Chapter 1

Introduction
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1.1 History of Currency Market

The current currency system of currency exchange has involved many improvements since long time, you can say since inception of trade. When trading has been started at initial level, that time goods and services exchanged by barter system to each other. For example, a farmer exchanges wheat with cotton with another farmer or fruits exchange for pulses. This system was not proper work due to it’s of non divisibility of certain goods. For example how does a farmer exchange his cattle for just salt or edible oil? Farmer has not the way to divide the cattle, same thing happens with when we need some things from one part to other part of same country like wheat exchange for sugar from one point to other point of country. In this case long distance is the problem. Therefore there is need of common exchange medium, as part of this money invented. Humans tried various things, commodity as a medium of exchange, because it’s common acceptances, easy to car anywhere, its divisibility. Peoples has been started the currency exchange from metal coins. In metal also there was a variety like silver; bronze, gold, copper but finally gold coins became the medium of exchange. Only gold coins were accepted for exchange the goods, this process have been continued for many years. Then paper currency has been evaluated after the gold coin invention.

After the deposition of gold and silver with bank peoples get the promising note for gold coins at any point of time exchange. Paper currency invented from this book entry system. After some time countries started trading to each other, they realized that every country cannot produced everything or some goods are cheaper than other countries, this trading invented foreign exchange i.e. one countries currency value versus another countries currency value. Every country has its own brand and when money is branded it’s called “currency”. If there is cross border trading then there is a need of exchange of brand of money for each other and this exchange of two currencies called “foreign exchange” or “Forex” (FX)

For the smooth function of international trade there is need of relative value of two currencies. In the past many system tried for arrive the relative value of currency. In 1870 many
countries agreed to determine the value of its currency against other currency of other country gold as a benchmark for is value. His process includes that central bank of the world hold gold and issue paper currency equivalent to gold value. The value of one currency against other currency derived from the value of gold exchange.

For example if one unit of gold is valued at Indian 10, Rupees (INR) 10,000 and US dollar (USD) 500 than the exchange rate of INR versus USD would be 1 USD = INR 20. This system called as gold standard. After the world wars, civil wars and situations of trade deficit or trade surplus countries shift from the gold standard to floating exchange rates. In this system central bank decided to value of currency to other countries currency. Central bank either buys or sells local currency as the desired direction of local currency.

Countries have been adopted Bretton woods system during the 1944-1971. This system was mix up the gold standard and floating rate system. After the World War II America became the strongest or in other words you can say world leader country. So its currency USD has important value as compared to others. As all countries decided to adopt this system, all currencies were pegged to USD at a fixed rate and USD value pegged to gold. All countries also agreed to maintain exchange rate plus or minus 1% of the fixed parity with USD. After this system introduced USD became dominant currency in the world. After some time Bretton Woods’s system suspended and all countries adopted free floating system or managed float system method.

World have been seen there is two system were adopted by countries i.e. developed countries adopted market determined exchange rate and developing countries adopted system pegged currency or system of managed rate. In this mechanism the value of currency is pegged to another or basket of currencies. The benefit of this system is creating favorable environment for foreign investors.

In the long run it is very difficult to maintain peg, central bank may change value of peg or moved to managed float or free float. In managed float system countries have controlled on flow of capital and central bank can intervention for sharp volatility and direction of currency movement. On 16 May 1972, the Chicago Mercantile Exchange started trading in currency futures. The foreign exchange currency trading in India is growing tremendously however it is said that the Forex market is still in the early phase in India. Nevertheless there are already several big players
in the Indian Forex market. In 1978 RBI has taken an important decision which allows banks to undertake intraday trading in foreign currency exchange.

In 1994 government appointed a committee of expert peoples to study the Forex market develop in India. This exercise help to banks for its Forex market development and liberalization. This development allowed banks to borrow and invest funds in overseas market up to certain limit with use of derivative also. Most of the foreign fund came through NRI only, common man was not interested in trading in foreign currency. Now the things are changing with growing economy and now more peoples showing interest in Forex currency derivative and looking out for hedging currency risks.

**Historical Events and USD/INR: 1973 to 2008**

![Historical Events and USD/INR: 1973 to 2008](image)

Fig 1.1: Major Events in International and Indian Monetary System

Source – Religare Securities Limited (Corporate Presentation)
Major Events in International and Indian Monetary System

2. Oil crisis in 1973 - quadrupling of oil prices
3. European Currencies float against US$ - 1978
4. Post emergency years
5. Majority Govt. formed - 1984-85
7. East and South East Asian Currency crisis - 1997
8. Nuclear tests by India - 1998
9. Robust economic growth in India
10. High crude oil and commodity prices

1.2 Introduction of Currency Derivatives Market in India

Currency derivatives market when introduced in India, it was great opportunity for importers, exporters and multinational companies with forex exposure. These derivative products have wide scope to match customer requirements. Currency derivatives market is similar to other derivatives, stocks and indices. Currency derivative value derives from the underlying currency. There is universally accepted that market risk cannot be eliminated but there is currency derivative work as an efficient risk management tool in the Forex market. Currency derivative developed to protect exposure against unpredictable currency movements. In terms of foreign currencies, importers and exporters incur huge obligations to guard their interest by buying appropriate derivative products.

In India RBI allowed Exchange Traded Currency Futures on 29 August 2008. Then Indian Forex market gaining huge growth as this market involved trading as well as hedging concept First time in India National Stock Exchange was launched Forex currency future. Now there are three more exchanges trading Forex currency derivative namely Bombay Stock Exchange, Multi commodity exchange of India and United Exchange of India Limited. Through these exchanges small trader and retail investor also can invest by opening an account in currency future market. Forex transactions in India managed through government authorities.
Flows driving the currency exchange:

- Trade & Capital flows
- Currency hedging by corporate
- Remittance by NRIs
- Investment by offshore institutions in India & Indian investments offshore
- FDI & FII Flows
- Balance of payment (Net import of USD 90 Billion for FY 2007-08)

**Most Traded Currency Pairs**

In the world most traded currency pairs called Majors. Following are the currencies includes in the Major category. US Dollar (USD), EURO (EUR), Pound Sterling (GBP), Japanese Yen (JPY), Australian Dollar (AUD), Swiss Franc (CHF), Canadian Dollar (CAD). In above currencies most active currency pairs are EURUSD, GBPUSD, USDJPY, CADUSD, AUDUSD and USDCHF.

Following are the currency pairs share in the international market as per the Bank International Settlement of April 2010.

<table>
<thead>
<tr>
<th>Currency</th>
<th>Share (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>EURUSD</td>
<td>28</td>
</tr>
<tr>
<td>USDJPY</td>
<td>14</td>
</tr>
<tr>
<td>GBPUSD</td>
<td>9</td>
</tr>
<tr>
<td>AUDUSD</td>
<td>6</td>
</tr>
<tr>
<td>USDCHF</td>
<td>4</td>
</tr>
<tr>
<td>USDCAD</td>
<td>5</td>
</tr>
<tr>
<td>USD/Others</td>
<td>18</td>
</tr>
<tr>
<td>Others/Others</td>
<td>16</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>100</strong></td>
</tr>
</tbody>
</table>
US Dollar (USD)
After the World War II, USA became the strong country in the world and USD became prominent currency in the world. Now USD is the most traded currency and very liquid currency against any other. Most of the countries, Banks, big institutions use USD as an “INVESTMENT” currency in most of the capital markets in the world, many banks use USD “RESEVE”, in international commodity market USD use as a “TRANSACTION” currency, many contracts using USD as an “INVOICE” currency.

Now a day’s US Dollar became universally accepted and it is use as a “VEHICLE” currency in foreign exchange transaction. In international trading or transaction vehicle currency plays an important role because most of currency pairs not convert directly in to each other, they using the vehicle currency to convert. US Dollar plays a role of vehicle currency, recently EURO also playing an important role of vehicle currency. Example, if traders want to fund shift from one currency to another, say Indian Rupees to Thailand Bath, will sell INR for US Dollars and then sell USD for Bath. This system is used because US Dollar/INR and US Dollar/Bath market is much more liquid and active market. So banks, multinational companies and other foreign exchange market make the balance of vehicle currency rather than holding and managing other currencies. Vehicle currency reduces the number of exchange rates by its use.

Euro (EUR)
Euro also became an important currency not only in Europe but all worldwide. After US Dollar Euro has significant international presence since its inception. Euro is the second largest currency in the world after the US Dollar. Euro is very liquid and active currency in the world.

Japanese Yen (JPY)
The third and most active, traded currency in the world is Japanese YEN. After the US Dollar and EURO, YEN has good presence the international market. Japanese YEN is very liquid and active currency, in other words we can say YEN is third largest currency in the world.

British Pound (GBP)
The fourth largest currency in the world is GBP from England. The nick name of the GBP is Cable; this is derived from telegrams to update the rates of USDGBP in all Atlantic pacific. Before World war II pound used for the reference. Pound has strongly presence in Europe and in USA; it
means pound is heavily traded against Euro and USD but very less presence against other currencies.

**Swiss Franc (CHF)**

Swiss Franc belongs to the Switzerland country which is major European country but not belongs to European Monetary Union or to the G-7 countries. Although Switzerland economy is very small economy but Swiss Franc counts in a major currencies in the world. Switzerland is very close to Germany, automatically to the Euro zone. Most of the countries believed that Swiss Franc is stable currency.

Source: NISM Currency Derivatives Module, Workbook, May 2010

**1.3 Overview of International currency market**

Currency market is 24 hrs markets at global level. The concept of 24 hrs currency markets has become a reality. Example –As per Indian time UK and Europe opens in the afternoon to till late evening, US market open in the evening and close in late night after the remaining Asian countries market and before Asian market close, Indian market opens. That’s why the concept of 24 hrs currency market becomes a reality. Many trades carrying pocket monitors or update with their market facility on mobile screen to keep in touch with the entire markets worldwide because they can use their huge amount any market of the world. As per the report of BIS (Bank for International Settlement) survey of April 2010, daily turnover of currency global market is approximately USD 3 trillion. So currency market becomes the world’s biggest market or in other words you can say largest asset class.
Fig 1.2: India - INR
Fig 1.3: United States of America – USD

Fig 1.4: Europe – EURO
Fig 1.5: United Kingdom (Great Britain/England) – GBP

Fig 1.6: Japan - JPY
Table 1.2: Market Timing

<table>
<thead>
<tr>
<th>Location</th>
<th>Regional time</th>
<th>Indian Standard Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tokyo</td>
<td>9:00 a.m - 5:00 p.m</td>
<td>5:30 a.m - 1:30 p.m</td>
</tr>
<tr>
<td>Hong Kong</td>
<td>9:00 a.m - 5:00 p.m</td>
<td>6:30 a.m - 2:30 p.m</td>
</tr>
<tr>
<td>Singapore</td>
<td>9:00 a.m - 5:00 p.m</td>
<td>6:30 a.m - 2:30 p.m</td>
</tr>
<tr>
<td>Mumbai</td>
<td>9:00 a.m - 5:00 p.m</td>
<td>9:00 a.m - 5:00 p.m</td>
</tr>
<tr>
<td>London</td>
<td>9:00 a.m - 5:00 p.m</td>
<td>2:30 p.m - 10:30 p.m</td>
</tr>
<tr>
<td>New York</td>
<td>9:00 a.m - 5:00 p.m</td>
<td>7:30 p.m - 3:30 a.m</td>
</tr>
<tr>
<td>Los angles</td>
<td>9:00 a.m - 5:00 p.m</td>
<td>9:00 p.m - 5:30 a.m</td>
</tr>
</tbody>
</table>

1.4 Basics of Currency Markets and Peculiarities in India

Currency Pair
Like other asset class in currency market there is significant part of currency market is currency pairs. In currency pair there is two different currencies with their different values to every currency.

Example – Say 1 USD is equal to 55 and says 80 against JPY. This theory makes this market very interesting about nation’s economic condition. The value of each currency against other currencies depends on the economic potion of that particular country.

Base Currency / Quotation Currency
In foreign exchange transaction or currency market there are two currencies, one currency is bought with or sold for another currency. So one is foreign currency and another one in domestic currency but there is a particular term for both currencies. The term is that Base Currency (BC) and Quoting Currency (QC). Base currency is that is priced and its amount is fixed at one unit. Quote Currency which price Base Currency and it’s varies as per market. It is vary time to time means BC is changeable anytime for QC. Normally in the currency pair BC code first followed by the QC code.
Example – in USDINR, USD is the BC and INR is the QC. As per this point dealer quotes a price say USDINR 55, it means that 1 USD vale for 55 INR.

**Interbank Market and Merchant Market**

There are two segments in OTC foreign market, one is “interbank market” and second one is the “merchant market”. In interbank market dealers quote price for buying as well as selling currency. This mechanism called market making. Example – Wholesaler of vegetables quotes the price for buying from farmer and same time he quotes the price for selling to retailer. So in this situation wholesaler is the market maker as he quotes price for buying as well as selling. This is called two way quotes. In merchant market, merchants are price takers and banks are price givers. Merchants may ask to banks to quote two way prices as such as merchants may have both side interests to sell as well as buy currency.

**BID / ASK Price**

In two ways quote price quote for the buying is called BID price and price quoted for the selling is called OFFER or ASK price. Example – Say in the spot market bank quote for the USD 55.05/55.06 merchant. In the quote 55.05 is the bid price, means bank willing to buy 1 USD for the INR 55.05 and 55.06 is offer or ask price, means bank willing to sell 1 USD for the INR 55.06.

As per above situation, merchant willing to buy 1 USD at 55.06 and interested to sell at 55.05, the difference between bid and ask called “SPREAD”. Spread is a very important toll for the measure the liquidity in particular currency pair. In spot market big spread indicates that there is not much liquidity or efficiency and narrow spread indicates that there high liquidity and high efficiency.

There are some rules or you can norms for two way quotes while quoting, few are as follows:

1. First quote bid price which is lower price then quote offer price which is higher price.
2. The offer price is generally quoted in abbreviated form. In case the currency pair is quoted up to four decimal places then offer price is quoted in terms of last two decimal places and if the currency pair is quoted in two decimal places then offer price is quoted in terms of two decimal places.

Let us look at market norms while quoting two way quotes in popular currency pair.
Table 1.3: Popular Currency Pairs

<table>
<thead>
<tr>
<th>Currency Pair</th>
<th>Actual BID - OFFER Price</th>
<th>Abbreviated Bid - Offer Price</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>USD INR</td>
<td>55.01 / 55.02</td>
<td>55.01 / 55.02</td>
<td>Price generally quoted up to two decimals places</td>
</tr>
<tr>
<td>EURO USD</td>
<td>1.4221 / 1.4223</td>
<td>1.4221 / 23</td>
<td>Price generally quoted up to four decimals places</td>
</tr>
<tr>
<td>GBP USD</td>
<td>1.6089 / 1.6089</td>
<td>1.6089 / 92</td>
<td>Price generally quoted up to four decimals places</td>
</tr>
<tr>
<td>USD JPY</td>
<td>84.24 / 84.25</td>
<td>84.24 / 25</td>
<td>Price generally quoted up to two decimals places</td>
</tr>
</tbody>
</table>

Source: NISM Currency Derivatives Module, Workbook, May 2010

Appreciation and Depreciation of Currency

In foreign exchange market currency rates constantly changing, it means that one currency value fluctuate constantly. A rate changing shows that one currency strengthening and other weakening. In other words we can say change in rate show appreciation or depreciation of currency. While base currency buys more of quote currency that time base currency has strengthened / appreciated and the quotation has weakened / depreciated.

Example – If USDINR moves from 55.05 to 55.30, it means USD has strengthened / appreciated and INR has weakened / depreciated. In other words USD become strong against INR and USD may go up to 56.

Market Timing

In India, market time for the OTC as well as future market is 9.00 am to 5.00 pm. OTC market is open for the merchants from 9.00 am to 4.30 pm and the last half hour for interbank dealing for banks to square off excess positions. Banks cannot carry forward excess position beyond the prescribed limits.
Price benchmarks

In OTC market there are two prices benchmark used merchant transactions. IBR (Inter Bank Rate) is the price available for large value merchant transaction. So IBR may differ from bank to bank and price variation very small range of 0.25 paisa to 2 paisa.

Banks publish a standard price for day to day called as a card rate for the small value transactions. The card rate is same for the day. In case of high volatility on any day, bank can revise it multiple times. The difference between IBR and card rate is high to cover the risk of price fluctuation.

Price discovery of Currency

Now a day’s all currency markets are associated to each other. The OTC market has opened the development of international market in the night. Generally OTC market is not very liquid at the time of its opening for few minutes because the impact of overnight development in global markets. Generally, Market discovers an equilibrium price at which market clears buy and sell orders. This process is called price discovery.

RBI reference rate

RBI published reference rate for spot rate of many currencies on daily basis. This rate is arrived from averaging of buy / sell rate from selected banks during a random five minute window between 11.45 AM to 12.15 PM. RBI issue this rate on daily basis at around 12.30 PM on week days (excluding Saturday).

Banks having big market share in the foreign exchange market. So their contribution is highly. RBI periodically reviews the procedure for selecting the banks for true reflection of RBI reference rate in the market. The reference rate is transparent price which is publically available from an authentic source.

Settlement date or Value date

The settlement in the OTC spot market happens by actual delivery of currency. On the maturity of the contract where each party exchange the goods called gross settlement and where market participants only settle difference in value of goods called net settlement.
Example – If an importer buys one month USDINR contract in currency future market at 55.05, on the expiry of contract or before the contract matured, the price of USDINR is 55.08 then importer will receive the difference of 55.05 and 55.08 i.e. RS 0.3 per USD.

In OTC spot market, if an importer buys one million of USD at a price of 55.05. Of the settlement date, he will deliver one million USD to bank and will receive Rs. 5, 50, 00,000 from the bank. In OTC market settlement date also called value date. But value date is different form trade date. Trade date means two participants agree to transaction with certain terms like currency, price, amount and value date. Value date is when market participants actually exchange the currency. Spot value date is most important value date which is settlement after two business days. The right definition of spot value date is settlement on second business day, subject to both centers being open on that day. There are two different centers so there may be problem arise of holiday, that’s why above definition has given. If one of the center is closed then settlement will be the next business day and it may third, fourth, fifth day after the trade date. Any settlement date after spot value date is called forward value dates, which are standardized in to 1 – months after spot value date. The forward market can extend up to one year. Transaction can settle also before spot date. If settlement done on the trade date and which spot date is at T+2 called as “cash” rate and if it happens one day after trade date the price called as “tom” rate.

The picture below represents cash, tom, spot and forward value dates on a time line:

![Cash, tom, spot and forward value dates on a time line](image)

Now we are have clear idea about that business day means spot value date. If there are holidays then how to calculate exact spot date? If one currency is USD and other is non USD, the spot date is second business day in the non USD currency center and New York business day. If New York is closed on second business day at non USD center, spot date is the next date on which both New York and non USD center open.
OTC forward market

We have seen briefly information about OTC spot market. In this section we have idea about OTC forward market. The forward OTC market can provide quotes for booking for any maturity. In OTC forward market there is high liquidity for less than one year and after that liquidity very less. In terms of settlement in OTC forward market there is settlement possible via gross or net settlement, not like currency future market where settlement is on end month maturity with net settlement concept. As per the RBI guidelines in OTC forward contract there is requirement of underlying trade contract before executing the forward contract. Limitation of OTC Market is as follows:

- Lack of Price Transparency
- Dealers not available in volatile market hours, especially for SMEs
- Underlying for every transaction required which in turn increases documentation.
- Higher turnaround time.
- Banks are running huge Credit risk and MTM’s at time exceeds.

Exchange rate arithmetic - cross rate

Currency prices are not available directly in the nay market. There is a mechanism developed. In market parlance, the price of currency pair for which direct prices is not available is called as cross rate. There are methods like left hand – right hand, chine rule for the derivation of cross rate.

EURINR

There is an important question arise that how currency pair prices are derived? Let us see the price of EUR/INR comes from EUR/USD and USD/INR.

Example – let us assume: EURUSD 1.4351 / 1.4355 and USDINR 44.38 / 44.39.

It means we have to calculate 1 EURO means how many INR. EURO is directly available in terms of USD only. So we have to sell INR to buy USD and then after sell USD to buy EURO. To calculate the cross rate it is very important to identify proper path of conversion. To buy 1 USD you need to pay 44.39 which are on offer price. Now you need to sell USD to buy 1 unit of EURO. For buying 1 EURO you need to pay 1.4355. So how many INR need to pay for buying 1.4355 USD?
1 USD is for 44.39 INR so 1.4355 USD * 44.39 INR i.e. 63.7218 INR. So for 1 EURO buying you need to pay 63.7218 INR. Same logic is for selling 1 unit f EURO i.e. 1.4351 * 44.38 = 63.6897 INR.

Therefore cross rate is 63.6897 / 63.7218.

**GBP/INR**

To calculate the GBP/INR, we have to go through the currency airs GBPUSD and USDINR. Let us take an example. Assume that GBPUSD price is 1.6290 / 1.6293 and USDINR is at 44.38 / 44.39. So the cross rate of GBP/INR is 72.2950 / 72.3246.

**JPY/INR**

For all currencies there is convention of 1 unit base currency in terms of quote currency. There is little bit change in quote of JPYINR. Market convention is to quote price of 100 JPY in terms of INR. There is slightly change in the computation of JPYINR from other currencies. To calculate the cross rate of JPYINR we will have the base of USDJPY and USDINR.

Assume USDJPY is at 83.35 / 83.37 and USDINR is at 44.38 / 44.39. Now let us calculate the computation of cross rate for the buying 100 JPY in terms of INR. In this case we need to sell INR to buy USD and after that sell USD to buy JPY. 1 USD is available for buying at 44.39 INR. Now sell USD and buy JPY. Selling price of USD is 83.35 JPY. So we get 83.35 JPY by spending 44.39 INR. So price of 1 JPY is 44.39 / 83.35 i.e. comes to 0.5325 INR, in other words price of buying 100 JPY is 53.25 INR. Similarly for selling price we have to take next price i.e. 1 JPY is 44.38 / 83.37. The figure comes to 0.5323 for 100 JPY, so it is 53.23 INR. Thus JPYINR is 5.23 / 53.25. By this process we can use one underlying and cross rate to computation other underlying currency rates.

### 1.5 Impact of market economics on currency prices

Currency market is very sensitive market. There are numbers of factors impacting the currency prices. Global as well as local factors are impacting o the value of currency. On the rate of INR against USD there is impact of local factors like GDP, BOP, trade deficit, fiscal deficit, various data releases, inflation, interest rate scene, government policies, foreign fund inflow and outflow. In global factors there are the factors like crude oil, performance of USD against other currencies...
etc. above factors are work all together in all times and decide the strengthens and weakness of currency and give the direction or move to currency. The appreciation and depreciation of currency depends on all the factors of local as well global.

If one day some good news is huge FDI comes in India then INR will become strong against USD and will appreciate but at the same if USD become strong against other currencies in the world then INR may again depreciate. So there is too much importance to track the demand supply related news, fundamental analysis, and technical (charts) analysis.

**Economic Indicators**

Given below are key economic indicators and their impact on currency market.

![Economic Indicators Diagram](Fig 1.8: Economic Indicators)

Source: NISM Currency Derivatives Module, Workbook, May 2010

**Gross Domestic Products (GDP)**

GDP is very important key factors of economy of the nation as well as helps to decide the position of currency whether strong and weak. A GDP figure indicates the market value of all goods and services produced in a country during given year. If GDP numbers are higher than expected that
means countries economic condition become strong so automatically currency of that particular country become strengthening against other currencies.

**IIP Data**

IIP means Index of Industrial production in given period. IIP is a major key factor of the economic condition. IIP numbers base is in 1993 – 94. On that basis IIP numbers are compared. The positive data of IIP shows the strength in economy as well in the nation’s currency.

**Retail Sales in the Country**

Sales in the country are the major factor of the economic indicator. The healthy economic depend of the numbers of retails sales in the country. If retail sales are higher than expected may means the sign of the strong currency of that particular country.

**Consumer Price Index (CPI)**

CPI tracks the prices of consumer goods and services. CPI considered by some cost of living index. If CPI rising, it means cost of goods and services increasing and automatically affect on inflation. Rising CPI means increase in rate of interest, inflation, it means economy will go down and weakens the local currency.

**Nonfarm Payrolls (NFP)**

In the country’s economy how many jobs added or lost in the last month, it represents by NFP. This data include only jobs from private sector. This data released monthly by USA labor department. NFP is very important factor for US currency market. Rising and positive numbers in NFP indicates that economy adding jobs and healthy sign for currency.

**Inflation**

In every country the major factor of economic condition is depend on the data release of inflation. Inflation is the key indicator of country’s economy as well as the help to decide the movement of that country’s currency. If the numbers of inflation are higher than expected or inflation data going to high side, it means that country’s economy in the trouble and value of currency goes down against other currency.
Interest Rate

Interest in the country is the very important factor to contribution in the country’s economy. The numbers of interest rate should be less than expected for healthy economy as well the healthy currency. Interest rate directly affects on the inflation, currency movement, CPI, data of house sales etc. so we can say interest rate of the country is the decider position of country’s economy. Interest rates are positively correlated with a strong currency when interest rates increase in a country, its currency strengthens against other currencies.

Fiscal deficit

When government’s total expenditure exceeds than revenue earned then fiscal deficit generate. Fiscal deficit is very harmful to economy. Big deficit shows sign of weak or trouble economy and it is very dangerous for the value of currency when compared to other currency. Low deficit or no deficit is very good to nation’s currency and economy as well.

Trade deficit

Trade deficit means a country imports more than exports. Then which deficit generates that is called trade deficit. Trade deficit is not good sign to currency positive movement. Trade deficit indicates that domestic currency going to other country means an outflow of domestic currency in foreign country.

Government policies

Government policies play an important role to decide the way of economy and currency value. Many decision of government doing directly impact on country’s economy and movement of the currency. So government policy is very much crucial factor to impact of currency whether strengthen and weaken.

Central bank meetings and key decisions

Decision of the central banks and meeting for any announcement is very much important for currency market. Central bank takes the decision about interest rate, CRR (Credit Reserve Ratio). So market tracks every meeting of the central bank. Central bank meetings and key decision set the next step of economy and automatically its impact on currency movement. Now we are going to study the about the Derivative.
Derivative

Derivative is a product whose value is derived from the underlying assets. The underlying assets can be equity, commodity, currency, interest rate, etc. Example – Cotton farmer wishes to sell his cotton at a future date to eliminate the risk in price change. The above example is an example of derivative. The price of this derivative is driven by the spot price of cotton as the underlying.

Basically derivative products emerged as hedging devices against fluctuations in commodity prices. More than three hundred years there is use of derivative concept in society. Due to instability in financial market in the decade of 1970 financial derivative came into spotlight. By 1990 this product becomes very popular in the financial market. Nowadays, derivative market grown up tremendously.

In the Indian context the Securities Contracts (Regulation) Act, 1956 [SC(R) A] defines "derivative" to include:

1. A security derived from a debt instrument, share, loan whether secured or unsecured, risk instrument or contract for differences or any other form of security.
2. A contract which derives its value from the prices, or index of prices, of underlying securities.

The term derivative has also been defined in section 45U (a) of the RBI act as follows:

An instrument, to be settled at a future date, whose value is derived from change in interest rate, foreign exchange rate, credit rating or credit index, price of securities (also called “underlying”), or a combination of more than one of them and includes interest rate swaps, forward rate agreements, foreign currency swaps, foreign currency-rupee swaps, foreign currency options, foreign currency-rupee options or such other instruments as may be specified by RBI from time to time.

Derivative Products

There are four types of products of derivative.

1) Forwards
2) Futures
3) Options
4) Swaps
Let us take a brief look above types of derivative.

1) **Forwards:** Forward contract is a contract between two parties, where settlement takes place on a specific date in the future at today’s pre-agreed price.

2) **Futures:** A future is a similar product as forwards but difference is that futures are exchange traded product.

3) **Options:** Option not buying and selling underlying directly but it is right to buy or sell with obligation on the underlying. When there is right to buy i.e. it is call option and when it is right to sell i.e. it is put option.

4) **Swaps:** According to pre arranged formula swaps are agreement between two parties to exchange cash flow in future. *Swaps* are contractual agreements to exchange or swap a series of cash flows. These cash flows are most commonly the interest payments associated with debt service. The swap itself is not a source of capital, but rather an alteration of the cash flows associated with payment.

Two commonly used swaps are the following –

Interest rate swaps - If the agreement is for one party to swap its fixed interest rate payments for the floating interest rate payments of another, it is termed an *interest rate swap*. Parties swapping only interest related cash flows in same currency.

Currency Swaps – If the agreement is to swap currencies of debt service obligation, it is termed a *currency swap*. In currency swaps parties swapping both principle and interest related cash flows in different currencies. Since all swap rates are derived from the yield curve in each major currency, the fixed-to-floating-rate interest rate swap existing in each currency allows firms to swap across currencies. The usual motivation for a currency swap is to replace cash flows scheduled in an undesired currency with flows in a desired currency. The desired currency is probably the currency in which the firm’s future operating revenues (inflows) will be generated. Firms often raise capital in currencies in which they do not possess significant revenues or other natural cash flows (a significant reason for this being cost).

Source: NISM Currency Derivatives Module, Workbook, May 2010
Growth of Derivatives
Derivatives have been started more than three hundred years. In last three decades we have seen a tremendous growth in derivatives segment worldwide. On the exchanges number of variety launched of derivative. Following factors are plays an important role to development of derivative segment.

1. Increased volatility in financial markets.
2. National and international financial markets are interdependent.
3. Communication facilities improved with cheap cost.
4. Various strategies developed of risk managing.
5. Higher returns minimize risk and low transaction cost is the objective of derivative segment, so it is very popular as of now.

Function of Derivatives –
Derivative segment is very popular in financial market players. Derivative segment perform some economic functions like

1. Derivative helps in discover of future prices with the basis of spot prices.
2. Derivative market helps to minimize the risk.
3. After the introduction of derivative segment market participant increased and we have seen tremendous growth in trading volume.
4. Maintain margin and surveillance of the speculators.
5. Derivatives attracted to many well educated peoples so new products and new employment opportunities open.

Future Contract
A future contract is a standardized contract which traded on exchanges to buy abs sell certain underlying asset at certain date with specified price called “future contract”.

Currency future contract
When underlying asset is an exchange rate then the contract called as “currency future contract”. In future contract tick is the minimum value of price change. The market price changes in multiples of the tick. In case USDINR there is a tick size of 0.25 paisa or 0.0025 rupees. If USDINR stands at 55.50 then one tick move to either 55.5025 or 55.4975. The profit loss associated with movement...
of tick value and it will be calculate tick * contract size. The value of one tick is (contract size 1000 * 0.0025) rupees 2.50. If traders buy 10 contracts and price move 4 ticks, he makes rupees 100 (10 * 4 * 2.5)

Future Terms

- **Spot Price**: Spot price the price at which the underlying asset trades in the spot market.

- **Future Price**: Future price is the current price of the specified future contract.

- **Contract Cycle**: The term contract cycle is the period over which a contract trades. SEBI recognized exchanges one, two three month up to twelve month contracts.

- **Value date / final settlement date**: Last business day of the month termed as value date or final settlement day of per contract.

- **Expiry day**: Last trading day of the month called as expiry day of the contract. Expiry day comes before two working days prior to the final settlement date.

- **Contract size**: Contract size called also lot size of the contract. In case of USDINR it is USD 1000; in case of EUROINR it is EUR 1000; in case of GBPINR it is GBP 1000 and in case of JPYINR it is JPY 1,00,000

- **Initial margin**: Initial margin is the amount deposited in margin account at the time of first trade in future contract.

- **Mark to market**: At the end of each trading day in future market, the margin account reflects with gain or loss called as Marking to market.
Table 1.4: Margin Requirement

<table>
<thead>
<tr>
<th></th>
<th>USDINR</th>
<th>EURINR</th>
<th>GBPINR</th>
<th>JPYINR</th>
</tr>
</thead>
<tbody>
<tr>
<td>Minimum margin requirement on first day</td>
<td>1.75%</td>
<td>2.8%</td>
<td>3.25</td>
<td>4.5%</td>
</tr>
<tr>
<td>Minimum margin requirement after first</td>
<td>1%</td>
<td>2%</td>
<td>2%</td>
<td>2.3%</td>
</tr>
</tbody>
</table>

**MTM Calculation**

Consider a client who buys on day 1 the contract at 46.5000
- The settlement price on day 1 is 46.0000
- Mark to market: difference between the two multiplied by the number of contracts and the contract multiplier
- The contract is carried forward at the settlement price
- The payment of profit or loss happens the next day
- The client squares up at 46.6500 on day 5
- No open positions and no mark to market

Table 1.5: MTM Calculation

<table>
<thead>
<tr>
<th>Day</th>
<th>Buy Quantity</th>
<th>in</th>
<th>Price</th>
<th>Closing Price</th>
<th>Profit / Loss</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1000</td>
<td></td>
<td>46.5000</td>
<td>46.0000</td>
<td>-500</td>
</tr>
<tr>
<td>2</td>
<td>1000</td>
<td></td>
<td>46.0000</td>
<td>46.7500</td>
<td>+750</td>
</tr>
<tr>
<td>3</td>
<td>1000</td>
<td></td>
<td>46.7500</td>
<td>46.4500</td>
<td>-300</td>
</tr>
<tr>
<td>4</td>
<td>1000</td>
<td></td>
<td>46.4500</td>
<td>46.6500</td>
<td>200</td>
</tr>
<tr>
<td>5</td>
<td>1000</td>
<td></td>
<td>46.6500</td>
<td>46.6500</td>
<td>0</td>
</tr>
</tbody>
</table>

**Rationale behind currency futures**

The rationale for introducing currency futures in the Indian context has been outlined in the Report of the Internal Working Group on Currency Futures (Reserve Bank of India, April 2008) as follows:
“The rationale for establishing the currency futures market is manifold. Both residents and non-residents purchase domestic currency assets. If the exchange rate remains unchanged from the time of purchase of the asset to its sale, no gains and losses are made out of currency exposures. But if domestic currency depreciates (appreciates) against the foreign currency, the exposure would result in gain (loss) for residents purchasing foreign assets and loss (gain) for non residents purchasing domestic assets. In this backdrop, unpredicted movements in exchange rates expose investors to currency risks. Currency futures enable them to hedge these risks. Nominal exchange rates are often random walks with or without drift, while real exchange rates over long run are mean reverting. As such, it is possible that over a long – run, the incentive to hedge currency risk may not be large. However, financial planning horizon is much smaller than the long-run, which is typically inter-generational in the context of exchange rates. Per se, there is a strong need to hedge currency risk and this need has grown manifold with fast growth in cross-border trade and investments flows. The argument for hedging currency risks appear to be natural in case of assets, and applies equally to trade in goods and services, which results in income flows with leads and lags and get converted into different currencies at the market rates. Empirically, changes in exchange rate are found to have very low correlations with foreign equity and bond returns. This in theory should lower portfolio risk. Therefore, sometimes argument is advanced against the need for hedging currency risks. But there is strong empirical evidence to suggest that hedging reduces the volatility of returns and indeed considering the episodic nature of currency returns, there are strong arguments to use instruments to hedge currency risks. Currency risks could be hedged mainly through forwards, futures, swaps and options. Each of these instruments has its role in managing the currency risk. The main advantage of currency futures over its closest substitute product, viz. forwards which are traded over the counter lies in price transparency, elimination of counterparty credit risk and greater reach in terms of easy accessibility to all. Currency futures are expected to bring about better price discovery and also possibly lower transaction costs. Apart from pure hedgers, currency futures also invite arbitrageurs, speculators and those traders who may take a bet on exchange rate movements without an underlying or an economic exposure as a motivation for trading. From an economy-wide perspective, currency futures contribute to hedging of risks and help traders and investors in undertaking their economic activity. There is a large body of empirical evidence which suggests that exchange rate volatility has an adverse impact on foreign trade. Since there are first order gains from trade which contribute to output growth and consumer welfare,
currency futures can potentially have an important impact on real economy. Gains from international risk sharing through trade in assets could be of relatively smaller magnitude than gains from trade. However, in a dynamic setting these investments could still significantly impact capital formation in an economy and as such currency futures could be seen as a facilitator in promoting investment and aggregate demand in the economy, thus promoting growth”.

Table 1.6 Distinction between forward and future

<table>
<thead>
<tr>
<th></th>
<th>Futures</th>
<th>Forwards</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type of Contracts</td>
<td>Standardized</td>
<td>Customized</td>
</tr>
<tr>
<td>Price transparency</td>
<td>High, Real time rate</td>
<td>Low</td>
</tr>
<tr>
<td>Accessibility</td>
<td>Online / offline modes</td>
<td>Low</td>
</tr>
<tr>
<td>Underlying exposure</td>
<td>Not Required</td>
<td>Required</td>
</tr>
<tr>
<td>Margin Requirement</td>
<td>3.00%</td>
<td>8-10 %</td>
</tr>
<tr>
<td>MTM Settlement</td>
<td>Daily Settled</td>
<td>High margins required</td>
</tr>
<tr>
<td>Settlement</td>
<td>Net settled in INR</td>
<td>Physical Settlement</td>
</tr>
</tbody>
</table>

Source: NISM Currency Derivatives Module, Workbook, May 2010

1.6 Concept of Premium and Discount

For understanding the concept of Premium and Discount we will have clear the idea from the following example.

Example – when future price of the Nov. 2012 USDINR is at 55.05 and spot price is 54.50, it means INR is discounted to USD and USD at premium to INR.

Market Participant

There are three types of participant in currency derivatives market. They are as following -
1. **Hedgers:** Hedging means taking a position in the future market that is opposite to a position in the physical market with a view to reduce or limit risk associated with unpredictable changes in exchange rate.

   Investors use these futures contracts to hedge against foreign exchange risk. If an investor will receive a cash flow denominated in a foreign currency on some future date, that investor can lock in the current exchange rate by entering into an offsetting currency futures position that expires on the date of the cash flow.

   To minimize the risk in business, this type of participants uses this segment. The main objective is that to remove or minimize the risk by using currency future market. By doing imports / exports of goods and services, travel in abroad, study in abroad have the exposure of foreign currency. Currency future helps the reduce volatility in future cash flow.

   Importer buys the required currency futures contract. Thus “locks in” a price for the purchase of foreign currency Hedges (avoids) risk due to exchange rate fluctuations.

   Exporter sells the expected currency futures contract Thus “locks in” a price for the sale Hedges risk due to exchange rate fluctuations.

**Long Hedge Example**

Suppose an edible oil importer wants to import edible oil worth USD 100,000 and places his import order on July 15, 2008, with the delivery date being 4 months ahead. At the time when the contract is placed, in the spot market, one USD was worth say INR 44.50.

But, suppose the Indian Rupee depreciates to INR 44.75 per USD when the payment is due in October 2008, the value of the payment for the importer goes up to INR 4,475,000 rather than INR 4,450,000. The hedging strategy for the importer, thus, would be: 1 Lot=1000 USD

Current Spot Rate (15th July ’08): 44.5000

Buy 100USD- INR Oct ’08

Futures Contracts on 15th July ’08 at 44.5500 (1000 * 44.5500) * 100
(Assuming the Oct '08 contract is trading at 44.5500 on 15th July, '08)

Sell 100 USD - INR Oct '08 Futures Contracts in Oct '08 @ 44.7500

Profit/Loss (futures market): 1000 * (44.75 – 44.55) * 100 = 20,000

Purchases in spot market @ 44.75

Total cost of hedged transaction: 100,000 * 44.75 – 20,000 = INR 44,55,000

Example: One agri products exports his products to USA, he will earn revenue in US dollar. Assume he will get 1 million US dollar after 3 months. In these 3 months he carries the risk of USDINR movement. So he decides reduce the risk by hedging in currency future market.

In above case exporter of agri products called as hedger.

**Example of export trade remittance –**

Mr. A is an exporter and he exports mat. He contracted to B who is living Dubai for 10000 mats at 100 USD per mat. Payment will the after three months after the shipment. At the signing of the contact price of USDINR is 55.

Mr. A has completed the 10000 mats in one month and exports it immediately. To avoid the risk of price movement of USDINR, Mr. A sells the four month future at 56. Mr. A receives the payment on time and he converts the USD to INR in OTC market at the exchange rate of 57 and same time he squared off the position of future contract also at 57.20.

As per the above situation Mr. A

- **Trade Transaction:** Against the budget of 55, Mr. A realize the price of 57, net positive change of Rs. 2.
- **Future Contract:** Mr. settle the contract at 57.20 against contracted price of Rs. 56, net negative change of Rs. 1.2
- **Combined effect:** The combined effect of change in spot price of USDINR and change in future price i.e. (Rs. 2) + (- Rs. 1.2) = + Rs. 0.8
- **Effective Price:** So the effective price was budgeted price at 55 + 0.8 i.e. Rs. 55.8.
Hedgers are the people who are exposed to risk due to their normal business operations and would like to eliminate/minimize their risk.

Illustration: The Exporter enters into contract on 1st June to receive a payment in USD on 25th November, 10. He is of the view that USDINR will depreciate. The Exporter will Sell on November Month USDINR

Contract: 1 USD = Rs. 47

On 25th November OTC market ongoing rate = Rs. 45

The Exporter will book actual Export at Rs. 45 in Bank, and will wind up the futures contract at Rs. 45. There by generating a profit of Rs. 2.

Effective rate of Export = Rs. 45 + Rs. 2 (profit on Currency Future) = Rs. 47

So if rupee moves either way corporate is hedged against currency fluctuation. Thus the currency future helps to exporter to mitigate the risk. At the same way future contract also helpful to importer also.

Table 1.7: Scenario 1

<table>
<thead>
<tr>
<th>Event</th>
<th>Importer</th>
<th>Exporter</th>
</tr>
</thead>
<tbody>
<tr>
<td>Appreciation of USD</td>
<td>Loses Money</td>
<td>Gains Money</td>
</tr>
<tr>
<td>Depreciation of INR</td>
<td>Loses Money</td>
<td>Gains Money</td>
</tr>
</tbody>
</table>

Table 1.8: Scenario 2

<table>
<thead>
<tr>
<th>Event</th>
<th>Importer</th>
<th>Exporter</th>
</tr>
</thead>
<tbody>
<tr>
<td>Depreciation of USD</td>
<td>Gains Money</td>
<td>Loses Money</td>
</tr>
<tr>
<td>Appreciation of INR</td>
<td>Gains Money</td>
<td>Loses Money</td>
</tr>
</tbody>
</table>

Hedging by currency future in various types of transactions –

Purpose of hedging through currency future in many transactions or in import/export as follows,

- Foreign currency needs for education in abroad, travel in abroad, medical treatment in abroad etc.
- Payment of loan availed in foreign currency.
• Investment in assets outside India.

Exchange traded currency future contracts are standard contract which are settled in cash without delivery of currencies. For hedgers there might be a mismatch in the timing of settlement or in cancellation of contract. This mismatch timing may result in small loss.

**Risk in Hedging with futures**

Maturity and Size mismatch - Mismatch in maturity date of futures contract and date of cash transaction or the quantity. Hedging with currency futures may not result in perfect hedge. The risk of change in the relation between futures and spot prices is called basis risk.

2. **Speculators**: Speculators or Traders plays an important role in currency future market. Even if currency future market made for hedgers but it is not useful to them without traders for trades done.

Traders are just trading as per the market movement. They are taking the risk for earn a profit by trading. Speculators also add some value in future market. Based on his forecast, a speculator would like to make gains by taking long /short Positions in derivatives.

<table>
<thead>
<tr>
<th>Table 1.9: Positions in Derivative</th>
</tr>
</thead>
<tbody>
<tr>
<td>Current USD/INR 27 Dec 2012 Contract</td>
</tr>
<tr>
<td>View</td>
</tr>
<tr>
<td>Position in Futures</td>
</tr>
<tr>
<td>Position at maturity</td>
</tr>
<tr>
<td>Profit/ Loss</td>
</tr>
</tbody>
</table>

A currency future contract is similar to a futures contract on any Scrip or Index

<table>
<thead>
<tr>
<th>Table 1.10: Currency Future Contract</th>
</tr>
</thead>
<tbody>
<tr>
<td>EUR/INR has 86% negative correlation with MCX-GOLD</td>
</tr>
<tr>
<td>USD/INR has 83% negative correlation with NIFTY</td>
</tr>
</tbody>
</table>
Advantages for Speculators

- Client investment diversification becomes easy
- **Low Margin, High Leverage**: These factors increase the potential for higher profits (and losses)
- **Self-regulatory**: Forex market is so vast and has so many participants that no single entity, not even RBI, can control the market price for an extended period.
- **No Insider trading**: because of the Forex market’s size and non-centralized nature, there is virtually any chance for ill effects caused by insider trading. Fraud possibilities, at least against the system as a whole, are significantly less than in any other financial instruments.
- **No Middlemen**: Futures/Options currency trading does away with the middleman and allows clients to interact directly on the exchange platform.
- **Interbank Market**: The backbone of the Forex market consists of a global network of dealers. They are mainly major commercial banks that communicate and trade with one another. The Forex market operates in a manner similar to that of the NASDAQ market in the United States. Thus, it is also referred to as an over-the-counter (OTC) market.

3. **Arbitrageurs**: Basically arbitrageurs are looking for the profit only. They have not any type of exposure or risk in currency future market. Arbitrageurs are books the profit by transaction in two or many markets simultaneously.

Example: say the spot rate of USDINR is 54.80 and one month forward quote at 30 paisa premium to spot at 55.10. At the same time currency future trading is at 55.25. Arbitrageurs implement the following strategy –

- Sell future at 55.25
- Buy forward contract at 55.10

On the expiry date of future contract he buys in forward contract and delivers the same on exchange platform. In the above process he makes the net gain of 0.15 paisa per USD (55.25 – 55.10) Profit is that 0.15 * 1000 = 150 Rs.

1.7 **Currency future contract details**
Currently currency future contracts are permitted on four currency pairs i.e., USDINR, EURINR, GBPINR and JPYINR. The detail of contract design for these currency pairs is given in the table below:

**Table 1.11: Future VS Forward**

<table>
<thead>
<tr>
<th>Futures contracts</th>
<th>Forwards contracts</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Are traded on an exchange</td>
<td>1. Are not traded on an exchange</td>
</tr>
<tr>
<td>2. Use a Clearing House which provides protection for both parties</td>
<td>2. Are private and are negotiated between the parties with no exchange guarantees</td>
</tr>
<tr>
<td>3. Require a margin to be paid</td>
<td>3. Involve no margin payments</td>
</tr>
<tr>
<td>4. Are used for hedging and speculating</td>
<td>4. Are used for hedging and physical delivery</td>
</tr>
<tr>
<td>5. Are standardized and published</td>
<td>5. Are dependent on the negotiated contract conditions</td>
</tr>
<tr>
<td>6. Are transparent - futures contracts are reported by the exchange.</td>
<td>6. Are not transparent as they are all private deals</td>
</tr>
</tbody>
</table>

**Table 1.12: Contract specification: USDINR, EURINR, GBPINR and JPYINR Currency**

<table>
<thead>
<tr>
<th>Underlying</th>
<th>Foreign currency as base currency and INR as quoting currency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Market timing</td>
<td>9:00 AM to 5:00 PM</td>
</tr>
<tr>
<td>Contract Size</td>
<td>USD 1000 (for USDINR), EUR 1000 (for EURINR), GBP 1000 (for GBPINR) and JPY 100,000 (for JPYINR)</td>
</tr>
<tr>
<td>Tick Size</td>
<td>Re. 0.0025</td>
</tr>
<tr>
<td>Quotation</td>
<td>The contract would be quoted in Rupee terms. However, outstanding position would be in USD, EUR, GBP and JPY terms for USDINR, EURINR,GBPINR and JPYINR contracts respectively</td>
</tr>
<tr>
<td>Available contracts</td>
<td>Maximum of 12 calendar months from current calendar month. New contract will be introduced following the Expiry of current month contract.</td>
</tr>
<tr>
<td>Settlement date</td>
<td>Last working day of the month (subject to holiday calendars) at 12 noon</td>
</tr>
<tr>
<td>Last trading day (or Expiry day)</td>
<td>12 noon on the day that is two working days prior to the settlement date</td>
</tr>
</tbody>
</table>
### Settlement Basis

<table>
<thead>
<tr>
<th>Settlement Basis</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Daily settlement</td>
<td>Daily mark to market settlement price will be announced by the exchange, based on volume-weighted average price in the last half an hour of trading, or a theoretical price if there is no trading in the last half hour.</td>
</tr>
<tr>
<td>Final Settlement</td>
<td>Cash settled in INR</td>
</tr>
<tr>
<td>Final Settlement Day</td>
<td>The reference rate fixed by RBI on last trading day or expiry day.</td>
</tr>
</tbody>
</table>

### 1.8 Other terminologies with respect to contract specifications

1) **Base Price**: First day price of future contract price of its life shall be theoretical future price.

2) **Settlement Price or Closing Price**: The closing price calculated by trading of last half an hour weighted price of the contract. In case future contract not traded on a day or in last half an hour then theoretical settlement price is computed by relevant authority.

3) **Tenor of Future Contract**: Cycle of the contract called as a Tenor of the contract. It means when contract will be available for futures trading. In India there are contract available for 1 – 12 months.

### Clearing and Settlement of Currency Future

All trades of currency future contract needs its clearing and settlement for proper routine. Clearing corporation undertakes clearing and settlement of all trades executed on the currency derivatives segment of the exchange. Clearing corporation act also as a legal counterparty to all the trades of currency derivatives segment and guarantees their financial settlement.
Clearing means computing all open positions or you can say trades, contracts of clearing members in the trading system and Settlement means actual pay in or pays out to settle the contract. Clearing and settlement activities in the currency derivatives segment are undertaken by clearing corporation with the help of following entities:

**Clearing Members**
Trading cum clearing member clear and settle their own trades with the trades of other are trading members also in currency derivatives segment. There are Professional clearing member also who clear and settle trades of trading members; PCM requires additional security deposit for that.

**Clearing Banks**
For the purpose of settlement funds there is need of clearing banks. Clearing banks plays an important role for fund settlement takes place. All clearing members are requires to open a separate bank account with clearing corporation designated clearing bank for currency derivatives segment. Following are the three main activities of clearing and settlement process –

1) Clearing
2) Settlement
3) Risk Management

**Clearing System** Clearing system involves open position and obligations of trading cum clearing as well as professional clearing members. Clearing system requires the exposure and daily margin, this daily activity of the clearing system.

The open position of clearing members comes through the aggregate position of trading members and all custodial participants. The open position of trading members comes through his proprietary open position and clients open position. Trading system require to identify the orders whether it proprietary or on behalf of clients through PRO/CLI.

**Example**
Mr. A is a trading member and he trades his own proprietary account and has three clients X, Y, Z. The day wise position of Mr. A and his clients as below:-

**Table 1.13: Trading Contract**
Mr. A’s Proprietary Position

<table>
<thead>
<tr>
<th></th>
<th>Day 1</th>
<th>Day 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Buys</td>
<td>40</td>
<td>40</td>
</tr>
<tr>
<td>Sells</td>
<td>60</td>
<td>30</td>
</tr>
</tbody>
</table>

X’s Position

<table>
<thead>
<tr>
<th></th>
<th>Day 1</th>
<th>Day 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Buys</td>
<td>20</td>
<td>10</td>
</tr>
<tr>
<td>Sells</td>
<td>10</td>
<td>30</td>
</tr>
</tbody>
</table>

Y’s Position

<table>
<thead>
<tr>
<th></th>
<th>Day 1</th>
<th>Day 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Buys</td>
<td>30</td>
<td>20</td>
</tr>
<tr>
<td>Sells</td>
<td>10</td>
<td>10</td>
</tr>
</tbody>
</table>

Z’s Position

<table>
<thead>
<tr>
<th></th>
<th>Day 1</th>
<th>Day 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Buys</td>
<td>10</td>
<td>Short 20</td>
</tr>
<tr>
<td>Sells</td>
<td>20</td>
<td></td>
</tr>
</tbody>
</table>

Note: Above position or deals are in same contract only.

At the end of the day net open position as below –

**Table 1.14: Net Position**

<table>
<thead>
<tr>
<th></th>
<th>Mr. A’s proprietary Position</th>
<th>X’s Position</th>
<th>Y’s Position</th>
<th>Z’s Position</th>
</tr>
</thead>
<tbody>
<tr>
<td>For trades done on Day 1</td>
<td>Short 20</td>
<td>Long 10</td>
<td>Long 20</td>
<td>Short 10</td>
</tr>
<tr>
<td>Carry forward to Day 2</td>
<td>Short 20</td>
<td>Long 10</td>
<td>Long 20</td>
<td>Short 10</td>
</tr>
<tr>
<td>For trades done on Day 2</td>
<td>Long 10</td>
<td>Short 20</td>
<td>Long 10</td>
<td>Short 20</td>
</tr>
<tr>
<td>Net position at the end of Day 2</td>
<td>Short 10</td>
<td>Short 10</td>
<td>Long 30</td>
<td>Short 30</td>
</tr>
</tbody>
</table>

**Guideline on open positions limits**

SEBI has given the guidelines related open positions limits to all members of the exchange. Rules with respect to monitoring and enforcement of position limits in the currency futures market:

- Positions during the day are monitored based on the total open interest at the end of the previous day’s trade.
- The above monitoring is for both client level positions (based on the unique client code) and for trading member level positions.
- The Exchange treats violation of position limits as an input for further surveillance action. Upon detecting large open positions, the exchange conducts detailed analysis based on the overall nature of positions, the trading strategy, positions in the underlying market, positions of related entities (concept of person acting in concert would be applied), etc.

The following gross open position limits across contracts have been prescribed by SEBI for different currency pairs and different market participants:
Table 1.15: Open Position Limits

<table>
<thead>
<tr>
<th></th>
<th>Client level</th>
<th>Non bank TM</th>
<th>Bank TM</th>
</tr>
</thead>
<tbody>
<tr>
<td>USDINR</td>
<td>6% of total open interest or USD 10 mn, whichever is higher</td>
<td>15% of total open interest or USD 50 mn, whichever is higher</td>
<td>15% of total open interest or USD 100 mn, whichever is higher</td>
</tr>
<tr>
<td>EURINR</td>
<td>6% of total open interest or EUR 5 mn, whichever is higher</td>
<td>15% of total open interest or EUR 25 mn, whichever is higher</td>
<td>15% of total open interest or EUR 50 mn, whichever is higher</td>
</tr>
<tr>
<td>GBPINR</td>
<td>6% of total open interest or GBP 5 mn, whichever is higher</td>
<td>15% of total open interest or GBP 25 mn, whichever is higher</td>
<td>15% of total open interest or GBP 50 mn, whichever is higher</td>
</tr>
<tr>
<td>JPYINR</td>
<td>6% of total open interest or JPY 200 mn, whichever is higher</td>
<td>15% of total open interest or JPY 1000 mn, whichever is higher</td>
<td>15% of total open interest or JPY 2000 mn, whichever is higher</td>
</tr>
</tbody>
</table>

Note: The position limit shall be specific to an exchange, not to the exchange traded currency derivatives market as whole. Source – NISM Currency Derivative Module.

Settlement System

All future currency contracts are cash settled through exchange of cash in Indian Rupees. Currency future contracts have two types of settlement:-

1) MTM settlement which happens on a continuous basis at the end of each day.
2) Final settlement which happens on the last trading day of the future contract.

Risk Management System

Risk management system is very important in currency derivative segment. Every exchange has a smoothly risk mechanism system, following are the features of risk management system –

1) Exchange very strict about the member’s net worth, security deposit.
2) Exchange requires initial margin of each futures.
3) Exchange requires mark to market on T+1 basis.
Currency Risk Management Techniques:
A firm may choose any one or any set of combinations of the following techniques to manage foreign exchange rate risks.

Fig 1.9: Techniques of Hedging

**Matching:** - Matching is the relation between receivables and payables in the same currency. Firms can influence the balance by arranging loans or deposits.

**Multi-lateral Netting:** - This type of netting can be done between inflow and outflow of different currencies which arising from cross border transactions.

**Leads and Lags:** - In the terms of trading contracts, payments to trading partners in currencies whose value are expected to appreciate or depreciate.

**Invoicing and Currency Clauses:** - Sometimes trading companies have options to trade cross border with domestic currency so that the other party absorbs exchange rate risk. Similarly invoicing of the third country currency may also be negotiated with trading partners.
Forward Currency Transactions: - Forward contract is a contract between two parties, where settlement takes place on a specific date in the future at today’s pre-agreed price.

In currency forward contracts, the contract holders are obligated to buy or sell the currency at a specified price, at a specified quantity and on a specified future date. These contracts cannot be transferred.

Currency Futures: - A future is a similar product as forwards but difference is that futures are an exchange traded product. A future contract is a standardized contract which traded on exchanges to buy abs sell certain underlying asset at certain date with specified price called “future contract”.

When underlying asset is an exchange rate then the contract called as “currency future contract”. In future contract tick is the minimum value of price change. The market price changes in multiples of the tick.

Currency Options: - Option not buying and selling underlying directly but it is right to buy or sell with obligation on the underlying. When there is right to buy i.e. it is call option and when it is right to sell i.e. it is put option.

It is a contract between two parties to buy or sell a given amount of asset at a pre-specified price on or before a given date.

Currency Swaps: - If the agreement is to swap currencies of debt service obligation, it is termed a currency swap. In currency swaps arties swapping both principle and interest related cash flows in different currencies. Since all swap rates are derived from the yield curve in each major currency, the fixed-to-floating-rate interest rate swap existing in each currency allows firms to swap across currencies. The usual motivation for a currency swap is to replace cash flows scheduled in an undesired currency with flows in a desired currency. The desired currency is probably the currency in which the firm’s future operating revenues (inflows) will be generated. Firms often raise capital in currencies in which they do not possess significant revenues or other natural cash flows (a significant reason for this being cost).

Money Market Hedging: - Money market hedging includes that companies raise foreign currency loans to reduce the currency risk.

Option: It is a contract between two parties to buy or sell a given amount of asset at a pre-specified price on or before a given date.

- Right to buy is a call option.
- Right to sell is a put option.
- Pre-specified price is strike price.
- The date at which strike price is applicable is expiration date.
- The difference between date of entering the contract and expiration date is called time to maturity.
- The party which buys the rights but not obligation and pays premium for buying the right called option buyer.
- The party which sells the right and receives the premium for assuming such obligations is called option seller.
- The price which option buyer pays to option seller is called premium.
- The asset which is bought or sold called underlying asset.

Options in Indian Financial Market:

Options are playing an important role in financial markets. Options are widely active traded instrument in most financial assets like equities, commodities, currency and interest rate. Exchange traded equity index options commenced trading in India on June 4, 2001 followed by single stock specific options on July 2001.

RBI allowed banks to offer foreign currency-INR European options to its customers with effect from July 7, 2003. SEBI and RBI allowed currency option on exchanges as on July 30, 2010.

Style of Options – There are two types of options:-
1) **European Style Option:**
   In India, all currency option in OTC market is European style. European style option exercised only on expiration date.

2) **American Style Option:**
   American option can be excised by the buyer any time on or before expiration date. Currency American Style option not allowed in India.

**Basic Strategies of Options Trading**

The basic strategies that can be used in options are as follows:

1. **Long Call**

   A trader buys the call when he is bullish on the underlying asset i.e. expects the underlying currency/asset to rise in future. If the asset price at expiration is lower than the exercise price, he will let the call contract expire worthless, and only lose the amount of the premium.

**Example**

The spot price of USDINR on 2nd February is Rs. 45.97 per USD. Mr. Rahul is bullish on USDINR. He buys a call option with a strike price of Rs. 46.50 at a premium of Rs. 0.30 expiring on 31st March. One option contract is for 1000US dollars.

![Long Call Chart](image)

**Fig 1.10: Long Call**

**On Expiration**

- If the USDINR price is above Rs. 46.50, call is in the money and Rahul will exercise the option.
• On the contrary, if the USDINR falls below Rs. 46.50, call is out of money and Rahul will not exercise the option and the maximum loss will be equal to the premium.

• If the USDINR is 46.50, call is at the money and he will not gain or lose any amount.

<table>
<thead>
<tr>
<th>Payoff Price</th>
<th>Expiration</th>
<th>Matrix Payoff</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rs. 46</td>
<td>-Rs.300</td>
<td></td>
</tr>
<tr>
<td>Rs. 46.50</td>
<td>-Rs.300</td>
<td></td>
</tr>
<tr>
<td>Rs. 46.80</td>
<td>Rs. 0.00</td>
<td></td>
</tr>
<tr>
<td>Rs. 49</td>
<td>Rs.2200</td>
<td></td>
</tr>
<tr>
<td>Rs. 52</td>
<td>Rs.5200</td>
<td></td>
</tr>
</tbody>
</table>

2. **Long Put**

A trader buys the put when he is bearish on the underlying asset i.e. on expiration he expects the underlying currency/asset to fall in future. If the asset price at expiry is higher than the exercise price, he will let the option contract expire worthless, and will only lose the amount of the premium. If the asset price at expiration is below the exercise price by more than the premium paid, he will make profit.

**Example**

The spot price of USDINR on 2nd February is Rs. 45.97 per USD. Mr. Ram buys a put option on USDINR with a strike rate of Rs. 44.60 at a premium of Rs 0.30, expiring on 31st March.

![Fig 1.11: Long Put](image-url)
On Expiration

- If the USDINR spot rate is above Rs. 44.60, put is out of money and Ram will not exercise the put option and as such limit his loss to the premium amount.
- If the USDINR falls below Rs. 44.60, put option is in the money and Ram will exercise the put option and will make profit if rate falls below Rs. 44.30.
- If the USDINR is at Rs. 44.60, put option is at the money.

Table 1.17: Basic Strategies of Options Trading

<table>
<thead>
<tr>
<th>Expiration Price</th>
<th>Payoff</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rs. 41.90</td>
<td>Rs.2400</td>
</tr>
<tr>
<td>Rs. 43.30</td>
<td>Rs.1000</td>
</tr>
<tr>
<td>Rs. 45</td>
<td>-Rs. 300</td>
</tr>
<tr>
<td>Rs. 46</td>
<td>-Rs.300</td>
</tr>
</tbody>
</table>

3. **Short Call**

Selling a Call options is the opposite of buying a Call options. The seller of the option feels the underlying price of a currency/asset is set to fall in the future or he is long in the spot and needs to hedge his exposure.

**Example**

The spot rate of USDINR on 2nd February is Rs. 45.97 per USD. Mr. Rahul is bearish on USDINR. He sells a call option with a strike rate of Rs. 45.50 at premium of Rs. 0.20 expiring on 31st March.

Fig 1.12: Short Call
On Expiration

- If the USDINR rate is above Rs. 45.50, the buyer of the call option will exercise the option and as such Rahul will make a loss only if the rate is higher than Rs. 45.70.
- If the USDINR falls below Rs. 45.50, the buyer of the call will not exercise the option and Rahul will make profit equal to the premium.

Table 1.18: Basic Strategies of Options Trading

<table>
<thead>
<tr>
<th>Payoff</th>
<th>Matrix</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Expiration Price</strong></td>
<td><strong>Payoff</strong></td>
</tr>
<tr>
<td>Rs. 43</td>
<td>Rs.200</td>
</tr>
<tr>
<td>Rs. 44</td>
<td>Rs.200</td>
</tr>
<tr>
<td>Rs. 45.70</td>
<td>Rs. 0.00</td>
</tr>
<tr>
<td>Rs. 49</td>
<td>Rs.3300</td>
</tr>
</tbody>
</table>

4. **Short Put**

An investor sells Put Options when he is Bullish about the currency/asset i.e. expects the currency/asset price to rise. When one sells a Put option, premium is earned.

**Example**

The spot rate of USDINR on 2nd February is Rs. 45.97 per USD. Mr. Ram sells a Put option on USDINR with a strike rate of Rs. 45.00 at a premium of Rs 0.60, expiring on 31st March.

Fig 1.13: Short put
On Expiration

- If the USDINR spot price is above Rs. 45.00, the buyer of the Put option will not exercise the Put option and Ram will make a profit equal to the premium.
- If the USDINR falls below Rs. 45.00, the buyer of the Put option will exercise the Put option but Ram will make a loss only when the price is below 44.40.

Table 1.19: Basic Strategies of Options Trading

<table>
<thead>
<tr>
<th>Payoff</th>
<th>Matrix</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Expiration Price</strong></td>
<td><strong>Payoff</strong></td>
</tr>
<tr>
<td>Rs. 42</td>
<td>-Rs.2400</td>
</tr>
<tr>
<td>Rs. 43</td>
<td>-Rs.1400</td>
</tr>
<tr>
<td>Rs. 44</td>
<td>-Rs. 400</td>
</tr>
<tr>
<td>Rs. 45</td>
<td>Rs.600</td>
</tr>
<tr>
<td>Rs. 46</td>
<td>Rs.600</td>
</tr>
</tbody>
</table>

- Options may also be classified as per their payouts -
  - *At-the-money (ATM)* options have an exercise price equal to the spot rate of the underlying currency
  - *In-the-money (ITM)* options may be profitable, excluding premium costs, if exercised immediately
  - *Out-of-the-money (OTM)* options would not be profitable, excluding the premium costs, if exercised.
Fig 1.14: Movement of USD VS SENSEX

Source: Religare Corporate Presentation on Currency Derivatives