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Currency Derivatives: A Beginner's Module Curriculum

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Note: Candidates are advised to refer to NSE's website: www.nseindia.com, click on 'NCFM' link and then go to 'Announcements' link, regarding revisions/updations in NCFM modules or launch of new modules, if any.

CHAPTER 1: Derivatives as a Risk Management Tool

The financial environment today has more risks than earlier. Successful business firms are those that are able to manage these risks effectively. Due to changes in the macroeconomic structures and increasing internationalization of businesses, there has been a dramatic increase in the volatility of economic variables such as interest rates, exchange rates, commodity prices etc. Firms that monitor their risks carefully and manage their risks with judicious policies enjoy a more stable business than those who are unable to identify and manage their risks.

There are many risks which are influenced by factors external to the business and therefore suitable mechanisms to manage and reduce such risks need to be adopted. One of the modern day solutions to manage financial risks is 'hedging'. Before trying to understand hedging as a risk management tool, we need to have a proper understanding of the term 'risk' and the various types of risks faced by firms.

1.1 What is risk?

Risk, in simple terms, may be defined as the uncertainty of returns. Risks arise because of a number of factors, but can be broadly classified into two categories: as business risks and financial risks.

Business risks include strategic risk, macroeconomic risk, competition risk and technological innovation risk. Managers should be capable of identifying such risks, adapting themselves to the new environment and maintaining their competitive advantage.

Financial risk, on the other hand, is caused due to financial market activities and includes liquidity risk and credit risk.

The role of financial institutions is to set up mechanisms by which firms can devolve the financial risks to the institutions meant for this purpose and thereby concentrate on managing their business risks. Financial institutions float various financial instruments and set up appropriate mechanisms to help businesses manage their financial risks. They help businesses through:

- Lending/ Borrowing of cash to enable the firms to adjust their future cash flows.
- Serving as avenues for savings and investments, helping individuals and firms in accumulating wealth and also earn a return on their investment.

- Providing insurance, which protects against operational risks such as natural disasters, terrorist attacks etc.
- Providing means for hedging for the risk-averse who want to reduce their risks against any future uncertainty.

1.2 Risk Management

An effective manager should be aware of the various financial instruments available in the market for managing financial risks. There are many tools for the same and a judicious mix of various tools helps in efficient risk management.

Since the early 1970s, the world has witnessed dramatic increases in the volatility of interest rates, exchange rates and commodity prices. This is fuelled by increasing internationalization of trade and integration of the world economy, largely due to technological innovations. The risks arising out of this internationalization are significant. They have the capacity to make or break not only businesses but also the economies of nations. However, financial institutions are now equipped with tools and techniques that can be used to measure and manage such financial risks. The most powerful instruments among them are derivatives. **Derivatives are financial instruments that are used as risk management tools. They help in transferring risk from the risk averse to the risk taker.**

In this module, we concentrate mainly on the exchange rate risks and their management. We shall know more about these instruments and how they help mitigate exchange rate risks in the later chapters.

1.3 Types of Traders in the Derivatives Markets

One of the reasons for the success of financial markets is the presence of different types of traders who add a great deal of liquidity to the market. Suppliers of liquidity provide an opportunity for others to trade, at a price. The traders in the derivatives markets are classified into three broad types, viz. hedgers, speculators and arbitrageurs, depending on the purpose for which the parties enter into the contracts.

1.3.1 Hedgers

Hedgers trade with an objective to minimize the risk in trading or holding the underlying securities. Hedgers willingly bear some costs in order to achieve protection against unfavorable price changes.

1.3.2 Speculators

Speculators use derivatives to bet on the future direction of the markets. They take calculated risks but the objective is to gain when the prices move as per their expectation. Based on the duration for which speculators hold a position they are further be classified as scalpers (very

short time, may be defined in minutes), day traders (one trading day) and position traders (for a long period may be a week, a month or a year).

1.3.3 Arbitrageurs

Arbitrageurs try to make risk-less profit by simultaneously entering into transactions in two or more markets or two or more contracts. They profit from market inefficiencies by making simultaneous trades that offset each other thereby making their positions risk-free. For example, they try to benefit from difference in currency rates in two different markets. They also try to profit from taking a position in the cash market and the futures market.

CHAPTER 2: Introduction to Currency Markets

Foreign exchange rate is the value of a foreign currency relative to domestic currency. The exchange of currencies is done in the foreign exchange market, which is one of the biggest financial markets. The participants of the market are banks, corporations, exporters, importers etc. A foreign exchange contract typically states the currency pair, the amount of the contract, the agreed rate of exchange etc.

2.1 Exchange Rate

A foreign exchange deal is always done in currency pairs, for example, US Dollar – Indian Rupee contract (USD – INR); British Pound – INR (GBP - INR), Japanese Yen – U.S. Dollar (JPY - USD), U.S. Dollar – Swiss Franc (USD-CHF) etc. Some of the liquid currencies in the world are USD, JPY, EURO, GBP, and CHF and some of the liquid currency contracts are on USD-JPY, USD-EURO, EURO-JPY, USD-GBP, and USD-CHF. The prevailing exchange rates are usually depicted in a currency table like the one given below:

Table 2.1: Currency Table

Date: 28 June 2009					**Time: 15:15 hours**
	USD	**JPY**	**EUR**	**INR**	**GBP**
USD	1.000	95.318	0.711	48.053	0.606
JPY	0.010	1.000	0.007	0.504	0.006
EUR	1.406	134.033	1.000	67.719	0.852
INR	0.021	1.984	0.015	1.000	0.013
GBP	1.651	157.43	1.174	79.311	1.000

In a currency pair, the first currency is referred to as the base currency and the second currency is referred to as the 'counter/terms/quote' currency. The exchange rate tells the worth of the base currency in terms of the terms currency, i.e. for a buyer, how much of the terms currency must be paid to obtain one unit of the base currency. For example, a USD-INR rate of Rs. 48.0530 implies that Rs. 48.0530 must be paid to obtain one US Dollar. Foreign exchange prices are highly volatile and fluctuate on a real time basis. In foreign exchange contracts, the price fluctuation is expressed as appreciation/depreciation or the strengthening/weakening of a currency relative to the other. A change of USD-INR rate from Rs. 48 to Rs. 48.50 implies that USD has strengthened/ appreciated and the INR has weakened/depreciated, since a buyer of USD will now have to pay more INR to buy 1 USD than before.

2.2 Fixed Exchange Rate Regime and Floating Exchange Rate Regime

There are mainly two methods employed by governments to determine the value of domestic currency vis-à-vis other currencies : fixed and floating exchange rate.

2.2.1 Fixed exchange rate regime:

Fixed exchange rate, also known as a pegged exchange rate, is when a currency's value is maintained at a fixed ratio to the value of another currency or to a basket of currencies or to any other measure of value e.g. gold. In order to maintain a fixed exchange rate, a government participates in the open currency market. When the value of currency rises beyond the permissible limits, the government sells the currency in the open market, thereby increasing its supply and reducing value. Similarly, when the currency value falls beyond certain limit, the government buys it from the open market, resulting in an increase in its demand and value. Another method of maintaining a fixed exchange rate is by making it illegal to trade currency at any other rate. However, this is difficult to enforce and often leads to a black market in foreign currency.

2.2.2 Floating exchange rate regime:

Unlike the fixed rate, a floating exchange rate is determined by a market mechanism through supply and demand for the currency. A floating rate is often termed "self-correcting", as any fluctuation in the value caused by differences in supply and demand will automatically be corrected by the market. For example, if demand for a currency is low, its value will decrease, thus making imported goods more expensive and exports relatively cheaper. The countries buying these export goods will demand the domestic currency in order to make payments, and the demand for domestic currency will increase. This will again lead to appreciation in the value of the currency. Therefore, floating exchange rate is self correcting, requiring no government intervention. However, usually in cases of extreme appreciation or depreciation of the currency, the country's Central Bank intervenes to stabilize the currency. Thus, the exchange rate regimes of floating currencies are more technically called a managed float.

2.3 Factors Affecting Exchange Rates

There are various factors affecting the exchange rate of a currency. They can be classified as fundamental factors, technical factors, political factors and speculative factors.

Fundamental factors:

The fundamental factors are basic economic policies followed by the government in relation to inflation, balance of payment position, unemployment, capacity utilization, trends in import and export, etc. Normally, other things remaining constant the currencies of the countries that follow sound economic policies will always be stronger. Similarly, countries having balance of

payment surplus will enjoy a favorable exchange rate. Conversely, for countries facing balance of payment deficit, the exchange rate will be adverse.

Technical factors:

Interest rates: Rising interest rates in a country may lead to inflow of hot money in the country, thereby raising demand for the domestic currency. This in turn causes appreciation in the value of the domestic currency.

Inflation rate: High inflation rate in a country reduces the relative competitiveness of the export sector of that country. Lower exports result in a reduction in demand of the domestic currency and therefore the currency depreciates.

Exchange rate policy and Central Bank interventions: Exchange rate policy of the country is the most important factor influencing determination of exchange rates. For example, a country may decide to follow a fixed or flexible exchange rate regime, and based on this, exchange rate movements may be less/more frequent. Further, governments sometimes participate in foreign exchange market through its Central bank in order to control the demand or supply of domestic currency.

Political factors:

Political stability also influences the exchange rates. Exchange rates are susceptible to political instability and can be very volatile during times of political crises.

Speculation:

Speculative activities by traders worldwide also affect exchange rate movements. For example, if speculators think that the currency of a country is over valued and will devalue in near future, they will pull out their money from that country resulting in reduced demand for that currency and depreciating its value.

2.4 Quotes

In currency markets, the rates are generally quoted in terms of USD. The price of a currency in terms of another currency is called 'quote'. A quote where USD is the base currency is referred to as a 'direct quote' (e.g. 1 USD – INR 48.5000) while a quote where USD is referred to as the terms currency is an 'indirect quote' (e.g. 1 INR = 0.021 USD).

USD is the most widely traded currency and is often used as the vehicle currency. Use of vehicle currency helps the market in reduction in number of quotes at any point of time, since exchange rate between any two currencies can be determined through the USD quote for those currencies. This is possible since a quote for any currency against the USD is readily available. Any quote not against the USD is referred to as 'cross' since the rate is calculated via the USD.

For example, the cross quote for EUR-GBP can be arrived through EUR-USD quote * USD-GBP quote (i.e. 1.406 * 0.606 = 0.852). Therefore, availability of USD quote for all currencies can help in determining the exchange rate for any pair of currency by using the cross-rate.

2.5 Tick-Size

Tick size refers to the minimum price differential at which traders can enter bids and offers. For example, the Currency Futures contracts traded at the NSE have a tick size of Rs. 0.0025. So, if the prevailing futures price is Rs. 48.5000, the minimum permissible price movement can cause the new price to be either Rs. 48.4975 or Rs. 48.5025. Tick value refers to the amount of money that is made or lost in a contract with each price movement.

To demonstrate how a move of one tick affects the price, imagine a trader buys a contract (USD 1000 being the value of each contract) at Rs. 52.2500. One tick move on this contract will translate to Rs. 52.2475 or Rs. 52.2525 depending on the direction of market movement.

Purchase price: Rs. 52.2500

Price increases by one tick: + Rs. 00.0025

New price: Rs. 52.2525

Purchase price: Rs. 52.2500

Price decreases by one tick: Rs. 00.0025

New price: Rs. 52.2475

The value of one tick on each contract is Rupees 2.50. So if a trader buys 5 contracts and the price moves up by 4 ticks, she makes Rupees 50.

Step 1: 52.2600 – 52.2500

Step 2: 4 ticks * 5 contracts = 20 points

Step 3: 20 points * Rs. 2.5 per tick = Rs. 50

(Note: please note the above examples do not include transaction fees and any other fees, which are essential for calculating final profit and loss)

2.6 Spreads

Spreads or the dealer's margin is the difference between bid price (the price at which a dealer is willing to buy a foreign currency) and ask price (the price at which a dealer is willing to sell a foreign currency). the quote for bid will be lower than ask, which means the amount to be paid in counter currency to acquire a base currency will be higher than the amount of counter

currency that one can receive by selling a base currency. For example, a bid-ask quote for USDINR of Rs. 47.5000 – Rs. 47.8000 means that the dealer is willing to buy USD by paying Rs. 47.5000 and sell USD at a price of Rs. 47.8000. The spread or the profit of the dealer in this case is Rs. 0.30.

2.7 Spot Transaction and Forward Transaction

The spot market transaction does not imply immediate exchange of currency, rather the settlement (exchange of currency) takes place on a value date, which is usually two business days after the trade date. The price at which the deal takes place is known as the spot rate (also known as benchmark price). The two-day settlement period allows the parties to confirm the transaction and arrange payment to each other.

A forward transaction is a currency transaction wherein the actual settlement date is at a specified future date, which is more than two working days after the deal date. The date of settlement and the rate of exchange (called forward rate) is specified in the contract. The difference between spot rate and forward rate is called “forward margin”. Apart from forward contracts there are other types of currency derivatives contracts, which are covered in subsequent chapters.

CHAPTER 3: Currency Futures

Derivatives are financial contracts whose value is determined from one or more underlying variables, which can be a stock, a bond, an index, an interest rate, an exchange rate etc. The most commonly used derivative contracts are forwards and futures contracts and options. There are other types of derivative contracts such as swaps, swaptions, etc. Currency derivatives can be described as contracts between the sellers and buyers whose values are derived from the underlying which in this case is the Exchange Rate. Currency derivatives are mostly designed for hedging purposes, although they are also used as instruments for speculation.

Currency markets provide various choices to market participants through the spot market or derivatives market. Before explaining the meaning and various types of derivatives contracts, let us present three different choices of a market participant.

The market participant may enter into a spot transaction and exchange the currency at current time.

The market participant wants to exchange the currency at a future date. Here the market participant may either:

- Enter into a futures/forward contract, whereby he agrees to exchange the currency in the future at a price decided now, or,
- Buy a currency option contract, wherein he commits for a future exchange of currency, with an agreement that the contract will be valid only if the price is favorable to the participant. (In this workbook we will be only dealing in Currency Futures).

3.1 Forward Contracts

Forward contracts are agreements to exchange currencies at an agreed rate on a specified future date. The actual settlement date is more than two working days after the deal date. The agreed rate is called forward rate and the difference between the spot rate and the forward rate is called as forward margin. Forward contracts are bilateral contracts (privately negotiated), traded outside a regulated stock exchange and suffer from counter-party risks and liquidity risks. Counter Party risk means that one party in the contract may default on fulfilling its obligations thereby causing loss to the other party.

3.2 Futures Contracts

Futures contracts are also agreements to buy or sell an asset for a certain price at a future time. Unlike forward contracts, which are traded in the over-the-counter market with no standard contract size or standard delivery arrangements, futures contracts are exchange traded and are more standardized. They are standardized in terms of contract sizes, trading parameters, settlement procedures and are traded on a regulated exchange. The contract size is fixed and is referred to as lot size.

Since futures contracts are traded through exchanges, the settlement of the contract is guaranteed by the exchange or a clearing corporation and hence there is no counter party risk. Exchanges guarantee the execution by holding an amount as security from both the parties. This amount is called as Margin money. Futures contracts provide the flexibility of closing out the contract prior to the maturity by squaring off the transaction in the market. Table 3.1 draws a comparison between a forward contract and a futures contract.

Table 3.1: Comparison of Forward and Futures Contracts

	Forward Contract	**Futures Contract**
Nature of Contract	Non-standardized / Customized contract	Standardized contract
Trading	Informal Over-the-Counter market; Private contract between parties	Traded on an exchange
Settlement	Single - Pre-specified in the contract	Daily settlement, known as Daily mark to market settlement and Final Settlement.
Risk	Counter-Party risk is present since no guarantee is provided	Exchange provides the guarantee of settlement and hence no counter party risk.

3.3 Pricing of Futures Contracts

According to the **interest rate parity theory**, the currency margin is dependent mainly on the prevailing interest rate (for investment for the given time period) in the two currencies. The forward rate can be calculated by the following formula:

$$\frac{F}{S} = \frac{1 + R_h}{1 + R_f}$$

Where, F and S are future and spot currency rate. R_h and R_f are simple interest rate in the home and foreign currency respectively. Alternatively, if we consider continuously compounded interest rate then forward rate can be calculated by using the following formula:

$$F = S * e^{(r_h - r_f)*T}$$

Where r_h and r_f are the continuously compounded interest rate for the home currency and foreign currency respectively, T is the time to maturity and e = 2.71828 (exponential). If the following relationship between the futures rate and the spot rate does not hold, then there will be an arbitrage opportunity in the market. This will force the futures rate to change so that the relationship holds true.

To explain this, let us assume that one year interest rates in US and India are say 7% and 10% respectively and the spot rate of USD in India is Rs. 44.

From the equation above the one year forward exchange rate should be

$$F = 44 * e^{(0.10-0.07)*1} = 45.34$$

Suppose that the one year rate is less than this, say Rs. 44.50. An arbitrageur can:

1. Borrow 1000 USD at 7% per annum for one year and convert to Rs. 44000 and invest the same at 10% (both rates being continuously compounded)

2. An amount of USD 1072.5082 has to be repaid. Buy a forward contract for USD 1072.5082 for Rs. 47726.61 (i.e. Rs. 44.50*1072.5082)

USD 1000 converted to Rs. 44000 and invested at 10% pa grows to Rs.52. Of this Rs. 47726.61 shall be used to buy USD 1072.5082 and repay the loan (US Dollars borrowed earlier).

The strategy therefore leaves a risk less profit of Rs. 900.91

Suppose the rate was greater than Rs. 45.34 as given in the equation above, the reverse strategy would work and yield risk less profit.

It may be noted from the above equation, if foreign interest rate is greater than the domestic rate i.e. $r_f > r_h$, then F shall be less than S. The value of F shall decrease further as time T increase.

If the foreign interest is lower than the domestic rate, i.e. $r_f < r_h$, then value of F shall be greater than S. The value of F shall increase further as time T increases.

Note : While the above is the theoretical position, in a scenario where capital flows are not unrestricted, as in India, the interest rate differential model would need to be modified somewhat. For the domestic yield (r_h), it may be necessary to employ MIFOR rates (which are a function of forward rates) instead of nominal rates, while USD yield (r_f) would be the nominal rate as per LIBOR, or any other equivalent published international source.

Box 3.1: Interest Rate Parity Theory – an example

Suppose, the spot rate is Rs. 48.0000 per USD and the prevailing continuously compounded interest rates in India and US are 7% and 5% respectively. From the equation above, the two years futures contract price should be Rs. 48 * exp (.07-.05)*2.

$$F = 48.0000 * e^{(.07-.05)*2} = 49.9589 \text{ or } 49.9600$$

If the futures price is less than this, say Rs. 49.50, then an arbitrageur can make a profit by:

- Borrowing 1000 USD at 5% p.a. for 2 years, and converting it to INR thereby getting Rs. 1000*48 = Rs. 48000. This will create a liability of USD 1000 * $e^{(0.05*2)}$ = 1105.71.
- He can invest the Rs. 48000 in a bank to earn interest @ 7% p.a.. Also, enter into a 2 years futures contract to buy 1105.71 USD at the rate of Rs. 49.50. So this requires an amount of Rs. 1105.71 * 49.50 = Rs. 54706 at the end of 2nd year.
- At the end of two years, the investment in the bank will mature and the investor will receive Rs. 48000 * $e^{(0.07*2)}$ = Rs. 55213.
- The investor can pay Rs. 54706 to obtain USD 1105.71, which will help him in repaying the liability on the USD loan. This will leave the investor with a riskless profit of Rs. 55213– Rs. 54706 = Rs. 507 at the end of 2nd year.

If the futures price is more than this , say Rs. 50.25, then an arbitrageur can make a profit by:

- Borrowing Rs. 48000 at 7% interest rate for a period of 2 years. This will create a liability of Rs. 48000 * $e^{(0.07 * 2)}$ = 55213. The investor can get the Rs. 48000 converted to USD at the prevailing spot rate and obtain USD 1000 (48000/48). The investor can invest the USD for 2 years at the rate of 5%. Simultaneously the investor can enter into the futures contract to sell 1105.17 USD and obtain INR at the end of 2 years, the contract exchange rate being Rs.50.2500 per USD.
- At the end of 2 years the investor will get USD 1000 * $e^{(0.05*2)}$ = 1105.17. The investor can then convert the USD into INR and obtain 1105.17 * 50.25 = Rs. 55535.
- The investor can then repay the liability of Rs. 55213 and make a riskless profit of Rs. 55535– 55213 = Rs. 322.

CHAPTER 4: Strategies using Currency Futures

Futures contracts act as hedging tools and help in protecting the risks associated with uncertainties in exchange rates. Anyone who is anticipating a future cash outflow (payment of money) in a foreign currency, can lock-in the exchange rate for the future date by entering into a futures contract. For example, let us take the example of an oil-importing firm - ABC Co. The company is expected to make future payments of USD 100000 after 3 months in USD for payment against oil imports. Suppose the current 3-month futures rate is Rs. 45, then ABC Co. has two alternatives:

OPTION A: ABC Co. does nothing and decides to pay the money by converting the INR to USD. If the spot rate after three months is Rs. 47, the ABC Co. will have to pay INR 47,00,000 to buy USD 100000. Alternatively, if the spot price is Rs. 43.0000, ABC Co. will have to pay only INR 43,00,000 to buy USD 100000. The point is that ABC Co. is not sure of its future liability and is subject to risk of exchange rate fluctuations.

OPTION B: ABC Co. can alternatively enter into a futures contract to buy 1,00,000 USD at Rs. 45 and lock in the future cash outflow in terms of INR. In this case, whatever may be the prevailing spot market price after three months the company's liability is locked in at INR 45,00,000. In other words, the company is protected against adverse movement in the exchange rates.

This is known as hedging and currency futures contracts are generally used by hedgers to reduce any known risks relating to the exchange rate.

In a currency futures contract, the party taking a long (buy) position agrees to buy the base currency at the future rate by paying the terms currency. The party with a short (sell) position agrees to sell the base currency and receive the terms currency at the pre-specified exchange rate. When the base currency appreciates and the spot rate at maturity date (S) becomes more than the strike rate in the futures contract (K), the 'long' party who is going to buy the base currency at the strike rate makes a profit. The party with the 'long' position can buy the USD at a lower rate and sell in the market where the exchange rate is higher thereby making a profit. The party with a 'short' position loses since it has to sell the base currency at a price lower than the prevailing spot rate. When the base currency depreciates and falls below the strike rate (K), the 'long' party loses and a 'short' position gains. This is depicted in Figure 4-1 as a pay-off diagram. In the pay-off diagram the profits are illustrative above the horizontal line and the losses below. The movement in the exchange rate is given on the horizontal line. The straight line (diagonal) indicates the pay-off for a buyer of USDINR contract. This pay-off is also called as a 'linear pay-off'.

An exposure in the currency futures market without any exposure (actual or expected) in the spot market becomes a speculative transaction. However, the role of speculators cannot be

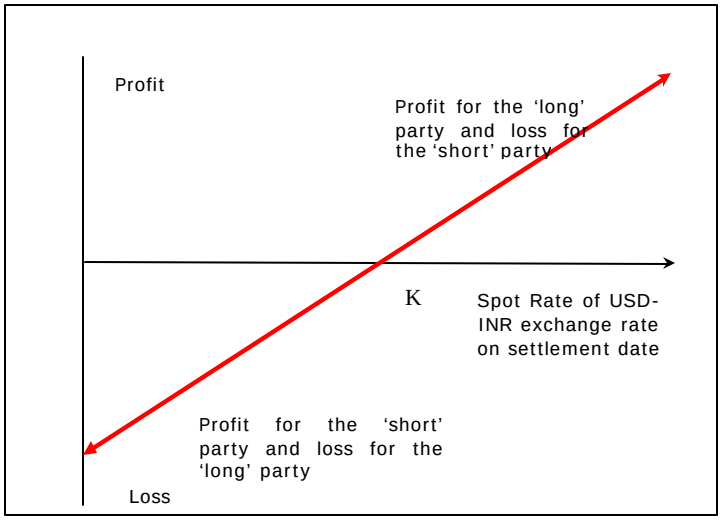


Figure4.1: Payoff from an USD-INR Futures Contract (Base Currency – USD)

undermined in the futures market. They play an active role in the derivatives market and help in providing liquidity to the market. In this chapter, we will discuss the various positions that can be taken in a futures market. We will also discuss the relevance of each position to different market players.

4.1 Hedging using Currency Futures

Hedging in currency market can be done through two positions, viz. Short Hedge and Long Hedge. They are explained as under:

4.1.1 Short-Hedge

A short hedge involves taking a short position in the futures market. In a currency market, short hedge is taken by someone who already owns the base currency or is expecting a future receipt of the base currency. An example where this strategy can be used :

An exporter, who is expecting a receipt of USD in the future will try to fix the conversion rate by holding a short position in the USD-INR contract. Box 4.1 explains the pay-off from a short hedge strategy through an example.

Box 4.1 Short Hedge

Exporter XYZ is expecting a payment of USD 1,000,000 after 3 months. Suppose, the spot exchange rate is INR 48.0000 : 1 USD. If the spot exchange rate after 3-months remains unchanged, then XYZ will get INR 48,000,000 by converting the USD received from the export contract. If the exchange rate rises to INR 49.0000 : 1 USD, then XYZ will get INR 49,000,000 after 3 months. However, if the exchange rate falls to INR 47.0000 : 1 USD, then XYZ will get INR 47,000,000 thereby losing INR 1,000,000. Thus, XYZ is exposed to an exchange rate risk, which it can hedge by taking an exposure in the futures market.

By taking a short position in the futures market, XYZ can lock-in the exchange rate after 3-months at INR 48.0000 per USD (suppose the 3 month futures price is Rs. 48). Since a USD-INR futures contract size is of 1000 USD, XYZ has to take a short position in 1000 contracts. Whatever may be the exchange rate after 3-months, XYZ will be sure of getting INR 48,000,000. A loss in the spot market will be compensated by the profit in the futures contract and vice versa. This can be explained as under:

If USD strengthens and the exchange rate becomes INR 49.0000 : 1 USD	**If USD weakens and the exchange rate becomes INR 47.0000 : 1 USD**
Spot Market:	**Spot Market:**
XYZ will get INR 49,000,000 by selling 1 million USD in the spot market.	XYZ will get INR 47,000,000 by selling 1 million USD in the spot market.
Futures Market:	**Futures Market:**
XYZ will lose INR (48 – 49)* 1000 = INR 1000 per contract. The total loss in 1000 contracts will be INR 1,000,000.	XYZ will gain INR (48 – 47)* 1000 = INR 1000 per contract. The total gain in 1000 contracts will be INR 1,000,000.
Net Receipts in INR:	**Net Receipts in INR:**
49 million – 1 million = 48 million	47 million + 1 million = 48 million

An exporting firm can thus hedge itself from currency risk, by taking a short position in the futures market. Irrespective, of the movement in the exchange rate, the exporter is certain of the cash flow.

4.1.2 Long Hedge

A long hedge involves holding a long position in the futures market. A Long position holder agrees to buy the base currency at the expiry date by paying the agreed exchange rate. This strategy is used by those who will need to acquire base currency in the future to pay any liability in the future. An example where this strategy can be used:

An importer who has to make payment for his imports in USD will take a long position in USD-INR contracts and fix the rate at which he can buy USD in future by paying INR. Box 4.2 explains the pay-off from a long hedge strategy in currency market.

Box 4.2: Long Hedge

An Importer, IMP, has ordered certain computer hardware from abroad and has to make a payment of USD 1,000,000 after 3 months. The spot exchange rate as well as the 3-months future rate is INR 48.0000 : 1 USD. If the spot exchange rate after 3-months remains unchanged then IMP will have to pay INR 48,000,000 to buy USD to pay for the import contract. If the exchange rate rises to INR 49.0000 : 1 USD, then IMP will have to pay more - INR 49,000,000 after 3 months to acquire USD. However, if the exchange rate falls to INR 47.0000 : 1 USD, then IMP will have to pay INR 47,000,000 (INR 1,000,000 less). IMP wants to remain immune to the volatile currency markets and wants to lock-in the future payment in terms of INR.

IMP is exposed to currency risk, which it can hedge by taking a long position in the futures market. By taking long position in 1000 future contracts, IMP can lock-in the exchange rate after 3-months at INR 48.0000 per USD. Whatever may be the exchange rate after 3-months, IMP will be sure of getting the 1 million USD by paying a net amount of INR 48,000,000. A loss in the spot market will be compensated by the profit in the futures contract and vice versa. This can be explained as under:

If USD strengthens and the exchange rate becomes INR 49.0000 : 1 USD	**If USD weakens and the exchange rate becomes INR 47.0000 : 1 USD**
Spot Market:	**Spot Market:**
IMP has to pay more i.e. INR 49,000,000 for buying 1 million USD in the spot market.	IMP will have to pay less i.e. INR 47,000,000 for acquiring 1 million USD in the spot market.
Futures Market:	**Futures Market:**
IMP will gain INR (49 – 48)* 1000 = INR 1000 per contract. The total profit in 1000 contracts will be INR 1,000,000.	The importer will lose INR (48–47)* 1000 = INR 1000 per contract. The total loss in 1000 contracts will be INR 1,000,000.
Net Payment in INR:	**Net Payment in INR:**
– 49 million + 1 million = 48 million	- 47 million - 1 million = 48 million

An importer can thus hedge itself from currency risk, by taking a long position in the futures market. The importer becomes immune from exchange rate movement.

4.2 Speculation in Currency Futures

Futures contracts can also be used by speculators who anticipate that the spot price in the future will be different from the prevailing futures price. For speculators, who anticipate a strengthening of the base currency will hold a long position in the currency contracts, in order to profit when the exchange rates move up as per the expectation. A speculator who anticipates a weakening of the base currency in terms of the terms currency, will hold a short position in the futures contract so that he can make a profit when the exchange rate moves down.

Box 4.3: Speculation in Futures Market

Suppose the current USD-INR spot rate is INR 48.0000 per USD. Assume that the current 3-months prevailing futures rate is also INR 48.0000 per USD. Speculator ABC anticipates that due to decline in India's exports, the USD (base currency) is going to strengthen against INR after 3 months. ABC forecasts that after three months the exchange rate would be INR 49.50 per USD. In order to profit, ABC has two options:

Option A: *Buy 1000 USD in the spot market, retain it for three months, and sell them after 3 months when the exchange rate increases:* This will require an investment of Rs. 48,000 on the part of ABC (although he will earn some interest on investing the USD). On maturity date, if the USD strengthens as per expectation (i.e. exchange rate becomes INR 49.5000 per USD), ABC will earn Rs. (49.50 – 48)*1000, i.e. Rs. 1500 as profit.

Option B: *ABC can take a long position in the futures contract – agree to buy USD after 3 months @ Rs. 48.0000 per USD:* In a futures contract, the parties will just have to pay only the margin money upfront. Assuming the margin money to be 10% and the contract size is USD 1000, ABC will have to invest only Rs. 4800 per contract. With Rs. 48,000, ABC can enter into 10 contracts. The margin money will be returned once the contract expires.

After 3 months, if the USD strengthens as per the expectation, ABC will earn the difference on settlement. ABC will earn (Rs 49.5000 – 48.0000) * 1000, i.e. Rs. 1500 per contract. Since ABC holds 'long' position in 10 contracts, the total profit will be Rs. 15000.

However, if the exchange rate does not move as per the expectation, say the USD depreciates and the exchange rate after 3 months becomes Rs. 47.0000 per USD, then in option A, ABC will lose only Rs. (48-47) * 1000 = Rs. 1000, but in option B, ABC will lose Rs. 10000 (Rs. 1000 per contract * 10 contracts).

Thus taking a position in futures market, rather than in spot market, give speculators a chance to make more money with the same investment (Rs. 48,000). However, if the exchange rate does not move as per expectation, the speculator will lose more in the futures market than in the spot market. Speculators are willing to accept high risks in the expectation of high returns.

Speculators prefer taking positions in the futures market to the spot market because of the low investment required in case of futures market. In futures market, the parties are required to pay just the margin money upfront, but in case of spot market, the parties have to invest the full amount, as they have to purchase the foreign currency. Box 4.3 explains a speculators strategy through an example.

CHAPTER 5: NSE's Currency Derivatives Segment

The phenomenal growth of financial derivatives across the world is attributed to the fulfillment of needs of hedgers, speculators and arbitrageurs by these products. In this chapter we look at contract specifications, participants, the payoff of these contracts, and finally at how these contracts can be used by various entities at the NSE.

5.1 Product Specification

The Reserve Bank of India has currently permitted futures only on the USD-INR rates. The contract specifications of the futures are as under:

Underlying: Initially, currency futures contracts on US Dollar – Indian Rupee (USD-INR) has been permitted.

Trading Hours: The trading on currency futures is available from 9 a.m. to 5 p.m. from Monday to Friday.

Size of the contract: The minimum contract size of the currency futures contract at the time of introduction is USD 1000.

Quotation: The currency futures contracts are quoted in Rupee terms. However, the outstanding positions are in US Dollar terms.

Tenor of the contract: The currency futures contracts have a maximum maturity of 12 months.

Available contracts: All monthly maturities from 1 to 12 months are available.

Settlement mechanism: The currency futures contracts are settled in cash in Indian Rupee.

Settlement price: The settlement price is the Reserve Bank of India Reference Rate on the last trading day.

Final settlement day: Final settlement day is the last working day (subject to holiday calendars) of the month. The last working day is taken to be the same as that for Inter-bank Settlements in Mumbai. The rules for Inter-bank Settlements, including those for 'known holidays' and 'subsequently declared holiday' are those laid down by FEDAI (Foreign Exchange Dealers Association of India). In keeping with the modalities of the OTC markets, the value date / final settlement date for the each contract is the last working day of each month and the reference rate fixed by RBI two days prior to the final settlement date is used for final settlement. The last trading day of the contract is therefore 2 days prior to the final settlement date. On the last trading day, since the settlement price gets fixed around 12:00 noon, the near month contract

ceases trading at that time (exceptions: sun outage days, etc.) and the new far month contract is introduced. Contract specification is given below in a tabular form.

Table 5.1: Contract specification

Underlying	Rate of exchange between one USD and INR
Trading Hours (Monday to Friday)	09:00 a.m. to 05:00 p.m.
Contract Size	USD 1000
Tick Size	0.25 paise or INR 0.0025
Trading Period	Maximum expiration period of 12 months
Contract Months	12 near calendar months
Final Settlement date/ Value date	Last working day of the month (subject to holiday calendars)
Last Trading Day	Two working days prior to Final Settlement Date
Settlement	Cash settled
Final Settlement Price	The reference rate fixed by RBI two working days prior to the final settlement date will be used for final settlement

5.2 Trading underlying versus trading futures

The USD-INR market in India is big. Significant volumes get traded on a daily basis. However there are certain restrictions on participation in the underlying OTC market. Access to the USD-INR market is restricted to specified entities like banks, who are registered as Authorised Dealers and to other entities to have a verifiable underlying commercial exposure. The primary reason for granting access to the markets is the need to hedge foreign exchange risks. This restriction is not applicable to the futures market.

Consider an importer of machinery from an international country where this import is going to be denominated in dollars. The importer enters into a contract in this regard with the exporter on say, September 01. According to the terms of the contract an amount of USD 1 million is to be paid on November 30. Between these days, the price of USD against INR is bound to fluctuate. The fluctuations can be such that the price of USD goes up (Rupee depreciates) or the price of USD

comes down (Rupee appreciates). What if rupee depreciates? This would affect the cost of the machinery, project cost, profitability of the deal and the profitability of the company as a whole.

Let us assume that the Dollar appreciated (Rupee depreciated) during this time from Rs. 44.12 to Rs. 45.94. The loss on this count would have been Rs.18.20 lakhs. To protect itself the company could do many things. Presumably they could buy dollars on September 01 itself. The cost of USD 1 million works out to Rs. 4.41 crores. But this would have tied up a huge amount of the working capital of the company. The cost of funds would have been a financial drain. The company can also book a forward contract. That would depend on its existing banking relationship and limits in this regard.

Instead, internationally many such companies prefer to hedge themselves against foreign exchange fluctuations using exchange traded currency futures contracts. Buying futures to hedge oneself against the payment currency depreciating is a typical strategy employed globally.

In this example, let us presume that the Indian importer chose to protect itself by buying futures. The company needed to buy 1000 contracts as one contract is of USD 1000. 1000 contracts amount to USD 1 million which is the same as the payment needed to be made by the importing company and therefore would totally offset the currency risk associated with the deal. For this purpose, only a very small portion of the total value needs to be put up as margin by the importing company. Typically it may be around say 5%.

Because of the increase in the cost of USD against INR during this period, for the payment on USD 1 million, the company had to pay Rs. 4.594 crores as against Rs. 4.412 crores. However this increase in cost was offset by the profit realized by being long in the futures contract (purchased at Rs. 44.12 and sold at Rs. 45.94). By hedging with the futures contracts the company hedged its exposures using currency futures.

While this company bought the currency futures as it had to pay dollars, some other company which may be receiving dollars in India and who hedged using selling futures or an investor with a directional view or a banker who was doing arbitrage would have provided the other side of the trade.

To trade the underlying or its forward, the customer must have a relationship with a banker who is ready to trade for him, exposure to dollar, and the associated documentation. In this case, it may be noted that the banker may be required to take a credit exposure on the customer.

To trade currency futures, a customer must open a futures trading account with any of the registered members of the recognized exchanges. Buying or selling futures simply involves putting in the margin money. This enables the futures traders to take a position in the underlying currency without having an underlying exposure.

A futures contract represents a promise to transact at some point in the future. In this light, a promise to sell currency is just as easy to make as a promise to buy currency. Selling currency futures without previously owning the currency simply obligates the trader to selling a certain amount of the underlying at some point in the future. It can be done just as easily as buying

futures, which obligates the trader to buying a certain amount of the underlying at some point in the future. However since currency futures are settled in cash, the buying and selling does not therefore directly involve delivery of the underlying currency and thus the buying or selling of the actual currency.

5.3 Uses of Currency Futures at NSE

5.3.1 Hedging:

Presume Entity A is expecting a remittance of USD 1000 on 27 August 09. It wants to lock in the foreign exchange rate today so that the value of inflow in Indian rupee terms is safeguarded. The entity can do so by selling one contract of USD-INR futures at NSE since one contract is for USD 1000.

Presume that the current spot rate is Rs. 43 and 'USDINR 27 Aug 09' contract is trading at Rs. 44.2500. Entity A shall do the following:

Sell one August contract today. The value of the contract is Rs. 44,250.

Let us assume the RBI reference rate on August 27, 2009 is Rs.44.0000. The entity shall sell on August 27, 2009, USD 1000 in the spot market and get Rs. 44,000. The futures contract will settle at Rs. 44.0000 (final settlement price = RBI reference rate).

The return from the futures transaction would be Rs. 250, i.e. (Rs. 44,250 – Rs. 44,000). As may be observed, the effective rate for the remittance received by the entity A is Rs. 44.2500 (Rs. 44,000 + Rs. 250)/1000, while spot rate on that date was Rs. 44.0000. The entity was able to hedge its exposure.

5.3.2 Speculation: Bullish, buy futures

Take the case of a speculator who has a view on the direction of the market. He would like to trade based on this view. He expects that the USD-INR rate presently at Rs. 42, is to go up in the next two-three months. How can he trade based on this belief? In case he can buy dollars and hold it, by investing the necessary capital, he can profit if say the Rupee depreciates to Rs. 42.50. Assuming he buys USD 10000, it would require an investment of Rs. 4,20,000. If the exchange rate moves as he expected in the next three months, then he shall make a profit of around Rs.10000. This works out to an annual return of around 4.76%. It may please be noted that the cost of funds invested is not considered in computing this return.

A speculator can take exactly the same position on the exchange rate by using futures contracts. Let us see how this works. If the USD- INR is at Rs. 42 and the three month futures trade at Rs. 42.40. The minimum contract size is USD 1000. Therefore the speculator may buy 10 contracts. The exposure shall be the same as above USD 10000. Presumably, the margin may be around Rs.

21,000. Three months later if the Rupee depreciates to Rs. 42.50 against USD, (on the day of expiration of the contract), the futures price shall converge to the spot price (Rs. 42.50) and he makes a profit of Rs.1000 on an investment of Rs. 21,000. This works out to an annual return of 19 percent. Because of the leverage they provide, futures form an attractive option for speculators.

5.3.3 Speculation: Bearish, sell futures

Futures can be used by a speculator who believes that an underlying is over-valued and is likely to see a fall in price. How can he trade based on his opinion? In the absence of a deferral product, there wasn't much he could do to profit from his opinion. Today all he needs to do is sell the futures.

Let us understand how this works. Typically futures move correspondingly with the underlying, as long as there is sufficient liquidity in the market. If the underlying price rises, so will the futures price. If the underlying price falls, so will the futures price. Now take the case of the trader who expects to see a fall in the price of USD-INR. He sells one two-month contract of futures on USD say at Rs. 42.20 (each contact for USD 1000). He pays a small margin on the same. Two months later, when the futures contract expires, USD-INR rate let us say is Rs. 42. On the day of expiration, the spot and the futures price converges. He has made a clean profit of 20 paise per dollar. For the one contract that he sold, this works out to be Rs. 200.

5.3.4 Arbitrage:

Arbitrage is the strategy of taking advantage of difference in price of the same or similar product between two or more markets. That is, arbitrage is striking a combination of matching deals that capitalize upon the imbalance, the profit being the difference between the market prices. If the same or similar product is traded in say two different markets, any entity which has access to both the markets will be able to identify price differentials, if any. If in one of the markets the product is trading at higher price, then the entity shall buy the product in the cheaper market and sell in the costlier market and thus benefit from the price differential without any additional risk.

One of the methods of arbitrage with regard to USD-INR could be a trading strategy between forwards and futures market. As we discussed earlier, the futures price and forward prices are arrived at using the principle of cost of carry. Such of those entities who can trade both forwards and futures shall be able to identify any mis-pricing between forwards and futures. If one of them is priced higher, the same shall be sold while simultaneously buying the other which is priced lower. If the tenor of both the contracts is same, since both forwards and futures shall be settled at the same RBI reference rate, the transaction shall result in a risk less profit.

CHAPTER 6: Trading

Currency futures were introduced in recognized stock exchanges in India in August 2008. The currency futures market is subject to the guidelines issued by the Reserve Bank of India (RBI) and the Securities Exchange Board of India (SEBI) from time to time. Amendments were also made to the Foreign Exchange Management Regulations to facilitate introduction of the currency futures contracts in India. Earlier persons resident in India had access only to the over-the-counter (OTC) products for hedging their currency risk, which included – forwards, swaps, options. Introduction of exchange traded currency futures contracts has facilitated efficient price discovery, counterparty risk management, wider participation (increased liquidity) and lowered the transaction costs etc.

6.1 Membership

6.1.1 Categories of membership (NSE)

Members are admitted in the Currency Derivatives Segments in the following categories:

Only Trading Membership of NSE

Membership in this category entitles a member to execute trades on his own account as well as account of his clients in the Currency Derivatives segment. However, clearing and settlement of trades executed through the Trading Member would have to be done through a Trading-cum Clearing Member or Professional Clearing Member on the Currency Derivatives Segment of the Exchange (Clearing and settlement is done through the National Securities Clearing Corporation Ltd. – NSCCL, a wholly owned subsidiary of the NSE). The exchange assigns a unique trading member ID to each trading member. Each trading member can have more than one user and each user is assigned a unique User-ID.

Orders by trading members on their own account are called proprietary orders and orders entered by the trading members on behalf of their clients are called client orders. Trading Members are required to specify in the order, whether they are proprietary orders or clients orders.

Both Trading Membership of NSE and Clearing Membership of NSCCL

Membership in this category entitles a member to execute trades on his own account as well as on account of his clients and to clear and settle trades executed by themselves as well as by other trading members who choose to use clearing services of the member in the Currency Derivatives Segment.

Professional Clearing Membership of NSCCL

These members are not trading members. Membership in this category entitles a member to clear and settle trades of such members of the Exchange who choose to clear and settle their trades through this member. SEBI has allowed banks to become clearing member and/or trading member of the Currency Derivatives Segment of an exchange.

6.1.2 Participants

Participants are clients of trading member who trade through them. Participants may trade through multiple trading members but settle through a single member. The participation in the futures contract market in India is restricted to 'persons resident in India' as defined as defined in section 2 (v) of the Foreign Exchange Management Act, 1999 (Act 42 of 1999). Non-Residents of India (NRI) and Foreign Institutional Investors (FII) are not permitted to participate in the currency derivatives market.

The membership of Currency Derivatives Segment of a recognized stock exchange is separate from the membership of the equity derivative segment or the cash segment. Membership for both trading and clearing in the Currency Derivatives Segment is subject to the guidelines issued by the SEBI.

6.1.3 Eligibility Criteria for Membership

The following are eligible to apply for membership subject to the regulatory norms and provisions of SEBI and as provided in the Rules, Regulations, Byelaws and Circulars of the Exchange -

- Individuals;
- Partnership Firms registered under the Indian Partnership Act, 1932;
- Corporations, Companies or Institutions or subsidiaries of such Corporations, Companies or Institutions set up for providing financial services;
- Such other person as may be permitted under the Securities Contracts (Regulation) Rules 1957

Individuals (Sole Proprietor)

Table 6.1: Eligibility criteria for membership (Individual)

Age	Minimum age : 21 years
Status	Indian Citizen
Education	At least a graduate or equivalent qualification
Experience	Should have a minimum of 2 years experience in an activity related to dealing in securities or as portfolio manager or as investment consultant or as a merchant banker or in financial services or treasury, broker, sub broker, authorised agent or authorised clerk or authorised representative or remisier or apprentice to a member of a recognized stock exchange, dealer, jobber, market maker, or in any other manner in dealing in securities or clearing and settlement thereof

Partnership Firms

Where the applicant is a partnership firm, the applicant should identify a Dominant Promoter Group as per the norms of the Exchange at the time of making the application. Any change in the shareholding of the partnership firm including that of the said Dominant Promoter Group or their sharing interest should be effected only with the prior permission of NSE/SEBI.

Table 6.2: Eligibility criteria for membership (Partnership Firms)

Age	Minimum age of partner(s) : 21 years
Status	Registered Partnership firm under Indian Partnership Act, 1932
Education	Partners should be at least a graduate or equivalent qualification
Designated Partners	Identify at least two partners as designated partners who would be taking care of the day to day management of the partnership firm
Designated Partners Experience	Should have a minimum of 2 years experience in an activity related to dealing in securities or as portfolio manager or as investment consultant or as a merchant banker or in financial services or treasury, broker, sub broker, authorised agent or authorised clerk or authorised representative or remisier or apprentice to a member of a recognized stock exchange, dealer, jobber, market maker, or in any other manner in dealing in securities or clearing and settlement thereof
Dominant Promoter Norms	Identify partner's sharing interest as per Exchange DPG norms

Corporates

A Company as defined in the Companies Act, 1956 (1 of 1956), is eligible to be admitted as a member of a Stock Exchange provided:

- such company is formed in compliance with the provisions of Section 12 of the said Act;
- it undertakes to comply with such other financial requirements and norms as may be specified by the Securities and Exchange Board of India for the registration of such company under sub-section (1) of section 12 of the Securities and Exchange Board of India Act, 1992 (15 of 1992);
- the directors of such company are not disqualified for being members of a stock exchange under clause (1) of rule 8 [except sub-clauses (b) and (f) thereof] or clause (3) of rule 8 [except sub-clauses (a) and (f) thereof] of the Securities Contracts (Regulation) Rules, 1957 and the directors of the company had not held the offices of the directors in any company which had been a member of the stock exchange and had been declared defaulter or expelled by the stock exchange.

Table 6.3: Eligibility criteria for membership (Corporates)

Age	Minimum age of director(s) : 21 years
Status	Corporate registered under The Companies Act, 1956 (Indian)
Minimum Paid-Up Equity Capital	Rs.30 lakhs
Designated Directors	Identification of at least two directors as designated directors who would be managing the day to day trading operations
Education	Each of the Designated Directors should be at least graduate or equivalent qualification
Designated Directors Experience	Should have a minimum of 2 years experience in an activity related to dealing in securities or as portfolio manager or as investment consultant or as a merchant banker or in financial services or treasury, broker, sub broker, authorised agent or authorised clerk or authorised representative or remisier or apprentice to a member of a recognized stock exchange, dealer, jobber, market maker, or in any other manner in dealing in securities or clearing and settlement thereof
Dominant Promoter Norms	Identify dominant group as per Exchange DPG norms

Professional Clearing Member (PCM)

The following persons are eligible to become PCMs of NSCCL for Currency Derivatives Segment provided they fulfill the prescribed criteria:

- SEBI Registered Custodians; or
- Banks recognized by NSE/NSCCL for issuance of bank guarantees

6.1.4 Who cannot become a member?

Further to the capital and network requirements, no entity will be admitted as a member/partner or director of the member if:

- It has been adjudged bankrupt or a receiver order in bankruptcy has been made against him or he has been proved to be insolvent even though he has obtained his final discharge;
- It has compounded with his creditors for less than full discharge of debts;
- It has been convicted of an offence involving a fraud or dishonesty;
- It is engaged as a principal or employee in any business other than that of Securities, except as a broker or agent not involving any personal financial liability or for providing merchant banking, underwriting or corporate or investment advisory services, unless he undertakes to severe its connections with such business on admission, if admitted;
- It has been at any time expelled or declared a defaulter by any other Stock Exchange or he has been debarred from trading in securities by an Regulatory Authorities like SEBI, RBI etc;
- It incurs such disqualification under the provisions of the Securities Contract (Regulations) Act, 1956 or Rules made there-under so as to disentitle such persons from seeking membership of a stock exchange;
- It incurs such disqualification consequent to which NSE determines it to be not in public interest to admit him as a member on the Exchange, provided that in case of registered firms, body corporates and companies, the condition will apply to, all partners in case of partnership firms, all directors in case of companies;
- the entity is not a fit and proper person in terms of the SEBI guidelines;

6.1.5 Banks as Trading / Clearing Members

Banks authorized by the Reserve Bank of India under section 10 of the Foreign Exchange Management Act, 1999 as 'AD Category - I bank' are permitted to become trading and clearing members of the currency futures market of the recognized stock exchanges, on their own account and on behalf of their clients, subject to fulfilling the following minimum prudential requirements:

- Minimum net worth of Rs. 500 Crores
- Minimum CRAR of 10 per cent
- Net NPA should not exceed 3 per cent
- Made net profit for last 3 years

The AD Category - I banks which fulfill the prudential requirements should lay down detailed guidelines with the approval of their Boards for trading and clearing of currency futures contracts and management of risks. The AD Category - I banks, shall operate within prudential limits, such as Net Open Position (NOP) and Aggregate Gap (AG) limits. The exposure of the banks, on their own account, in the currency futures market shall form part of their NOP and AG limits.

AD Category - I banks which do not meet the above minimum prudential requirements and AD Category - I banks which are Urban Co-operative banks or State Co-operative banks can participate in the currency futures market only as clients, subject to approval therefore from the respective regulatory Departments of the Reserve Bank.

Let us now understand what contracts trading members buy and sell at NSE in more details:

6.2 Future Contract Specifications

The contract specification of a USD-INR future contract that is floated by NSE is given in Table 6.4. In the contract, the USD is the base currency and the INR is the quote currency. Contracts are available for a maximum period of 12 months. Each month new contract is introduced. The market disseminates open price, high and low prices, and last trading prices on a real-time basis. Since the final settlement is done on T+2 days, the last day for trading on futures contract is two working days prior to the final settlement.

Table 6.4: USD-INR future contract specifications

<table>
<tr><td>Symbol</td><td>USDINR</td></tr>
<tr><td>Market Type</td><td>Normal</td></tr>
<tr><td>Instrument T ype</td><td>FUTCUR</td></tr>
<tr><td>Unit of trading</td><td>1 unit denotes 1000 USD</td></tr>
<tr><td>Underlying</td><td>The exchange rate in Indian Rupees for US Dollars</td></tr>
<tr><td>Tick size</td><td>0.25 Paise or INR 0.0025</td></tr>
<tr><td>Trading hours</td><td>Monday to Friday: 9:00 a.m. to 5:00 p.m.</td></tr>
<tr><td>Contract trading cycle</td><td>12 months trading cycle</td></tr>
<tr><td>Last trading day</td><td>Two working days prior to the last business day of the expiry month</td></tr>
<tr><td>Final settlement day</td><td>Last working day (excluding Saturdays) of the expiry month; The last working day will be the same as that for Interbank Settlements in Mumbai</td></tr>
<tr><td>Quantity Freeze</td><td>10,001 or greater</td></tr>
<tr><td>Base price</td><td>Theoretical price on the 1st day of the contract
On all other days, Daily Settlement Price of the contract</td></tr>
<tr><td>Price operating range</td><td><table><tr><th>Tenure upto 6 months</th><th>Tenure greater than 6 months</th></tr><tr><td>+/-3 % of base price</td><td>+/- 5% of bas e price</td></tr></table></td></tr>
<tr><td>Position limits</td><td><table><tr><th>Clients</th><th>Trading Members</th><th>Banks</th></tr><tr><td>Higher of 6% of total open interest or USD 10 million</td><td>Higher of 15% of the total open interest or USD 50 million</td><td>Higher of 15% of the total open interest or USD 100 million</td></tr></table></td></tr>
<tr><td>Initial margin</td><td>SPAN ® Based Margin</td></tr>
<tr><td>Extreme loss margin</td><td>1% of MTM value of open position.</td></tr>
<tr><td>Calendar spreads</td><td>Rs. 250/- per contract for all months of spread</td></tr>
<tr><td>Settlement</td><td>Daily settlement : T + 1
Final settlement : T + 2</td></tr>
<tr><td>Mode of settlement</td><td>Cash settled in Indian Rupees</td></tr>
<tr><td>Daily settlement price (DSP)</td><td>Calculated based on the last half an hour weighted average price.</td></tr>
<tr><td>Final settlement price (FSP)</td><td>RBI reference rate</td></tr>
</table>

6.2.1 Permitted lot size

Permitted lot size for USDINR future contracts is 1000 US dollars. Members place orders in terms of number of lots. Therefore, if a member wants to take a position for 10000 USD, then the number of contracts required is 10000/1000 = 10 contracts.

6.2.2 Tick Size

Price steps in respect of all currency futures contracts admitted to dealing on the Exchange have been specified to be Rs. 0.0025. For example, if the current price is INR 48.5000, a single tick movement will result the price to be either INR 48.5025 or 48.4975 for one USD.

6.2.3 Quantity Freeze

Quantity Freeze for Currency Futures Contracts is 10,001 lots or greater i.e. orders having quantity up to 10001 lots are allowed. In respect of orders, which have come under quantity freeze, the members are required to confirm to the Exchange that there is no inadvertent error in the order entry and that the order is genuine. On such confirmation, the Exchange may approve such order. However, in exceptional cases, the Exchange has discretion to disallow the orders that have come under quantity freeze for execution for any reason whatsoever including non-availability of turnover / exposure limits.

6.2.4 Base Price

Base price of the USDINR Futures Contracts on the first day is the theoretical futures price. The base price of the contracts on subsequent trading days is the daily settlement price of the USDINR futures contracts.

6.2.5 Price Dissemination

The exchanges generally disseminate the open price, high price, low price, last-traded prices and the total number of contracts traded in the day through its trading system on a real-time basis. It also disseminates information about the best ask and best bid price, the spread and the net open interest on each contract on a real-time basis. (Open Interest means the total number of contracts of an underlying security that have not yet been offset and closed by an opposite derivatives transaction nor fulfilled by delivery of the cash or underlying security or option exercise. For calculation of open interest, only one side of the derivatives contract is counted).

Table 6.5 shows the price watch window of NSE. In India, futures contracts are floated that mature every month but the maximum period is 12 months. The spread for the nearest-maturity contracts is generally just a single tick and they are more liquid than other contracts.

Table 6.5: Price Watch Window

Contract	Best Bid		Best Ask		Spread	LTP	Volume	OI
USDINR 290709	45	48.7550	48.7575	569	0.0025	48.7525	531143	357288
USDINR 270809	6	48.7800	48.8600	500	0.0800	48.8450	38238	130130
USDINR 280909	195	48.9275	48.9500	1	0.0225	48.9450	3995	11049
USDINR 281009	5	49.0100	49.1725	1	0.1625	49.3450	233	2984
USDINR 261109	200	49.0800	49.1500	200	0.0700	48.7000	355	4697
USDINR 291209	51	48.9800	49.2000	1	0.2200	49.1500	67	1989
USDINR 270110	1	48.6000	49.6000	10	1.0000	-	-	721
USDINR 240210	2	49.0050	49.5300	18	0.5250	-	-	499
USDINR 290310	1	49.3000	49.8875	1	0.5875	-	-	299
USDINR 280410	28	49.2200	49.7975	1	0.5775	49.2100	2	323
USDINR 270510	1	48.9025	50.1500	3	1.2475	-	-	313
USDINR 280610	2	49.5575	49.7000	1	0.1425	49.6500	7	478
						Total	574040	510770

As On 17-Jul-2009 12:00:00 Hours IST

Underlying RBI reference rate	
USDINR	48.6900

6.2.6 Price ranges of contracts

There are no daily price bands (circuit limits) applicable for Currency Futures contracts. This means that the strike rate is allowed to change to any level within a day. This is unlike in case of stocks, where there is circuit limit on price, ranging from ± 5% to ± 20% depending on the stock category.

However, in order to prevent erroneous order entry by members, operating ranges have been kept at +/-3% of the base price for contracts with tenure upto 6 months and 5% for contracts with tenure greater than 6 months. In respect of orders, which have come under price freeze,

the members are required to confirm to the exchange that there is no inadvertent error in the order entry and that the order is genuine. On such confirmation, the exchange may take appropriate action. This is done to take care of cases where an order is entered into the system at a price, which is not meant by the party, but wrongly given due to data entry errors. For example, instead of placing an order to sell USD at the rate of 48.5000, the client may enter 4.8500 in the system.

6.3 Trading System

The trading system at NSE is called as NEAT-CDS (National Exchange for Automated Trading – Currency Derivatives Segment) which supports an order driven market and provides complete transparency of trading operations.

6.3.1 Order Matching Rule

When the orders are received, they are time stamped and then immediately processed for potential match. The best buy order will match with the best sell order. For this purpose, the best buy order is the one with highest price and the best sell order is the one with lowest price (i.e. orders are looked from the point of view of the opposite party). If a match is found then the order is executed and a trade happens. An order can also be executed against multiple pending orders, which will result in more than one trade per order. If an order cannot be matched with pending orders, the order is stored in pending order books. The matching of orders at NSE is done on a price-time priority i.e. in the following sequence:

- Best Price
- Within Price, by time priority

Orders lying unmatched in the system are 'passive' orders and orders that come in to match the existing orders are called 'active' orders. Orders are always matched at the passive order price.

6.3.2 Order Conditions

A Trading Member can enter various types of orders depending upon his/her requirements. These conditions are broadly classified into two categories viz. Time related conditions and Price-related conditions.

6.3.2.1 Time Related Conditions

Day Order (Day): A Day order is valid for the day on which it is entered. The order, if not matched, gets cancelled automatically at the end of the trading day.

Immediate or Cancel order (IOC): An IOC order allows the Trading Member to buy or sell a security as soon as the order is released into the market, failing which the order will be removed from the market. Partial match is possible for the order and the unmatched portion of the order is cancelled immediately.

6.3.2.2 Price Conditions

Limit Price/Order: In these order, the price has to be specified while entering the order into the system. The order gets executed only on the quoted price or at a better price (a price lower than the limit price in case of a purchase order and a price higher than the limit price in case of a sale order).

Market Price/Order: Here the constraint is the time of execution and not the price. It gets executed at the best price obtainable at the time of entering the order. The system guarantees immediate execution of such orders, unless there is no pending order of the opposite type. The matching is done automatically at the best available price. If it is a sale order, the order is matched against the best bid price and if it is a purchase order, the order is matched against the best ask price.

Stop Loss (SL) Price/Order: Stop-loss orders allows the trading member to place an order, which gets activated only when the market price of the relevant security reaches a threshold price. When the currency derivatives contract reaches the pre -determined price, or trades through such price, the stop loss order is time-stamped, and entered into the system as a market/limit order and is executed at the limit or better. Until then the order does not enter the market. A sell order in the stop loss book gets triggered when the last traded price in the normal market reaches or falls below the trigger price of the order. A buy order in the Stop Loss book gets triggered when the last traded price in the normal market reaches or exceeds the trigger price of the order. The trigger price should be less than the limit price in case of a purchase order and vice versa. Traders may also place stop-loss market orders, where a market order is placed as soon as the trigger price is touched.

For example, if someone wants to buy an USD-INR contract only if the exchange rate rises to INR 48.6000, but also doesn't want to buy at a price exceeding INR 48.7000, then he/she can place a stop-loss limit order with trigger price as Rs. 48.6000 and limit price as Rs. 48.7000.

Stop orders accelerate price changes, since purchase orders are released when the price rises and touches the trigger price and sales orders are released when the price is falling and touches the trigger price.

6.4 The trader workstation

6.4.1 The market watch window

The following windows are displayed on the trader workstation screen:

- Title bar
- Menu Bar
- Toolbar
- Ticker window of Currency Derivatives segment
- Ticker window of spot market
- Market watch window
- Inquiry window
- Snap quote
- Order/trade window
- System message window

The best way to familiarize oneself with the screen and its various segments is to actually spend some time studying a live screen. In this section we shall restrict ourselves to understanding just two segments of the workstation screen, the market watch window and the inquiry window.

The market watch window is the fifth window from the top of the screen which is always visible to the user. This is the main window from the dealer's perspective. The purpose of market watch is to allow continuous monitoring of contracts that are of specific interest to the user. It displays trading information for contracts selected by the user.

6.4.2 Inquiry window

The inquiry window enables the user to view information such as Market by Price (MBP), Previous Trades (PT), Outstanding Orders (OO), Activity log (AL), Snap Quote (SQ), Order Status (OS), Market Movement (MM), Market Inquiry (MI), Net Position, On line backup, Most active security and so on. Relevant information for the selected contracts can be viewed. We shall look in detail at the Market by Price (MBP) and the Market Inquiry (MI) screens.

1. ***Market by price (MBP):*** The purpose of the MBP is to enable the user to view passive orders in the market aggregated at each price and are displayed in order of best prices. The window can be invoked by pressing the [F6] key. If a particular contract is selected, the details of the selected contract can be seen on this screen. This enquiry helps the user to view the best outstanding orders for the contracts from Regular Lot order book. The best buy order is with the highest order price among all outstanding orders for the contract whereas the best sell order is with the lowest order price among all outstanding orders for the contract. The outstanding orders for the contract are aggregated at each price point. The information is displayed for the best 5 price points on the buy side and sell side. The information provided at each of these price points is number of buy

orders and total buy order quantity, number of sell orders and total sell quantity. Other statistical details provided on this enquiry are:

- The aggregates for total traded quantity, total buy order quantity and total sell order quantity. The price information on highest traded price, lowest traded price, last traded price and average traded price.
- Carrying cost at the best buy price and at the best sell price for futures contract.
- The market trends with respect to change indicator between traded price of two immediate preceding trades, change percentage between last traded price and previous day's close price.

2. ***Market inquiry (MI):*** The market inquiry screen can be invoked by using the [F11] key. This inquiry facilitates the user to view the order/ trade statistics for the contract descriptor. The information available can be broadly categorized into:

- *Trade information* - total traded quantity, last traded price, last traded quantity, last traded date and time.
- *Price information* - previous close price, open price, high price, low price, life time high price and life time low price.
- *Open interest (OI) information* - Previous day's closing OI, opening OI, high OI, low OI, current OI, life time high OI, life time low OI.
- *Best order details* - best buy order price, quantity available at the best buy order price, best sell order price and quantity available at the best sell order price.
- *Market trends information* - net change indicator between last traded price and previous day's close price, change percentage between last traded price and previous day's close price, net change indicator between latest open interest and previous day's closing open interest, change percentage between latest open interest and previous day's closing open interest.

6.4.3 Placing orders on the trading system

While entering orders on the trading system, members are required to identify orders as being proprietary or client orders. Proprietary orders should be identified as 'Pro' and those of clients should be identified as 'Cli'. Apart from this, in the case of 'Cli 'orders, the client unique identification number should also be provided.

The futures market is a zero sum game i.e. the total number of long in any contract always equals the total number of short in any contract. The total number of outstanding contracts (long/short) at any point in time is called the "Open interest". This Open interest figure is a good indicator of the liquidity in every contract. Based on studies carried out in F&O segment of NSE, it is found that open interest is maximum in near month expiry contracts.

6.4.4 Market spread order entry

The NEAT-CDS trading system also enables to enter spread orders. Figure 6.1 shows the spread screen. This enables the user to input two orders simultaneously into the market. These orders will have the condition attached to it that unless and until the both the orders finds a counter match, they shall not be traded. This facilitates spread trading strategies with minimum or no price risk.

Figure 6.1 Market spread order entry

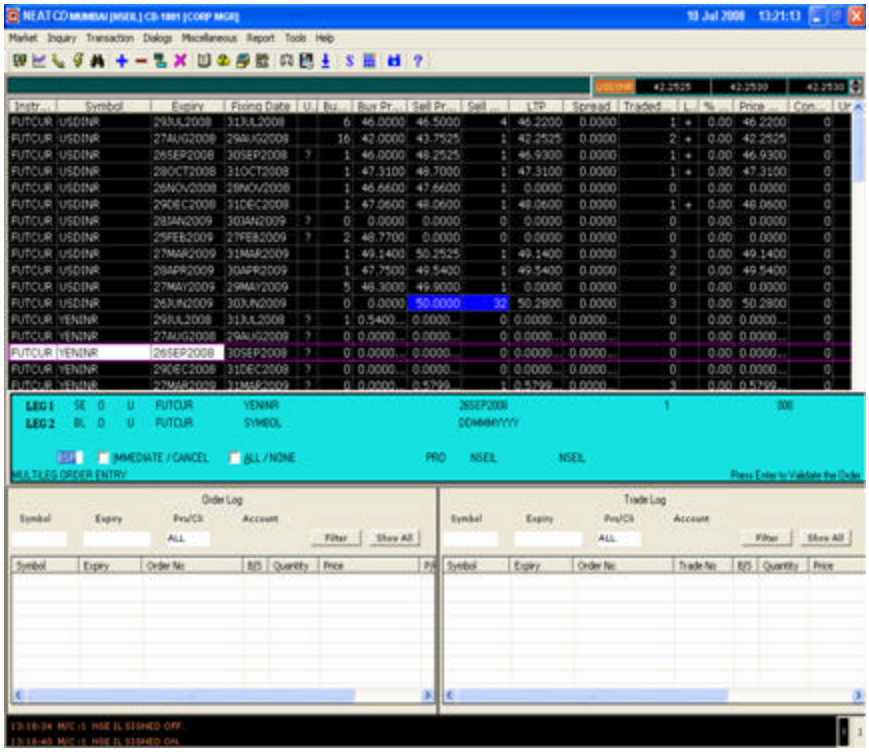
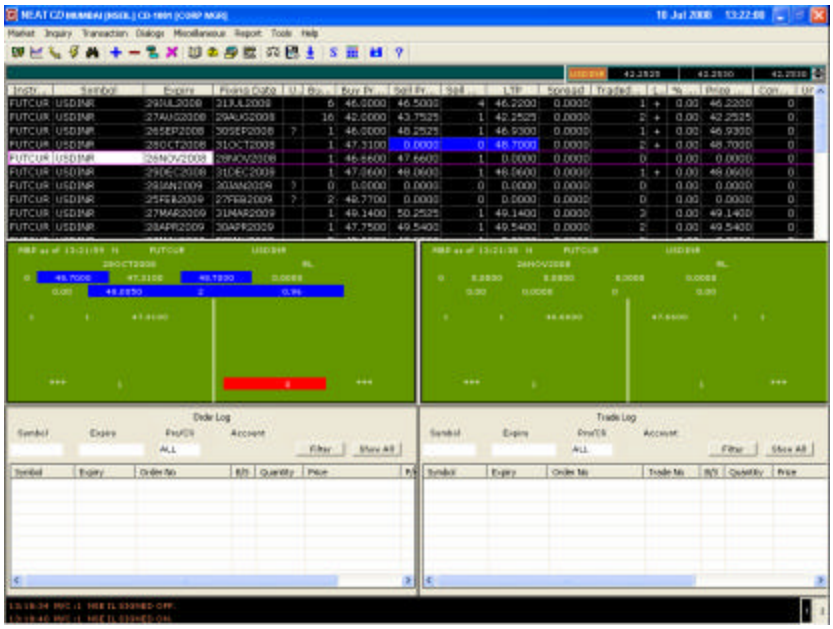


Figure 6.2 Market by price in NEAT CDS



6.5 Basis of trading

The NEAT-CDS system supports an order driven market, wherein orders match automatically. Order matching is essentially on the basis of security, its price and time. All quantity fields are in contracts and price in Indian rupees. The exchange notifies the contract size and tick size for each of the contracts traded on this segment from time to time. When any order enters the trading system, it is an active order. It tries to find a match on the opposite side of the book. If it finds a match, a trade is generated. If it does not find a match, the order becomes passive and sits in the respective outstanding order book in the system.

6.5.1 Corporate hierarchy

In the trading software, a trading member has the facility of defining a hierarchy amongst users of the system. This hierarchy comprises corporate manager, branch manager and dealer.

1) ***Corporate manager:*** The term 'Corporate manager' is assigned to a user placed at the highest level in a trading firm. Such a user can perform all the functions such as order and trade related activities, receiving reports for all branches of the trading member firm and also all dealers of the firm. Additionally, a corporate manager can define limits for the branches and dealers of the firm.

2) ***Branch manager:*** The branch manager is a term assigned to a user who is placed under the corporate manager. Such a user can perform and view order and trade related activities for all dealers under that branch. Additionally, a branch manager can define limits for the dealers under that branch.

3) ***Dealer:*** Dealers are users at the lower most level of the hierarchy. A dealer must be linked either with the branch manager or corporate manager of the firm. A Dealer can perform view order and trade related activities only for oneself and does not have access to information on other dealers under either the same branch or other branches.

Cases given below explain activities possible for specific user categories:

- **Corporate manager of the clearing member**

Corporate manager of the clearing member has limited rights on the trading system. A corporate manager of the clearing member can perform following functions:

- On line custodian/ 'give up' trade confirmation/ rejection for the participants
- Limit set up for the trading member / participants
- View market information like trade ticker, Market Watch etc.
- View net position of trading member / Participants

- **Corporate Manager of the trading member**

This is the top level of the trading member hierarchy with trading right. A corporate manager of the trading member can broadly perform following functions:

- Order management and trade management for self
- View market information
- Set up branch level and dealer level trading limits for any branch/ dealer of the trading member
- View, modify or cancel outstanding orders on behalf of any dealer of the trading member
- View, modify or send cancel request for trades on behalf of any dealer of the trading member
- View day net positions at branch level and dealer level and cumulative net position at firm level.

- **Branch manager of trading member**

The next level in the trading member hierarchy with trading right is the branch manager. One or more dealers of the trading member can be a branch manager for the trading member. A branch manager of the trading member can broadly perform the following functions:

- Order management and trade management of self
- View market information
- Set up dealer level trading limits for any dealer linked with the branch
- View, modify or cancel the outstanding orders on behalf of any dealers linked with the branch
- View, modify or send cancel request for trades on behalf of any dealer of the dealer linked with the branch
- View day net positions at branch level and dealer level

- **Dealer of a trading member**

The dealer is at the last level of the trading member hierarchy with trading right. The dealer can be set up either under a branch manager or corporate manager. A dealer of the trading member can broadly perform the following functions:

- Order management and trade management of self
- View market information
- Set up order level trading limits for self
- View net position
- Back up of online orders and trades for self

6.6 Client Broker Relationship in Derivatives Segment

A client of a trading member is required to enter into an agreement with the trading member before commencing trading. A client is eligible to get all the details of his or her orders and trades from the trading member. A trading member must ensure compliance particularly with relation to the following while dealing with clients:

- Filling of 'Know Your Client' form
- Execution of Client Broker agreement
- Bring risk factors to the knowledge of client by getting acknowledgement of client on risk disclosure document
- Timely execution of orders as per the instruction of clients in respective client codes.
- Collection of adequate margins from the client
- Maintaining separate client bank account for the segregation of client money.
- Timely issue of contract notes as per the prescribed format to the client
- Ensuring timely pay-in and pay-out of funds to and from the clients
- Resolving complaint of clients if any at the earliest
- Avoiding receipt and payment of cash and deal only through account payee cheques
- Sending the periodical statement of accounts to clients

- Not charging excess brokerage
- Maintaining unique client code as per the regulations.

CHAPTER 7: Clearing, Settlement and Risk Management

Clearing and Settlement is a post trade activity and risk management is undertaken to ensure safe and smooth running of the market and proper settlement of transactions on the settlement days. Clearing means identifying who the buyers and sellers of the contracts are and what are their obligations (at clearing member level) and settlement is the process by which the buyer and the sellers are given their dues as per the final obligations (at clearing member level). Risk management involves imposition of margins, collection of margins, monitoring of position limits etc. There are certain terms we must be associated with to understand the basics of Clearing, Settlement and Risk Management.

7.1 Clearing entities

NSCCL undertakes the Clearing and Settlement activities with the help of the following entities:

7.1.1 Clearing members

Clearing members are trading cum clearing members (TM-CM) and Professional Clearing members (PCM). They help in clearing the trades executed on the Currency Derivatives Segment.

7.1.2 Clearing banks

Clearing banks handle the Funds settlement. A separate Bank account needs to be opened by each clearing member with a NSCCL designated clearing bank for the purpose of funds settlement.

7.2 Position Limits

Fixing position limits is one of the mechanisms to control excessive concentration of positions with a single entity and well as prevent building of positions which are way too large as compared to the underlying market. It is a part of the Risk Management activity. The position limit gives the maximum permissible open position of trading members and clients in the currency futures market.

The position limits is specific to an exchange and not to the exchange traded currency derivatives market as a whole.

Client level: The gross open position of a client across all contracts shall not exceed 6% of the total open interest or 10 million USD, whichever is higher.

Non-bank Trading Member level: The gross open position of a Trading Member, who is not a bank, across all contracts shall not exceed 15% of the total open interest or 50 million USD whichever is higher.

Bank Trading Member level: The gross open position of a bank, across all contracts shall not exceed 15% of the total open interest or 100 million USD whichever is higher.

7.3 Margins

The trading of currency futures is subject to maintaining initial, extreme loss, and calendar spread margins and the Clearing Corporations of the exchanges (in the case of NSE it is the NSCCL) should ensure maintenance of such margins by the participants based on the guidelines issued by the SEBI from time to time. The Clearing Corporation acts as a counterparty to all contracts traded on the exchange and is responsible for settling all trades. They control their risks, by asking the members to pay margins and provide timely information about their financial conditions. There are various types of margins that the clients/ trading members/ clearing members are required to deposit. They are:

7.3.1 Initial Margins

Initial margin is payable on all open positions of Clearing Members,upto client level, and is payable upfront by Clearing Members in accordance with the margin computation mechanism and/ or system as may be adopted by the Clearing Corporation from time to time. Initial Margin includes SPAN ® margins, futures final settlement margin and such other additional margins, that may be specified by the Clearing Corporation from time to time.

7.3.2 Calendar Spread Margins

A calendar spread is a position in an underlying with one maturity which is hedged by an offsetting position in the same underlying with a different maturity: for example, a short position in a July futures contract on USD-INR and a long position in the August futures contract on USD-INR is a calendar spread. Calendar spreads attract lower margins because they are not exposed to market risk of the underlying. If the underlying rises, the July contract would make a profit while the August contract would make a loss. The calendar spread margin is Rs. 250/- per contract for all months of spread. The benefit for a calendar spread continues till expiry of the near month contract.

7.3.3 Minimum Margins

The minimum margin percentage is 1.75% on the first day of currency futures trading and 1 % thereafter, which is scaled up as per the rules and regulations specified by the Clearing Corporation from time to time.

7.3.4 Futures Final Settlement Margin

Futures Final Settlement Margin is levied at the clearing member level in respect of the final settlement amount due. The final settlement margin is levied from the last trading day of the contract till the completion of pay-in towards the Final Settlement.

7.3.5 Extreme Loss margins

Clearing members are subject to extreme loss margins in addition to initial margin. The applicable extreme loss margin is 1% on the mark to market value of the gross open positions or as may be specified by the relevant authority from time to time. In case of calendar spread positions, extreme loss margin is levied on one third of the mark to market value of the open position of the far month contract.

Extreme Loss margin requirement is computed as under:

- For client positions - it is netted at the level of individual client and grossed across all clients, at the trading/ clearing member level, without any set-offs between clients.

- For proprietary positions - it is netted at trading/ clearing member level without any set-offs between client and proprietary positions. The open position is the net of (buy - sell) positions of each individual client.

For example, to calculate the open position of a trading member having two clients (A and B), the procedure to be followed can be summarized as under:

Calculate the net (long – short) open position of the trading member proprietary transactions. If the trading member is long in 100 contracts and short in 10 contracts, the net proprietary open position is 100 – 10 = 90

Calculate the net open position of each individual client.

If client A is long in 20 contracts and short in 30 contracts then the net position of A is 10

If client B is long in 50 contracts and short in 20 contracts, the net position of B is 30

Similarly, calculate the open position of each client individually.

Sum the net open position of each client ignoring whether it is long or short. For example, if client A is 10 and client B is 30 then the total open position for clients is 10 + 30 = 40.

Add (A) + (B) + trading member's open position to get the total open position for the trading member.

The margin can then be computed based on the total open position at the trading member level. The margins so computed shall be aggregated first at the trading member level and then aggregated at the clearing member level.

7.3.6 Imposition of additional margins

As a risk containment measure, the Clearing Corporation may require clearing members to make payment of additional margins as may be decided from time to time. This is in addition to the initial margin and extreme loss margin, which are or may have been imposed from time to time.

7.3.7 Mode of payment of margin

CDS Clearing Members are required to furnish margin deposits in the form of liquid assets, which consist of cash component as well as non-cash component. The cash component should be at least 50% of the liquid assets and include cash, bank guarantees, fixed deposit receipts, units of money market mutual fund and Gilt funds, and any other form of collateral as prescribed by the Clearing Corporation. Non-cash component includes all other forms of deposits like deposit of approved list of demat securities, units of mutual funds and any other form of collateral as may be prescribed by the Clearing Corporation from time to time. The margins is collected /adjusted from the liquid assets of the member on a real time basis.

7.3.8 Payment of margins

The initial margin and extreme loss margins are payable upfront by the clearing members.Members are required to collect initial margins and extreme loss margins from their client/constituents on an upfront basis.

It is mandatory for all clearing /trading members to report details of such margins collected to the Clearing Corporation.

7.4 Settlement of contracts

7.4.1 Settlement Price

The settlement price for currency futures is determined as under:

Daily Settlement price for mark to market settlement of futures contracts: Daily settlement price for futures contracts is the closing price of such contracts on the trading day. The closing price for a futures contract is calculated on the basis of the last half an hour weighted average price of such contract or such other price as may be decided by the relevant authority from time to time.

Theoretically daily settlement price: Theoretical price is used for unexpired futures contracts, which are not traded during the last half an hour on a day. Similarly, on the first day of the contract cycle, the base price is the theoretically calculated futures price. The theoretical price is calculated using the formula as per the interest rate parity theory, which is as under:

$$F = S * e^{(r - r_f) * T}$$

where:

F_0 = Theoretical Futures Price

S_0 = Value of the underlying

r = domestic risk-free interest rate

r_f = foreign risk-free interest rate

T = time till expiration

e = 2.71828

The domestic risk-free interest rate and the foreign risk-free interest rate is the MIFOR and LIBOR rate as specified by the clearing corporation from time to time.

Final Settlement Price for mark to market settlement of futures contracts: Final settlement price for a futures contract is the Reserve Bank Reference Rate on the last trading day of such futures contract, or as may be specified by the relevant authority from time to time.

7.4.2 Settlement Schedule and Procedure

The pay-in and pay-out of daily mark to market settlements and final settlement of futures contracts is effected in accordance with the settlement schedule issued by the Clearing Corporation periodically.

Daily mark to market settlement

Daily mark to market settlement and final settlement in respect of admitted deals in futures contracts are cash settled by debit/ credit of the clearing accounts of clearing members with the respective clearing bank.

The daily mark to market settlement is reflected on T+1 day basis as per the timelines specified by the Clearing Corporation.

Final settlement

The final settlement of futures contracts is effected on T+2 day basis as per the timelines specified by the clearing corporation. The final settlement date is the contract expiry date. Since the final settlement is done on the contract expiry date, the last trading day is two working days prior to the last business day of the expiry month at 12 noon.

Daily mark to market settlement and final settlement in respect of admitted deals in futures contracts are cash settled by debit/ credit of the clearing accounts of clearing members with the respective clearing bank. In order to facilitate the settlement, the members are required to have clear balance of funds in their clearing account towards their pay-in obligation by the declared pay-in time on the settlement day. The payout of funds is credited to the receiving members clearing account thereafter.

Option to settle daily MTM on T+0 day

Clearing members may opt to pay daily mark to market settlement on a T+0 basis. The option can be exercised once in a quarter (Jan-March, Apr-June, Jul-Sep & Oct-Dec). The option once exercised remains irrevocable during that quarter. Clearing members who opt for payment of daily mark to market settlement amount on a T+ 0 basis are not levied the scaled up margins.

Clearing members who opt to pay the daily mark to market settlement on a T + 0 basis compute such settlement amounts on a daily basis and make the amount of funds available in their clearing account before the end of day on T + 0 day. Failure to do so, either partially or fully is construed as non-compliance and penalties as applicable for settlement shortages from time to time shall be levied.

7.4.3 Calculation of daily mark to market settlement

All positions (brought forward, created during the day, closed out during the day) of a clearing member in futures contracts, at the close of trading hours on a day, are marked to market at the daily settlement price (for daily mark to market settlement) and settled. The mark-to-market profit (loss) is calculated as under:

For contracts executed during the day but not squared off during the day: Current Day's Settlement Price – Trade Price

If the contracts were executed as well as squared off during the day: Sell Price – Buy Price

If the contracts were brought forward from previous day close and squared off during the day: Trade Price – Previous Day Settlement Price

If the contracts were brought forward from previous day close but not squared off during the day: Current Day's Settlement Price – Previous Day Settlement Price

MODEL TEST

CURRENCY DERIVATIVES: A BEGINNER'S MODULE

Q:1 There are many _____ in the financial and business environment today. [3 Marks]

(a) risks
(b) mergers and acquisitions
(c) legal issues
(d) consolidations

Q:2 Exchange rate fluctuations are a risk to _____. [2 Marks]

(a) Issuers
(b) Merchant Bankers
(c) Those with an obligation to pay in a foreign currency
(d) None of the above

Q:3 Exchange rate risks can be mitigated by using _____. [2 Marks]

(a) Index Futures
(b) Currency derivatives
(c) Stock Futures
(d) Interest Rate derivatives

Q:4 Financial Institutions assist businesses in managing their financial risks by creating various _____ instruments. [1 Mark]

(a) hedging
(b) speculative
(c) exotic
(d) financial

Q:5 Businesses use derivatives primarily for _____ . [1 Mark]

(a) hedging
(b) forecasting
(c) estimation
(d) understanding stock price behaviour

Q:6 _____ use currency derivatives to hedge against exchange rate risks. [1 Mark]

(a) Exporters
(b) Importers
(c) Banks
(d) All of the above

Q:7 USD-GBP futures is a contract on the _____. [3 Marks]

(a) US Dollar and Indian Rupees
(b) US Dollar and Japanese Yen
(c) US Dollar and Euro
(d) US Dollar and British Pound

Q:8 A currency pair has a _____ and a _____. [2 Marks]

(a) base currency, price currency
(b) base currency, terms currency
(c) price currency, base currency
(d) price currency, terms currency

Q:9 A USD-INR rate of Rs. 48.0630 implies that Rs. 48.0630 must be paid to obtain ____ US Dollar (s) [2 Marks]

(a) one
(b) two
(c) three
(d) four

Q:10 A change of USD-INR rate from Rs. 48.50 to Rs. 47.50 implies that the buyer of USD will have to pay ____ INR now to buy USD. [1 Mark]

(a) less
(b) more

Q:11 In order to maintain _____, government participates in the open currency market. [1 Mark]

(a) a floating exchange rates
(b) a fixed exchange rates

Q:12 Tick size refers to the _____ at which traders can enter bids and offers. [1 Mark]

(a) base price differential
(b) actual price differential
(c) maximum price differential
(d) minimum price differential

Q:13 A market participant may enter into a spot transaction and exchange the currency _____ [3 Marks]

(a) after 1 m onth
(b) after 2 months
(c) at any future date
(d) at current time

Q:14 Futures contracts can be traded on a _____ platform. [2 Marks]

(a) FII
(b) banking
(c) stock exchange
(d) OTC

Q:15 Futures contracts do not have any expiry date. [2 Marks]

(a) False
(b) True

Q:16 One year interest rates in US and India are say 7% and 10% respectively and the spot rate of USD in India is Rs. 47. One year forward exchange rate should be Rs. ____. [1 Mark]

(a) 48.78
(b) 48.43
(c) 47.45
(d) 47.86

Q:17 One year interest rates in US and India are say 7% and 11% respectively and the spot rate of USD in India is Rs. 38. One year forward exchange rate should be Rs. ____. [1 Mark]

(a) 39.55
(b) 39.90
(c) 40.67
(d) 40.56

Q:18 OTC contracts are _____. [1 Mark]

(a) illegal
(b) standardized contracts
(c) non-standardized contracts
(d) more expensive than futures contracts

Q:19 Purchasing a futures contracts means the buyer must hold on to the contract till expiry and cannot close out the contract with an off setting transaction prior to expiry. [1 Mark]

(a) False
(b) True

Q:20 An oil-importing firm - ABC Co. is expected to make future payments of USD 100000 after 3 months (in USD) for payment against oil imports. Suppose the current 3-month futures rate is Rs. 60. ABC Co. can go ____ in the futures contract to hedge itself. [2 Marks]

(a) Short
(b) Long

Q:21 An exporter - ABC Co. is expected to receive an amount of USD 100000 after 3 months (in USD). Suppose the current 3 - month futures rate is Rs. 57. ABC Co. can go ____ in the futures contract to hedge itself. [2 Marks]

(a) Short
(b) Long

Q:22 An oil-importing firm - ABC Co. is expected to make future payments of USD 100000 after 3 months (in USD) for payment against oil imports. Suppose the current 3 - month futures rate is Rs. 53. ABC Co. goes short in the futures contract to hedge itself. Its hedging strategy will protect itself against against adverse exchange rat e movements. [3 Marks]

(a) False
(b) True

Q:23 An oil-importing firm - ABC Co. is expected to make future payments of USD 100000 after 3 months (in USD) for payment against oil imports. Suppose the current 3 - month futures rate is Rs. 41. ABC Co. goes long in the futures contract to hedge itself. Its hedging strategy will protect itself against against adverse exchange rate movements. [3 Marks]

(a) False
(b) True

Q:24 By hedging, the losses made in the underlying market is offset by the profits made in the futures market. [3 Marks]

(a) False
(b) True

Q:25 A speculator buys 107 USD-INR contracts @ Rs. 49.00 per contract and sells them @ Rs. 50.00 per contract. Assuming 1 contract = 1000 USD, the total profit made by the speculator is Rs. _____ [2 Marks]

(a) 107000
(b) 109000
(c) 1070
(d) 10700

Q:26 A speculator buys 65 USD -INR contracts @ Rs. 41.00 per contract and sells them @ Rs. 42.00 per contract. Assuming 1 contract = 1000 USD, the speculator ends up with a _____. [2 Marks]

(a) loss
(b) profit
(c) no profit no loss

Q:27 A speculator sells 65 USD- INR contracts @ Rs. 41.00 per contract and buys them @ Rs. 40.00 per contract. Assuming 1 contract = 1000 USD, the speculator ends up with a _____. [2 Marks]

(a) loss
(b) profit
(c) no profit no loss

Q:28 All futures contracts have a _____ requirement. [1 Mark]

(a) cash
(b) collateral
(c) deposit
(d) margin money

Q:29 Presume Entity A is expecting a remittance for USD 21000 on 27 August. Wants to lock in the foreign exchange rate today so that the value of inflow in Indian rupee terms is safeguarded. The entity can do so by selling ____ contracts of USD-INR futures at NSE since one contract is for USD 1000. [2 Marks]

(a) 22
(b) 20
(c) 21
(d) 23

Q:30 Presume Entity A is expecting a remittance for USD 25000 on 27 August. Wants to lock in the foreign exchange rate today so that the value of inflow in Indian rupee terms is safeguarded. The entity can do so by selling ____ contracts of USD-INR futures at NSE since one contract is for USD 1000. [2 Marks]

(a) 22
(b) 20
(c) 25
(d) 24

Q:31 Presume Entity A is expecting a remittance of USD 21000 on 27 August. To hedge, it should go ___ currency futures. [3 Marks]

(a) short
(b) long

Q:32 Presume Entity A has a future payment obligation after three months of USD 21000. To hedge, it should go ___ currency futures. [3 Marks]

(a) short
(b) long

Q:33 Arbitrage is a strategy of taking advantage of _____ between two markets. [3 Marks]

(a) price differential
(b) theoretical prices
(c) interest rate differential
(d) timing

Q:34 A trader expects to see a fall in the price of USD-INR. He sells one two-month contract of futures on USD at Rs. 38.00 (each contact for USD 1000). Two months later, when the futures contract expires, USD-INR rate is Rs. 32.00. The trader makes a profit of Rs. ___. [2 Marks]

(a) 2000
(b) 3000
(c) 12000
(d) 6000

Q:35 A speculator who is bullish on the US Dollars would ____ USD-INR contracts.
[2 Marks]

(a) buy
(b) sell

Q:36 A speculator who is bearish on the US Dollars would ____ USD-INR contracts.
[2 Marks]

(a) buy
(b) sell

Q:37 A trader expects to see a rise in the price of USD-INR. He buys one two-month contract of futures on USD at Rs. 38.00 (each contact for USD 1000). Two months later, when the futures contract expires, USD-INR rate is Rs. 41.00. The trader makes a profit of Rs. ___.
[2 Marks]

(a) 12000
(b) 3000
(c) 6000
(d) 9000

Q:38 Futures contracts are attractive for market participants as compared to OTC contracts because futures contracts have _____. [2 Marks]

(a) a settlement guarantee mechanism.
(b) a greater money making potential
(c) zero risk
(d) minimum volatility

Q:39 Banks have been restricted from participating in the USD-INR futures markets in India.
[2 Marks]

(a) False
(b) True

Q:40 If a member wants to take a position for 15000 USD, then the number of contracts required in the Currency Derivatives Segment will be :
[3 Marks]

(a) 15000
(b) 150
(c) 15
(d) 1500

Q:41 The minimum bid-ask spread in the USD-INR currency futures contracts can be _____.
[3 Marks]

(a) 0.0025
(b) 0.0050
(c) 0.0075
(d) 0.1000

Q:42 If the current price is Rs. 50.2025, a single downtick movement will result the price to be Rs. : [3 Marks]

(a) 50.1500
(b) 50.1000
(c) 50.2001
(d) 50.2000

Q:43 A order comes in at 11:30 am into the system and matches with an order which had come into the system at 11:29 am. Trade will take place at the price of the ____ order. [3 Marks]

(a) 11:30 am
(b) 11:29 am
(c) trade cannot take place.

Q:44 The following window is displayed on the trader workstation screen: [2 Marks]

(a) snap quote
(b) valid quote
(c) outstanding quote
(d) open orders quote

Q:45 A calendar spread is a (n) _____ position. [3 Marks]

(a) no margin
(b) highly margined
(c) illegal
(d) hedged

Q:46 No margin is required to be paid on the first day of trading in a USD-INR contract [2 Marks]

(a) False
(b) True

Q:47 Margins are based on the rules and regulations as prescribed by the _____ from time to time. [2 Marks]

(a) SEBI
(b) NSDL
(c) SBI
(d) NSE

Q:48 If the trading member is long in 200 contracts and short in 120 contracts, the net proprietary open position is _____. [1 Mark]

(a) 320
(b) 80
(c) 120
(d) 200

Q:49 Clearing Members are required to furnish margin deposits in the form of liquid assets, which consist of cash component only. [1 Mark]

(a) False
(b) True

Q:50 The daily and final settlement in USD-INR currency futures is in _____.
[1 Mark]

(a) price differential
(b) credit
(c) securities
(d) cash

Correct Answers :

Question No.	Answers	Question No.	Answers
1	(a)	26	(b)
2	(c)	27	(a)
3	(b)	28	(d)
4	(a)	29	(c)
5	(a)	30	(c)
6	(d)	31	(a)
7	(d)	32	(b)
8	(b)	33	(a)
9	(a)	34	(d)
10	(a)	35	(a)
11	(b)	36	(b)
12	(d)	37	(b)
13	(d)	38	(a)
14	(c)	39	(a)
15	(a)	40	(c)
16	(b)	41	(a)
17	(a)	42	(d)
18	(c)	43	(b)
19	(a)	44	(a)
20	(b)	45	(d)
21	(a)	46	(a)
22	(a)	47	(a)
23	(b)	48	(b)
24	(b)	49	(a)
25	(a)	50	(d)