crores

Position of outflow under three currencies will be as follows:

CURRENCY	INVOICE AT SPOT RATE	EXPECTED RATE AFTER 6-MONTHS	CONVERSION IN INR AFTER 6-MONTHS
\$	2,40,00,000/81.35 = \$ 2,95,021.512	81.35(1.025) = 83.38	2,95,021.512 × 83.38 = 2,45,98,894 INR
€	2,40,00,000/88.65 = € 2,70,727.580	88.65(1.03) = 91.31	2,70,727.580×91.31 = 2,47,20,135 INR
£	2,40,00,000/101.50 = £ 2,36,453.202	101.50(1.02) = 103.53	2,36,453.202×103.53 = 2,44,80,000 INR

Advice: Since cash inflow is highest (5,07,51,412 INR) in case of EURO hence invoicing for Export should be in EURO. However, cash outflow is least (2,44,80,000 INR) in case of £ the invoicing for import should be in £.

PART VI: RESIDUAL

EXTRA QUESTION

Topic 28 CURRENCY OF INVOICING

Question 3: HW ANS BOOK PAGE 81

Following information relates to X Ltd. which is a manufacturing-cum-exporting unit. It is exporting some electronic components to Japan, USA and Europe on 90 days credit terms:

Cost and Sales Information:

	Japan	USA	Europe
Variable cost per unit	₹250	₹400	₹505
Export sale price per unit	Yen 480	\$6.50	Euro 7.00
Receipts from sale due in 90 days	Yen 24,00,000	\$ 52,000	Euro 84,000

Foreign exchange rate information:

	Japan Yen/Re	USA \$/Re	Europe Euro/Re
Spot market	1.562-1.586	0.0124-0.0127	0.01129-0.01159
3 months forward	1.542-1.576	0.0123-0.0126	0.01119-0.01139
3 months spot	1.568-1.604	0.0126-0.0128	0.01129-0.01149

Advise the company by calculating average contribution to sales ratio whether it should hedge its currency risk or not.

(Source: FOD)

ANSWER:

If foreign exchange risk is hedged

	Japan	USA	Europe	Total (₹)
Sum due	Yen24,00,000	US\$52,000	Euro 84,000	
Unit input price	Yen 480	US\$6.50	Euro 7.00	
Unit sold	5000	8000	12000	
Variable cost per unit	₹250/-	₹400/-	₹505/-	
Variable cost	₹12,50,000	₹ 32,00,000	₹60,60,000	₹ 1,05,10,000
Three months forward rate for selling	1.576	0.0126	0.01139	
Rupee value of receipts	₹15,22,843	₹41,26,984	₹73,74,890	₹ 1,30,24,717
Contribution	₹2,72,843	₹9,26,984	₹13,14,890	₹25,14,717
Average contribution to sale ratio				19.30%
If risk is not hedged				
Rupee value of receipt	₹14,96,259	₹ 40,62,500	₹73,10,704	₹ 1,28,69,463

Total contribution				₹ 23,59,463
Average contribution to sale ratio				18.33%

X Ltd. Is advised to hedge its foreign currency exchange risk.

PART VI: RESIDUAL

Topic 29 EXPOSURE AMBIGUOUS

Question 62: SSEI HW Book Page No. 27

Following are the details of cash inflows and outflows in foreign currency denominations of MNP Co. an Indian export firm, which have no foreign subsidiaries:

Currency	Inflow	Outflow	Spot rate	Forward rate
US \$	4,00,00,000	2,00,00,000	48.01	48.82
French Franc (FFr)	2,00,00,000	80,00,000	7.45	8.12
U.K. £	3,00,00,000	2,00,00,000	75.57	75.98
Japanese Yen	1,50,00,000	2,50,00,000	3.20	2.40

- Determine the net exposure of each foreign currency in terms of Rupees.
- Are any of the exposure positions offsetting to some extent?

(Source: ICAI)

ANSWER:

- Net exposure of each foreign currency in Rupees**

	Inflow (Millions)	Outflow (Millions)	Net Inflow (Millions)	Spread	Net Exposure (Millions)
US\$	40	20	20	0.81	16.20
FFr	20	8	12	0.67	8.04
UK£	30	20	10	0.41	4.10
Japan Yen	15	25	-10	-0.80	8.00

- The exposure of Japanese yen position is being offset by a better forward rate

PART V: DECISIONS INVOLVING CFO

Topic 25 INTERNATIONAL PROJECT APPRAISAL

Question 56: SSEI HW Book Page No. 24

ABC Ltd. is considering a project in Germany, which will involve an initial investment of € 2,20,00,000. The project will have 5 years of life. Current spot exchange rate is ₹ 72 per €. The risk-free rate in Germany is 4% and the same in India is 6%. Cash inflow from the project is as follows:

Year	Cash inflow
1	€ 40,00,000
2	€ 50,00,000
3	€ 60,00,000
4	€ 80,00,000
5	€ 100,00,000

Calculate the NPV of the project using

- Home Currency Approach
- Foreign Currency Approach.
- Required rate of return on this project is 7%.

(Source: ICAI)

ANSWER:

i. Calculation of Forward Exchange Rates

End of Year	₹	₹/€
1	$₹ 72.00 \times \left(\frac{(1+0.06)}{(1+0.04)} \right)^1$	73.38
2	$₹ 72.00 \times \left(\frac{(1+0.06)}{(1+0.04)} \right)^2$	74.80
3	$₹ 72.00 \times \left(\frac{(1+0.06)}{(1+0.04)} \right)^3$	76.23
4	$₹ 72.00 \times \left(\frac{(1+0.06)}{(1+0.04)} \right)^4$	77.70
5	$₹ 72.00 \times \left(\frac{(1+0.06)}{(1+0.04)} \right)^5$	79.19

Calculation of NPV

Year	Cash Flow (Million) €	Expected Rate	Cash flow	PV Factor @ 7%	P.V.
1	4.00	73.38	293.52	0.935	274.44
2	5.00	74.80	374.00	0.873	326.50
3	6.00	76.23	457.38	0.816	373.22
4	8.00	77.70	621.60	0.763	474.28
5	10.00	79.19	791.90	0.713	564.62
Total PV of Cash Inflows					2013.06
Less: Investment	22.00	72.00			1584.00
NPV					429.06

Therefore, Rupee NPV of the project is = ₹ 429.06

and € NPV = ₹ 429.06 / ₹72.00 = € 5.96 Million

ii. $(1 + 0.06) (1 + \text{Risk Premium}) = (1 + 0.07)$

Or, $1 + \text{Risk Premium} = 1.07/1.06 = 1.00943$

Therefore, Risk adjusted dollar rate is = $1.00943 \times 1.04 = 1.0498 - 1 = 0.0498$

Calculation of NPV

Year	Cash flow (Million) €	PV Factor at 4.98%	P.V.
1	4.00	0.953	3.812
2	5.00	0.907	4.535
3	6.00	0.864	5.184
4	8.00	0.823	6.584
5	10.00	0.784	7.840
			27.955
Less: Investment			22.000
NPV			5.955

Therefore, Rupee NPV of the project is = ₹ (72 x 5.955) Million

= ₹ 428.76 Million

PART V: DECISIONS INVOLVING CFO

Topic 25 INTERNATIONAL PROJECT APPRAISAL

Question 79: SSEI CW Book Page No. 33

X Ltd., an Indian company, is considering a proposal to make an investment of USD 1,65,00,000 in Latin America. The project will have a life of 5 years. The current spot exchange rate is INR/USD 72. All investments and revenues will occur in USD. The USD and INR risk free rates are 8% and 12% respectively. The following cash flow is expected form the project.

Year	Cash inflow (USD)
1	30,00,000
2	37,50,000
3	45,00,000
4	60,00,000
5	75,00,000

Assume required rate of return on the project as 14%.

You are required to calculate:

- The viability of the project using foreign currency approach.
- What will be the impact if there is a withholding tax of 10% applicable on the project.

(Source: ICAI)

ANSWER:

i. Viability of the Project

$$(1 + 0.12) (1 + \text{Risk Premium}) = (1 + 0.14)$$

$$\text{Or, } 1 + \text{Risk Premium} = 1.14/1.12 = 1.0179$$

$$\text{Therefore, Risk adjusted dollar rate is } = 1.0179 \times 1.08 = 1.099 - 1 = 0.099$$

Calculation of NPV

Year	Cash flow (Million) US\$	PV Factor at 9.9%	P.V.
1	3.00	0.910	2.730
2	3.75	0.828	3.105
3	4.50	0.753	3.389
4	6.00	0.686	4.116
5	7.50	0.624	<u>4.680</u>
			18.02
		Less: Investment	<u>16.50</u>
		NPV	<u>1.52</u>

Therefore, Rupee NPV of the project is = ₹ 72 x US\$ 1.52 Million
= ₹ 109.44 Million

Project is viable as the NPV is positive.

ii. If there is a withholding tax of 10%

Total PV of Cash Inflows	US\$ 18.02 Million
Less: Withholding Tax @ 10%	US\$ 1.802 Million
PV of Cash Inflow after Withholding Tax	US\$ 16.218 Million
Less: Initial Investment	US\$ 16.50 Million
NPV	(US\$ 0.282 Million)

Therefore, Rupee NPV of the project is = ₹ 72 x (US\$ 0.282 Million)
= - ₹ 20.304 Million

Thus, if there is a withholding tax of 10% then the project will not be viable.