

Foreign Exchange Management

Foreign Exchange simply means foreign money. No country is self sufficient; consequently there is need for exchange of goods and services. Therefore when a country buys or sells goods and services from or to another country it has to pay or receive currencies of that country and there arise the need to exchange currencies against its local currency. Also due to liberalization of the economy global, acquisition and investments have grown up leading to increase activity of cross border deal requiring exchange of currencies.

One needs to go to Foreign exchange market for exchange of currencies. Foreign exchange market is misnomer as much as there is no market place as such which can be called Foreign exchange market. The Foreign exchange market basically comprises of Foreign exchange dealer i.e. Banks, Customer Central banks and other participants who are connected to each other throughout the world through telecommunication network.

Basics of Exchange rates

Since Forex involves two currencies, one currency has to be distinguished from other; the best way to do that is to designate one currency as **Base currency** and another as **Quoted or Variable currency**.

Base currency: It is on the Left hand side (L.H.S) of the currency pair and its value is always fixed or constant

Quoted/Variable currency: It is always on the Right hand side (R.H.S) of the currency pair and its value is variable or changes and is quoted as per unit of Base currency

E.g.: USD/INR- here USD is the base currency and the value is constant and INR is variable currency and the value changes for e.g. the value of 1 USD can be 49 or it can be 50

USD/INR= 49 means one unit of USD = 49 unit of INR

USD/INR = 50 means one unit of USD = 50 unit of INR

Direct quote: Means number of unit of domestic currency per unit of foreign currency

1 USD = Rs. 49.00here USD is foreign currency and Rs. is domestic or local currency

Indirect quote: Means number of unit of foreign currency per unit of Domestic currency.

1 Rs. = 0.02040 USD here number of unit of foreign currency changes

Indirect quote = 1/ Direct quote

Cross currency rate: Cross rate can be created when one pair has common currency

E.g. USD/INR and EUR/USD in this two pair USD is common in both the pair so EUR/INR rate is a cross currency rate and can be created using both the pair

Reciprocal quote: Method of quoting the currency in a reverse manner

E.g. INR/USD is a reciprocal quote of USD/INR

Interpreting some of the quotes

USD/INR = 49.50 (1 USD = 49.50 INR)
 EUR/USD = 1.3200 (1 EUR = 1.3200 USD)
 GBP/USD = 1.5850 (1 GBP = 1.5850 USD)
 AUD/USD = 1.0740 (1 AUD = 1.0740 USD)
 NZD/USD = 0.8425 (1 NZD = 0.8425 USD)
 USD/CAD = 1.0050 (1 USD = 1.0050 CAD)
 USD/JPY = 81.50 (1 USD = 81.50 JPY)

Concept of Market maker and Market taker (user)

Two way Prices

Mostly Bank is a Market maker and Customer is a Market taker, further a Bank who quotes to other Banker is also a Market maker. A Market maker is one who gives two way prices and a Market taker is one who has to act on the prices.

Buying Rate and Selling rate

Buying rate or Bid rate is the rate at which a Bank which quotes price is ready to buy the currencies at that price.

Selling rate or Ask/Offer rate is the rate at which a Bank which quotes price is ready to sell the currencies at that price

Some time a banker may prefer to quote choice price or choice quote means bid and ask rate is same.

Spread

The difference between the Buying and Selling rate is called spread

$$\text{Spread \%} = \frac{\text{Ask-Bid}}{\text{Bid}} \times 100$$

Pip: The last two decimal or digits in cross rates is called pip
 e.g. EUR/USD = 1.3445 here 45 is called pip

Concept of Value date

Value date is the date at which settlement of the two currencies take place.

- 1) **Spot date:** is the date which is two working days from trade date
- 2) **Cash date:** is the date which is same as the trade date/transaction date
- 3) **Tom date:** is the day which is day after trade date
- 4) **Forward date:** any date after spot date is forward date

So the rate of this dates are called **Spot rate, Cash rate, Tom rate and Forward rate**

It is important to know that in Foreign exchange market the rate which is quoted by Bank or seen in newspaper or various websites are Spot rate. To calculate Forward rate one need to add or deduct the **forward premia/ swap points** which can be at premium or discount from the spot rate. Similarly Cash rate and Tom rate can be calculated by adding or deducting **swap points** from spot rate.

Determination of Exchange Rate:

Exchange Rate is the rate at which one currency is quoted or exchanged against another.

- 1) **Purchasing power parity (PPP):** This theory was propounded by Gustav Cassel, a Swedish economist. The theory in simple terms, states that currencies are valued for what they can buy. It is based on law of one price. If 100 Japanese Yen (JPY) can buy one pen and the same pen can be bought for US Dollar \$ 1 then it can be inferred 1 \$ = 100 JPY. The sole criterion to determine the exchange rate of currency of the two countries was their purchasing power which called absolute purchasing power.

Relative PPP does not tell how rates are determined but tells what determines changes in exchange rates. It relates the change in exchange rates to change in the ratio of prices in two countries. Relative PPP suggest that the changes in the exchange rates is determined by the difference in Inflation rate in two countries

$$\frac{\text{New Rate}}{\text{Old Rate}} = \frac{(1 + I_h)^n}{(1 + I_f)^n} \quad \begin{array}{l} I_h = \text{Inflation of home country} \\ I_f = \text{Inflation of foreign country, } n \text{ is number of year} \end{array}$$

$$\text{Change in exchange rate} = \left[\frac{(1 + I_h)^n}{(1 + I_f)^n} \right] - 1$$

Fisher Effect: The theory explains the changes in exchange rate due to change in Interest rate differential. The Interest rate in any country is the nominal interest rate.

Where Nominal. Interest. Rate = (1 + Real Interest Rate) (1 + Inflation Rate) – 1

The international Fisher effect theory suggest that spot rate of a country with higher interest rate will depreciate and that of lower interest rate would appreciate since high Nominal interest rate reflect expected inflation and also incorporate the default risk of an investment.

$$\frac{S_f}{S_o} = \frac{(1 + r_h)^n}{(1 + r_f)^n} \quad \begin{array}{l} S_f = \text{future rate, } S_o \text{ is the present spot rate, } r_h, \text{ annual interest rate} \\ \text{of home country, } r_f \text{ is the annual interest rate of foreign country} \\ n \text{ is number of year} \end{array}$$

Interest Rate parity: It says that Interest rate differential between the two countries is reflected in size of forward premia (discount) between two currencies. When Interest rate parity exist Covered Interest arbitrage is not possible since any Interest rate advantage will be offset by discount on the forward rate. Thus the currency with **higher interest rate will be at discount in terms of currency with lower interest rate & vice versa.**

$$\frac{F}{S} = \frac{(1 + r_h)}{(1 + r_f)} \quad \begin{array}{l} F \text{ is the forward rate and } S \text{ is the spot rate} \end{array}$$

Inter bank quote and Merchant quote: A quote which is given by Banker to another Bank is called Inter bank quote.

A quote which is given by a banker to customer/Merchant is called Merchant quote. It may in the form of TT Buying, TT Selling (Remittance in the form of Telegraphic Transfer) and Bill Buying, Bill Selling. It is arrived after deducting or adding margin from Inter bank quote for e.g.

	Bid	Ask
Inter bank quote	49.0050	49.0150
Less/Add Exchange Margin (in paisa)	- <u>0.0200</u>	+ <u>0.0200</u>
Merchant quote	48.9850	49.0250
	(TT/Bill buying)	(TT/Bill Selling)

Forward Rate: In Forex market Forward rate is calculate by adding forward premia or discount also referred as swap points to the Spot rate. A currency is said to be in premium when its forward rate is higher than spot rate and is in discount when its forward rate is less than spot rate.

For e.g. USD/INR spot rate = 49.0500/0600

1 month Rate = 49.4000/4200

Here for Dollar's rate against INR is higher than spot rate so USD is said to be at premium and INR at discount

If 1 month forward rate is 48.8000/8200 then USD is said to be in discount. And INR at premium

One thing to note when the interest rate of base currency is lower than variable currency then the base currency is said to be in premium and variable currency is at discount & vice versa.

$$\text{Forward Premia/Discount \%} = \frac{F - S}{S} \times \frac{12}{n} \times 100$$

n is the Number of months the forward contract

Arbitrage & Covered Interest Arbitrage: Taking advantage of price differential of the asset in two different markets at the same time to make clean profit is called Arbitrage. It is possible that a currency is quoted in London market at Particular price and the same currency is quoted in Dubai market at a slightly lower price at the same time, thereby making it possible to take advantage of same and make clean profit.

Covered interest arbitrage is possible when the forward premia or discount of a currency doest not reflects the actual difference in the interest rate of two currencies. For e.g. The the one year interest rate in India is 10% and in United States it is 2% now the difference in interest rate between the two countries should reflect in forward premia or discount. Now suppose one year forward premia of US dollar against Rupee is 6% then there is a clean arbitrage of $(10\% - 2\%) - 6\% = 2\%$

1 year interest rate in India = 10%

1 year interest rate in US = 2%

1 year annualized Forward premia of USD/INR = 6%

Spot USD/INR = 49.00

So the 1 year Forward rate @ 6% premia = 51.94

Assume a person in US borrow 1 million USD @ 2% for 1 year. So the liability after one year is = $1000000(1+0.02) = 1020000$ USD

The borrowed 1 million USD will be converted at the current exchange rate of 49.00 to get Rupees 4,90,00000. which will be invested for 1 year in India @ 10% to get Rs 5,39,00000. Since the investor does not want to take any risk on excessive volatility of currency, will hedge its risk by taking a forward cover for converting the Rupees in to USD after 1 year @ 51.94.

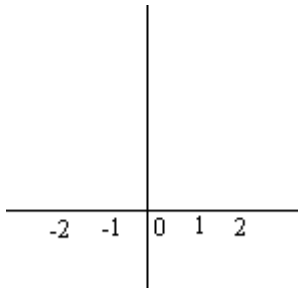
$$\begin{array}{rcl}
 \text{So USD after 1 year} & = & \frac{5,39,00,000}{51.94} = 1037735.90 \$ \\
 \text{Less liability after 1 year} & = & 1020000.00 \$ \\
 \text{Arbitrage} & & \mathbf{17735.90 \$}
 \end{array}$$

Understanding some the Concepts in Swap/forward points and calculation of Rates

- Swap/Forward points represent the difference between the interest rate of the two countries.
- Swap/Forward points can be at premium or discount.
- Swap points do not carry + or – sign

Then how to read swap point whether it is at premium or discount if no sign is given in the question Swaps are quoted from lower to higher i.e. if Bid is lower than Ask, then swap points are at premium. If swap points are quoted from higher to lower i.e. Bid is higher than Ask then swap point are at discount

Have a grasp of this graph



Here assume 0 is spot date; all positive area from 0 is forward date and negative area from 0 i.e. -1 and -2 are tom date and cash date.

Always inter bank quote is spot rate and to arrive at forward rate one has to add swap points i.e. Premia is to be added and discount is to be deducted from spot rate.

The area of cash rate and tom rate in the graph is negative. So it means swap points are to be deducted from spot rate to arrive at cash rate and tom rate. So if the swap point for cash or tom rate is negative you have to ultimately add the swap points to spot rate to arrive at cash or tom rate and vice versa

For e.g. swap points for cash over spot(C/S) is -0.02 and spot rate is 49.00

$$\begin{array}{rcl}
 \text{Spot rate} & & 49.00 \\
 \text{Less: C/S} & - & 0.02 \\
 \text{Cash rate} & & 49.02
 \end{array}$$

Since negative and negative becomes positive

A question over Cash or Tom rate may or may not be asked in CA exam, but in actual practice one needs to know the actual calculation and may be useful when one really get chance to cover the exposure in foreign exchange market.

Often student get confused while calculation of rate whether to take bid rate or ask rate.

In foreign exchange market always think with selfish motives i.e. give less to other and take more from others. As a banker you will always give less to customer and take more from customer. As a market taker (user), a customer has to accept the adverse rate given by banker. As an exporter, a customer will always sell his receivable in foreign currencies, so he has to accept the Bid rate. (Bid rate is the rate at which bank is ready to buy) As a importer, a customer will always buy for his payables in foreign currency so he has to accept Ask rate (Ask rate is the rate at which bank is ready to sell)

In case of cross rates here is some simple method explained with e.g.

1) EUR/INR to be calculated given EUR/USD 1.3200/1.3202 and USD/INR= 49.00/49.02
EUR is in numerator and INR in denominator so

$$\begin{aligned}\text{EUR/INR} &= \frac{\text{EUR}}{\text{USD}} \times \frac{\text{USD}}{\text{INR}} \\ &= 1.3200 \times 49.00 \quad (\text{here the product is multiplication}) \\ &= 64.68 \quad (\text{Bid rate}) \quad \text{the rate given to exporter}\end{aligned}$$

Since a banker will give ex porter the worst rate and what constitute the worst rate? The bid rate of EUR/USD and Bid rate of USD/INR and what constitute the worst rate for importer? The Ask rate of EUR/USD and Ask Rate of USD/INR i.e. $1.3202 \times 49.02 = 69.72$

2) JPY/INR to be calculated given USD/JPY = 81.50/81.52 and USD/INR = 49.00/49.02
JPY is in numerator and INR in denominator

$$\begin{aligned}\text{JPY/INR} &= \frac{\text{JPY}}{\text{USD}} \times \frac{\text{USD}}{\text{INR}} \quad \text{here JPY/USD is reciprocal quote of USD/JPY} = 1/(\text{USD/JPY}) \\ &= \frac{1}{(\text{USD/JPY})} \times \frac{\text{USD}}{\text{INR}}\end{aligned}$$

$$\begin{aligned}\text{So bid rate} &= \frac{1}{81.52} \times 49.00 \quad (\text{here the product is division}) \\ &= 0.6012\end{aligned}$$

Since here the product is division, the worst rate for exporter has to be a lower numerator and higher denominator and the worst rate for importer will be a higher numerator and lower denominator

Thus from the above we can conclude that if the base currency is same in both the pair we need to divide to get the cross rate and if the base currency is different in each pair then we need to multiply to get the cross rate.

Other alternative way

In division to get the bid of cross rate one need to divide the ask rate of one pair from the bid rate of the other pair. And to get ask of cross rate one need to divide bid rate of the one pair from ask rate of other pair.

In multiplication to get the bid of cross rate one need to multiply bid rate of one pair with bid rate of other pair and to get ask of cross rate one need to multiply ask rate of the one pair with ask rate of the other pair.

Forward contract: It is one the tool of hedging foreign exchange exposure. Under Forward contract one can buy and sell currencies at the contracted rate at some future date.

- a) **Fixed Date Contract:** In this forward contract, the contract to sell or buy the currency is at fixed date for e.g., Contract for 31st March. Here the customer needs to give or take delivery of the currency on that fixed date.
- b) **Option Date Contract:** In this forward contract, the customer has option to buy or sell the currency during a specified period mentioned in the contract. The customer has take or deliver the currency within this specified period. The specified period cannot be more than 1 month for e.g. Contract for the period 1st march to 31st March, 15th March to 14th April or 15th March to 20th March. Point to be noted in case a contract for selling a currency is from 1st April to 30th April the Banker will give premia up to 1st April or if the currency is at discount will charge discount till 30th April, since it is assume that the customer will deliver currency on the 1st day of the option period if currency is in premia and on the last date of the option period if currency is in discount. In case of contract for buying, Banker will charge premia up to 30th April in case of premia and give discount till 1st April.

What bank does

Contract	Premium	Discount
Forward Purchase	Minimum Premium Earliest period	Maximum Discount Latest period
Forward Sell	Maximum Premium Latest period	Minimum Discount Earliest period

- c) **Broken Date Forward Contract:** In foreign exchange market generally Forward premia are quoted for 1,2,3,6, and 12 months. However, if the customer wants a contract which falls between the standard forward contract periods, the rates for such period may not be easily available in the market. Thus the forward exchange contract where the value date does not coincide with standard forward period quoted in market is known as Broken Date Forward Exchange Contract. For e.g. Contract for 6th April

The calculation of the premia in such contract is done by taking the difference between the premia of two standard periods and dividing it by number of days between those Standard dates. The resultant is then multiplied by number of days between 1st standard period to broken date. This figure is then added to the premium of 1st standard period.

March end premia = 30

April end premia = 40

No of day between March and April is 30 days and difference of the premia is 10

So = $10/30 \times 6 = 2$, this is then added to march end premia to get premia for 6th April
This comes to $2 + 30 = 32$

Utilization of forward contract: Forward contract can be utilized by delivering the currencies on the date specified in the contract. In case of fixed date contract it needs to be delivered on that fixed date and in case of option date contract it needs to be delivered any time between the option period. For the rate under the contract to be effective it is very necessary that the currencies to be delivered on those date mentioned in the contract

Cancellation of forward contract: A contract can be cancelled any time by customer on or before the due date. Loss if any on cancellation will be charged to the customer and gain if any will be passed to the customer. As per FEDAI rules, in the absence of any instructions from customer, forward exchange contract, which has been matured will automatically cancelled on 7th working day from the date of maturity (previously it was 15th days from maturity) The swap cost and loss on cancellation will charged to customer while gain if any will not be paid to customer.

Early Delivery and Extension of Forward Contract

Early delivery means the customer gives or takes delivery of currency before the contract period. In case of early delivery bank has to do a swap to set right its position

- 1) The Bank shall pay/recover the swap difference
- 2) **Outlay and inflow of Fund:** Bank shall charge interest at not below the prime lending rate of the bank on outlay of fund for doing swap. The amount of funds outlaid shall be arrived by taking the difference between original contract rate and the rate at which swap could be arranged. If the swap results in inflow of fund to bank, then interest at an appropriate rate applicable for term deposit shall be paid to the customer at the discretion of bank

- 3) Bank also charges early delivery charges say Rs. 100 as per FEDAI rules

E.g Original forward Sell contract for \$1000000 for delivery July 31 = 50.00

Customer asked for early delivery on May 31

Spot rate on May 31 = 49.4000/4100

Spot/ July = 80.00/82.00

Here customer was required to deliver. i.e. sell USD on July 31 now he is delivered on 31st May. So bank has to set right its position by doing a swap

Since customer sold for 31st July bank must have covered the customer position by selling on 31st July now to set it right it must buy for 31st July and sell the dollar in spot (cash) which customer delivered on 31st May. So bank need to do a sell buy swap for the period 31st May over 31st July

Bank does a sell buy swap at a premium of 82.00

Bank will sell spot (31st May) @ 49.4000

Add: premium	31 st July	<u>0.8200</u>
		50.2200

So swap of 82.00 paisa should be charged to customer .i.e. $0.82 \times 1000000 = 820000$

Outflow/Inflow of funds

Amount arrived at by taking original contract rate	$50.00 \times 1000000 =$	50000000
Amount arrived at by taking spot selling rate	$49.400 \times 1000000 =$	<u>49400000</u>
Cash outlay as the Bank is receiving less rupees by selling spot		600000

Assuming prime lending rate 14%, so interest 14% for 2 months (31st May to 31st July) should be charged to customer

$$= \frac{600000 \times 14 \times 2}{100 \times 12} = 14000$$

So Total charges paid by customer = 8200000+14000+100 = 8214100

Extension of forward Contract: Extension is nothing but cancellation and re-booking of contract. When extension of forward contract is sought by customer, it has be cancelled at an on going TT buying or TT selling rate and re-booked at the current rate. The difference between contracted rate and cancellation rate should be recovered or paid by bank to the customer at the time of extension.

Crystallization of overdue bill: As per FEDAI rules if an export bill remain overdue for more than 30day from due date then the Foreign currency liability has be crystallized in to Rupees. crystallization has to be done at TT selling Rate. When the overdue bill is actually realized then it can be sold at on going TT buying rate on the date when it is realized

Exchange and Fund Position: The Receipt and Payment of foreign currency funds is effected through accounts maintained with Banks abroad called as correspondent bank. The balances with these correspondent banks are fund position of a Bank.

Various account maintained with and by a correspondent bank

- a) **NOSTRO A/C:** The Latin term of Nostro means “our account with you” thus it is an account maintained by Indian bank abroad. This is always in foreign currency
- b) **VOSTRO A/C:** the Latin term of Vostro means “your account with us” Thus it is an account maintained by a foreign bank with an Indian bank. This account is maintained in Rupees.

Exchange position of the bank may not be same as Fund position. Exchange position may or may not involve actual inflow or outflow of fund.

The difference between the amount of currency bought and amount of currency sold is known as position in that currency. If the amount of currency bought is more than the amount of currency sold the bank is said to have overbought or long position and if amount sold is more than bought then it is has oversold position or short position. If the amount of currency bought and sold is equal the bank is said to have square position in that currency.

Component of Exchange position

- 1) Foreign currency cash notes
- 2) Demand draft /TT issued/ purchased
- 3) Export bill purchased
- 4) Forward buy /sell
- 5) Forward cancellation
- 6) Inter bank Buy/sell deals

E.g.

Bank dealer has following position in USD

Opening Balance with JP Morgan Chase	25000
Opening long position	60000
Purchased a TT	200000
Remittance outward (TT)	100000
Issue a DD	20000
Export bill purchased	250000
Forward sell	275000
Export bill crystallized	50000
Export bill realized	40000
DD issued earlier debited to Nostro	20000
Sold in Interbank	25000

You need to maintain USD 125000 in Nostro A/C and keep position overbought of 50000

Exchange Position				
	Purchase	sell	Net position	
Op. Balance (Long)	60000		60000	O/B
purchased TT	200000		260000	O/B
Remittance outward		100000	160000	O/B
Issue a DD		20000	140000	O/B
Export Bill purchased	250000		390000	O/B
Forward sell		275000	115000	O/B
Export bill crystallized		50000	65000	O/B
Sold in Interbank		25000	40000	O/B
Total	510000	470000		
Overbought		40000		
	510000	510000		

Fund Position		
	Dr.	Cr.
Opening Balance		25000
TT purchased		200000
Outward remittance	100000	
Sold in interbank	25000	
Export bill realized		40000
DD issued earlier	20000	
Balance Cr.	120000	
	265000	265000

Export bill realized and DD issued earlier will hit in Nostro A/c so will affect fund position.

The bank has to keep Cr. Balance of \$125000 and O/B position of \$50000 so the bank will buy \$ 5000 in cash from interbank market so that the balance in Nostro A/C is \$125000 and will Buy forward \$ 5000 to make O/B position \$50000 (40000+ 5000 bought in cash and 5000 bought in forward)

Types of Exposures in Foreign Exchange

Transaction Exposure: It is an exposure when the future value of transaction though known is denominated in foreign currency and is exposed to change or volatility in exchange rates.

Inflow or outflow on transaction before the exchange rate	XXX
Inflow or outflow on transaction after the exchange rate	<u>XXX</u>
Transaction gain or loss on fluctuation in exchange rate	XXX

Translation Exposure: Translation exposure is also called Accounting exposure and is caused by translation of foreign currency asset and liabilities in to domestic currency of the parent company

Economic Exposure: It refers to the potential effect of change in exchange rate on the assets and liabilities of the firm

Managing Transaction exposure: It can be managed through following tools

- 1) Forward Contract
- 2) Option Contract
- 3) Futures Market
- 4) Money market
- 5) Other methods

Money market Hedge: Exporter and importer can hedge their exposure through money market operation as follows

Exporter has foreign currency receivables which is an asset. So create a liability

E.g. Receivable in future \$100000 after 3 months

So borrow say x Amount in \$ for 3 months such that outflow after 90 day including interest is \$100000. If interest on borrowing say is 6% and spot Rupee is 49.00

So Amount need to borrow $100000 / (1 + 0.06 \times 3/12) = \98522

Convert \$98522 in spot rate of 49.00 = 48, 27578

Now if Interest rate in India or cost of fund of exporter is 8% and spot rate after 3 month is 49.10

So 48, 27578 if invested @ 8% will fetch Rs. 49, 24130

Inflow if not hedged through Money market (\$100000 x 49.10) 49, 10000

Gain due to money market hedge 14130

The Amount borrowed in \$ will be repaid along with interest on 90th day when receivable of \$100000 is realized.

Importer has foreign currency payable which is a liability. So create an Asset.

E.g. payable of \$ 100000 after 3 months

Create an asset in \$ by borrowing in Rupee such that asset created will sufficient exactly to repay the \$ payables = $100000 \times (1 + 0.06 \times 3/12) = 98522$ (Investment rate is assumed to be 6%)

So Rupee amount to be borrowed to create asset of \$ 98522 = $49.00 \times 98522 = 48,27578$

Repayment of Rupee borrowed after 3 months@10 % (assumed)
 $= 48,27578(1 + 0.10 \times 3/12) = 49,48267$
 Outflow if not hedged through Money market ($49.10 \times \$100000$) = 49,10000
 Loss due to money market hedge 38267

The asset created will be used to repay the foreign currency payables.

Other methods of hedging transaction exposure includes

- Invoicing** through domestic currency subject to the consent of other party so as to avoid the fluctuation in exchange rate and passing the risk to other party
- Netting:** It involves netting the payment and receipt.
- Leading and Lagging:** Leading means advancing the timing of payment or receipts whereas. Lagging means postponing the timing of payment or receipts. It involves some sort of view on the currency for. E.g. if it is expected the local currency to appreciate then foreign currency payable can be postponed. However it may involve interest cost. It is also possible that the a firm has received its export proceed and need to pay its liabilities after some days, it may resort to leading of payables if there is no good investment opportunity and the local currency is expected to weaken after some days.

Some other Terms

Letter of Credit (LC): LC is the Link between the buyer and the seller of goods. While the seller gets the payment on presentation of document the buyer is assured of his receiving the ordered goods by the mechanism of LC. That is why LC is the most convenient way of settling international trade

Pre-shipment Credit in Foreign Currency (PCFC): As the name suggest PCFC is pre-shipment finance given by bank to exporter. This facility is available in all convertible currencies for a period of 180 days on the basis of firm export order or irrevocable LC. If PCFC is given to exporter he will convert it to rupees at TT buying rate and if no export takes place then PCFC is reversed at TT selling rate

Export Bills Purchased/Negotiated/Discounted: This is Post-shipment Advance given by Bank. Here against the bill the bank will give the currency of the bill to exporter which will be converted at TT buying rate and crystallization of this overdue bill is done at TT selling rate.

Question

1) From the Following Information

	EUR/USD	USD/INR
Spot	1.3140/1.3142	49.00/49.01
Swap Points 1M	4/2	30/31.50
2M	3/5	62/63
3M	11/13	85/86

i) Calculate the 1, 2, 3 months EUR/INR Rates. Mr. X and Indian Exporter want to hedge his

1 million receivables in Euro expected in 3 months from now. What rate he can get if bank charges a margin of 0.1%.

ii) Calculate the annualized 3 months Premium/Discount of EUR/USD, USD/INR and EUR/INR

iii) Mr. X is urgent need of fund and has two options either to discount his receivables with Authorized dealer Bank by presenting Export bill or to avail short term loan for 3 months. Local bank quoted him a rate of 7% while European Bank in Germany quoted him a rate of 3 month Libor plus 200 bps if borrowed in Euro. You as an advisor suggest him the best possible option The Authorized dealer charges flat fees of 0.2% and discounting rate of 6% to be paid upfront. 3 months Euribor rate are

	Bid	Ask
3m Euribor	0.55	0.60

2) On 1st Jan 2012 Mr. A asked the Bank for purchase of Demand Bill of US\$ 100000. The bank when presented the Bill on 10th Jan 2012 at New York was not honoured. The advice for non payment was conveyed to Mr. A on 13th Jan 2012. Mr. A requested the bank

- To recover the bill amount plus Rs. 250 as charges
- The bill be treated on collection basis and represented for payment.
- 5% rebate to given by Mr. A to overseas Importer.

On 3rd Feb 2012 the New York Bank recovered the amount of bill and remitted to the Indian bank via swift less charge of US \$ 50 with value date 3rd Feb 2012.

Inter Bank Rates

1st Jan 50.1100/1200

13th Jan 50.2000/2100

3rd Feb. 50.0200/0300

Bank charges 1 paise margin on every dollar .Calculate the Total loss on the above transaction also show the loss on exchange and loss on Bank charges and rebate due to dishonor of bill(ignore overdue interest).

3) A pen cost \$ 135 in USA and Eur 100 in Europe. The expected inflation in one year in US is 2% and in Europe 4%. The current rate of interest in Europe is 5% and in US is 3%. If PPP and Fisher effect holds good find the Spot rate of EUR/USD , expected rate of EUR/USD after one year and Real rate of interest in Europe and US

4) Infratel has receivables of \$2 million after 2months. It has also payable of \$3 million for which forward cover is already taken at 50.20. The market rates are as under

Spot	49.40/42
Swap points 2m	50/52
1m	72/74

The Company wants to minimize its risk, it has following option

- To cover the receivables in Forward market
- To lead the payables for which Infratel will get a discount of 1% for early payment
- To lag the debtor

Cost of Rupee fund is 12%. What is the best possible option for the company?

5) Boston Inc. a British company have trade with various US based companies .The trade transaction are as follows

Company	Export	Import
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X	\$500	£200
Y	\$100	\$1250
Z	£150	\$850

The due date for all this trades are 3 month. Following rates are given

£/\$	Spot	1.5800/1.5805
	Swap 2M	14/12
	6M	42/40

Interest rate up to 6 months	Borrowing	Investment
US	3%	2%
UK	5%	4%

Show how Boston Inc. will hedge its risk through Forward market and Money market. Suggest which hedging tool it should follow.

6) 1\$ = 0.9100 CHF. Complete the missing entries

	3M	6M	1 year
\$ interest rate	5%	8%	?
CHF interest rate	7%	?	13%
Forward CHF swap points	?	93	?
% Forward discount on CHF annualized	?	?	1.595%

7) Sam Ltd. imported a casting machine from Australia at a cost of AUD 1.5million, the terms of payment is 30 days which is backed by irrevocable letter of credit. The Finance director Mr. X .has been asked to evaluate various proposal to make payment. The company will be able to generate internal cash accruals of Rs. 2.65 crore. For balance payment Mr. X intends to avail finance from local bank @ 15% with quarterly rest. Mr. X is also contemplating with the option of availing buyer's credit from West Pac Bank Sydney. The bank is ready to extend a credit of 6 month backed by letter of credit. It will charge 6months Libor of AUD plus 200 bps.

	AUD/USD	USD/INR
Spot	1.0600/02	50.02/03
Swap 1M	39/37	38/39
6M	216/214	174/175
7M	250/248	195/196

The interest rate will remain stable in Australia for next one year. The 6M Libor for AUD is

	Bid	Ask
6M rate	4.80	4.85

Evaluate the above proposal.

8) Golden Star Inc. a UK based company has imported goods worth \$500000 from US based Company payable in 3 months time.

Spot £/\$ 1.5805/07

Swap 3M 12/10

The interest rate up to 6 months is as follows

	Borrowing	Investment
US	2%	1%
UK	3%	2%

The Finance director is worried about the volatility of exchange rate and wants to hedge the risk either through

- 1) Forward market
- 2) Money market
- 3) Currency futures

3months Sterling futures are quoted in LIFFE at 1.5795 with a contract size of 28000£. (Contract can be hedged in whole number).Rate after 3 months

Spot 1.5830/32

Futures 1.5818

Initial margin to deposit upfront @ £5000 per contract with LIFFE. What should the Finance director do?

9) An US based company has subsidiary in UK and Germany. The following transaction is to occur and the surplus or deficit in cash with the each company is expected to remain for next 1 month

	Export	Import
US	\$1250	\$1800
German	€ 1000	€ 600
UK	£ 950	£ 650

	€/£	£/\$
Spot	1.3200	1.5800
1 M	1.3210	1.5792

Lending & Investment Rates for next 3 months are as follows

	Lending	Investment
US	2%	1%
German	2.5%	1.5%
UK	3.5%	2.5%

Calculate the Net surplus or deficit of each company at the end of 1 month in USD if

- a) Each company manages its finances in local currency by investing or borrowing from local market
- b) The net balance is pooled immediately with the US Company and invested or borrowed for 1 month in US market. Suggest which option is better.

Answer

Q1 EUR/INR 1, 2, 3 month rate-64.7605 & 64.8131, 65.2156 & 65.2617, 65.5577, & 65.6040.

Rate to exporter- 65.4921, annualized 3 months Premium/Discount- 0.3349%, 6.94%, 7.2792%

Exporter should avail loan from local bank

Q2. Loss to Mr. A. 273800.50,

Loss due to Exchange rate 21000.00

Loss due to rebate & bank Charges 252800.50

Q3. Expected rate 1.3240, % change in Rate 1.923%

Real rate for Europe 0.96%, for US 0.98%

Q4. Outflow is less if the company lead the payable

Q5. Outflow under forward market hedge is less it is preferable.

Q6.

	3M	6M	1 year
\$ interest rate	5%	8%	11.23
CHF interest rate	7%	10.13%	13%
Forward CHF swap points	44	93	145
% Forward discount on CHF annualized	1.934%	2.05%	1.595%

Q7. Total cash outflow is lesser in Buyer's credit so it is preferable

Q8 Hedging through forward contract is better option.

Q9. Option (a) is better