6 Months forward rate: 36.10/36.40

The company needs $ funds for six months, Determine whether the company should borrow in $ or ₹. Interest rates are:

3 Months interest rate: ₹: 12%, $: 6%

6 Months interest rate: ₹: 11.50%, $: 5.5%

Also determine what should be the rate of interest after 3 – months to make the company indifferent between 3- months borrowings end 6- months borrowings in the case of:

(i) Rupee borrowing

(ii) Dollar borrowing

Note: For the purpose of calculation you can take the units of dollar and rupee as 100 each.

(Exam November – 2018)

Solution:

Suppose we need $ 100 for 6 months

(i) Borrow from US

Principal	= $ 100
Interest ($ 100 × 5.5% × 6/12)	= $ 2.75
	= $ 102.75

Buy $ 102.75 at 6 month FR

Cash outflows = $ 102.75 × 36.40

= ₹ 3,740.10

(ii) Borrow from India

₹ Required to buy $100 at SR ($100 × 36.10)	= ₹ 3610
Interest (3,610 × 11.5% × 6/12)	= ₹ 207.575
Cash outflows	= ₹ 3,817.575

Borrow in $ is better due to lower cash outflows.

Indifference Rate

₹ Borrowing

$$3 \text{ months rate} = \left[\frac{1.0575}{1.03} - 1\right] \times 100 \times \frac{12}{3} = 10.68\%$$

$ Borrowing

$$3 \text{ months FRA} = \left[\frac{1.0275}{1.015} - 1\right] \times 100 \times \frac{12}{3} = 4.93\% \text{ p.a.}$$

Question – 65

A German subsidiary of an US based MNC has to mobilize 1,00,000 Euro's working capital for the next 12 months. It has the following options:

Loan from German Bank	:	@ 5% p.a.
Loan from US Parent Bank	:	@ 4% p.a.
Loan from Swiss Bank	:	@ 3% p.a.

Banks in Germany charge an additional 0.25% p.a. towards loan servicing. Loans from outside Germany attract withholding tax of 8% on interest payments. If the interest rates given above are market determined, examine which loan is the most attractive using interest rate differential.

(Exam November – 2019)

Solution:

Calculation of cost of loan

(i) Borrow from German Bank

(5% + 0.25%) = 5.25%

(ii) Borrow from US Bank Interest

$\frac{4\%}{1-0.08}$ = 4.35%

Premium in $ = $\left[\frac{1.05}{1.04} - 1\right]$ = 0.96%

= 5.31%

(iii) Borrow from Swiss Bank

Interest = $\left[\frac{3\%}{1-0.08}\right]$ = 3.26%

Premium in SF = $\left[\frac{1.05}{1.03}-1\right]\times 100$ = 1.94

= 5.20%

Borrow from Swiss Bank is better due to lower cash outflows.

Cash outflows = € 1,00,000 × 1.052

= € 1,05,200

(10) CURRENCY OF INVESTMENT

Question – 66

Your bank's London office has surplus funds to the extent of USD 5,00,000/- for a period of 3 months. The cost of the funds to the bank is 4% p.a. It proposes to invest these funds in London, New York or Frankfurt and obtain the best yield, without any exchange risk to the bank. The following rates of interest are available at the three centers for investment of domestic funds there at for a period of 3 months.

London	5 % p.a.
New York	8% p.a.
Frankfurt	3% p.a.

The market rates in London for US dollars and Euro are as under:

London on New York

Spot	1.5350/90
1 month	15/18
2 months	30/35
3 months	80/85

London on Frankfurt

Spot	1.8260/90
1 month	60/55
2 months	95/90
3 months	145/140

At which centre, will be investment be made & what will be the net gain (to the nearest pound) to the bank on the invested funds?

(SM TYK – 49, RTP Nov – 2021 & Exam Nov – 2013)

Solution:

Option 1: Investment in London

Fund available = $ 5,00,000

Convert $ 5,00,000 at SR $/£ 1.5390

$\frac{\$\ 5,00,000}{£\ 1.5390}$ = £ 3,24,886.29

Invest @ 5% p.a. for 3 months

(£ 3,24,886.29 + (3,24,886.29 × 5% × 3/12) = £ 3,28,947.37

Repayment in $ after 3 months [$ 5,00,000 (1.01)] = $ 5,05,000

Buy $ 5,05,000 at 3 months FR [1.5350 + 0.0080] = $/£ 1.5430

Cash outflow in £ $= \frac{\$\ 5,05,000}{£\ 1.5430}$ = £ 3,27,284.51

Gain (£ 3,28,947.37 – £ 3,27,284.51) = £ 1,663

Option 2: Invest in New York

Invest $ 5,00,000 @ 8% p.a. for 3 months

Cash inflows ($) [$ 5,00,000 (1.02)] = $ 5,10,000

Cash outflow $ = $ 5,05,000

Net Gain ($) = $ 5,000

Convert $ 5,000 at 3 months FR

(1.5390 + 0.0085) = 1.5475

Net Gain in £ $= \frac{\$\ 5{,}000}{1.5475}$ = £ 3,231

Option 3: Invest in Frankfurt

$ Available = $ 5,00,000

Convert $ 5,00,000 at SR = $\frac{\$\ 5{,}00{,}000}{1.5390}$ = £ 3,24,886.2

Convent £ 3,24,886 at in € at SR €/£ - 1.8260

(£ 3,24,886 × 1.8260) = € 5,93,242

Invest € 5,93,242 @ 8% p.a. for 3 months

(€ 5,93,242 × 1.0075) = € 5,97,691

Convert € 5,97,691 in £ at 3 months FR

(1.8290 – 0.0140) = €/£ 1.8150

$= \frac{\$\ 5{,}97{,}691}{1.8150}$ = £ 3,29,306

Buy $ 5,05,000 at FR

Gain = £ 3,29,306 – £ 3,27,285

= £ 2,021

Invest in New York is the best option due to highest gain.

Question – 67

ICL an Indian MNC is executing a plant in Sri Lanka. It has raised ₹ 400 billion. Half of the amount will be required after six months' time. ICL is looking an opportunity to invest this amount on 1st April, 2020 for a period of six months. It is considering two underlying proposals:

Market	Japan	US
Nature of Investment	Index Fund (JPY)	Treasury Bills (USD)
Dividend (in billions)	25	-
Income from stock lending (in billions)	11.9276	-

Discount on initial investment at the end	2%	-
Interest	-	5 per cent per annum
Exchange Rate (1st April, 2020)	JPY/INR 1.58	USD/INR 0.014
Exchange Rate (30th September, 2020)	JPY/INR 1.57	USD/INR 0.013

You, as an Investment Manager, is required to suggest the best course of option.

(Exam November – 2020)

Solution:

Option 1: Investment in japan (index fund)

Fund available (₹ 400 billions × 50%) = ₹ 200 billions

Convert ₹ 200 billions in ¥ at SR

₹ 200 billions × 1.58 = ¥ 316 billions

Investment value after 6 months

Index fund (¥ 316 × 98%)	= ¥ 309.68 billions
(+) Dividend	= ¥ 25 billions
(+) Stock lending income	= ¥ 11.9276 billions
	¥ 346.6076 billions

Convert ¥ into ₹ at FR

$\frac{¥\ 346.6076}{1.57}$ = ₹ 220.7692 billions

Income = ₹ 220.7692 – ₹ 200 = 20.7692 billions

Option 2: Investment in US [T. Bill]

Amount available = ₹ 200 billions

Convert ₹ 200 billions in $ at SR

₹ 200 × 0.014 = $ 2.80 billions

Investment value after 6 months

$ 2.80 × (1.025) = $ 2.87 billions

Convert $ 2.87 billions in ₹ at FR

$$\frac{\$\ 2.87}{0.013} = ₹\ 220.7692$$

Income = ₹ 220.7692 – 200 = ₹ 20.7692 billions

- The equivalent amount is same in both the options so ICL is indifferent.
- However, USD is more stable, and Treasury Bills are risk free, so investment in Treasury Bills (USD) is suggested.

Question – 68

(i) Interest rates for 3 months in USA and Canada are as follows:

Currency	Borrow	Interest
US $	4%	2.5%
Canadian $	4.5%	3.5 %

(ii) Can $/ US $ spot 1.235 ---- 1.240

3 months forward 1.255 ---- 1.260

Advice, the currency in which borrowing and lending for 3 months needs to be done for the US company. Take 3 months = 90/360 days.

(Exam Jan – 2021)

Solution:

Assume $ 1,000

Lending

Option 1: Lending in US

Principal	$ 1,000.00
(+) Interest ($ 1,000 × 2.5% × 90/360)	$ 6.25

$ 1,006.25

Option 2: Lending in Canada

Convert $ 1,000 in Can $ at SR

$ 1,000 × 1.235	C$ 1,235
Interest (1,235 × 3.5% × 90/360)	C$ 10.80
	C$ 1,245.80

Convert C$ 1,245.80 in US $ at FR

$$\frac{\text{Can \$ 1,245.80}}{1.260} = \$\ 988.74$$

Lending in US is better due to higher cash inflows.

Borrowing

Option -1 Borrow from US

Borrowing amount	=	$ 1,000
Interest ($ 1,000 × 4% × 90/360)		$ 10
		$ 1,010

Option -2 Borrowing from Canada

Can $ required to buy US $ 1,000

$ 1,000 × 1.240	C$ 1,240
Interest (C$ 1,240 × 4.5% × 90/360)	C$ 13.95
	C$ 1,253.95

Buy C$ 1,253.95 at FR

$$\frac{\text{Can \$ 1,253.95}}{1.255} = \$\ 999.16$$

Borrow from Canada is better due to lower cash outflows.

(11) INTERNATIONAL CASH MANAGEMENT

Question – 69

Suppose you are a treasurer of XYZ plc in the UK. XYZ have two overseas subsidiaries, one based in Amsterdam and one in Switzerland. The Dutch subsidiary has surplus Euros in the amount of 725,000 which it does not need for the next three months but which will be needed at the end of that period (91 days). The Swiss subsidiary has a surplus of Swiss Francs in the amount of 998,077 that, again, it will need on day 91. The XYZ plc in UK has a net balance of £75,000 that is not needed for the foreseeable future.

Given the rates below, what is the advantage of swapping Euros and Swiss Francs into Sterling?

Spot Rate	(€) £0.6858– 0.6869
91 day Pts	0.0037 0.0040
Spot Rate(£)	CHF 2.3295– 2.3326
91 day Pts	0.0242 0.0228

Interest rates for the Deposits

Amount of Currency	91 Days Interest Rate % p.a.		
	£	€	CHF
0 – 1,00,000	1	¼	0
1,00,001 – 5,00,000	2	1 ½	¼
5,00,001 – 10,00,000	4	2	½
Over 10,00,000	5.375	3	1

Solution:

Option 1: [Individual basis] assume 1 year = 360

Without swapping		Individuals basis			
Curre -ncy	Principal	Interest	Total	Calculation of interest in £	6 months
£	£ 75,000	£ 75,000 × 1% × 91/360	₹ 75,189.58	---	£ 75,189.58
€	€ 7,25,000	£ 7,25,000 × 2% × 91/360	€ 7,28,665.28	€ 7,28,665.28 × 0.6895	£ 5,02,414.71
CHF	CHF 9,98,077	9,98,077 × 2% × 91/360	CHF 9,99,338.46	9,99,338.46 / 2.3098	£ 4,32,651.51
					£ 10,10,255.80

Option 2: Swapping

Available £ in UK = £ 75,000

Convert € in £ at SR (€ 7,25,000 × 0.6858) = £ 4,97,205

Convert CHF in £ at SR $\left(\frac{9,98,077}{2.3326}\right)$ = £ 4,27,881.76

= £ 10,00,086.76

Invest £ at 5.375% for 91 days

Interest = £ 10,00,086.76 × 5.375% × 91/360

= £ 13,587.98

Total = £ 10,00,086.76 + £ 13,587.98

= £ 10,13,674.74

Swapping is better due to higher cash inflows.

(12) FX SWAP

Question – 70

Drilldip Inc. a US based company has a won a contract in India for drilling oil field. The project will require an initial investment of ₹ 500 crore. The oil field along with equipments will be sold to Indian Government for ₹ 740 crore in one year time. Since the Indian Government will pay for the amount in Indian Rupee (₹) the company is worried about exposure due exchange rate volatility.

You are required to:

(a) Construct a swap that will help the Drilldip to reduce the exchange rate risk.

(b) Assuming that Indian Government offers a swap at spot rate which is 1US$ = ₹ 50 in one year, then should the company should opt for this option or should it just donothing. The spot rate after one year is expected to be 1US$ = ₹ 54. Further you may also assume that the Drilldip can also take a US$ loan at 8% p.a.

(SM TYK – 50)

Solution: