FOREX CLASS 19

CLASS WORK COVERAGE

To streamline our learning process, I've categorized the questions we'll tackle in class into four distinct groups:

1. ***Classic:*** *These questions are exactly as presented in your book, providing a familiar foundation.*
2. ***Transformed:*** *Here, we've converted book questions into multiple-choice format to enhance your analytical skills.*
3. ***Adapted:*** *These are similar to book questions but with altered numbers or names, presented as multiple-choice questions for varied practice.*
4. ***Original:*** *These are entirely new questions not found in your book, designed to challenge and expand your understanding.*

This structure will help us navigate through a range of problems, ensuring a comprehensive grasp of the material. Looking forward to our next session!

Q. No	Type	Book	Page No.
45	Classic	CW Q BOOK	19
46	Classic	CW Q BOOK	19
47	Classic	CW Q BOOK	19
48	Classic	CW Q BOOK	19
49	Classic	CW Q BOOK	20

PART IV: INTERNATIONAL PARITY CONDITIONS

Topic 17 IRP EQUATION

Question 45:SSEI CW Book Page No. 19

The US dollar is selling in India at ₹ 55.50. If the interest rate for 6 months borrowing in India is 10% per annum and the corresponding rate in USA is 4%.

i. Do you expect that US dollar will be at a premium or at discount in the Indian Forex Market?

ii. What will be the expected 6-months forward rate for US dollar in India? and

iii. What will be the rate of forward premium or discount?

(Source: ICAI)

ANSWER:

i. Under the given circumstances, the USD is expected to quote at a premium in India as the interest rate is higher in India.

ii. Calculation of the forward rate:

$$\frac{1+R_h}{1+R_f}=\frac{F_1}{E_o}$$

Where: Rh is home currency interest rate, Rf is foreign currency interest rate, F1 is end of the period forward rate, and Eo is the spot rate.

$$\text{Therefore } \frac{1+(0.10/2)}{1+(0.04/2)}=\frac{F_1}{55.50}$$

$$\frac{1+0.05}{1+0.02}=\frac{F_1}{55.50}$$

$$\text{or } \frac{1.05}{1.02}\times 55.50 = F_1$$

$$\text{or } \frac{58.275}{1.02} = F_1$$

$$\text{or } F_1 = ₹57.13$$

iii. Rate of premium:

$$\frac{57.13-55.50}{55.50}\times\frac{12}{6}\times 100 = 5.87\%$$

Question 46:SSEI CW Book Page No. 19

On April 1, 3 months interest rate in the UK £ and US $ are 7.5% and 3.5% per annum respectively. The UK £/US $ spot rate is 0.7570. What would be the forward rate for US $ for delivery on 30th June?

(*Source: ICAI*)

ANSWER:

As per interest rate parity

$$S_1 = S_0\left[\frac{1+\text{in A}}{1+\text{in B}}\right]$$

$$S_1 = £0.7570\left[\frac{1+(0.075)\times 3/12}{1+(0.035)\times 3/12}\right]$$

$$= £0.7570\left[\frac{1.01875}{1.00875}\right]$$

$$= £0.7570 \times 1.0099 = £0.7645$$

$$= \text{UK } £0.7645 / \text{US\$}$$

Question 47:SSEI CW Book Page No. 19

Shoe Company sells to a wholesaler in Germany. The purchase price of a shipment is 50,000 deutsche marks with term of 90 days. Upon payment, Shoe Company will convert the DM to dollars. The present spot rate for DM per dollar is 1.71, whereas the 90-day forward rate is 1.70.

You are required to calculate and explain:

i. If Shoe Company were to hedge its foreign-exchange risk, what would it do? What transactions are necessary?
ii. Is the deutsche mark at a forward premium or at a forward discount?
iii. What is the implied differential in interest rates between the two countries?

(Use interest-rate parity assumption).

(*Source: ICAI*)

ANSWER:

i. If Shoe Company were to hedge its foreign exchange risk, it would enter into forward contract of selling deutsche marks 90 days forward. It would sell 50,000 deutsche marks 90 days forward. Upon delivery of 50,000 DM 90 days hence, it would receive US $ 29,412 i.e. 50,000 DM/1.70. If it were to receive US $ payment today it would receive US $ 29,240 i.e.

50,000 DM/1.71. Hence, Shoe Company will be better off by $ 172 if it hedges its foreign exchange risk.

ii. The deutsche mark is at a forward premium. This is because the 90 days forward rate of deutsche marks per dollar is less than the current spot rate of deutsche marks per dollar. This implies that deutsche mark is expected to be strengthen i.e. Fewer deutsche mark will be required to buy dollars.

iii. The interest rate parity assumption is that high interest rates on a currency are offset by forward discount and low interest rate on a currency is offset by forward premiums.

Further, the spot and forward exchange rates move in tandem, with the link between them based on interest differential. The movement between two currencies to take advantage of interest rates differential is a major determinant of the spread between forward and spot rates. The forward discount or premium is approximately equal to interest differential between the currencies i.e.

$$\frac{F_{(DM/US\$)} - S_{(DM/US\$)}}{S_{(DM/US\$)}} \times \frac{365}{90} = r_{DM} - r_{US\$}$$

$$\text{or } \frac{1.70 - 1.71}{1.71} \times \frac{365}{90} = r_{DM} - r_{US\$}$$

$$\text{or } -0.0237 = r_{DM} - r_{US\$}$$

Therefore, the differential in interest rate is –2.37%, which means if interest rate parity holds, interest rate in the US should be 2.37% higher than in Germany.

Question 48:SSEI CW Book Page No.19

The following table shows interest rates for the United States Dollar and French Franc. The spot exchange rate is 7.05 Franc per Dollar. Complete the missing entries:

	3 Months	6 Months	1 Year
Dollar interest rate			
(annually compounded)	11½%	12¼%	?
Franc interest rate			
(annually compounded)	19½%	?	20%
Forward Franc per Dollar	?	?	7.5200
Forward discount per Franc			
percent per year	?	6.3%	

(Source: ICAI)

ANSWER:

Computation of Missing Entries in the Table: For computing the missing entries in the table we will use Interest Rates Parity (IRP) theorem. This theorem states that the exchange rate of two countries will be affected by their interest rate differential. In other words, the currency of one country with a lower interest rate should be at a forward premium in terms of currency of country with higher interest rates and vice versa. This implies that the exchange rate (forward and spot) differential will be equal to the interest rate differential between the two countries i.e.

Interest rate differential = Exchange rate differential

$$\text{or } \frac{(1+r_f)}{(1+r_d)} = \frac{S_{f/d}}{F_{f/d}}$$

Where r_f is the rate of interest of country F (say the foreign country), r_d is rate of interest of country D (say domestic country), $S_{f/d}$ is the spot rate between the two countries F and D and $F_{f/d}$ is the forward rate between the two countries F and D.

3 months

Dollar interest rate = $11\frac{1}{2}\%(\text{annually compounded})$

Franc interest rate = $19\frac{1}{2}\%(\text{annually compounded})$

Then Forward Franc per Dollar rate would be

$$= 7.05\left(\frac{1+\frac{0.195}{4}}{1+\frac{0.115}{4}}\right) = 7.05\left(\frac{1+0.04875}{1+0.02875}\right)$$

= Franc 7.19 per US Dollar

Further Forward discount per Franc per cent per year = Interest Differential i.e.

$$= 19\frac{1}{2}\% - 11\frac{1}{2}\% = 8\%$$

Alternatively, more precisely it can also be computed as follows:

Spot Per Franc Rate = 1 / 7.05 = US Dollar 0.142 per Franc

One Year Forward Rate = $0.142\left(\frac{1+0.115}{1+0.195}\right) = \text{US Dollar } 0.132 \text{ per Franc}$

Accordingly, the discount per annum will be = $\frac{0.142 - 0.132}{0.142} \times 100 = 7.04\%$

6 months

Forward discount on Franc % per year = − 6.3% or – 3.15% for 6 months

Hence 6 months Forward rate = 7.05/ (100% − 3.15%)

Forward Francs per Dollar = 7.28 Francs

Let r be the Franc interest rate (annually compounded) then as per IRP Theory:

$$7.05\left(\frac{1+\frac{r}{2}}{1+\frac{0.1225}{2}}\right)=\text{Franc 7.28 per Dollar}$$

On solving the equation we get the value of r = 19.17% i.e. Franc interest rate (annually compounded)

1 Year

Franc interest rate = 20% (annually compounded)

Forward Franc per Dollar = 7.5200

As per Interest Rate Parity the relationship between the two countries rate and spot rate is i.e.

$$\frac{1\ +\text{Dollar interest rate}}{1+0.20}=\frac{7.05}{7.52}$$

Accordingly, the Dollar interest rate = 1.20 × 0.9374 – 1 = 1.125 – 1 = 0.125 or 12.5%

The completed Table will be as follows:

	3 Months	6 Months	1 Year
Dollar interest rate			
(annually compounded)	11½%	12¼%	12.50%
Franc interest rate			
(annually compounded)	19½%	19.17%	20%
Forward Franc per Dollar	7.19	7.28	7.5200
Forward discount per Franc			
percent per year	8% or 7.04%	6.3%	

Question 49:SSEI CW Book Page No. 20

Six-month T-bills have a nominal rate of 7 percent, while default-free Japanese bonds that mature in 6 months have a nominal rate of 5.5 percent. In the spot exchange market, 1 yen equals $0.009. If interest rate parity holds, what is the 6-month forward exchange rate?

(***Source: ICAI)***

ANSWER:

(1.035 / 1.0275) × .009 = 0.00907