

Domestic Currency (Home Currency): The currency in which the CFO reports Company's performance to the stake holders.

Foreign Currency: Any currency other than the domestic currency

Exchange Rate: The rate at which one currency is exchanged i.e. bought and sold for another currency.

- ✓ The "price" of one currency viewed in relation to another currency.

Rule 1: In any transaction involving foreign exchange, you are selling one currency and buying another

Rule 2: In an exchange rate, two currencies are involved (a pair).

The rate is to be understood in terms of the "First" of the pair of currencies.

Ex: Re/\$ 47.50 means Rs. 47.50 equals 1 USD.

Direct Quote: A Direct Quote expresses the exchange rate in terms of **Home Currency per unit of Foreign Currency.**

- ✓ It is the number of **Home Currency units** required to buy or sell **One unit** of Foreign Currency.

Ex: Rs. 49.50 per USD is a direct quote for USD in India.

Rule 3: In a Direct Quote, **Price** comes **First** & the **Commodity** comes **Next**.

Rule 4: In a Direct Quote, the Foreign Currency is the Commodity, which is being bought and sold.

Indirect Quote: An Indirect Quote expresses the exchange rate in terms of **Foreign Currency per unit of Home Currency.**

- ✓ It is the number of units of **Foreign Currency** required to buy or sell **One unit** of Home Currency.

Ex: Re 1 = 0.02 USD is an indirect quote for the Rupee

Rule 5: In a Indirect Quote, **Commodity** comes **First** & the **Price** comes **Next**.

Rule 6: In a Indirect Quote, the Home Currency is the Commodity, which is being bought and sold.

Rule 7: An Indirect Quote is the reciprocal of the Direct Quote and vice versa.

Indirect Quote = $1 / \text{Direct Quote}$

Note: DQ – I want to buy or sell \$

IDQ – I want to buy or sell Rupees.

Link: What is DQ for a given currency in one Country is an IDQ for that currency in the other Country.

Ex: Rs. 50 per \$ - DQ for \$ in India and an IDQ for \$ in US.

Foreign Exchange Market: Forex Market is a market for buying and selling currencies.

The major players in the forex market are Banks. They deal with:

Customers – Trade & Capital related transactions

Central Bank – RBI in India

Inter bank trade – between 2 banks

- ✓ No Single Location – No Barriers
- ✓ Forex Market is not located in Single Building
- ✓ No Specific Market place exists
- ✓ Forex Market is global in nature/character
- ✓ Exchange rate fluctuates every four second
- ✓ Highly liquid Market
- ✓ Forex Market operates 24 hours , seven days a week and 365 days a year

NOSTRO Account:

- A Foreign currency account maintained by a Bank in India with a Bank abroad.

Ex: Andhra Bank's US \$ Account with Citi Bank.

VOSTRO Account:

- A Rupee account of a Foreign Bank with a Bank in India.

Ex: Citi Bank Rupee Account with Andhra Bank.

LORO Account: A Bank's Account with other Bank.

Ex: Andhra Bank's New York Branch US\$ Account with Citi Bank New York Branch.

Types of Exchange Rates:

Ready / Cash: Settlement of transaction on the same day.

TOM: Settlement of transaction on the next working day.

SPOT: Settlement of transaction on the second working day.

Note: In the Forex Market, all the rates that are quoted are generally spot rates

American Term: A quote which is a direct quote for the American is said to be in American Terms

European Term: A quote which is an indirect quote for the American is said to be in European Terms.

Ex: \$1.5 per pound is in American terms.

\$ 1 = INR 45 is in European terms.

Note: International quotes except for £, €, SA Rand, AU\$ and NZ\$ are all expressed in European terms.

Bid: The rate at which the **Bank Buys** a currency is called the "Bid" rate of that currency.

Ask: The rate at which the **Bank Sells** a currency is called the "Ask" rate of that currency.

Rule: 8 The Bank's quote of Bid & Ask is from the Banker's perspective.

- ✓ In a **direct quote**, the Bid or Ask, as the case may be, is of Bid or Ask on the **Foreign Currency**.
- ✓ In an **indirect quote**, the Bid or Ask, as the case may be, is of Bid or Ask on the **Home Currency**.

Ex: If the bid rate for USD is Rs. 45,
it means that the **Bank** is ready to buy 1\$ for Rs. 45
If the ask rate for USD is Rs. 46,
it means that the **Bank** is ready to sell 1\$ for Rs. 46

Two-way Quote: A banker gives a two-way quote.
That is a “Bid quote” and an “Ask quote”
In the direct quote, the Bid quote precedes the Ask quote.
Ex: Rs/\$ 47.00 – 47.80
The bank buys the \$ at Rs. 47 and sells \$ at Rs. 47.80

Bid & Ask on Dollars

Bank	Buys \$ (or) Sells Rs.	Sells \$ (or) Buys Rs.
Customer	Sells \$ (or) Buys Rs.	Buys \$ (or) Sells Rs.

Spread: Difference between the bank’s buying rate (Bid rate) and the bank’s selling rate (Ask rate) is called the Spread.

- ✓ The following two factors determine the size of the spread:
 1. Stability of the exchange rate –
If the exchange rate is expected to be stable, the spread will be narrow.
If the exchange rate is volatile, the spread will be wider.
 2. Depth of the Market .

Converting two-way quotes:

Exchange rates can be written in the numerator denominator format -Always Denominator is bought or sold

Ex:1 Bid (Rs/\$) means
the denominator currency, \$ is being **bought** in exchange for the numerator currency, Rupees.

Ex: 2 Ask (Rs/\$) means
the denominator currency, \$ is being **sold** in exchange for the numerator currency, Rupees.

Formula:

$$\text{Bid (Rs/\$)} = 1 / \text{Ask (\$/Rs.)}$$

$$\text{Ask (Rs/\$)} = 1 / \text{Bid (\$/Rs.)}$$

Cross Rate: Traditionally, a Cross rate denotes an exchange rate that does not involve the home currency.

In Forex Market, Cross rate is understood as an exchange rate that does not involve the USD in it.

A Straight rate is understood as one that has the USD in it.

$$\text{Math Rule 1: Bid (A/B)} = \text{Bid (A/C)} \times \text{Bid (C/B)}$$

$$\text{Math Rule 2: Ask (A/B)} = \text{Ask (A/C)} \times \text{Ask (C/B)}$$

Forward Rate: The forward exchange rate is the rate contracted today for exchange of currencies at a specified future date.

- Once the rate is contracted, both parties, namely the customer and the dealer-banker, are obliged to perform on the specified future date irrespective of the exchange rate prevailing on that date.

Appreciation & Depreciation:

- ✓ In a direct quote, if the forward rate is greater than the spot rate, the Foreign Currency is Appreciating & the Home Currency is Depreciating.
- ✓ In a direct quote, if the forward rate is less than the spot rate, the Foreign Currency is Depreciating & the Home Currency is Appreciating.

Relationship	Direct	Indirect
F>S	FC Appreciating HC Depreciating	FC Depreciating HC Appreciating
F<S	FC Depreciating HC Appreciating	FC Appreciating HC Depreciating

Premium & Discount:

- ✓ When a currency is **Appreciating**, relative to another currency, it is said to be at a **Premium**.
- ✓ When a currency is **Depreciating**, relative to another currency, it is said to be at a **Discount**.

Rule 8:

In a Direct Quote, the FC is the commodity & the HC is the price.

In an Indirect Quote, the HC is the commodity & FC is the price.

Formula: % of Appreciation / Depreciation

$$\text{Commodity} = (F - S) / S \times (12/m) \times 100$$

$$\text{Price} = (S - F) / F \times (12/m) \times 100$$

Where, F = Forward
S = Spot
m = month

Swap Points

- Forward Exchange rates can be quoted either as
Outright forward exchange rate Or
Adjustment to Spot rates – also known as Swap points.
- The difference between the outright forward rate and the spot rate is called the Swap Differential or Swap Points.
- ✓ Bid Swap = Difference between Forward Bid & Spot Bid
- ✓ Ask Swap = Difference between Forward Ask & Spot Ask

Term	Bid	Ask	Spread
Spot	A	B	B – A
Forward	C	D	D – C
Swap	C – A	D – B	

The Swap point can represent either a premium or a discount.

Direct Quote:

If the commodity (FC) is appreciating, Add the swap points to the Spot rate to arrive at the forward rate.
If it is depreciating, Deduct the swap points from the Spot rate to arrive at the forward rate.

Indirect Quote:

If the commodity (HC) is appreciating, Deduct the swap points.
If the commodity (HC) is depreciating, Add the swap points.

Rule 9: Direct Quote

If Swap Ask > Swap Bid, the Foreign currency is Appreciating. Hence, Add the Swap points.
If Swap Ask < Swap Bid, the Foreign currency is Depreciating. Hence, Deduct the Swap points.

Factors that drive the Exchange Rates are:

1. International trade

2. Speculation
3. Balance of Payments
4. Central Bank intervention
5. Economic fundamentals
6. Political stability
7. Interest rate parity
8. Inflation
9. Self fulfilling expectations

Interest Rate Parity Theory (IRPT):

(Link between exchange rates and interest rates)

Proposition 1: The interest rates prevailing in two countries affect the exchange rate between the currencies of those countries.

Ex: The interest rates ruling in India and in USA will drive the exchange rate between \$ and Rs.

Proposition 2: In an efficient market, if the interest rates in two countries are different, the exchange rates between the two countries will move in such a way as to bring about “parity” in interest rates, offsetting the apparent interest rate differentials, thereby denying any arbitrage opportunity.

✓ This implies that high interest rate in one country will be offset by the depreciation of the currency of that country.

Ex: If the interest rate in India is higher than that in the US, the Re will depreciate against USD.

Exchange rate, a year later (also known as Future Spot Rate)

$$FSR = (1 + r_h) / (1 + r_f) = F1 / E0$$

Where,

r_h = Home Country's Interest rate

r_f = Foreign Country's Interest rate

$F1$ = Forward rate of the Foreign currency

$E0$ = Spot rate of the Foreign currency.

Second Formula: $\{(r_h - r_f) / (1 + r_f)\} \times 100$

- Arbitrage means the existence of two different prices in two markets for the same commodity.
- Arbitrage opportunities can be identified in one of the two ways:

1. Compute **what should be** the Forward price (Theoretical price) and compare it with **what is the** Forward price (Actual Forward rate)
✓ If the two are not equal, there could be an arbitrage opportunity.
2. Compute **what should be** the Home country interest rate (Theoretical interest rate) for the given forward rate and compare it with **what is the** Actual Home country rate (Actual Interest rate)
✓ If the two are not equal, there could be an arbitrage opportunity.

Steps for Second Method:

1. Compute theoretical home interest rate using IRPT
2. If Actual rate > Theoretical rate,
Money will flow **into** home country.
If Actual rate < Theoretical rate,
Money will flow **out of** home country.

Existence of Arbitrage:

1. Borrow money from the country where money would flow out
2. Convert the money at spot rate
3. Take forward cover to eliminate risk
4. Invest the proceeds in the other country
5. Collect the proceeds at the forward rate
6. Repay Principal & Interest on borrowed money
7. Gain = Step 6 – Step 1

Purchasing Power Parity Theory (PPPT)

(Link between exchange rates and inflation)

Proposition: 1 The inflation rates prevailing in two countries affect the exchange rate between the currencies of those countries.

Ex: Inflation rates ruling in India & in USA will determine the exchange rate between INR & USD.

Purchasing Power Parity Theory

Proposition: 2 In an efficient market, if the inflation rates in two countries are different, the exchange rates between the two

countries will move in such a way as to bring about “parity” in inflation rates, offsetting the apparent inflation rate differentials, thereby denying any arbitrage opportunity.

- ✓ High Inflation rate in one country will be offset by the depreciation of the currency of that country.

Formula: $(1 + I_h) / (1 + I_f) = F_1 / E_0$

Where,

I_h	=	Inflation in Home Country
I_f	=	Inflation in Foreign Country
F_1	=	Forward rate of the Foreign currency
E_0	=	Spot rate of the Foreign currency.

Risk: Risk is the possibility that the actual result from an action will deviate from the expected level of result.

- The greater the magnitude of deviation, and greater the possibility of its occurrence, the greater is the Risk.

Types of Risk : Currency risk is the risk associated with exchange-rate movements.

1. Transaction Risk
 2. Translation Risk
 3. Economic Risk
 4. Political Risk
- Transaction Risk refers to the effect of exchange rate movement associated with the time-gap between the date of the transaction and the date on which the consideration is settled.
 - **Translation Risk** is the profit or loss associated with converting foreign currency denominated assets/liabilities (also income and expenses) into reporting currency.
 - It emerges when for the limited purpose of financial reporting, items of income, expenses, assets and liabilities denominated in foreign currency are translated into home currency.

Economic Risk: It is an unanticipated change in exchange rate, which has an impact on the potential of an organisation to perform.

Political Risk: It refers to the consequences that political activities in a country may have on the value of a firm's overseas operations

Managing Exchange Rate Risks

- Minimise all the risks that will affect cash flow – transaction risks.

- **Internal Hedging Tools:**

- Home currency invoicing
 - Leading and Lagging
 - Bilateral & Multilateral Netting
 - EEFC Account as a hedging tool

- **External Hedging Tools:**

- Forward Contracts
 - Futures Contract
 - Currency Options

Home Currency Invoicing:

An Exporter can invoice in INR instead of \$

An Importer can insist that supplier to invoice in INR.

This ensures that the exchange risk is transferred to the Foreigner.

Leading & Lagging:

- ✓ Leads refer to earlier settlement of accounts
- ✓ Lags refer to delayed settlement of accounts

In case of Exports:

1. If the Foreign Currency (\$) depreciates, it is better to receive the FC (\$) proceeds now. Hence lead the receipt.
2. If the Foreign Currency (\$) appreciates, lead or lag would depend on the rate at which export proceeds can be invested in alternative investments.
 - a. If appreciation rate is less than return on alternative investment, receive now and invest, i.e. lead the receipt.
 - b. Otherwise, lag the receipt.

In case of Imports:

1. If the Foreign Currency (\$) depreciates, it is better to pay later. i.e. to lag the payment.

2. If the Foreign Currency (\$) appreciates, prima facie to lead. But it depends on the borrowing rate if short of cash, and on the investment rate if surplus cash.
- a. If appreciation rate < borrowing rate, Lag the payment.
 - b. If appreciation rate > borrowing rate, Lead the payment.
 - c. If appreciation rate < investment rate, Lag the payment.
 - d. If appreciation rate > investment rate, Lead the payment.

Netting is a process under which debit balances are netted off against credit balances, so that only the net amounts remain due to be paid in actual currency flows.

Bilateral Netting: In this arrangement, only two entities are involved. The lower balances are netted off against higher balances, and the remainder is paid or received

Multi-lateral Netting: This process is adopted mostly among three or more subsidiaries in the same group.

- ✓ First a common currency is decided and
- ✓ Second a method of establishing the exchange rates to be used for netting purposes is also decided.

Forward Exchange Rate Contracts:

- ✓ The contract is for the purchase or sale of a specified quantity of a specified currency.
- ✓ Price is agreed today
- ✓ Performance is at a future date.
- ✓ This Future time can be either a specified date or **any time between two Specified dates.**
- ✓ Both parties are obliged to perform

Option Forward Exchange Contracts (OFE): The OFE contract has two periods – a front period and a rear period.

- ✓ The customer can perform his obligation:
On the last day of the front period Or
Any day during the rear period not later than the last day of the rear period.

Ex: An OFE for 6 months taken on 1st Jan broken into 3 plus 3 means, one can perform on 31st Mar or on any day between 1st April and 30th Jun and in any case on 30th Jun.

- ✓ Such contracts are normally employed in circumstances where the likely date of payment or receipt in foreign currency is uncertain.
- ✓ An OFE can also incorporate delivery of foreign currency asset at any time during the contract period.

Quote for an OFE: Bank will quote the rate that is most favourable to it – taking into account, the forward rates applicable for the entire period covered by the contract.

Hedging Through Forward Exchange Contracts:

A forward contract eliminates the uncertainty surrounding the rupee cash flow on the future date.

Rule : 1 If you were to receive \$ (Exporter), an appreciation of rupee hurts, while depreciation benefits you.

- ✓ Prima facie, forward cover is to be taken only if rupee is expected to appreciate.

Rule : 2 If you were to pay \$ (Importer), depreciation of the rupee hurts, while appreciation benefits you.

- ✓ Prima facie, forward cover is to be taken only if rupee is expected to depreciate.

Honor, Rollover or Cancel of Forward Contracts:

A forward exchange contract can be closed either by

- ✓ Honoring the contract or
- ✓ Rolling over the contract (extending the contract) or
- ✓ Cancelling the contract.

Honor, Rollover or Cancel of Forward Contracts

		Importer		Exporter	
Action		Buy	Sell	Buy	Sell
A. Honor					
Due date	No Action	No Action	No Action	No Action	No Action
Early	Spot	Forward	Forward	Spot	Spot
B. Roll Over					
Due date	Forward	Spot	Spot	Forward	Forward
Early	Forward	Forward	Forward	Forward	Forward
C. Cancel					

Due date	No Action	Spot	Spot	No Action
Early	No Action	Forward	Forward	No Action

Rules:

1. Honor on due date - No action
2. Honor early
 - a. Identify original position
 - b. Reverse original position - Forward rate is relevant
 - c. Create original position now - Spot rate is relevant
3. Cancel
 - a. Identify original position
 - b. Reverse original position
 - On due date - Spot rate is relevant
 - Before due date - Forward rate is relevant
4. Roll over
 - a. Identify original position
 - b. Reverse original position
 - On due date - Spot rate is relevant
 - Before due date - Forward rate is relevant
 - c. Create original position - Forward rate is relevant

Money Market Hedge:

Money market is a market for short-term instruments.

Money market hedge involves

- ✓ Borrowing in foreign currency in the case of Exports
- ✓ Investing in foreign currency in the case of Imports

Steps:

1. Identify foreign currency asset or liability
 - ✓ Importer will have a FC liability
 - ✓ Exporter will have a FC asset

2. Create a matching position
 - ✓ Importer will create a FC Asset
 - ✓ Exporter will create a FC liability
3. Borrow Money
 - ✓ Importer will borrow in domestic currency, for an amount equivalent to PV of FC liability, at the FC deposit rate.
 - ✓ Exporter will borrow in FC overseas. Amount will be equal to PV of FC Asset, discounted at borrowing rate.
4. Convert the borrowed money into the required currency.
 - ✓ Importer - DC into FC at spot rate.
 - ✓ Exporter - FC into DC at spot rate
5. Invest the borrowed money
 - ✓ Importer - Invest the FC overseas
 - ✓ Exporter - Invest the DC in domestic deposits
6. Encash the asset and settle liability
 - ✓ Importer - Receive maturity proceeds of FC Asset and settle FC liability
 - ✓ Exporter - Receive the asset value from Overseas customer, and settle FC liability there itself.

Importer - Payables:

1. Find Exposure
2. Find PV of Exposure (**using Deposit Rate**)
3. Use Spot rate to find local borrowing
4. Repay borrowing with interest

Exporter - Receivables:

1. Find Exposure
2. Find PV of Exposure (**using Borrowing Rate**)
3. Use Spot rate to find Investible amount
4. Realise investment with interest

Note: Exporters use Bid Rate in DQ & Ask Rate in IDQ

Importers use Ask Rate in DQ & Bid Rate in IDQ

Currency Futures

Steps for hedging through futures:

1. Estimating target outcome (with reference to spot rate available on a given date)
2. Deciding on whether Futures contract should be bought or sold
3. Determining number of contracts
4. Identifying profit or loss on target outcome
5. Closing out futures position and
6. Evaluating profit or loss on futures

Rule:

1. If you are buying Spot £, Buy £ Futures
2. If you are selling Spot £, Sell £ Futures