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NISM SERIES VIII - EQUITY DERIVATIVES CERTIFICATION



NISM VIII– EQUITY DERIVATIVES CERTIFICATION EXAMINATION

SHORT NOTES BY PASS4SURE.IN

Basics of Derivatives

Derivative is a contract or a product whose value is derived from value of some other asset known as underlying. Derivatives are based on wide range of underlying assets which include metals, energy resources, agricultural commodities and financial assets.

Derivative Markets: History and Evolution

12th Century: Sellers signed contracts promising future delivery in Europe.

13th Century: Multiple examples of contracts English Cistercian Monasteries, who frequently sold their wool up to 20 years in advance, to foreign merchants.

Late 17th century: A futures market in rice was developed in Japan at Dojima near Osaka.

1848: Chicago Board of Trade (CBOT) facilitated trading of forward contracts.

1865: CBOT listed the first ‘exchange traded’ derivative contract (Futures contract) in the US.

1919: Chicago Mercantile Exchange (CME) was re-organized to allow futures trading.

1972: CME introduced International Monetary Market, which allowed trading in currency futures.

1973: Chicago Board Options Exchange became the first marketplace for trading listed options.

1975-77: CBOT introduced Treasury bill futures and T-Bond futures contract.

1982: CME introduced Eurodollar futures contract and Kansas City Board of Trade launched the first stock index futures.

Factors influencing the growth of derivative market globally

- High volatility in financial markets.
- Integration of financial markets globally.
- Use of latest technology in communications has helped in reduction of transaction costs.
- Higher understanding of market participants on sophisticated risk management tools.
- Frequent innovations in derivatives market and newer applications of products.

Indian Derivatives Market

1996: SEBI set up a committee under Dr. L. C. Gupta to develop appropriate regulatory framework for derivatives trading in India.

1998: SEBI set up a group under Prof. J.R.Verma, to recommend measures for risk containment in derivatives market in India.

1999: The Securities Contract Regulation Act was amended to include “derivatives” within the domain of ‘securities’ and regulatory framework was developed for governing it’s trading.

2000: The exchange traded derivatives started with SEBI permitting BSE and NSE to introduce equity derivative segment.

Products in India Derivative Markets

Forwards: It is a contract between two parties to buy/sell an underlying asset at a certain future date for a price that is pre-decided on the date of contract. Both the parties are obliged to honor the transaction irrespective of price of the underlying asset at the time of delivery.

Futures: A futures contract is similar to a forward, except that the deal is made through an organized and regulated exchange rather than being negotiated directly between two parties. Indeed, we may say futures are exchange traded forward contracts.

Options: It is a contract that gives the right, but not obligation, to buy or sell the underlying at a stated date and price. The buyer of option pays the premium for the right, seller of option receives premium with obligation to sell/buy the underlying, if the buyer exercises his right.

Swaps: A swap is an agreement made between two parties to exchange cash flows in the future according to a prearranged formula. Swaps help market participants manage risk associated with volatile interest rates, currency exchange rates and commodity prices.

Market participants

Hedgers: They already have risks with the prices of underlying assets and use derivatives to reduce their risk. Their main objective is to avoid losses from other positions.

Speculators/Traders: They try to predict the future movements in prices of underlying assets and based on the view, take positions in derivative contracts.

Arbitrageurs: Arbitrageurs produce profit by exploiting a price difference in a product in two different markets.

OTC derivatives markets

Over-the-counter market is not a physical marketplace but a collection of broker-dealers scattered across the country. Buying and selling of contracts is matched through negotiated bidding process over a network that links thousands of intermediaries. OTC derivative market is less regulated market because these transactions occur in private.

Significance of Derivatives

- Helps in improving price-discovery
- Helps transfer of risks
- Helps shift of speculative trade from unorganized market to organized markets.

Risks faced by participants in Derivatives

Derivatives, being leveraged instruments have risks like:

- Counterparty risk: Default by counterparty
- Price risk: Loss on position because of price movement
- Liquidity risk: Inability to exit from a position
- Legal or regulatory risk: Enforceability of contracts
- Operational risk: Fraud, inadequate documentation, improper execution, etc.

Understanding Index

An index is a portfolio of securities that represent a particular market or a portion of a market. Each Index has its own calculation methodology and usually is expressed in terms of a change from a base value. It is an indicator of the performance of overall market or a particular sector.

It serves as a benchmark for portfolio performance. It is used as an underlying for financial application of derivatives.

Types of Stock Market Indices

1. Market capitalization weighted index

In this method of calculation, each stock is given weight according to its market capitalization. So, higher the market capitalization of a constituent, higher is its weight in the index. Popular indices in India Sensex and Nifty were earlier designed on market capitalization weighted method.

2. Free-float market capitalization index

Equity holding is divided differently among various stake holders. Market has started to segregate this on the basis of what is readily available for trading or what is not. The one available for immediate trading is categorized as free float. And, if we compute the index based on weights of each security based on free float market cap, it is called free float market capitalization index.

3. Price weighted index

It is a stock index in which each stock influences the index in proportion to its price. Stocks with a higher price will be given more weight and therefore, will have a greater influence over the performance of the Index.

4. Equal weighted index

An equally-weighted index makes no distinction between large and small companies, both of which are given equal weighting. The value of the index is generated by adding the prices of each stock in the index and dividing that by the total number of stocks.

A good market index should have following attributes:

- It should reflect the market behavior.
- It should be computed by independent third party and be free from influence of any market participant.
- It should be professionally maintained.

Impact Cost

Liquidity in the context of stock market means a market where large orders are executed without moving the prices. (Please read the example explained in the book)

Index management

Index construction, maintenance and revision process is generally done by specialized agencies. It includes: Index **construction**, Index **maintenance** and **index revision**.

Application of Indices

- **Index Funds:** These types of funds invest in a specific index with an objective to generate returns equivalent to the return on index. These funds invest in index stocks in the proportions in which these stocks exist in the index.
- **Index Derivatives:** Index Derivatives are derivative contracts which have the index as the underlying asset. Index Options and Index Futures are the most popular derivative contracts worldwide. Index derivatives are useful as a tool to hedge against the market risk.
- **Exchange Traded Funds:** an exchange. They have number of advantages over other mutual funds as they can be bought and sold on the exchange. Since, ETFs are traded on exchanges intraday transaction is possible. Further, ETFs can be used as basket trading in terms of the smaller denomination and low transaction cost.

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Introduction to Forwards and Futures

Forwards

Forward contract is an agreement made directly between two parties to buy or sell an asset on a specific date in the future, at the terms decided today. Forwards are widely used in commodities, foreign exchange, equity and interest rate markets. In other words, Forwards are bilateral over-the-counter (OTC) transactions where the terms of the contract, such as price, quantity, quality, time and place are negotiated between two parties to the contract. Any alteration in the terms of the contract is possible if both parties agree to it.

Limitations of Forwards

Liquidity Risk: Forwards are not listed or traded on exchanges, which makes it difficult for other market participants to easily access these contracts or contracting parties. The tailor made contracts and their non-availability on exchanges creates illiquidity in the contracts.

Counterparty Risk: Counterparty risk is the risk of an economic loss from the failure of counterparty to fulfill its contractual obligation. Thus, a party to the contract may default on his obligation if there is incentive to default. This risk is also called default risk or credit risk.

Futures

Futures markets were innovated to overcome the limitations of forwards. A futures contract is an agreement made through an organized exchange to buy or sell a fixed amount of a commodity or a financial asset on a future date at an agreed price. Simply futures are standardized forward contracts that are traded on an exchange.

Features of a Futures Market

- Contract between parties to exchange on a centralized trading platform i.e. exchange
- Price discovery through free interaction of buyers and sellers
- Margins are payable by both the parties
- Quality and quantity decided today (standardized)

Terminologies in Futures Market

- **Spot Price:** The price at which an asset trades in the cash market.
- **Futures Price:** The price of the futures contract in the futures market.
- **Contract Cycle:** The period over which a contract trades.
- **Expiration Day:** The day on which a derivative contract ceases to exist. It is last trading day of the contract.
- **Ticket size:** It is minimum move allowed in the price quotations. Exchanges decide the tick sizes on traded contracts as part of contract specification.
- **Contract size and contract value:** Futures contracts are traded in lots and to arrive at the contract value we have to multiply the price with contract multiplier or lot size or contract size.

- **Basis:** The difference between the spot price and the futures price is called basis. If the futures price is greater than spot price, basis for the asset is negative. Similarly, if the spot price is greater than futures price, basis for the asset is positive.
- **Cost of carry:** Cost of Carry is the relationship between futures prices and spot prices. It measures the storage cost plus the interest that is paid to 'carry' the asset till delivery less the income earned on the asset during the holding period. For equity derivatives, carrying cost is the interest paid to finance the purchase less (minus) dividend earned.
- **Margin Account:** As exchange guarantees the settlement of all the trades, to protect itself against default by either counterparty, it charges various margins from brokers. Brokers in turn charge margins from their customers.
- **Initial Margin:** The amount one needs to deposit in the margin account at the time of entering a futures contract is known as the initial margin.
- **Marking to market:** In futures market, while contracts have maturity of several months, profits and losses are settled on day-to-day basis – called mark to market (MTM) settlement.
- **Open Interest and volumes traded:** An open interest is the total number of contracts outstanding (yet to be settled) for an underlying asset.
- **Price Band:** Price Band is essentially the price range within which a contract is permitted to trade during a day.

Terminologies in Futures Market

- **Long Position:** Outstanding buy position in a contract is called "Long Position".
- **Short Position:** Outstanding sell position in a contract is called "Short Position".
- **Open Position:** Outstanding either long (buy) or short (sell) position in various derivative contracts is called "Open Position".
- **Naked and calendar spread position:** Naked position in futures market simply means a long or short position in any futures contract without having any position in the underlying asset. Calendar spread position is a combination of two positions in futures on the same underlying - long on one maturity contract and short on a different maturity contract.
- **Opening a position:** Opening a position means either buying or selling a contract, which increases client's open position (long or short).
- **Closing a position:** Closing a position means either buying or selling a contract, which essentially results in reduction of client's open position (long or short). A client is said to be closed a position.

Pay-off charts

Pay off on a position is the likely profit/ loss that would accrue to a market participant with change in the price of the underlying asset at expiry. The payoff diagram is graphical representation showing the price of the underlying asset on the X-axis and profits/ losses on the Y-axis. In case of futures contracts, long as well as short position has unlimited profit or loss potential. This results into linear pay offs for futures contracts.

Differences between Forwards and Futures

Feature	Forward contracts	Futures contracts
Operational mechanism	It is not traded on the exchanges.	It is an exchange-traded contract.
Contract specifications	Terms of the contracts differ from trade to trade (tailor made contract) according to the need of the participants.	Terms of the contracts are standardized.
Counter-party risk	Exists, but at times gets reduced by a guarantor.	Exists but the clearing agency associated with exchanges becomes the counter-party to all trades assuring guarantee on their settlement.
Liquidation profile	Low, as contracts are tailor made catering to the needs of the parties involved. Further, contracts are not easily accessible to other market participants.	High, as contracts are standardised exchange-traded contracts.
Price discovery	Not Efficient, as markets are scattered.	Efficient, centralised trading platform helps all buyers and sellers to come together and discover the price through common order book.
Quality of information and its dissemination	Quality of information may be poor. Speed of information dissemination is week.	Futures are traded nationwide. Every bit of decision related information is distributed very fast.
Examples	Currency markets are an example of forwards. Today currency futures and options have been introduced in India, but yet a market for currency forwards exists through banks.	Commodities futures, Currency futures, Index futures and Individual stock futures in India.

Futures Pricing

There is no single way to price futures contracts because different assets have different demand and supply patterns, different characteristics and cash flow patterns. This makes it difficult to design a single methodology for calculation of pricing of futures contracts. Market participants use different models for pricing futures.

1. Cash and Carry Model for Futures Pricing

Cash and Carry model is also known as non-arbitrage model. This model assumes that in an efficient market, arbitrage opportunities cannot exist. In other words, the moment there is an opportunity to make money in the market due to mispricing in the asset price and its replicas, arbitrageurs will start trading to profit from these mispricing and thereby eliminating these opportunities. This trading continues until the prices are aligned across the products/ markets for replicating assets. The cost of creating a synthetic futures position is the fair price of futures contract. Fair price of futures contract is nothing but addition of spot price of underlying asset and cost of carrying the asset from today until delivery. Cost of carrying a financial asset from today to the future date would entail different costs like transaction cost, custodial charges, financing cost, etc whereas for commodities, it would also include costs like warehousing cost, insurance cost, etc.

Assumptions in cash and carry model

- Underlying asset is available in abundance in cash market.
- Demand and supply in the underlying asset is not seasonal.
- Holding and maintaining of underlying asset is easy and feasible.
- Underlying asset can be sold short.
- No transaction costs.
- No taxes.
- No margin requirements.

Convenience yield: Convenience return for a commodity is likely to be different for different people, depending on the way they use it. Further, it may vary over a period. In fact, convenience is a subjective issue and may be very difficult to price. Convenience yield sometimes may dominate the cost of carry, which leads futures to trade at a discount to the cash market. In this case, reverse arbitrage is also not possible because no one lends traders the assets to sell short in the cash market.

2. Expectancy model of futures pricing

According to the expectancy model, it is not the relationship between spot and futures prices but that of expected spot and futures prices, which moves the market, especially in cases when the asset cannot be sold short or cannot be stored. According to this model-

- Futures can trade at a premium or discount to the spot price of underlying asset.
- Futures price give market participants an indication of the expected direction of movement of the spot price in the future.

Price discovery and convergence of cash and futures prices on the expiry: It is important to understand what actually futures prices indicate? For instance, if say May 2018 index futures contract is trading today (in March 2018) at 10200, what does it mean. We can explain this by saying that that market expects the cash index to settle at 10200 at the closure of the market on last Thursday of May (i.e., on the last trading day of the contract which is May 31, 2018). Accordingly, both futures and spot prices converge at the maturity of futures contract, as at that point in time there cannot be any difference between these two prices. This is the reason why all futures contracts on expiry settle at the underlying cash market price. This principal remains same for all the underlying assets.

Commodity, Equity & Index Futures: The basic concept of a derivative contract remains the same for all the underlying assets, whether the underlying happens to be a commodity or equity or index futures. In the case of financial derivatives, most of these contracts are cash settled whereas in the case of commodity derivatives, some contracts may settle with physical delivery. Even in the case of physical settlement, financial assets are not bulky and do not need special facility for storage, whereas in commodity market, due to the bulky nature of the underlying assets, physical settlement in commodity derivatives creates the need for warehousing.

- ❖ Specific risk or **unsystematic risk** is the component of price risk that is unique to particular events of the company and/or industry. This risk is inseparable from investing in the securities.
- ❖ An investor can diversify his portfolio and eliminate major part of price risk i.e. the diversifiable/unsystematic risk but what is left is the non-diversifiable portion or the market risk-called **systematic risk**.

Important terms in hedging

Long hedge: Long hedge is the transaction when we hedge our position in cash market by going long in futures market.

Short hedge: Short Hedge is a transaction when the hedge is accomplished by going short in futures market.

Cross hedge: When one uses index futures to hedge against the market risk, he is essentially establishing a cross hedge because he is not using the exact underlying to hedge the risk against.

Introduction to Options

An Option is a contract that gives the right, but not an obligation, to buy or sell the underlying asset on or before a stated date/day, at a stated price, for a price. The party taking a long position i.e. buying the option is called buyer/ holder of the option and the party taking a short position i.e. selling the option is called the seller/ writer of the option.

Options may be categorized into two main types: -

- ❖ Call Options
- ❖ Put Options

Option, which gives buyer a right to buy the underlying asset, is called Call option and the option which gives buyer a right to sell the underlying asset, is called a Put option.

Option terminologies:

- **Index option:** These options have index as the underlying asset.
- **Stock option:** These options have individual stocks as the underlying asset
- **Buyer of an option:** The buyer of an option is one who has a right but not the obligation in the contract. For owning this right, he pays a price to the seller of this right called 'option premium',
- **Writer of an option:** The writer of an option is one who receives the option premium and is thereby obliged to sell/buy the asset if the buyer of option exercises his right.
- **American option:** The owner of such option can exercise his right at any time on or before the expiry date/day of the contract.
- **European option:** The owner of such option can exercise his right only on the expiry date/day of the contract. In India, Index options are European.
- **Option price/Premium:** It is the price which the option buyer pays to the option seller.
- **Lot size:** Lot size is the number of units of underlying asset in a contract.
- **Expiration Day:** The day on which a derivative contract ceases to exist. It is the last trading date/day of the contract.
- **Strike price or Exercise price (X):** Strike price is the price per share for which the underlying security may be purchased or sold by the option holder.
- **In the money (ITM) option:** This option would give holder a positive cash flow, if it were exercised immediately. Ex: A call option is said to be ITM, when spot price is higher than strike price.
- **At the money (ATM) option:** At the money option would lead to zero cash flow if it were exercised immediately. Therefore, for both call and put ATM options, strike price is equal to spot price.
- **Out of the money (OTM) option:** Out of the money option is one with strike price worse than the spot price for the holder of option. In other words, this option would give the holder a negative cash flow if it were exercised immediately
- **Intrinsic value:** Intrinsic value refers to the amount by which option is in the money i.e. the amount an option buyer will realize, before adjusting for premium paid.
- **Time value:** It is the difference between premium and intrinsic value.
- **Open Interest:** As discussed in futures section, open interest is the total number of option contracts outstanding for an underlying asset.

Pay-off charts

Long on option: Buyer of an option is said to be "long on option". As described above, he/she would have a right and no obligation with regard to buying/ selling the underlying asset in the contract. When you are long on equity option contract:

- You have the right to exercise that option.
- Your potential loss is limited to the premium amount you paid for buying the option.
- Profit would depend on the level of underlying asset price at the time of expiry of the contract.

Short on option: Seller of an option is said to be "short on option". As described above, he/she would have obligation but no right with regard to selling/buying the underlying asset in the contract. When you are short (i.e., the writer of) an equity option contract:

- Your maximum profit is the premium received.
- You can be assigned an exercised option any time during the life of option contract (for American Options only). All option writers should be aware that it is a distinct possibility.
- Your potential loss is theoretically unlimited as defined below.

Note: Please refer the examples provided in the book to a get a better understanding of the pay-off charts.

- ❖ An opening transaction is one that adds to, or creates a new trading position. It can be either a purchase or a sale.
- ❖ A closing transaction is one that reduces or eliminates an existing position by an appropriate offsetting purchase or sale.
- ❖ An option buyer pays a relatively small premium for market exposure in relation to the contract value. This is known as leverage.

Risk and Return profile of option contracts:

	Risk	Return
Long	Premium paid	Unlimited
Short	Unlimited	Premium paid

Fundamental parameters on which the option price depends:

- 1) Spot price of the underlying asset
- 2) Strike price of the option
- 3) Volatility of the underlying asset's price
- 4) Time to expiration
- 5) Interest rates

Option Greeks

Delta: This measures the sensitivity of the option value to a given small change in the price of the underlying asset. It may also be seen as the speed with which an option moves with respect to price of the underlying asset. **Delta = Change in option premium / Unit change in price of the underlying asset.**

Gamma: It measures change in delta with respect to change in price of the underlying asset. This is called a second derivative option with regard to price of the underlying asset. It is calculated as the ratio of change in delta for a unit change in market price of the underlying asset. **Gamma = Change in an option delta / Unit change in price of underlying asset**

Theta: It is a measure of an option's sensitivity to time decay. Theta is the change in option price given an one-day decrease in time to expiration. It is a measure of time decay. Theta is generally used to gain an idea of how time decay is affecting your option positions. **Theta = Change in an option premium / Change in time to expiry**

Vega: This is a measure of the sensitivity of an option price to changes in market volatility. It is the change of an option premium for a given change (typically 1%) in the underlying volatility. Vega is positive for a long call and a long put. **Vega = Change in an option premium / Change in volatility**

Rho = Change in an option premium / Change in cost of funding the underlying Rho is the change in option price given a one percentage point change in the risk-free interest rate. Rho measures the change in an option's price per unit increase in the cost of funding the underlying. **Rho = Change in an option premium / Change in cost of funding the underlying**

Option Trading Strategies

Options Spread

Spreads involve combining options on the same underlying and of same type (call/ put) but with different strikes and maturities.

- 1. Vertical Spread:** Vertical spreads are created by using options having same expiry but different strike prices. Further, these can be created either using calls as combination or puts as combination. These can be further classified as:
 - Bullish Vertical Spread (Using calls and puts)
 - Bearish Vertical Spread (Using calls and puts)
- 2. Horizontal spread:** Horizontal spread involves same strike, same type but different expiry options. This is also known as time spread or calendar spread. Here, it is not possible to draw the payoff chart as the expiries underlying the spread are different.
- 3. Diagonal Spread:** Diagonal spread involves combination of options having same underlying but different expiries as well as different strikes. Again, as the two legs in a spread are in different maturities, it is not possible to draw pay offs here as well. These are much more complicated in nature and in execution.

Straddle

This strategy involves two options of same strike prices and same maturity. A long straddle position is created by buying a call and a put option of same strike and same expiry whereas a short straddle is created by shorting a call and a put option of same strike and same expiry.

- 1. Long Straddle:** If a person buys both a call and a put at these prices, then his maximum loss will be equal to the sum of these two premiums paid. And, price movement from here in either direction would first result in that person recovering his premium and then making profit.
- 2. Short Straddle:** Here, trader's view is that the price of underlying would not move much or remain stable. So, he sells a call and a put so that he can profit from the premiums. As position of short straddle is just opposite of long straddle, the payoff chart would be just inverted, so what was loss for long straddle would become profit for short straddle.

Strangle

- 1. Long Strangle:** The outlook here is that the market will move substantially in either direction, but while in straddle, both options have same strike price, in case of a strangle, the strikes are different. Also, both the options in this case are out-of-the-money and hence the premium paid is low.
- 2. Short Strangle:** This is exactly opposite to the long strangle with two out-of-the-money options (call and put) shorted. Outlook, like short straddle, is that market will remain stable over the life of options. Pay offs for this position will be exactly opposite to that of a long strangle position. As always, the short position will make money, when the long position is in loss and vice versa.

Covered Call

This strategy is used to generate extra income from existing holdings in the cash market. The most important factor in this strategy is the strike of the sold call option. If strike is close to the prevailing price of underlying stock, it would fetch higher premium upfront but would lock the potential gain from the stock early. And, if strike is too far from the current price of underlying, while it would fetch low upfront premium, would provide for longer ride of money on underlying stock.

Protective Put

A protective put payoff is similar to that of long call. This is called synthetic long call position. Any investor, long in the cash market, always runs the risk of a fall in prices and thereby reduction of portfolio value and MTM losses. A mutual fund manager, who is anticipating a fall, can either sell his entire portfolio or short futures to hedge his portfolio. The strategy used here is called protective put.

Collar

A collar strategy is an extension of covered call strategy. Readers may recall that in case of covered call, the downside risk remains for falling prices; i.e. if the stock price moves down, losses keep increasing (covered call is similar to short put). To put a floor to this downside, we long a put option, which essentially negates the downside of the short underlying/futures (or the synthetic short put).

Butterfly Spread

As collar is an extension of covered call, butterfly spread is an extension of short straddle. We may recollect that downside in short straddle is unlimited if market moves significantly in either direction. To put a limit to this downside, along with short straddle, trader buys one out of the money call and one out of the money put. Resultantly, a position is created with pictorial pay-off, which looks like a butterfly and so this strategy is called “Butterfly Spread”. Butterfly spread can be created with only calls, only puts or combinations of both calls and puts. Here, we are creating this position with help of only calls.

Introduction to Trading Systems

- **Trading member:** They are members of Stock Exchanges. They can trade either on behalf of their clients or on their own account. The exchange assigns a trading member ID to each of its trading member. A trading member can have more than one user.
- 1. **Trading cum clearing member:** A Clearing Member (CM) is also a Trading Member (TM) of the exchange. Such CMs may clear and settle their own proprietary trades, their clients' trades as well as trades of other TM's & Custodial Participants.
- 2. **Professional Clearing member:** Professional clearing member clears the trades of his associate Trading Member and institutional clients. PCM is not a Trading Member of the exchange. Typically banks or custodians become a PCM and clear and settle for TM's as well as for Custodial Participants.

3. **Self-Clearing member:** A Self Clearing Member is also a Trading Member on the exchange. Such CMs may clear and settle only their own proprietary trades and their clients' trades but cannot clear and settle trades of other TM's.
- **Participant:** Client of the trading member
 - **Market Timing of Derivative segment:** All working days between 9.15 am to 3:30 pm
 - **Corporate Hierarchy:**
 -

Corporate Manager (1): it is the highest level in a trading firm. Corporate Manager 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. Along with this he can also define exposure limits for the branches of the firm. This facility is available only to the corporate manager.

Branch Manager (2): As a user, it is placed under the corporate manager. Branch Manager can perform and view order and trade related activities for all dealers under that branch.

Dealer (3): Dealer is at the lowest level of the user hierarchy. He can only view his own orders and trades and does not have access to information on other dealers under either the same branch or in other branches.

- **Client Broker Relationship**

Types of Orders

- **Day Order:** A Day order is valid for a single day. If not executed, the trading system cancels it automatically.
- **Immediate or Cancelled:** User is allowed to buy/sell a contract as soon as the order is released into the trading system. An unmatched order will be immediately cancelled.
- **Limit Order:** It is an order to buy or sell a contract at a specified price. The order gets executed only at this specified limit price or at a better price than that.
- **Market Order:** A market order is an order to buy or sell a contract at the best bid/offer price currently available in the market. Price is not specified at the time of placing this order.
- **Stop-Loss order:** A stop loss is an order to buy (or sell) a security once the price of the security climbed above (or dropped below) a trigger price.

In India, F&O platforms offer an order driven market, wherein orders match automatically on price time priority basis. Orders, as and when they are received, are first time stamped and then immediately processed for potential match. If a match is not found, then the orders are stored in different 'books'.

- **Price bands:**

There are no price bands applicable in the derivatives segment. However, in order to prevent erroneous order entry, operating ranges and day minimum/maximum ranges are kept as below:

For Index Futures: at 10% of the base price

For Futures on Individual Securities: at 10% of the base price

For Index and Stock Options: A contract specific price range based on its delta value is computed and updated on a daily basis.

In view of this, orders placed at prices which are beyond the operating ranges would reach the Exchange as a price freeze.

- **The Trader Workstation**

The market watch window

The best way to familiarize oneself with the screen is to spend some time studying a live screen. The windows displayed on the trader workstation screen are title bar, Ticker window of futures and options market, Ticker window of underlying (capital) market, Toolbar, Market watch window, Inquiry window, Snap quote, Order/trade window and System message window.

Placing orders on the trading system

While entering orders on the trading system for both the futures and the options market, trading member are required to identify orders as being proprietary or clients. 'Pro' identifies proprietary orders while 'Cli' identifies client orders. Client account number should be provided for client orders.

- **Adjustments for corporate actions**

Adjustments for Corporate Actions for Stock Options would be as follows:

1. The basis for any adjustment for corporate action shall be such that the value of the position of the market participants on cum and ex-date for corporate action shall continue to remain the same as far as possible. This will facilitate in retaining the relative status of positions viz. in-the-money, at-the-money and out-of-money. This will also address issues related to exercise and assignments.
2. Any adjustment for corporate actions shall be carried out on the last day on which a security is traded on a 'cum' basis in the underlying cash market, after the close of trading hours.
3. Adjustments shall mean modifications to positions and/or contract specifications as listed below such that the basic premise of adjustment laid down in the above paragraph is satisfied:
 - (a) Strike Price
 - (b) Position
 - (c) Market Lot/Multiplier

The adjustments shall be carried out on any or all of the above based on the nature of the corporate action. The adjustments for corporate actions shall be carried out on all open positions. The corporate actions may be broadly classified under stock benefits and cash benefits as follows Bonus, Rights, Merger/De-merger, Amalgamation, Splits, Consolidations, Hive-off, Warrants, Secured Premium Notes

- **Recently approved changes - Inclusion and Exclusion of stocks for derivatives trading**

SEBI in its Board Meeting on March 28, 2018 took the following decisions in order to rationalize and strengthen the framework of the equity derivatives market in India:

(I) To facilitate greater alignment of the cash and derivative market, physical settlement for all stock derivatives shall be carried out in a phased and calibrated manner.

(II) To update and strengthen the existing entry criteria for introduction of stocks into the derivative segment in line with the increase in market capitalization since the last revision of the criteria in 2012.

(III) To begin with, stocks which are currently in derivatives but fail to meet any of the enhanced criteria would be physically settled.

(IV) Stocks which are currently in derivatives and meet the enhanced criteria shall be cash settled

(V) To reflect global initiatives on product suitability, a framework has been approved.

Individual investors may freely take exposure in the market (cash and derivatives) up to a computed exposure based on their disclosed income as per their Income Tax Return (ITR) over a period of time.

Introduction to Clearing and settlement system

Clearing Corporation/ Clearing House is responsible for clearing and settlement of all trades executed on the F&O Segment of the Exchange. Clearing Corporation acts as a legal counterparty to all trades on this segment and also guarantees their financial settlement. The Clearing and Settlement process comprises of three main activities, viz., Clearing, Settlement and Risk Management.

Clearing Member

- Self-clearing member
- Trading member-cum-clearing member
- Professional clearing member

Clearing Banks: Funds settlement takes place through clearing banks. For the purpose of settlement all clearing members are required to open a separate bank account with Clearing Corporation designated clearing bank for F&O segment.

Settlement Schedule: The settlement of trades is on T+1 working day basis. Members with a funds pay-in obligation are required to have clear funds in their primary clearing account on or before 10.30 a.m. on the settlement day.

Mark to Market is a process by which margins are adjusted on the basis of daily price changes in the markets for underlying assets.

Final Settlement: On expiration day of the futures contracts, after the close of trading hours, clearing corporation marks all positions of a clearing member to the final settlement price and the resulting profit/ loss is settled in cash.

Options contracts have two types of settlements

1. **Daily premium settlement:** The clearing members who have a premium payable position are required to pay the premium amount to clearing corporation which in turn passed on to the members who have a premium receivable position. This is known as daily premium settlement.
2. **Final settlement:** Profit/ loss amount for options contract on index and individual securities on final settlement is credited/debited to the relevant clearing members clearing bank account on T+1 day i.e. a day after expiry day. Open positions, in option contracts, cease to exist after their expiration day.

Clearing corporation provides a facility to entities like institutions to execute trades through any trading member, which may be cleared and settled by their own CM. Such entities are called **Custodial Participants (CP)**.

SPAN

In order to manage risk efficiently in the Indian securities market, exchanges have adopted SPAN (Standard Portfolio Analysis of Risk), a risk management and margining product designed by CME, Chicago, USA. This software was developed for calculating initial margins on the various positions of market participants. The objective of SPAN is to identify overall potential risk in a portfolio. The program treats futures and options uniformly, while recognizing the exposures associated with options portfolios. Since SPAN is used to determine initial margins on various positions, its basic objective is to determine the largest possible loss that a portfolio might reasonably be expected to suffer from one day to the next. It then sets the initial margins at a level, which is sufficient to cover this one-day potential loss.

- **Initial Margin:** Initial margin requirements are based on 99% value at risk over a day's time.
- **Premium Margin:** This margin is required to be paid by a buyer of an option till the premium settlement is complete.
- **Assignment Margins:** assignment margin is required to be paid on assigned positions of Clearing Members towards final exercise settlement obligations
- **Exposure margins:** Clearing members are subject to these margins in addition to initial margins.
- **Client Margins:** Clearing Corporation intimates all members of the margin liability of their client.

Legal and Regulatory Environment

Securities Contracts (Regulation) Act, 1956

The Securities Contracts (Regulation) Act, 1956 also known as SCRA is an Act of the Parliament of India enacted to prevent undesirable exchanges in securities and to control the working of stock exchange in India. The Act aims to prevent undesirable transactions in securities. It governs the trading of securities in India. The term "securities" has been defined in the Section 2(h) of SCRA. It came into force on 20 February 1957.

Securities and Exchange Board of India Act, 1992

SEBI Act, 1992 provides for establishment of Securities and Exchange Board of India (SEBI) with statutory powers for:

- Protecting the interests of investors in securities
- Promoting the development of the securities market
- Regulating the securities market.

Its regulatory jurisdiction extends over corporate in the issuance of capital and transfer of securities, in addition to all intermediaries and persons associated with securities market. SEBI has been obligated to perform the aforesaid functions by such measures as it thinks fit.

Major recommendations of Dr. L.C.Gupta Committee

- Margins should be based on Value at Risk Methodology at 99% confidence.
- Volatility and Exposure should be monitored online.
- Daily collection of Mark to Market Margins (on the next trading day).
- Market participants should know volatility and margin methodology.
- Each dealer should pass SEBI approved certification exams (certificate will have a validity of 3 years).
- Derivatives segment must be separate from cash segment and grossing up of margins at client level.
- Separate Investor Protection Fund must be created for derivatives segment.
- Off line order entry is permitted.
- The derivatives segment should attract at least 50 members.
- Clearing Members should have a Minimum Net-worth of Rs 3 Crores.
- Clearing Members should maintain a Minimum Deposit in Liquid Assets of Rs 50 lakhs with the exchange or its Clearing Corporation.
- Mark to Margins should be settled only in Cash.
- Both speculators/traders and hedgers are required for a healthy derivatives market.
- Both Exchanges and SEBI should work together in regulating the derivatives market.
- Exchanges should regulate at operational day to day level, while SEBI will oversee the process and formulate policy.
- Mutual Funds should be allowed to hedge in derivatives segment.
- Derivatives should begin with Index Futures and other products should be introduced in a phased manner.
- Members' exposure should be linked to the amount of liquid assets maintained by them with the clearing corporation.
- Cross margining (linking overall cash and derivative positions for margining) is not permitted.
- All clients should pay margins. Brokers should not fund margins of clients.
- In the long run, India should have a national level clearing corporation.
- Clients should be provided with a Risk Disclosure Document by brokers.
- Brokers should keep margins collected from clients in a separate bank account.
- Brokers cannot use margins for any purpose except for payment of such margins to the clearing corporation.
- Transactions should be entered in the trading system exclusive of brokerage.
- Brokerage should be charged separately in the Contract Note.
- In case of Clearing Member default, margins paid by the Clearing Member on his own account alone would be used to settle his dues.
- All brokers in the derivatives segment should obtain SEBI Registration.
- The clearing function should be organized as a separate entity, preferably in the form of a Clearing Corporation.
- The Clearing Corporation has powers to levy additional margins, special margins, define maximum exposure limits and disable brokers from trading.
- At the time of entering into a transaction, the broker must indicate the client on whose behalf the transaction is being entered into. Proprietary trading must also be clearly identified.
- SEBI should create a Special Derivatives Cell within itself to understand and supervise the market better.
- SEBI should constitute an Advisory Council for derivatives.
- Derivatives segment should have a separate Governing Council.
- No common members should be allowed between the Cash segment Governing Board and the Derivatives segment Governing Council of the exchanges.

- The exchange should set up Arbitration and Investor Grievance Cells in at least 4 regions across the country.
- Derivatives trading must be through on-line systems.
- Disaster recovery site (in case of computer failure) is a must.
- Information about derivatives segment must be disseminated over at least two information vending networks (e.g. Reuters, Bloomberg).
- All brokers of the Cash segment will not automatically become members of the Derivative segment.
- An efficient cash market is a must for a healthy derivatives market.
- Delivery levels in the cash market should improve and increase.
- Uniform settlement cycle across all exchanges is recommended.
- A separate Governing Board should be constituted for the Clearing Corporation of the Derivatives segment.
- No broker members should be allowed to sit on the Governing Board of the Clearing Corporation.
- If your client is a Trust or a Company, you (as a broker) must obtain authorization from the Board of Trustees or Board of Directors for trading in derivatives on their behalf
- Providing Client ID for every transaction is mandatory

Major recommendations of Prof. J.R.Verma Committee

- Calendar spreads on futures will attract lower margins (minimum 1% and maximum 3% - the margin itself being 0.5% per month of spread on the far month value).
- Detailed methodology on Value at Risk provided.
- Volatility should be calculated based on standard deviation of logarithmic daily returns.
- Exponential weighted average method should be used for calculation of Volatility.
- Initial Margin levels should be dynamic and recalculated continuously based on volatility levels.
- Exchange should obtain SEBI approval if it wants to change the Initial Margin calculation methodology.
- Initial Margin, if changed, will apply to all outstanding contracts and not only to fresh contracts.
- Calendar spreads carry only basis risk and no market risk - hence lower margins are adequate.
- Calendar spreads should be treated as open positions as the near month expires.
- Differential margins on conversion of Calendar spread positions to open positions should be collected three days before expiry of the near month (technically, Prof. J.R.Verma Committee recommendation was different, however currently as per SEBI guidelines, this is the regulation).
- Liquid Assets mean Deposits maintained by Clearing Members with the Clearing Corporation.
- Liquid Assets can be in the form of Cash, Cash Equivalents (Government Securities, Fixed Deposits, Treasury Bills, Bank Guarantees, and Investment Grade Debt Securities) and Equity Securities.
- Equity Securities can form maximum 50% of Liquid Assets.
- Cash and Cash Equivalents must form minimum 50% of Liquid Assets.
- Liquid Net-worth is defined as Liquid Assets minus Initial Margin.
- Liquid Net-worth of all Clearing Members at all points of time (including intraday) should be maintained at Rs 50 lakhs minimum level.
- Securities placed with the Clearing Corporation shall be marked to market on weekly basis.
- Hair cut on equity securities is 15% and on debt securities is 10%.

Accounting and Taxation

Accounting for Forward Contract as per Accounting Standard - 11

When forward contract is for hedging

- The premium or discount should be amortized over the life of contract.
- Exchange difference is recognized in Profit & Loss statement of the year.
- Profit/ loss on cancellation/ renewal of forward contract are recognized in P&L of the year.

When forward contract is for trading/ speculation

- No premium or discount is recognized.
- A gain or loss i.e. the difference between the forward rates for remaining maturity period should be recognized in the P&L of the period.
- Profit/ loss on cancellation / renewal of forward contract are recognized in P&L of the year.

Accounting of Equity index and Equity stock futures in the books of the client

The Institute of Chartered Accountants of India (ICAI) has issued guidance notes on accounting of index futures contracts from the view point of parties who enter into such futures contracts as buyers or sellers. Hence in this section we shall largely focus on the accounting treatment of equity index futures in the books of the client.

Taxation of derivative transaction in securities

Prior to Financial Year 2005–06, transaction in derivatives were considered as speculative transactions for the purpose of determination of tax liability. Finance Act, 2005 has amended section 43(5) so as to exclude transactions in derivatives carried out in a “**recognized stock exchange**” for this purpose. This implies that income or loss on derivative transactions which are carried out in a “recognized stock exchange” is **not taxed as speculative income or loss**. Thus, loss on derivative transactions can be set off against any other income during the year (except salary income). In case the same cannot be set off, it can be carried forward to subsequent assessment year and set off against any other non-speculative business income of the subsequent year. Such losses can be carried forward for a period of 8 assessment years. It may also be noted that securities transaction tax paid on such transactions is eligible as deduction under Income-tax Act, 1961.

Sales Practices and Investors Protection Services

Financial Institutions should have customer-oriented approach, where sales of products are customer lead and always accompanied by correspondingly efficient and appropriate advice. It can be summarily stated that: "Customers have the right to get good advice; finance employees have the duty to give good advice."

- Investors should be careful of opportunities that promise spectacular profits or "guaranteed" returns.
- One has to keep in mind no investment is risk-free. Returns are related to the risk taken and hence there cannot be a product in the market that gives high return in risk free manner.

"High Return" or "Risk-Free" Investments

Investors should be careful of opportunities that promise spectacular profits or "guaranteed" returns. The deal sounds too good to resist. An individual may claim that unrealistic returns can be realized from "Low-Risk Investment Opportunities", but one has to keep in mind no investment is risk-free. Returns are related to the risk taken and hence there cannot be a product in the market that gives high return in risk free manner.

Investment Advisor services

Investment advisor is an individual or firm responsible for making investments on behalf of, and/ or providing advice to, investors. He has a duty to act in the best interest of their clients. Sometimes, however, investment advisors take advantage of their positions to misappropriate money directly from their clients. Investors should be careful to review their monthly account statements and to conduct annual reviews of their investment plans with their investment adviser.

Unsuitable Investment Recommendations

Some unscrupulous investment advisers convince clients to purchase investment products that don't meet the objectives of an investor. Unsuitable recommendations can occur when a broker sells speculative transactions such as options, futures, or penny stocks to say a senior citizen with low risk tolerance. Investors should be careful to review the risk profile of each investment recommendation.

Investor Seminars

Investment advisers commonly invite investors to attend seminars. At these seminars, advisers often use sales tactics to pitch unsuitable products. Investors should avoid making rushed decisions at sales seminars and should seek objective third party advice before committing their funds. As sales become an integral part in financial services and proper advice to the customers is important.

Churning refers to when securities professionals making unnecessary and excessive trades in customer accounts for the sole purpose of generating commissions.

Risk profile of the clients:

People invest in various investment products that generally comprise:

- Fixed Income Instruments, and
- Market oriented investments.

Some of the key parameters on which one's risk tolerance can depend is age, personal income, combined family income, dependents, occupation, marital status, education, etc. The objectives of the investors should be made clear to give a proper advice and meet his short term as well as long term needs.

Risk based approach

It is generally recognized that customers can be classified into a higher or lower risk category depending on circumstances such as the customer's background, type of business relationship or transaction etc. As such, the registered intermediaries should apply each of the customers due diligence measures on a risk sensitive basis. The basic principle enshrined in this approach is that the registered intermediaries should adopt an enhanced customer due diligence process for higher risk categories of customers. In line with the risk-based approach, the type and amount of identification information and documents that intermediaries should obtain necessarily depend on the risk category of a particular customer.

- ❖ Clients of special category include NRIs, HNIs, Trust, Charities, PEPs, Non Face to face clients, government executives, etc.

Written Anti Money Laundering Procedures

Each registered intermediary should adopt written procedures to implement the anti-money laundering provisions as envisaged under the Anti-Money Laundering Act, 2002. Such procedures should include inter alia, the following three specific parameters which are related to the overall 'Client Due Diligence Process':

- Policy for acceptance of clients
- Procedure for identifying the clients
- Transaction monitoring and reporting especially Suspicious Transactions Reporting (STR)

Client Identification Procedure

The 'Know your Client' (KYC) policy should clearly spell out the client identification procedure to be carried out at different stages i.e. while establishing the intermediary – client relationship, while carrying out transactions for the client or when the intermediary has doubts regarding the veracity or the adequacy of previously obtained client identification data.

Investors Grievance mechanism

- Each Exchange has a process for grievance redressal.
- All exchanges have a dedicated department to handle grievances of investors against the Trading Members and Issuers.

PLEASE NOTE, THESE ARE SHORT IMPORTANT NOTES EXTRACTED FROM THE NISM BOOK. ITS ADVISABLE TO READ THE NISM BOOK TO GET FULL KNOWLEDGE.

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SHORT NOTES BY PASS4SURE.IN

I. Introduction to Indian Currency Market

Initially, the trading of goods and services was by barter system where in goods were exchanged for each other. Such system had its difficulties primarily because of non-divisibility of certain goods, cost in transporting such goods for trading and difficulty in valuing of services. People tried various commodities as the medium of exchange ranging from food items to metals. The process of evolution of medium of exchange further progressed into development of paper currency. People would deposit gold/ silver coins with bank and get a paper promising that value of that paper at any point of time would be equal to certain number of gold coins. With time, and the growth in international trade resulted in evolution of foreign exchange (FX) i.e., value of one currency of one country versus value of currency of other country. Whenever there is a cross-border trade, there is need to exchange one brand for another, and this exchange of two currencies is called “foreign exchange” or simply “forex” (FX).

The smooth functioning of international trade required a universally accepted foreign currency to settle the internal trade and a way to balance the trade imbalances amongst countries. The documented history suggests that sometime in 1870 countries agreed to value their currencies against value of currency of other country using gold as the benchmark for valuation.

During 1944-1971, countries adopted a system called Bretton Woods System. As part of the system, all currencies were pegged to USD at a fixed rate and USD value was pegged to gold. With adoption of this system, USD became the dominant currency of the world. Finally Bretton Woods system was suspended and countries adopted system of free floating or managed float method of valuing the currency. Developed countries gradually moved to a market determined exchange rate and developing countries adopted either a system of pegged currency or a system of managed rate.

Major Currency Pairs

The most traded currency pairs in the world are called the Majors. The list includes following currencies: Euro (EUR), US Dollar (USD), Japanese Yen (JPY), Pound Sterling (GBP), Australian Dollar (AUD), Canadian Dollar (CAD), and the Swiss Franc (CHF). These currencies follow free floating method of valuation.

- **USD:** The US Dollar is by far the most widely traded currency. In part, the widespread use of the US Dollar reflects its substantial international role as “investment” currency in many capital markets, “reserve” currency held by many central banks, “transaction” currency in many international commodity markets, “invoice” currency in many contracts, and “intervention” currency employed by monetary authorities in market operations to influence their own exchange rates.
- **EUR:** Like the US Dollar, the Euro has a strong international presence and over the years has emerged as a premier currency, second only to the US Dollar.

- **JPY:** The Japanese Yen is the third most traded currency in the world. It has a much smaller international presence than the US Dollar or the Euro. The Yen is very liquid around the world, practically around the clock.
- **GBP:** Until the end of World War II, the Pound was the currency of reference. The nickname Cable is derived from the telegrams used to update the GBPUSD rates across the Atlantic.
- **CHF:** The Swiss Franc is the currency of Switzerland and is represented with the symbol CHF. It is one of the most stable currencies in the world and is used as the reserve currency in many of the international transactions.

Overview of International Currency Markets

For currency market, the concept of a 24-hour market has become a reality. In financial centers around the world, business hours overlap; as some centers close, others open and begin to trade. Given this uneven flow of business around the clock, market participants often will respond less aggressively to an exchange rate development that occurs at a relatively inactive time of day, and will wait to see whether the development is confirmed when the major markets open.

At any moment, the exchange rates of major currencies tend to be virtually identical in all the financial centers where there is active trading. Rarely are there such substantial price differences among major centers as to provide major opportunities for arbitrage. In pricing, the various financial centers that are open for business and active at any one time are effectively integrated into a single market.

Basics of currency markets and peculiarities in India

Currency Pair: The most significant part of currency market is the concept of currency pairs. In currency market, while initiating a trade you buy one currency and sell another currency. Therefore same currency will have very different value against every other currency. This peculiarity makes currency market interesting and relatively complex. For major currency pairs, economic development in each of the underlying country would impact value of each of the currency, although in varying degree.

Base currency/ Quotation currency: Every trade in FX market is a currency pair: one currency is bought with or sold for another currency. We need to identify the two currencies in a trade by giving them a name. The BC is the currency that is priced and its amount is fixed at one unit. The other currency is the QC, which prices the BC, and its amount varies as the price of BC varies in the market. What is quoted throughout the FX market anywhere in the world is the price of BC expressed in QC.

Interbank Bank Market and Merchant Bank Market: Interbank market is the market between banks where dealers quote prices at the same time for both buying and selling the currency. Similarly dealers in interbank market quote prices for both buying and selling i.e., offer two way quotes. In majority of the “merchant” market, merchants are price takers and banks are price givers. Although few large merchants or corporates may ask banks to quote two way prices as such merchants may have both side interest i.e., interest to sell or buy or both.

Two Way Quote: In a two way quote, the prices quoted for buying is called bid price and the price quoted for selling is called as offer or ask price. There are certain market norms for quoting the two way quotes. Some of the important norms are as follows:

1. The bid price (lower price) is quoted first followed by offer price (higher price)

2. The offer price is generally quoted in abbreviated form. In case the currency pair is quoted upto four decimal places then offer price is quoted in terms of last two decimal places and if the currency pair is quoted in two decimal places then offer price is quoted in terms of two decimal places.

Appreciation/ Depreciation: Changes in rates are expressed as strengthening/weakening of one currency to the other currency. Changes are also expressed as appreciation or depreciation of one currency in terms of the other currency. Whenever the base currency buys more of the quotation currency, the base currency has appreciated and the quotation currency has weakened / depreciated.

Market Timing: In India, OTC market is open from 9:00 AM to 5:00 PM. However, for merchants the market is open from 9:00 AM to 4:30 PM and the last half hour is meant only for interbank dealings for banks to square off excess positions.

Price Benchmarks: Banks price large value merchant transactions from interbank rate (IBR). IBR is the price available to the bank in the interbank market. Therefore IBR could differ from bank to bank. For small value transactions, banks publish a standard price for the day called as card rate. For small value transactions, banks publish a standard price for the day called as card rate. On most days for most banks, the card rate is same for the whole day.

Price Discovery: Gradually, market discovers an equilibrium price at which market clears buy and sell orders. This process of discovering an equilibrium price is called as price discovery.

RBI Reference Rate: RBI reference rate is the rate published daily by RBI for spot rate for various currency pairs. The Reserve Bank periodically reviews the procedure for selecting the banks and the methodology of polling so as to ensure that the reference rate is a true reflection of the market activity. There is an increasing trend of large value FX transaction done at RBI rate even on OTC market.

Settlement date or Value date

Unlike currency futures market, the settlement in the OTC spot market happens by actual delivery of currency. The mechanism of settlement where each counterparty exchange the goods traded on the maturity of contract is called as gross settlement and the mechanism where market participants only settle the difference in value of goods is called as net settlement. Please note that value date is different from trade date. On trade date, the two counterparties agree to a transaction with certain terms (currency, price, and amount and value date). The settlement of the transaction, when counterparties actually exchange currency, is called as value date.

The most important value date is the “spot” value date, which is settlement after two business days. The price at which settlement takes before spot date is a derived price from spot price and is not a traded price.

OTC Forward Market

The forward OTC market can provide quotes for booking a forward contract for any maturity. However, the liquidity is high for maturity less than one year and beyond that liquidity is less. With respect to settlement, the market participant could decide to settle it via gross settlement mechanism or net settlement mechanism. One more unique feature of OTC forward market is the requirement of underlying trade contract before executing the forward contract.

Exchange Rate Arithmetic- Cross Rate

For some currency pairs prices are not directly available and are rather derived by crossing the prices of underlying currency pairs. Crossing the prices to arrive at price of the currency pair could involve either multiplication or division of the underlying prices. In market parlance, the price of currency pair for which direct prices is not available is called as cross rate.

Let us start the computation of cross rate, using the buy side argument i.e. price of buying 1 EUR in terms of INR. As understood from underlying currency pairs, the price of EUR is directly available only in terms of USD. Therefore you need to sell INR to buy USD; and further sell the USD received to buy EUR. It is important to identify this FX conversion path of selling one currency and buying another to calculate the cross rate.

Impact of Economic Factors on Currency Prices

There are multiple factors impacting the value of the currency at any given point of time. Some of the factors are of the local country while others could be from global markets. For example, the value of INR against USD is a function of factors local to India like gross domestic product (GDP) growth rate, balance of payment situation, deficit situation, inflation, interest rate scenario, policies related to inflow and outflow of foreign capital. It is also a function of factors like prices of crude oil, value of USD against other currency pairs and geopolitical situation.

To assess the impact of economic factors on the currency market, it is important to understand the key economic concepts, key data releases, their interpretation and impact on market. Since currency market is a globalized market and the value of currency is always determined against another currency, therefore the analysis in FX market also means analysis of economic conditions in other major countries of the world.

Economic Indicators

GDP: GDP represents the total market value of all final goods and services produced in a country during a given year. A GDP growth rate higher than expected may mean relative strengthening of the currency of that country, assuming everything else remaining the same.

Retail Sales: It is a coincident indicator and shows how strong is consumer spending. A retail sales number higher than expected may mean relative strengthening of the currency of that country.

Consumer Price Index (CPI): CPI is a statistical time-series measure of a weighted average of prices of a specified set of goods and services purchased by consumers. The indicator measures level of inflation in the economy for the basket of goods and services which are generally brought by the people.

Non-Farm Payrolls: Nonfarm payrolls represent the number of jobs added or lost in the economy over the last month, not including jobs relating to the farming industry, government jobs, household jobs and employees of non-profit organization that provide assistance to individuals.

Import/Export Growth: For a country like India, the figures pertaining to import / export, current account deficit and balance of payments are very important. During periods of risk aversion, any development resulting in widening current account deficit results in weakening of INR.

Central Bank Meeting and Key Decisions: Market also tracks minutes of the central bank meetings and the key policy decisions. Some of the important announcements from central bank meetings are their interest rate decisions, CRR (cash reserve ratio). Market also actively looks forward to central bank's perspective on state of the economy.

II. Foreign Exchange Derivatives

Derivative is a product whose value is derived from the value of one or more basic variables, called bases. The underlying asset can be equity, foreign exchange, commodity or any other asset. Derivative products initially emerged as hedging devices against fluctuations in commodity prices, and commodity linked derivatives remained the sole form of such products for almost three hundred years. Financial derivatives came into spotlight in the post 1970 period due to growing instability in the financial markets. However, since their emergence, these products have become very popular and by 1990s, they accounted for about two thirds of total transactions in derivative products. In the Indian context the Securities Contracts (Regulation) Act, 1956 [SC(R)A] defines "derivative" to include-

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

Derivative Products

Forwards: A forward contract is a customized OTC contract between two parties, where settlement takes place on a specific date in the future at today's pre-agreed price.

Futures: It is similar to forward except that it is an Exchange-trade product. The term "futures" refer to the derivative and the term "future" to a later point in time. Thus, the "futures price" is the current price of derivatives and the "future" price is the price that will prevail on a later point of time.

Options: Option does not buy or sell the underlying directly but buys or sells the right without obligation on the underlying. The right can be the right to buy (when it is called call option) and the right to sell (when it is called put option).

Swaps: Swaps are agreements between two parties to exchange cash flows in the future according to a prearranged formula. They can be regarded as portfolios of forward contracts. The two commonly used swaps are:

- Interest rate swaps: These entail swapping only the interest related cash flows between the parties in the same currency.
- Currency swaps: These entail swapping both principal and interest between the parties, with the cash flows in one direction being in a different currency than those in the opposite direction.

Growth Drivers of Derivative Products:

- Increased Volatility
- Increased integration of markets
- Marked improvement in communication facilities and sharp decline in their costs
- Development of more sophisticated risk management tools
- Innovations in the derivatives markets

Market players

The following three broad categories of participants - hedgers, speculators, and arbitrageurs - trade in the derivatives market. Hedgers face risk associated with the price of an underlying asset and they use derivative markets to reduce or eliminate this risk. Speculators wish to bet on future movements in the price of an underlying asset. Derivatives give them an ability to buy the underlying without paying for it fully or to sell it without owning it or delivering it immediately. In the process, the potential gains and losses are amplified. Arbitrageurs are in business to take advantage of a discrepancy between prices in two different markets.

- Prices in an organized derivatives market reflect the perception of market participants about the future and lead the prices of underlying to the perceived future level.
- The derivatives market helps to transfer risks
- With the introduction of derivatives, the underlying market witnesses higher trading volumes
- Speculative trades shift to a more controlled environment of derivatives market
- Derivatives trading acts as a catalyst for new entrepreneurial activity.

III. Exchange Traded Currency Futures

A futures contract is a standardized contract, traded on an exchange, to buy or sell a certain underlying asset or an instrument at a certain date in the future, at a specified price. Both parties of the futures contract must fulfill their obligations on the settlement date. Currency futures are a linear product, and calculating profits or losses on these instruments is similar to calculating profits or losses on Index futures. In determining profits and losses in futures trading, it is essential to know both the contract size (the number of currency units being traded) and also the “tick” value.

Futures Terminology

Spot price: The price at which the underlying asset trades in the spot market.

Futures price: The current price of the specified futures contract

Contract cycle: The period over which a contract trades. The currency futures contracts on the SEBI recognized exchanges have one-month, two-month, and three-month up to twelve-month expiry cycles.

Value Date/Final Settlement Date: The last business day of the month will be termed as the Value date date of each contract. The rules for Inter-bank Settlements, including those for ‘known holidays’ and ‘subsequently declared holiday’ would be those as laid down by Foreign Exchange Dealers’ Association of India (FEDAI).

Expiry date: Also called Last Trading Day, it is the day on which trading ceases in the contract; and is two working days prior to the final settlement date.

Contract size: The amount of asset that has to be delivered under one contract. It is also called as lot size.

Initial margin: The amount that must be deposited in the margin account at the time a futures contract is first entered into is known as initial margin.

Marking-to-market: In the futures market, at the end of each trading day, the margin account is adjusted to reflect the investor's gain or loss depending upon the futures closing price. This is called marking-to-market.

Distinction between futures and forward contracts

Forward contracts are often confused with futures contracts. The confusion is primarily because both serve essentially the same economic functions of allocating risk in the probability of future price uncertainty. However futures have some distinct advantages over forward contracts as they eliminate counterparty risk and offer more liquidity and price transparency.

Advantages and Limitations of Futures

Advantages:

- Price transparency.
- Elimination of Counterparty credit risk.
- Access to all types of market participants. The OTC market is restricted to Authorized Dealers (banks which are licensed by RBI to deal in FX), individuals and entities with 36 forex exposures. Retail speculators with no exposure to FX cannot trade in OTC market.
- Futures offer low cost of trading as compared to OTC market.

Limitations:

- The benefit of standardization, though improves liquidity in futures, leads to imperfect hedge since the amount and settlement dates cannot be customized.
- While margining and daily settlement is a prudent risk management policy, some clients may prefer not to incur this cost in favor of OTC forwards, where collateral is usually not demanded.

Interest Rate Parity

This concept of difference between future exchange rate and spot exchange rate being approximately equal to the difference in domestic and foreign interest rate is called the "Interest rate parity". Alternative way to explain, interest rate parity says that the spot price and futures price of a currency pair incorporates any interest rate differentials between the two currencies assuming there are no transaction costs or taxes.

Please go through the example in the Nism book to get a better understanding of the concept

IV. Strategies Using Currency Futures

Market Participants

Hedgers: These types of participants have a real exposure to foreign currency risk on account of their underlying business and their objective is to remove the FX risk using currency futures. The objective of hedgers is to reduce the volatility in future cash flows by locking in the future currency rates.

Speculators: Speculators play a vital role in the futures markets. Futures are designed primarily to assist hedgers in managing their exposure to price risk; however, this would not be possible without the participation of speculators. Speculators, or traders, assume the price risk that hedgers attempt to lay off in the markets.

Arbitragers: This set of market participants identify mispricing in the market and use it for making profit. They have neither exposure to risk and nor do they take the risk. Arbitrageurs lock in a profit by simultaneously entering opposite side transactions in two or more markets.

Computing payoffs from a portfolio of futures and trade remittances

The market participants may undertake various kinds of currency positions and it is important to understand the payoff from these positions. There are different combinations of positions in futures market on standalone basis and futures positions combined with cash position in OTC market. Examples of such positions would be:

- Combined position of futures and underlying export trade remittance
- Combined position of futures and underlying import trade remittance

Go through the examples given in the Nism book to understand the payoff of the above position under different circumstances.

Currency Futures are used for hedging for following purposes:

- Payment in foreign currency for travel abroad, for education, etc.
- Payment of loan availed in foreign currency
- Investment in assets outside India or repatriation of capital invested outside India
- Payment of loan installments in INR by a person earning in foreign currency

Investment in Gold

A high net worth individual in India is keen to invest in gold with a view of rising gold prices against USD. He invested via ETF gold contract which are exchange traded and priced in INR. After three months of investment in ETF, gold appreciated by 15% against USD while ETF appreciated by only 10%. The low appreciation of ETF was because of 5% appreciation in INR against USD in last three months. Thus to remove the USD INR risk in the ETF contract The investor could short USDINR currency futures for an amount equal to the amount of investment in ETF and for a tenor for which he intends to stay invested in gold ETF. This would reduce the USDINR risk embedded in gold ETF.

Investment in assets outside India and repatriation of profit and capital

Currency futures could also be effectively used to hedge the currency risk when investing abroad. A person has invested USD 100,000 in US equities with a view of appreciation of US stock market. In next one year, his investments in US equities appreciated in value to USD 115,000. The investor decided to sell off his portfolio and repatriate the capital and profits to India. However, at the time of converting USD to INR, he received an exchange price of 64 as against 67 which was the price at which he had converted INR to USD at the time of investing abroad. The investor may short USDINR currency futures for one year. This would allow him to sell USD to INR at a contracted price via futures contract and thus remove currency risk from the portfolio.

Use of currency futures for speculation

A trader has a view that given the buoyant economic condition in India and likelihood of drop in inflation, the INR may appreciate in next six months from current level of 66 to 64. To execute the view, he shorts 100 contracts at a price of 67.5. As expected, INR appreciated. At the expiry of the contract, the settlement price was 64.5. Since the settlement price was lower than the contracted price and the trader had shorted the futures, he made profit. The amount of profit would be equal to the difference in the contracted price and the settlement price. Thus the trader made a profit of Rs 3 per USD.

Use of currency futures for arbitrageurs

A trader notices that 6 month USDINR currency futures was trading at 65.98/66.00 while 6 month forward in OTC market, for same maturity as that of currency futures contract, was available at 65.85/65.86. The trader would short currency futures at price of 65.98 and go long in currency forward at 65.86. At the time of settlement, trader loses 1.02 on futures and makes a profit of 1.14 on OTC forward contract. Thus he makes an arbitrage profit of 0.12 per USD.

Triangular Arbitrage

Triangular arbitrage involves identifying and exploiting the arbitrage opportunity resulting from price differences among three different currencies in the forex market. It involves three trades: exchanging the first currency for a second currency, exchanging the second currency for a third currency and exchanging the third currency for the first currency. Like all other arbitrage opportunities, this triangular arbitrage also possible only when the exchange rates are not aligned with the implicit cross exchange rate. Please note that profitable triangular arbitrage is very rarely possible because when such opportunity arises, traders execute trades that take advantage of the imperfections and prices adjust up or down until the opportunity disappears. Even when those opportunities appear for a very brief period of time, the opportunity (price disparity) may be very small (around 1 basis point or so in many cases) making it not a profitable opportunity after factoring in the transaction costs and taxes. Moreover, there is also a risk of adverse price movement while the arbitrageur is still setting up the arbitrage position.

Trading spreads using currency futures

Spread refers to difference in prices of two futures contracts. A good understanding of spread relation in terms of pair spread is essential to earn profit. Intra-Currency Pair Spread (also called as “calendar spread”): An intra-currency pair spread consists of one long futures and one short futures contract. Both have the same underlying but different maturities. Inter-Currency Pair Spread: An inter-currency pair spread is a long-short position in futures on different underlying currency pairs. Both typically have the same maturity.

Limitations of currency futures for hedgers

Exchange traded currency futures contracts are standard contracts which are settled in cash i.e. without delivery of currencies. For hedgers, there might be a mismatch in the timing of settlement or cancellation of futures contract and the timing of actual trade remittance. This timing mismatch may result in small loss of value as compared to OTC forward contract. However, the transparency, small lot size and ease of trade execution may offset it.

V. Trading in Currency Futures

Currently currency futures contracts on four INR pairs i.e., USDINR, EURINR, GBPINR and JPYINR and on three cross currency pairs i.e., EURUSD, GBPUSD and USDJPY are being traded on the recognized stock exchanges.

- **Base price** of the futures contracts on the first day of its life shall be the theoretical futures price. The base price of the contracts on subsequent trading days will be the daily settlement price of the previous trading day.
- The **closing price** for a futures contract is currently calculated as the last half an hour weighted average price of the contract.
- The **tenor of a contract** means the period when the contract will be available for futures trading, i.e. the “cycle” of the contract.

Entities in the Trading System

Trading Members: Trading members are members of an authorized Exchange. They can trade either on their own account or on behalf of their clients including participants. The exchange assigns a trading member ID to each trading member. Each user of a trading member must be registered with the exchange and is assigned a unique user ID. The unique trading member ID functions as a reference for all orders/trades of different users.

Clearing Members (CM): Clearing members are members of the Clearing Corporation. They carry out risk management activities and confirmation/inquiry of participant trades through the trading system.

Trading-cum-Clearing Member (TCM): A member with a right to trade on its own account as well as on account of its clients. He can clear and settle the trades for self and for others through the Clearing House.

Professional Clearing Members (PCM): A professional clearing member is a clearing member who is not a trading member. Typically, banks and custodians become professional clearing members and clear and settle for their trading members and participants.

Participants: A participant is a client of a trading member- like financial institutions. These clients may trade through multiple trading members but settle through a single clearing member.

Types of Orders

A. Time Conditions

- **Day order:** A day order, as the name suggests is an order which is valid for the day on which it is entered.
- **Immediate or Cancel (IOC):** An IOC order allows the user to buy or sell a contract as soon as the order is released into the system, failing which the order is cancelled from the system.

B. Price Conditions

- **Market Price:** Market orders are orders for which no price is specified at the time the order is entered. For the buy order placed at market price, the system matches it with the readily available sell order in the order book. For the sell order placed at market price, the system matches it with the readily available buy order in the order book.
- **Limit Price:** An order to buy a specified quantity of a security at or below a specified price, or an order to sell it at or above a specified price (called the limit price).
- **Stop Loss:** This facility allows the user to release an order into the system, after the market price of the security reaches or crosses a threshold price.

C. Other Conditions

- **Pro:** 'Pro' means that the orders are entered on the trading member's own account.
- **Cli:** 'Cli' means that the trading member enters the orders on behalf of a client.

Price Limit Circuit Filter

With the view to ensure orderly trading and market integrity, SEBI prescribes stock exchanges to implement a mechanism of Dynamic Price Bands so as to prevent acceptance of orders placed beyond the price limits set by the stock exchanges. These dynamic price bands are applicable to all currency futures positions including the cross currency futures contracts.

Contracts with tenure up to 6 months	± 3% of the theoretical price or the previous day closing price, as applicable
Contracts with tenure greater than 6 months	± 5% of the theoretical price or the previous day closing price, as applicable

The exchanges relax the dynamic price bands in increments of 1% as and when a market-wide trend is observed.

VI. Clearing, Settlement and Risk Management in Currency Futures

- Clearing means computing open positions and obligations of clearing members in the trading system.
- Settlement means honoring the actual pay in or pay out to settle the contract.

Clearing entities

Clearing Members: In the Currency Derivatives segment, trading-cum-clearing member clear and settle category of members, called professional clearing members (PCM) who clear and settle trades executed by TMs their own trades as well as trades of other trading members (TMs). Besides, there is a special.

Clearing Banks: Funds settlement takes place through clearing banks. For the purpose of settlement all clearing members are required to open a separate bank account with the Clearing Corporation designated clearing bank for Currency Derivatives segment.

Clearing Mechanism

The clearing mechanism essentially involves working out open positions and obligations of clearing (trading-cum-clearing/professional clearing) members. This position is considered for exposure and daily margin purposes. The open positions of Clearing Members (CMs) are arrived at by aggregating the open positions of all the TMs and all custodial participants clearing through him. A TM's open position is arrived at as the summation of his proprietary open position and clients' open positions. While entering orders on the trading system, TMs are required to identify the orders, whether proprietary (if own trades) or client (if entered on behalf of clients) through 'Pro/Cli' indicator provided in the order entry screen. Proprietary positions are calculated on net basis (buy - sell) for each contract. Clients' positions are arrived at by summing together net (buy - sell) positions of each individual client. Please note that positions are only netted for each client and not netted across clients and are rather added up across clients. A TM's open position is the sum of proprietary open position, client open long position and client open short position.

Settlement Mechanism

Mark-to-Market settlement (MTM Settlement): futures contracts for each member are marked to market to the daily settlement price of the relevant futures contract at the end of each day. The profits/losses could be computed differently for different types of positions. The computational methodology is given below:

- For squared off position: The buy price and the sell price for contracts executed during the day and squared off.
- For positions not squared off: The trade price and the day's settlement price for contracts executed during the day but not squared up.
- For brought forward positions: The previous day's settlement price and the current day's settlement price for brought forward contracts.
-

Final Settlement for Futures: On the last trading day of the futures contracts, after the close of trading hours, the Clearing Corporation marks all positions of a CM to the final settlement price and the resulting profit/loss is settled in cash. Final settlement loss/profit amount is debited/ credited to the relevant CM's clearing bank account on T+2 working day following last trading day of the contract (contract expiry day). The final settlement price is the RBI reference rate for the last trading day of the futures contract.

Margin Requirements and Types

Since futures is a leveraged position, it is imperative to have very effective margining framework at exchange to avoid any systemic failure during periods of high volatility. Margins also play the role of acting as a deterrent to excessive speculation. The different types of margins collected by the Exchanges are as follows:

Initial Margin: The initial security deposit paid by a member is considered as his initial margin for the purpose of allowable exposure limits. Initially, every member is allowed to take exposures up to the level permissible on the basis of the initial deposit. The Initial Margin requirement is based on a worst case loss of a portfolio of an individual client across various scenarios of price changes.

Portfolio Based Margin: The Standard Portfolio Analysis of Risk (SPAN) methodology is adopted to take an integrated view of the risk involved in the portfolio of each individual client comprising his positions in futures contracts across different maturities.

Real Time computation: The computation of worst scenario loss has two components. The first is the valuation of the portfolio under the various scenarios of price changes. At the second stage, these scenario contract values are applied to the actual portfolio positions to compute the portfolio values and the initial margin. The latest available scenario contract values are applied to member/client portfolios on a real-time basis.

Calendar spread margin: For a calendar spread position, the extreme loss margin is charged on one-third of the mark-to-market value of the far month contract.

Extreme Loss Margin: Extreme loss margin is computed as percentage of the mark-to-market value of the Gross Open Position. It shall be deducted from the liquid assets of the Clearing Member.

Liquid Net Worth: The initial margin and the extreme loss margin are deducted from the liquid assets of the clearing member. The clearing member's liquid net worth after adjusting for the initial margin and extreme loss margin requirements must be at least Rs. 50 lacs at all points in time.

Liquid Assets: The liquid assets for trading in currency futures are maintained separately in the currency futures segment of the clearing corporation.

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VII. Exchange Traded Currency Options

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

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

Buying an option is also called as taking a long position in an option contract and selling is also referred to as taking a short position in an option contract.

Difference between futures and options

The difference between two contracts is that in futures both the parties are under right as well as obligation to buy or sell and therefore face similar risk. Whereas in options, the buyer has only rights and no obligation and therefore he faces only the risk of premium paid and option seller is under obligation to buy or sell and therefore faces unlimited risk. At the same time, the option buyer has chances to get unlimited upside and the option seller has limited upside equal to the premium received.

The call option buyer would exercise the option only if the price of underlying asset is higher than the strike price and premium paid. Similarly the put option buyer would exercise the option if the price of the underlying asset is less than the strike price and the premium paid.

Options in financial markets

Options market in India: Exchange traded equity index options commenced trading in India on June 4, 2001 followed by single stock specific options on July 2001. Since then, the volume in options is on a continuous growth path. RBI allowed banks to offer foreign currency-INR European options to its customers with effect from July 7, 2003. Banks were allowed to run option book subject to their meeting certain parameters with respect to net worth, profitability, capital adequacy and NPA%. The currency options have now been also allowed for trading on exchanges. The exchanges started trading in currency options from November 10, 2010.

Difference between OTC options and exchange-traded options: In OTC option market, the select scheduled commercial banks are permitted to be market makers in currency options market and resident Indians are allowed to be net buyer of options i.e., they should be paying a net premium when undertaking an option structure and they should not be the net receiver of premium. While for an exchange traded option, the restriction on amount and tenor are not related to the underlying FX transaction but are restricted by open interest and total volume. In terms of currency pair, in OTC market the client can get quotes for any currency pair and in exchange traded market the prices are currently available only for USDINR option contracts.

- European options can be exercised by the buyer of the option only on the expiration date. In India, all the currency options are of European type.
- American options can be exercised by the buyer any time on or before the expiration date. Currently American options are not allowed in currencies in India.

Moneyness of an option indicates whether the contract would result in a positive cash flow, negative cash flow or zero cash flow for the option buyer at the time of exercising it. Based on these scenarios, moneyness of option can be classified in three types:

In the money (ITM) option: An option is said to be in the money, if on exercising it, the option buyer gets a positive cash flow.

Out of the money (OTM) option: An option is said to be out of the money, if on exercising it, the option buyer gets a negative cash flow.

At the money (ATM) option: An option is said to be at the money if spot price is equal to the strike price.

Option Value

Intrinsic value: The intrinsic value of an option is the difference between spot price and the strike price. For a call option, the intrinsic value is $\text{Max}(S_t - K, 0)$ where K is strike price and S_t is the spot price of the asset.

Time value: The difference between option premium and intrinsic value is time value of option. The time value is directly proportional to the length of time to expiration date of the option. Longer the time to expiration, higher is time value.

Option Greeks

- **Delta** is the rate of change of option price with respect to the price of the underlying asset.
- **Vega** measures the rate of change of option value to volatility of price of the underlying asset.
- **Theta** measures the change in the value of the option with respect to passage of time.
- **Rho** measures sensitivity of option value to the risk free rate.

Option pricing methodology

There are two common methodologies for pricing options:

- Black and Scholes: This methodology is more analytical, is faster to compute and is mainly used to price European options.
- Binomial pricing: This methodology is more computational, taken more computing power and is mainly used to price American options.

Option Pay-Offs

Payoff means return from the derivative strategy with change in the spot price of the underlying. Option strategies result in non-linear pay offs (that is not a straight line, but either curve or a line with a sharp bend) because of the optionality of options, which is the right without obligation for the buyer.

Vanilla options: These are four basic option positions, which are long call, long put, short call and short put option. Please note that in all the exchange traded currency option contracts, the final settlement of the contracts happen at RBI reference rate. Following are the four types of options:

- Buying a call option or going long call option
- Selling a call option or going short on call option
- Buying a put option or going long put option
- Selling a put option or going short on put option

Please go through the pay-off examples give in the Nism book to understand them better.

VIII. Account Taxation

Client has to maintain two separate accounting heads for initial margin and mark to market margin. These heads could be called as:

- Initial margin-currency futures
- Mark to market- currency futures

Accounting entries for live positions:

The accounting entries have to be understood separately for any pay-in or pay-out for positions which are live and for positions which are expired or cancelled.

For pay-out: Any cash lay out on account of initial margin or mark to market has to be debited to respective heads i.e., Initial margin-currency futures or Mark to market- currency futures and bank account has to be credited.

For pay-in: Any cash inflow on account of mark to market settlement, mark to market- currency futures has to be credited and Bank account has to be debited.

Accounting entries for expired or cancelled positions

At the expiry of a series of currency futures, the profit/loss should be calculated as the difference between final settlement and contract prices of all the contracts in the series and it should be passed through the profit and loss statement of the client. However, where a balance exist in the provision account created for any anticipated loss, any loss arising on final settlement should be first charged to the provision account and the balance to the profit and loss account.

Accounting entries in case of default by a client

When a client defaults in making payments in respect of a daily settlement, the contract is closed out. The amount not paid by the client is adjusted against the initial margin. In the books of client, the amount so adjusted should be debited to “Mark to market currency futures accounts” with a corresponding credit to “Initial margin- currency futures account”.

Disclosure Requirements

The amount of bank guarantee and book value as also the market value of securities lodged should be disclosed in respect of contracts having open positions at the year end, where initial margin money has been paid by way of bank guarantee and/or lodging of securities.

IX. Regulatory Framework for Currency Derivatives

Securities Contracts (Regulation) Act, 1956 [SC(R)A]

The Act aims to prevent undesirable transactions in securities. It governs the trading of securities in India. The term “securities” has been defined in the Section 2(h) of SCRA.

RBI-SEBI standing technical committee on exchange traded currency and interest rate derivatives

With a view to enable entities to manage volatility in the currency market, RBI on April 20, 2007 issued comprehensive guidelines on the usage of foreign currency forwards, swaps and options in the OTC market. At the same time, RBI also set up an Internal Working Group to explore the advantages of introducing currency futures. The Report of the Internal Working Group of RBI submitted in April 2008, recommended the introduction of exchange traded currency futures. With the expected benefits of exchange traded currency futures, it was decided in a joint meeting of RBI and SEBI on February 28, 2008, that an RBI-SEBI Standing Technical Committee on Exchange Traded Currency and Interest Rate Derivatives would be constituted.

Foreign Exchange Management Act, 1999 - Provisions

The Foreign Exchange Management (Foreign Exchange Derivative Contracts) Regulations, 2000 (Notification No. FEMA 25/RB-2000 dated May 3, 2000) was amended by RBI in exercise of the powers conferred by clause (h) of sub-section 2 of Section 47 of the Foreign Exchange Management Act, 1999 (Act 42 of 1999). This amendment incorporated a new clause after clause (v) in regulation 2 reading "(va) 'Currency Futures' means a standardized foreign exchange derivative contract traded on a recognized stock exchange to buy or sell one currency against another on a specified future date, at a price specified on the date of contract, but does not include a forward contract."

Regulatory framework for exchanges

A recognized stock exchange having nationwide terminals or a new exchange recognized by SEBI may set up currency futures segment after obtaining SEBI's approval. The currency futures segment should fulfill the following eligibility conditions for approval:

- The trading should take place through an online screen-based trading system.
- The clearing of the currency derivatives market should be done by an independent Clearing Corporation.
- The exchange must have an online surveillance capability which monitors positions, prices and volumes in real time so as to deter market manipulation.
- The exchange shall have a balance sheet net worth of at least Rs. 100 crores.
- Information about trades, quantities, and quotes should be disseminated by the exchange in real time to at least two information vending networks which are accessible to investors in the country. The per-half-hour capacity of the computers and the network should be at least 4 to 5 times of the anticipated peak load in any half hour, or of the actual peak load seen in any half-hour during the preceding six months, whichever is higher. This shall be reviewed from time to time on the basis of experience. The segment should have at least 50 members to start currency derivatives trading. The exchange should have arbitration and investor grievances redressal mechanism operative from all the four areas/regions of the country. The exchange should have adequate inspection capability. If already existing, the exchange should have a satisfactory record of monitoring its members, handling investor complaints and preventing irregularities in trading.

Regulatory framework for clearing corporation

- The Clearing Corporation must ensure that all trades are settled by matching of buyers and sellers
- The Clearing Corporation should enforce the stipulated margin requirements, mark to market settlement, electronic funds transfer, etc.
- A separate settlement guarantee fund should be created and maintained for meeting the obligations arising out of the currency futures segment. A separate investor protection

X. Codes of Conduct and Investor Protection Measures

Adherence to SEBI codes of conduct for brokers/ sub-brokers

Code of Conduct for Brokers

General

1. Integrity
2. Exercise of due skill and care
3. Manipulation: A broker should not indulge in manipulative, fraudulent or deceptive transactions or schemes or spread rumors with a view to distorting market equilibrium or making personal gains.
4. Malpractices: A broker should not create false market either singly or in concert with others or indulge in any act detrimental to the investors' interest or which leads to interference with the fair and smooth functioning of the market.
5. Compliance with statutory requirements'

Duty to client

1. Execution of orders
 2. Issue of contract note
 3. Breach of trust:
 4. Business and commission: A broker should not encourage sales or purchases of securities with the sole object of generating brokerage or commission.
 5. Business of defaulting client: A broker should not deal or transact business knowingly, directly or indirectly or execute an order for a client who has failed to carry out his commitments in relation to securities with another broker.
 6. Fairness to client
 7. Investment Advice
- **A broker should extend fullest cooperation to other brokers in protecting the interests of his clients.**
 - **A broker should carry out his transactions with other brokers and should comply with his obligations in completing the settlement of transactions with them.**

Note: The code of conduct of sub-brokers is majorly similar to that of brokers

Adherence to codes of conduct specific to currency derivatives segment

General Principles

- Adequate Disclosures
- No guarantee against a loss
- Professionalism
- Adherence to Trading practices
- Honesty and Fairness
- Capabilities

Trading Principles

- Trading Members/Participants shall ensure that the fiduciary and other obligations imposed on them and their staff.
- A Trading Member shall be responsible for all the actions including trades originating through.
- No Trading Member or person associated with a Trading Member shall make improper use of constituent's securities/positions in derivatives contracts or funds.
- When entering into or arranging a transaction, Trading Members must ensure that at all times great care is taken not to misrepresent in any way, the nature of transaction.

General Guidelines

- Shielding or assisting
- Suspended Derivative contracts
- Misleading Transactions
- Use of information obtained in Fiduciary capacity

SEBI Complaints Redress System (SCORES)

SEBI launched a centralized web based complaints redress system (SCORES). This would enable investors to lodge and follow up their complaints and track the status of redressal of such complaints from anywhere. This would also enable the market intermediaries and listed companies to receive the complaints from investors against them, redress such complaints and report redressal. All the activities starting from lodging of a complaint till its disposal by SEBI would be carried online in an automated environment and the status of every complaint can be viewed online at any time. An investor, who is not familiar with SCORES or does not have access to SCORES, can lodge complaints in physical form. However, such complaints would be scanned and uploaded in SCORES for processing. SCORES is web enabled and provides online access 24 x 7. It would facilitate easy retrieval and tracking of complaints at any time.

Arbitration

SEBI has instructed the exchange to have arbitration committees so that differences, disputes and claims between trading members and investors can be settled effectively and in a short time. Arbitration is also governed by Exchange Bye-laws. Arbitration is a quasi judicial process of settlement of disputes between Trading Members, Investors, Sub-brokers & Clearing Members and between Investors and Issuers (Listed Companies). Generally the application for arbitration has to be filed at the Arbitration Centers established by the exchanges. The parties to arbitration are required to select the arbitrator from the panel of arbitrators provided by the Exchange. The arbitrator conducts the arbitration proceeding and passes the award normally within a period of four months from the date of initial hearing.

Combination Strategies

Combination strategies mean use of multiple options with same or different strikes and maturities. Numerous strategies can be worked out depending on the view on the market, risk appetite and objective. Following are some of the widely known combination strategies:-

View: Moderately Bullish or Bearish

- Bull Call Spread
- Bull Put Spread
- Bear Put Spread
- Bear Call Spread

View: Range bound view on USDINR or a break out view

- Short Strangle
- Short Straddle
- Long Butterfly

View: Break out view of USDINR

- Long Straddle
- Long Straddle
- Short Butterfly

Strategies complimenting existing positions in futures market

- Covered Call
- Covered Put
- Protective Call
- Protective Put

PLEASE NOTE, THESE ARE SHORT IMPORTANT NOTES EXTRACTED FROM THE NISM BOOK. ITS ADVISABLE TO READ THE NISM BOOK TO GET FULL KNOWLEDGE.

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NISM IV – INTEREST RATE DERIVATIVES EXAM

SHORT NOTES BY PASS4SURE.IN

Chapter 1: Introduction to Interest Rate, Interest Rate Instruments and Fixed Income MarketThe Interest Rate Concept:

Debt is a concept in which the receiver of the favour is willing to return the favour with agreed rate of return for using the favour for the time period. The agreed rate of interest is expressed as percentage per annum. Assets borrowed can include cash, consumer goods, vehicles, property, etc. Interest rates apply to most lending or borrowing transactions. The interest rate is the cost of debt for the borrower and the rate of return for the lender. Interest rates are typically quoted as the annual percentage rate which is generally termed as nominal annual interest rate.

The interest rate is dependent upon various factors. When the borrower is considered to be low risk by the lender, the borrower will usually be charged a lower interest rate. If the borrower is considered high risk, the interest rate that they are charged will be higher.

Factors like inflation, liquidity, duration, central bank policy, price of competing assets, etc., influence the movement and level of general interest rates in the market. Following are a few factors that influence the interest rates in the economy:

1. Demand for Money
2. Supply for Money
3. Fiscal deficit and government borrowing
4. Inflation
5. Global Interest Rates and foreign exchange rates
6. Central Bank Actions

The **effective interest** rate can be different from annual interest rate due to compounding effect.

Effective interest rate = $[(1 + \text{annual interest rate}/n)^n - 1]$

The **nominal interest** rate is the stated interest rate (coupon rate) of a bond. The nominal interest rate denotes the rate that the bond issuer pays to the bond holder. The nominal interest rate adjusted for inflation is called **real interest rate**. The relationship between real and nominal interest rates can be described in the equation: $(1 + r) \times (1 + i) = (1 + R)$

Fixed Income Securities

Fixed Income Securities are debt instruments that pay a fixed amount of interest - in the form of coupon payments - to investors. The interest payments are made periodically while the principal invested returns to the investor at maturity

Key Components of Fixed Income Securities:

Issue Price is the price at which the bonds are issued to the investors.

- **Face Value (FV)** is also known as the par value or principal value.
- **Coupon / Interest** is the cash flow that are offered by a particular security at fixed intervals / predefined dates.
- **Coupon Frequency** means how regularly an issuer pays the coupon to holder.
- **Interest Payment Dates** means dates on which interest/coupon is paid to bond holder by the issuer.
- **Maturity date** is a date in the future on which the investor's principal will be repaid.
- **Call / Put option** date is the date on which issuer or investor can exercise their rights to redeem the security before maturity date.
- **Maturity / Redemption Value** is the amount paid by issuer other than coupon payment.

Classification of fixed income securities based on the Type of Issuer:

- Government Bonds / Sovereign Bonds / Gilt edged Bonds
- Municipal Bonds
- Corporate Bonds
- Securitized Debt

Classification of fixed income securities based on Maturity

- Overnight Debt / Borrowings
- Ultra-Short-Term Debt (Money Market)
- Short Term Debt
- Medium Term Debt
- Long Term Debt
- Staggered Maturities

Classification of fixed income securities based on Coupon

- Plain Vanilla Bonds
- Zero-Coupon Bonds
- Floating Rate Bonds
- Caps and Floor
- Inverse Floater
- Inflation Indexed Bonds
- Step Up/Down Bonds
- Deferred Coupon Bonds
- Deep Discount Bonds

Classification of fixed income securities based on Embedded Options

- Straight Bonds
- Bond with a Call Option
- Bond with a Put Option
- Bond with Call and Put Option

Classification of fixed income securities based on Security

- Secured debt
- Unsecured debt
- Subordinated debt
- Credit enhanced bonds

Other Instruments

- Perpetual (consol bonds)
- Annuities
- AT1 (Additional Tier-1) Bonds & AT2 Bonds
- Convertible Bonds
- REITs (Real Estate Investment Trusts)
- InvITs (Infrastructure investment trusts)
- Green bonds
- Tax-free bonds
- Tax Saving Bonds
- Asset Linked Bonds

Concept of risk-free interest rate

One should note that fixed-income security does not mean fixed-return security. It merely means that the timing of cash flows (and in certain cases, the size of cash flows, too) is fixed and known in advance. It does not necessarily guarantee a fixed return. There are some additional Risks, mainly:

- Credit risk: The Company may not be able to pay interest and principal as per schedule.
- Price Risk (Interest rate risk): One cannot demand prepayment from the issuing company but should sell it in the secondary market and the price may be higher or lower than the initial purchase price.
- Reinvestment risk: The interim cash-flows from a fixed income security are known in advance. But since the reinvestment rates are not known in advance, it is called reinvestment risk.
- Credit Risk: For borrowers other than the sovereign government, there is some chance of default. The difference between them is called the “credit spread”.

Term Structure of Interest Rates

The term structure of risk-free rate is the most important tool in any valuation because it represents the ultimate opportunity cost. It is the rate an investor can earn without any risk of default or loss for a given term. Any other competing alternative has a risk, which has to be priced and added to the risk-free rate for the same term as the “risk premium.” The interest rate of different terms is determined the demand supply of money for different tenors.

The term structure has different shapes but four of the following account for most of the shapes:

1. Normal Yield Curve

This is an upward sloping yield curve indicating higher yield for higher maturity. Long term yields are higher compared to short term yields as the risk premia is higher for higher maturities.

2. Inverted Yield Curve

In this kind of curve, the short-term yields are higher than the long-term yields. At times, the policy rates are kept high to bring down excess demand and reduce financial bubbles created due to easy availability of credit and use of high leverage by the borrowers. At times, severe asset liability mismatch may also produce inverted yield curve.

3. Flat Yield Curve

Here yields remain constant irrespective of time to maturity. There is no difference between short term yield and long-term yield indicating no extra premium for higher maturities.

4. Humped yield curve

At times, yield curves can be humped, and the short term and long-term yields would be lower than medium term yield.

Term Structure of Rates: Shifts

Shift	Description
Steepening	Difference between LR and SR rises or widens. The curve shifts in anti-clockwise direction
Flattening	Difference between LR and SR falls or narrows. The curve shifts in clockwise direction.
Parallel	All rates move in the same direction by same extent

Simple interest is basically an interest rate without any reinvestment option. When interest is accrued for more than one period, it becomes necessary to distinguish between simple interest (SI) and compound interest (CI). Under **compound interest**, the money received at various points of time is reinvested to earn a higher effective rate of return.

Simple interest (SI) = Principal * Interest rate p.a. * Time in years

Interest for Year 1 (I1) = Principal * Interest rate p.a. * (Time which is 1 year)

Interest for Year 3 (I3) = (Principal + I1 + I2) * Interest rate p.a. * (Time which is 1 year)

Day count fraction (day count basis): It specifies the conversion of payment period into year fraction. For this, we must agree on counting the number of days in a year and in the interest accrual period.

- **Actual/Actual day counting:** This takes into account the actual number of days between the last coupon date and the next coupon date. In India this is widely used for bond securities.
- **30/360 (European) Day Counting:** This day count convention considers all months are equal and have fixed 30 days in a month and 360 days in a year.

Accrued interest is a market practice peculiar to bond market. Accrued interest applies only when a bond is a coupon bond. For the secondary market trades of such bonds, there are two prices. They are “clean price”: the price at which the bond is negotiated; and “dirty price” (also known as “invoice price”): the price at which the bond is settled. Dirty price is always higher than the clean price by the amount of accrued interest. In other words, dirty price is clean price plus accrued interest.

Coupon, Current Yield and Yield-To-Maturity

Coupon Income: A coupon income is the regular flow of money or return to the investor or lender as promised by the borrower.

Capital Appreciation: During the life of investment in a bond, market interest rate changes and the present value of the bond would also change as the coupon is fixed. This change could be positive/negative leading to a capital appreciation or depreciation.

Reinvestment income: The investor receives periodic interest or coupon on the debt investment. The same is reinvested on assets which would yield further income.

Yield Measures

Current Yield: Current yield is the simplest measure of the yield on a bond and oldest form of yield used in the market to compare various bonds in terms of their relative attractiveness of investment.

$$\text{Current Yield} = \text{Coupon/Clean Price} * 100$$

Yield to Maturity (YTM): The YTM is the discount rate that equates the discounted future cash flows and principal to be received with the present value or current price of the bond. In other words, it is the internal rate of return (IRR) or the expected rate of return on the bond.

Yield for Money Market: Yield measures for money market instruments are annualized but not compounded. Discount yield computes the expected return of a bond purchased at a discount and held until maturity:

$$\text{Discount Yield} = (\text{Face value} - \text{Price}) * 360 / (\text{Face Value} * \text{Days to maturity})$$

Effective Yield: The equivalent rate is the rate which produces same final amount at the end of 1 year if simple interest is applied.

Valuation of Bonds: Readers are requested to go through the calculations and methodologies given in the NISM book for this part to get a better understanding.

Spot Rate Bond Price and YTM

Spot rate (also known as “zero rate”) is the true return on investment. It considers premium/discount in bond price, capital gain/loss at redemption and reinvestment of interim income.

To make the different zero rates/spot rates easier for interpretation, we average all the rates into a single number, which is called YTM.

Price-Yield Relationship

The price-yield relationship is inverse in nature. When we calculate the relationship, we use only the clean price. If we want to plot the price-yield relationship of two bonds, we can compare their relative effective riskiness.

The price-yield relationship can be summarized here as follows:

1. The inverse relation between a bond's price and rate of return is given by the negative slope of the price-yield curve. The movement across the curve is nonlinear.
2. The bond with larger maturity time would have higher sensitivity to interest rate changes.
3. The lower a bond's coupon rate, the greater is its price sensitivity

Relation between Coupon Rate(C^R), Yield (R), Price (V), and par value (F)

	if $C^R = R \Rightarrow V_o^b = F$: Bond valued at par.
Bond-Price	if $C^R < R \Rightarrow V_o^b < F$: Bond valued at discount.
Relation 1:	if $C^R > R \Rightarrow V_o^b > F$: Bond valued at premium.

The coupon rate (CR), current market yield (CY) and yield-to-maturity (YTM) are related such that:

Bond Selling at	Relationship				
Par	CR	=	CY	=	YTM
Discount	CR	<	CY	<	YTM
Premium	CR	>	CY	>	YTM

Risk Measures of Fixed Income Securities

Price risk and reinvestment risk always work in the opposite way. For example, if the market interest rate rises, the bond price falls but reinvestment income rises. Similarly, if the market interest rate falls, the bond price rises but reinvestment income falls. The change in bond price is instant after the change in interest rate but the effect of reinvestment income is slow over a period of time.

Price Volatility Characteristics of Option Free Fixed Income Securities

Each bond has a unique volatility stream with respect to change in interest rate. Volatility stream is nothing but variability in volatility or sensitivity of a bond with respect to the given yield or interest rate changes. A bond with long maturity may have higher sensitivity for a given change in interest rate vis-à-vis a shorter maturity bond.

There are four basic properties with regard to the price volatility of an option-free bond:

- i. The percentage change in price due to a change in yield will be different for different bonds where their coupons, maturities and traded yields are different.

- ii. When yield changes are very small, the percentage price change for a given bond remains more or less the same irrespective of increase or decrease in the yield.
- iii. When yield changes are large, the price change for the bond is different for the same increase and decrease in the yield.
- iv. When yields fall, the price changes are bigger than the price changes when yield rises by the same magnitude

Understand the Concept of Duration

Duration of a bond is the time weighted average of the present value of bond's future known cash flows. It is also called weighted average maturity or the payback period of the bond. Since the bonds have fixed maturities and cash flows come at various points in time, we need to put them in one single explanatory element to understand the relative and effective maturity of a bond vis-à-vis another as well as to understand the riskiness of the bonds.

Macaulay duration: It is an extremely important concept for understanding bond price sensitivity. It is the weighted average of the time to get the future cash flows from a bond. It is measured in units of years. In simple terms, this concept tells the weighted average time that we need to hold a bond in the portfolio so that the total present value of the future cash flows is equal to the current market price of the bond.

We typically use the following formula for deriving Duration of a bond:

$$\text{Mac Duration} = \frac{\sum_{t=1}^n PV(CF_t) * t}{\text{Market Price of Bond}}$$

$$\text{Or, Mac Duration} = \frac{\sum_{t=1}^n \frac{t * C}{(1+Y)^t} + \frac{n * M}{(1+Y)^n}}{\text{Market Price of Bond}}$$

where:

Mac Duration = duration of the bond;

CF_t= cashflow at time t;

t = time period of the cashflow;

n = number of periods to maturity;

Y = the yield to maturity (market interest rate).

Some Important Duration Relationships are summarized below:

- Coupon is inversely related to Duration. Higher coupon means lower duration. This is mainly due to the fact that we receive large part of the income or cash flows at the early stage.
- Yield to maturity is inversely related to duration. Higher yield = lower Duration and vice versa.
- Duration increases with maturity.
- For zero coupon bond, duration is equal to its maturity. For simple coupon paying bond with no embedded features, duration is lower than its maturity.

The **duration of a portfolio** is equal to the weighted average of the duration of the bonds in the portfolio.

Modified Duration is an adjusted measure of Macaulay duration to help in the estimation of a bond's price sensitivity to changes in interest rates. In other words, it illustrates the effect of a 100-basis point (1%) change in

interest rates on the price of a bond. It is important to note that modified duration shows the volatility of a dirty price.

To find the modified duration, all an investor needs to do is take the Macaulay duration and divide it by $1 + (\text{yield-to-maturity} / \text{number of coupon periods per year})$.

Price Value of a Basis Point is simply the change in price in terms of currency of the bond, if the yield changes by 1 basis point (0.01%).

Convexity Measure: Duration is derived from the first derivative of the Bond price equation. Mathematically, duration is a first approximation of the price/yield relationship. Modified duration is an approximation of the percentage change in bond price for a given change in yield. In fact, it is accurate only for very small and parallel shifts in the yield curve. The actual price change curve looks more convex vis-à-vis the linear line suggested by modified duration. Hence, we need to look at the effect of convexity on the price change to figure out better precision.

Convexity measures how the bond's duration—and by implication, its price—will change depending on how much interest rates change. Convexity is a measure of the sensitivity of a bond's price to changes in yield which is not explained by duration due to non-linear relationship between price and yield.

$$\text{Convexity} = \frac{1}{P \times (1 + y)^2} \sum_{t=1}^T \left[\frac{CF_t}{(1 + y)^t} (t^2 + t) \right]$$

Where,

P= Bond price

Y= Yield to maturity

T= Maturity in years

CF_t = Cash flow at time t

The change in the price of a bond can be summarized as follow:

Change in price = Duration effect + Convexity effect

Role and Importance of Debt Market

Firms need finance for daily operations, typically raised through debt and equity. Debt involves borrowed money repaid with interest, while equity raises funds by selling ownership stakes. Debt is a charge on income, whereas equity returns are a share of company profits. Governments also borrow to manage liquidity or fund long-term development. Depending on purpose and duration, various debt instruments are used to raise funds. The debt market enables borrowing through these instruments, catering to investors with different risk profiles. Debt instruments are essentially loans or IOUs, with fixed interest payments and principal repayment over a specified period, earning them the name "Fixed Income Securities." Using debt for operations and growth is a form of

leverage that allows owners to retain control. However, excessive debt can hinder growth or lead to bankruptcy. Therefore, firms must carefully balance debt and equity based on a thorough assessment of each option's pros and cons.

Governments issue the most debt to fund expenditures, and a developed debt market helps them borrow at lower costs. A liquid market improves pricing efficiency and reduces reliance on banks by distributing risk among investors. Debt can be raised through bank loans or bond issuances, with corporate bonds offering a lower-cost option for companies.

A strong debt market supports long-term investors like pension funds and insurance firms by matching long-term liabilities. It also attracts retail and collective investment schemes. The primary market allows direct issuance—governments via auctions and corporates via private placements. The secondary market offers liquidity, price discovery, and insights into credit risk.

Debt issuance involves regulatory processes like underwriting, credit ratings, and listings. High regulatory costs often push smaller firms toward bank loans over market issuance. A robust debt market depends on a sound legal and regulatory framework.

Primary and Secondary Debt Market in India

The debt market deals in both the Government debt as well as in non-Government debt instruments.

Thus, the three critical participants in the debt market are:

- Issuers are Governments, commercial banks, public sector companies, private corporate firms
- Intermediaries are investment banks and merchant banks.
- Investors are the private corporate treasuries, collective investment vehicles like mutual funds, insurance companies, commercial banks, pension funds, high net worth Individuals, etc.

Investors can further be classified as domestic and international investors. The Reserve Bank of India and the Securities and Exchange Board of India are the main regulators in the Indian debt market.

Indian Debt market typically has three distinct segments based on issuer category

- Government debt, known as “G-sec” market with Government of India issuing dated papers, Treasury Bills and State governments issuing State Development Loans of various maturities
- Public sector units (PSU) and Banks issuing instruments to raise resources from the market
- Private sector raising resources through issuance of debt papers.

Debt instruments are issued in the **primary market** where initially they are subscribed by the various investors who may trade in them subsequently in the **secondary market**.

In the primary market, Government securities & Treasury Bills are issued through auctions through Competitive Bidding or Non-Competitive Bidding.

Secondary market trading takes place through:

- Negotiated Dealing System-Order Matching (NDS-OM)
- Over the Counter (OTC)/Telephone Market
- NDS-OM-Web
- Stock Exchanges
- RBI Retail Direct Scheme

OMOs or **Open Market Operations** are the market operations conducted by the RBI by way of sale/ purchase of GSecs to/ from the market with an objective to adjust the rupee liquidity conditions in the market on a durable basis.

Repurchase (buyback) of G-Secs is a process whereby the Government of India and State Governments buy back their existing securities, by redeeming them prematurely, from the holders.

Public Issue means an invitation by a company to public to subscribe to its debt securities offered through a prospectus. SEBI regulations require all public issues of debt to be listed on one or more recognized Stock Exchanges,

Private Placement refers to an offer of sale of debt securities by an issuer to a select group of people/institutions.

Money Market

Money Market is a short-term market and handles instrument from 1 day to 1 year. It is mostly used by Government, Banks and other corporate entities to tide over short-term requirements of funds.

Money market is typically divided into two segments: (a) Borrowing and Lending segment with or without collaterals; (b) Asset Market involving purchase and sale of money market instruments. They are as follows:

- Call Money
- Notice Money
- Term Money
- Market Repo
- Triparty Repo
- Treasury Bills
- Cash Management Bills
- Commercial Paper
- Certificate of Deposit

Chapter 2: Interest Rate Derivatives

Derivative is something that is derived from another thing called the underlying. The price of derivatives is determined by the price of underlying, and not by the demand-supply for derivative. The future date is the second requirement for the settlement of the derivative. They also provide the ability to buy the underlying without fully paying for it immediately or sell it without delivering it immediately. Derivatives are tools to manage price risk. Following are the approaches to risk management:

Approach	Explanation
Speculation	Taking risk (more formally called “trading”) It results in the possibility of positive return (i.e., profit) or negative return (i.e., loss) in future
Hedging	You are already exposed to risk and hedging eliminates that risk and locks in the future return at a known level.
Insurance	You are already exposed to risk and insurance selectively eliminates the negative return but retains the positive return. It has an explicit upfront cost, unlike speculation and hedging, which do not have any cost. It requires a particular derivative called option to implement it.
Diversification	It reduces both return and risk but in such a way that risk is reduced more than return so that risk is minimized per unit return (or, alternately, return is maximized per unit risk).

Key Economic Functions of Derivatives:

- Hedging risk exposure
- Price Discovery
- Market efficiency
- Access to unavailable assets or markets
- Price Stability
- Price Speculation

Products in Derivatives Market

Forwards are a contractual agreement between two parties to buy/sell an underlying asset at a certain future date for a particular price that is pre-decided on the date of contract.

Forward Rate Agreement (FRA) is an interest rate derivative contract that involves exchange of interest payments on a notional principal amount, on a future date, at agreed rates, for a defined forward period.

A **futures contract** is similar to a forward, except that the deal is made through an organized and regulated exchange rather than being negotiated directly between two parties.

An **Option** is a contract that gives the right, but not an obligation, to buy or sell the underlying on or before a stated date and at a stated price.

Interest Rate Option (IRO) is an option contract whose value is based on interest rates or interest rate instruments.

An Interest Rate Cap is a series of interest rate call options (called caplets) in which the buyer of the option receives a payment at the end of each period when the underlying interest rate is above a rate agreed in advance (strike rate).

An Interest Rate Floor is a series of interest rate put options in which the buyer of the option receives a payment at the end of each period when the underlying interest rate is below the strike rate.

An Interest Rate Collar is a derivative contract where a market participant simultaneously purchases an interest rate cap and sells an interest rate floor on the same interest rate for the same maturity and notional principal amount.

A Reverse Interest Rate Collar is a derivative contract which involves simultaneous purchase of an interest rate floor and sale of an interest rate cap on the same interest rate for the same maturity and notional principal amount.

A **swap** is an agreement made between two parties, to exchange cash flows in the future, according to a prearranged formula. Swaps are, broadly speaking, series of forward contracts.

Interest rate swap is a derivative contract that involves exchange of a stream of agreed interest payments on a 'notional principal' amount during a specified period.

A swaption is an option on swaps. A swaption gives the buyer the right, but not the obligation, to enter into swap.

Interest Rate Derivatives

Interest rate derivatives are most often used to hedge against interest rate risk, or else to speculate on the direction of future interest rate moves. Interest rate risk exists in an interest-bearing asset, such as a loan or a bond, due to the possibility of a change in the asset's value resulting from the variability of interest rates.

Market Participants in Interest Rate Derivatives Market

- Hedgers face risk associated with the prices of underlying assets and use derivatives to reduce their risk
- Speculators/Traders try to predict the future movements in prices of underlying assets and based on the view, take positions in derivative contracts.
- Arbitrage is a deal that produces profit by exploiting a price difference in a product in two different markets.

Interest Rate Derivative (IRD) is a financial derivative contract whose value is derived from one or more interest rates, prices of interest rate instruments, or interest rate indices. According to definition, for IRD underlying can be interest rate or it can be interest rate instrument like government securities, treasury bills, corporate bonds and interest rate indices.

OTC versus Exchange-Traded Derivatives

OTC derivatives (OTCD) are privately negotiated and settled contracts between two parties whereas Exchange-traded derivatives (ETD) are screen-based order matching platform and settled contracts with the aid of Exchange (which provides platform for trade execution) and Clearing Corporation (which conducts the settlement). This makes ETD more transparent as compared to OTCD.

Chapter 3: Exchange Traded Interest Rate Futures

Futures markets were innovated to overcome the limitations of forwards. A futures contract is an agreement made through an organized exchange to buy or sell a fixed amount of a commodity or a financial asset on a future date at an agreed price. Simply, futures are standardised forward contracts that are traded on an exchange. The clearing corporation guarantees settlement of trades done on Exchange.

Interest Rate Futures (IRF) are standardized interest rate derivative contracts traded on a recognized stock exchange to buy or sell a notional security or any other interest-bearing instrument or an index of such instruments or interest rates at a specified future date, at a price determined at the time of the contract. Interest Rate Futures include money market futures also.

Futures Terminologies

Underlying Asset: The value of the future contract is derived from value/price of certain underlying asset.

Spot price/rate: The price/interest rate at which the underlying asset trades in the spot market.

Futures price/rate: The current price /rate of the specified futures contract

Contract Cycle: It is a period over which a contract trade.

Expiry date: Also called last trading day of contract. It is the day on which trading ceases in the contract.

Tick Size: It is minimum move allowed in the price/rate quotations.

Contract Size / Lot Size: Futures contracts are traded in lots. Contract size specifies the amount of asset that has to be delivered for a single contract.

Contract Value: To arrive at contract value, we have to multiply the price/rate with contract multiplier or lot size or contract size.

Trading Hours: Time during which trading is allowed on Exchange trading platform.

Base Price: Base price generally acts as reference price for trading for start of the day.

Price Band: The price range (maximum and minimum price) for the day within which contract can be traded for that day.

Mark to Market (MTM): The positions in the futures contracts for each member are marked-to-market to the daily settlement price of the futures contracts at the end of each trade day.

Final Settlement: Final settlement can be cash settled or physical settled. In case of cash settlement only the profit and loss resulting from positions shall be paid / received from the participants.

Open Interest: An open interest is the total number of contracts outstanding (yet to be settled) for an underlying asset.

Comparison of FRAs and Interest Rate Futures

Operational Mechanism	Bilateral – Over the Counter	Through Centralized trading exchanges
Terms of Contracts	Non-Standardized	Standardized Contract
Underlying	Usually Interest Rate	Interest Rate, Index
Price Discovery	Not efficient, through negotiation	Through free interaction of buyers and sellers
Liquidation Profile	Low	High
Advantages	<ul style="list-style-type: none"> • Since customized product can provide perfect hedge. • Less operation issues related to margin and mark to market settlement 	<ul style="list-style-type: none"> • Price transparency • Elimination of Counterparty credit risk as settlement guarantee by clearing corporation of Exchanges • Access to all types of market participants • Credit Agnostic • Lower liquidity risk compared to OTC • Generally lower impact cost
Limitations	<ul style="list-style-type: none"> • Liquidity risk • Counter party risk • Not accessible for all kind of market participants 	<ul style="list-style-type: none"> • May lead to imperfect hedge as amount and settlement dates are standardized. • Operational issues related to mark-to-mark settlement and margin

A **forward rate** is an interest rate applicable to a financial transaction that will take place in the future. Forward Rate can be determined using spot rate. In an efficient market, the same returns are received for investment made over one long term or multiple shorter terms by reinvesting the maturity proceeds.

Financing cost is the relationship between futures prices and spot prices. It measures the interest that is paid to “finance” or ‘carry’ the asset till expiry date of contract.

In case of fixed income securities, income is accrued on daily basis. Such accrued interest expected to be received on expiry + Coupon payment received in between the contact + interest received on investment of such coupon payment will be considered **as income on cash position**.

$$\text{The future bond price} = \text{Cash Price} + \text{financing cost} - \text{income on cash position}$$

Chapter 4: Exchange Traded Interest Rate Options

Forward/futures contract is a commitment to buy/sell the underlying and has a linear pay off, which indicates unlimited losses and profits. Some market participants desired to ride upside and restrict the losses. Accordingly, options emerged as a financial instrument, which restricted the losses with a provision of unlimited profits on buy or sell of underlying asset. An Option is a contract that gives the option buyer right, but not an obligation, to buy or sell the underlying asset on or before a specified date/day, at a pre-determined price. For acquiring right option buyer pay certain price/premium to option seller.

The right to buy the asset is called **call option** and the right to sell the asset is called **put option**.

The pre-specified price at which the underlying asset may be purchased or sold by the option holder is called as **strike price**.

The date at which the option contract will expire / or ceases to exist is called **expiration date**.

The difference between the date of entering into the contract and the expiration date is called **time to maturity**.

The party which buys the rights but not obligation and pays premium for buying the right is called as **option buyer** and the party which sells the right and receives premium for assuming such obligation is called **option seller/ writer**.

The price which option buyer pays to option seller to acquire the right is called as **option price or option premium**.

In options trading, "**to exercise**" means to put into effect the right to buy or sell the underlying security that is specified in the options contract. If the holder of a call option exercises the contract, they will buy the underlying security at a stated price within a specific timeframe. If the holder of a put option exercises the contract, they will sell the underlying security at a stated price within a specific timeframe.

European options: European options can be exercised by the buyer of the option only on the expiration date. Hence, option buyer enjoys less flexibility in how they handle option trading.

American options: American options can be exercised by the buyer any time on or before the expiration date. American option offers more flexibility to option buyer as they can be exercised on any trading day prior to their expiration.

Moneyness of an option

In the money (ITM) option: An option is said to be in the money, if on exercising it, the option buyer gets a positive cash flow.

Out of the money (OTM) option: An option is said to be out of the money, if on exercising it, the option buyer gets a negative cash flow.

At the money (ATM) option: An option is said to be at the money if spot price is equal to the strike price. On exercise of ATM option buyer gets zero cash flows.

Basics of Option Pricing and Option Greeks

The option value/option premium can be broken in two parts:

Intrinsic value: Option premium, defined in earlier section, consists of two components – intrinsic value and time value. For an option, intrinsic value refers to the amount by which option is in the money.

Time value: The difference between option premium and intrinsic value is the time value of that Option. ATM and OTM option will have only time value because the intrinsic value of such option is zero. The time value is directly proportional to the length of time to expiration date of the option. Longer the time to expiration, higher is time value. Therefore, everything else remaining the same, call option for two months maturity would be priced higher than the call option at the same strike price for one month maturity.

There are five fundamental parameters on which the option price depends:

Spot price of the underlying asset: The option premium is affected by the price movements in the underlying instrument. If price of the underlying asset goes up, the value of the call option increases, while the value of the put option decreases. Similarly, if the price of the underlying asset falls, the value of the call option decreases, while the value of the put option increases.

Strike Price: If all the other factors remain constant but the strike price of option increases, intrinsic value of the call option will decrease and hence its value will also decrease. On the other hand, with all the other factors remaining constant, increase in strike price of option increases the intrinsic value of the put option which in turn increases its option value.

Volatility: It is the magnitude of movement in the underlying asset's price, either up or down. It affects both call and put options in the same way. Higher the volatility of the underlying stock, higher the premium because there is a greater possibility that the option will move in-the-money during the life of the contract.

Time to expiration: The effect of time to expiration on both call and put options is similar to that of volatility on option premiums. Generally, longer the maturity of the option greater is the uncertainty and hence the higher premiums. The time value portion of an option's premium will decrease with the passage of time. This is also known as time decay.

Interest Rates: The interest rate referred to in relation to the prices of options is what is known as the "Risk Free Interest Rate". Interest rates are slightly complicated because they affect different options, differently. In simpler way high interest rates will result in an increase in the value of a call option and a decrease in the value of a put option.

Option Greeks

Delta measures the sensitivity of the option value to a given small change in the price of the underlying asset.

Gamma measures change in delta with respect to change in price of the underlying asset. This is called a second derivative option with regard to price of the underlying asset.

Theta is a measure of an option's sensitivity to time decay. Theta is the change in option price given a one-day decrease in time to expiration. It is a measure of time decay. Theta is generally used to gain an idea of how time decay is affecting your option positions.

Vega is a measure of the sensitivity of an option price to changes in market volatility. It is the change of an option premium for a given change in the underlying volatility.

Rho is the change in option price given a one percentage point change in the risk-free interest rate. Rho measures the change in an option's price per unit increase in the cost of funding the underlying.

Put-Call Parity

Put-call parity shows the relationship that has to exist between European put and call options that have the same underlying asset, expiration, and strike prices. Put-Call parity holds only for a European option.

$$C + PV(x) = P + S$$

Option pricing methodology

There are various option pricing models which traders use to arrive at the right value of the option:

The Binomial Pricing Model: The binomial model represents the price evolution of the option's underlying asset as the binomial tree of all possible prices at equally-spaced time steps from today under the assumption that at each step, the price can only move up and down at fixed rates and with respective simulated probabilities.

The Black & Scholes Model: It is one of the most popular, relatively simple and fast modes of calculation. Unlike the binomial model, it does not rely on calculation by iteration. This model is used to calculate a theoretical call price (ignoring the dividends paid during the life of the option).

Call and Put option price can be calculated as:

$$C = SN(d_1) - Xe^{-rt}N(d_2)$$

$$P = Xe^{-rt}N(-d_2) - SN(-d_1)$$

$$\text{Where, } d_1 = [\ln(S/X) + (r + v^2/2) * t] / (v * \sqrt{t})$$

$$d_2 = d_1 - v * \sqrt{t}$$

And the variables are:

- S = stock price
- X = strike price
- t = time remaining until expiration, expressed in years
- r = current continuously compounded risk-free interest rate
- v = annual volatility of stock price (the standard deviation of the short-term returns over one year)
- ln = natural logarithm
- N(x) = standard normal cumulative distribution function
- e = the exponential function

Implied Volatility (IV)

Historical Volatility, in the financial market world, we take the past closing prices of the stock/index/bonds/currency rate and calculate the historical volatility. Historical volatility is very easy to calculate and helps us with most of the day-to-day requirements.

Forecasted Volatility refers to the act of predicting the volatility over the desired time frame. There are a few good statistical models available to forecast volatility.

Implied Volatility (IV) represents the market participant's expectation on volatility. Implied volatility can be thought of as consensus volatility arrived amongst all the market participants with respect to the expected amount of underlying price fluctuation over the remaining life of an option.

Pay off Diagrams for Options

Readers are requested to go through the pay-off diagrams given in the NISM book for this part to get a better understanding.

Chapter 5: Strategies Using Exchange Traded Interest Rate Derivatives

Market participants

Hedgers are traders who wish to protect themselves from the risk involved in price movements of underlying i.e., interest rate or interest rate instruments. These types of participants have a real exposure to interest rate risk on account of their underlying business and their objective is to remove the interest rate risk using Exchange Traded Interest Rate Derivatives.

Speculators are a set of market participants does not have a real exposure to interest rate risk. These participants assume interest rate risk by taking a view on the market direction and hope to make returns by taking the price risk.

Arbitragers continuously hunt for the profit opportunities across the markets and products and seize those by executing trades in different markets and products simultaneously. Importantly, arbitragers generally lock in their profits unlike traders who trade naked contracts. This set of market participants identify mispricing in the market and use it for making profit.

Hedging through Exchange Traded Interest Rate Derivatives

For hedging and/or trading, we must decide three parameters: (1) instrument; (2) market size; and (3) Contract Month.

Portfolio Based Hedging: A duration-based hedge ratio is a hedge ratio constructed when interest rate futures contracts are used to hedge positions in an interest-dependent asset, usually bonds money market securities. To reduce interest rate risk in a debt portfolio, investor may hedge the portfolio or part of the portfolio (including one or more securities) on weighted average modified duration basis by using Interest Rate Futures (IRFs).

$$\text{(Portfolio Modified Duration * Market Value of the Portfolio) /}$$

$$\text{(Futures Modified Duration * Futures Price / PAR)}$$

The above ratio can be used to make the duration of the entire position zero.

Option Trading Strategies

Option Spreads: Spreads involve combining options on the same underlying and of same type (call/ put) but with different strikes and maturities. These are limited profit and limited loss positions. They are primarily categorized into three sections as:

- Vertical Spreads
- Horizontal Spreads
- Diagonal Spreads

Vertical Spreads

Vertical spreads are created by using options having same expiry but different strike prices. Further, these can be created either using calls as combination or puts as combination. These can be further classified as:

- Bullish Vertical Spread using Calls or Using Puts: A bull spread is created when the underlying view on the market is positive, but the trader would also like to reduce his cost on position.

- Bearish Vertical Spread using Calls or Using Puts: This is taken when there is a Bearish view.

Horizontal Spread

Horizontal spread involves same strike, same type but different expiry options. This is also known as time spread or calendar spread. Here, it is not possible to draw the payoff chart as the expiries underlying the spread are different.

Diagonal Spread

Diagonal spread involves combination of options having same underlying but different expiries as well as different strikes. Again, as the two legs in a spread are in different maturities, it is not possible to draw pay offs here as well. These are much more complicated in nature and in execution.

Straddle

- Long Straddle: If a person buys both a call and a put at same strike price, then his max loss will be equal to the sum of these two premiums paid and, price movement from here (in either direction) would first result in that person recovering his premium and then making profit.
- Short Straddle: Here, trader's view is that the price of underlying would not move much or remain stable (i.e., not much movement in interest rate/yield of bond). So, he sells a call and a put so that he can profit from the premiums.

Strangle

- Long Strangle: The outlook here (for the long strangle position) is that the market will move substantially in either direction, but while in straddle, both options have same strike price, in case of a strangle, the strikes are different.
- Short Strangle This is exactly opposite to the long strangle. Outlook, like short straddle, is that market will remain stable over the life of options.

Covered Call

Writing covered calls is a strategy that sells volatility in return of fees. This strategy is used to generate extra income from existing holdings in the bonds.

Protective Put

A fund manager, who is anticipating a fall, can either sell his entire portfolio or short futures to hedge his portfolio. In both cases, he is out of the market, as far as profits from upside are concerned. A protective put helps limit downside losses while keeping the upside by paying a small cost.

Butterfly Spread

A butterfly spread is an options strategy that combines both bull and bear spreads. These are neutral strategies that come with a fixed risk and capped profits and losses. Long Call Butterfly: Long Call Butterfly is a neutral strategy where very low volatility in the price of underlying is expected.

Chapter 6: Trading Mechanism in Exchange Traded Interest Rate Derivatives

List of Entities in the Trading System

Stock Exchange is incorporated for the purpose of assisting, regulating or coordinating the business of buying, selling or dealing in securities. Its important role is to establish a nation-wide trading facility for various financial instruments.

Clearing Corporation does clearing, settlement and risk management for trades executed on Exchanges.

A **trading member** is allowed to execute trades on his own account as well as on account of his clients.

Clearing Members have clearing and settlement rights in any recognised clearing corporation. Clearing Member helps in clearing of the trades of their clients. Clearing Members have clearing and settlement rights in any recognised clearing corporation. Clearing Member helps in clearing of the trades of their clients.

Investors/clients trade in Exchange Traded Interest Rate Derivatives (ETIRD) through trading member of the currency derivatives segment. Trading member will accept order on behalf of client and sends the same to the Exchange.

SEBI registered Stock Brokers to access Negotiated Dealing System-Order Matching (NDS-OM)

In order to facilitate SEBI-registered stock brokers to participate in Government Securities (G-Secs) market in the NDS-OM, it has been decided that they may do so under a Separate Business Unit (SBU) of the stock broking entity itself, in the manner specified herewith.

Exchange Trading System

All the derivatives exchanges in India provide a fully automated screen-based trading platform for ETIRD as part of currency derivatives segment. These trading systems support an order driven market and simultaneously provide complete transparency of trading operations. Exchange trading system is a fully computerized system designed to offer investors across the length and breadth of the country a safe and easy way to invest which adopts the principle of an order driven market.

The **trader workstation (TWS)** is the terminal from which the member accesses the trading system. Exchange provides own trading platforms to its member. Each trader has a unique identification by way of Trading Member ID and User ID through which they are able to log on to the system for trading or inquiry purposes.

Placing of Order: The Broker accepts orders from the client and sends the same to the Exchange after performing the risk management checks. Clients have the option of placing their orders directly through various channels, provided by members, like internet, phone, direct market access (DMA) (for institutional clients), securities trading using wireless technology facility (STWT) / Automated / Algorithm Trading (ALGO) / Smart order router (SOR), etc

Order Book refers to an electronic list of buy and sell orders which are available for matching (not yet converted in trade or outstanding order) for a specific security or derivatives contract organized by price level. An order book lists the number of shares/lot being bid on or offered at each price point, or market depth. It also provides number of orders at each price level.

Exchanges provide **spread order book** separately for taking calendar spread combination. A calendar spread is a contract where you buy/sell a particular month contract (Futures or Options) and sell/buy (take an opposite position) of the same contract of a different month.

Order management consists of entering orders, order modification, order cancellation and order matching. The main components of an order are:

- Price
- Time
- Quantity / No. of Contract
- Security/Contract (What to buy and what to sell)
- Action (Buy / Sell)
- Client identity (UCC) and Proprietary / Client identifier.

Types of orders

Price Condition

- Market Order – Basic Trade: A market order is where a trader purchases or sells their contracts at the best market price available across the market depth to complete the order quantity/lot. In the market order there is no need to specify the price at which a trader wants to purchase or sell.
- Limit Order: Limit orders involve setting the entry or exit price and then aiming to buy at or below the market price or sell at or above it. Unlike market order, the trader here needs to specify price.
- Stop Orders: (orders with stop loss triggers) The one that allows the Trading Member to place an order which gets activated only when the market price of the relevant security reaches or crosses a threshold price. Until then the order does not enter the market.

Time Condition

- DAY - A Day order, as the name suggests, is an order which is valid for the day on which it is entered. If the order is not matched during the day, the order gets cancelled automatically at the end of the trading day.
- IOC - An Immediate or Cancel (IOC) order allows a 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 194 from the market.
- GTC - A Good Till Cancelled (GTC) order is an order that remains in the system until it is cancelled by the Trading Member. It will therefore be able to span trading days if it does not get matched.
- GTD - A Good Till Days/Date (GTD) order allows the trading member to specify the days/date up to which the order should stay in the system. At the end of this period the order will get flushed from the system
- Cancel on Logout (COL): If member / user entered order with COL, all outstanding order of the user will get cancelled once user logs out from the TWS.

Quantity Condition

- DQ - Disclosed Quantity (DQ) - An order with a DQ condition allows the Trading Member to disclose only a part of the order quantity/lot to the market.
- MF - Minimum Fill (MF) orders allow the Trading Member to specify the minimum quantity by which an order should be filled.
- AON - All or None orders allow a Trading Member to impose the condition that only the full order should be matched against. This may be by way of multiple trades. If the full order is not matched it will stay in the books till matched or cancelled.

Proprietary Trading

Trading members are also allowed to trade on own behalf. To facilitate the same Stock Exchanges, provide facility of placing order on proprietary (pro) account. Facility of placing orders on proprietary account through trading terminals shall be extended only at one location of the members as specified / required by the members. Trading terminals located at places other than the above location shall have a facility to place orders only for and on behalf of a client by entering client code details as required / specified by the Exchange / SEBI.

Types of Risk for Members

Operational risk is the risk of monetary loss resulting from inadequate or failed internal processes, manual and systems error or external events.

Market risk refers to the possibility of incurring large losses from adverse changes in financial asset prices such as stock prices.

Credit risk is the risk of default on a debt that may arise from a borrower failing to make required payments.

Legal risk arises from the possibility that an entity may not be able to enforce a contract against another party.

Systemic Risk refers to (1) the scenario that a disruption at a firm, in a market segment, or to a settlement system could cause a “domino effect” throughout the financial markets toppling one financial institution after another or (2) a “crisis of confidence” among investors, creating illiquid conditions in the marketplace.

Pre-Order and Pre-Trade Checks

There are various pre-order (checks which are applicable before order entering into the trading system) and Pre-trade (checks which are applicable before execution of trade) checks which are available on TWS and trading system of the Exchange.

Pre-order checks:

- Price Range Check
- Quantity Freeze
- Single Order Quantity
- User order value limits
- Cumulative open order value checks
- UCC/PAN Check

Pre-trade checks

- Trade Execution Range
- Self-Trade Check
- Market price protection
- Kill Switch
- Cancel on Logout (COL)

Trading Costs

While trading in Exchange Traded Interest Rate Derivatives (ETIRD) on behalf of client, a trading member should specify various charges, including brokerage, payable by the client to avoid any disputes at a later date. Following levies / brokerage can be charged to client:

- Statutory Levies
- Regulatory Levies/Charges
- Brokerage
- SEBI Turnover Fees
- Stamp Duty

Chapter 7: Clearing, Settlement and Risk Management in Exchange Traded Interest Rate Derivatives

Clearing and Settlement Mechanism

The clearing mechanism essentially involves working out open positions and obligations of clearing members. This position is considered for exposure and daily margin purposes. The open positions of clearing members are arrived at by aggregating the open positions of all the brokers/trading members and all custodial participants clearing through them.

Important Terminologies pertaining to clearing corporations

- **Pay-In** is a process whereby a Clearing Member brings in money and/or securities to the Clearing House/ Corporation. This forms the first phase of the settlement activity.
- **Pay-Out** is a process where the Clearing House/ Corporation pays money or delivers securities to the Clearing Member. This is the second phase of the settlement activity

Clearing Corporation

The clearing corporation determines fund/security obligations and arranges for pay-in of the same. It collects and maintains margins, processes for shortages in funds and securities. For carrying out settlement of trades, the clearing corporation is helped by the clearing members, clearing banks, custodians and depositories. Thus, these entities are also important intermediaries of securities market.

Clearing Members

- Trading cum Self-clearing member
- Trading member–cum–clearing member
- Professional clearing member

Clearing Bank(s) acts as an important intermediary between a clearing member(s) and the clearing corporation. Every clearing member needs to maintain an account with any of the empanelled clearing banks at the designated clearing bank branches. The clearing accounts are to be used exclusively for clearing & settlement operations. It is the function of the clearing members to ensure that the funds are available in his account with clearing bank on the day of funds pay-in to meet the funds obligations.

A **Depository** is an entity facilitating holding of securities in electronic form and enables transfer of securities by book entry. The main objective of depository is to provide maintenance of ownership or transfer records of securities in an electronic book entry form resulting in paper-less trading rather than paper-based trading and to ensure transferability of securities with speed, accuracy and safety.

The **clearing mechanism** essentially involves working out open positions and obligations of clearing members. This position is considered for exposure and daily margin purposes. The open positions of Clearing Members (CMs) are arrived at by aggregating the open positions of all the TMs and all custodial participants clearing through him.

Settlement Obligation

Clearing Corporation receives the details of trades and prices from the Exchange. Settlement obligations are computed using predefined methodology specified for the segment/product. The obligations are generated and downloaded to trading and clearing member at end of day. Some of the methods of determining obligations are listed below:

- Daily mark to market settlement of futures contract
- Final settlement for futures contract which are cash settled
- Premium settlement for option contracts
- Exercise settlement for cash settled option contracts
- Netted obligation
- Delivery Settlement

Settlement

Settlement follows clearing and consists of receipt and payment of cash and/or delivery of securities (in case of physical settlement) after multilateral netting in the clearing. Physical settlement means exchange of cash for the security. Physical settlement does not mean that every sell trade during contract's life results in physical delivery. The seller can always close ("square up") his position with an offsetting buy trade, but it must be done before the close of business on the last trading day. In case of physical delivery, the open position at the close on last trading day must be settled with physical delivery of any of the deliverable securities.

Daily Mark to Market (MTM) settlement of futures contract: Daily settlement prices will be computed for interest rate futures contracts based on methodology specified in above table. All positions of a clearing member in interest rate futures contracts, at the close of trading hours on a day, shall be marked to market at the daily settlement price (for daily mark to market settlement) and settled in cash. The settlement is done by debit/ credit of the clearing accounts of clearing members with the respective clearing bank on T+1 as per timeline specified by clearing corporation. All open positions will be carried forward at the latest daily settlement prices.

Premium settlement for option contracts: Premium settlement in respect of admitted deals in interest rate options contracts shall be cash settled by debit/ credit of the clearing accounts of clearing members with the respective clearing bank on T+1 as per timeline specified by clearing corporation. The premium payable or receivable value of clearing members shall be computed after netting the premium payable or receivable positions at trading member/Custodial Participant level, for each option contract, at the end of each trading day. Wherein, premium variation in interest rate options position will be adjusted against the collateral placed and not cash settled.

Margins and action on deliverable positions:

- i) **Margins on physical delivery positions:** For positions marked for delivery, a margin equal to VaR of the futures on the invoice price plus 5% of face value along with mark to market adjustments shall be charged both to the buying client and selling client. The margins shall be levied from the intention day and shall be released on the completion of the settlement.
- ii) **Margins from last trading day to last intention day:** For positions from last trading date till date of intention in cases where no intention is provided, a margin amount equal to VaR of the futures on the invoice price of the costliest security from the deliverable basket plus 5% of face value along with mark to market adjustments based on the underlying closing prices of the costliest security from the deliverable basket shall be charged on both buying client and selling client. The margins shall be levied from the last trading day till the day of receipt of intention to deliver.
- iii) **Action in case no intent to deliver is provided:** In case no intent is provided by the selling CM till two business days prior to the last delivery date, it shall be presumed that selling CM has failed to deliver the security and the auction mechanism, as specified for security shortages, shall be activated. The auction shall take place one business day prior to the last delivery date.

Initial margin is payable on all open positions of clearing members, up to client level and shall be payable upfront by Clearing Members in accordance with the margin computation mechanism adopted by the Clearing Corporation. Initial margin shall include SPAN margins, Margin on consolidated crystallized obligation, delivery margins and such other additional margins that may be specified by the clearing corporation from time to time.

Net Option Value is computed as the difference between the long option positions and the short option positions, valued at the last available closing price of the option contract and shall be updated intraday at the current market value of the relevant option contracts at the time of generation of risk parameters. The Net Option Value shall be added to the Liquid Net Worth of the clearing member.

Additional Margin: Exchanges / Clearing Corporations have the right to impose additional risk containment measures over and above the risk containment system mandated by SEBI. This shall be in addition to the initial margin and extreme loss margin, which are or may have been imposed from time to time.

Core Settlement Guarantee Fund

The corpus of the fund should be adequate to meet all the contingencies arising on account of failure of any member(s). The risk or liability to the fund depends on various factors such as trade volume, delivery percentage, maximum settlement liability of the members, the history of defaults, capital adequacy of the members, the degree of safety measures employed by the CC/SE, etc. A Minimum Required Corpus (MRC) of the core SGF should be created. In the event of usage of Core SGF during a calendar month, contributors shall, as per usage of their individual contribution, immediately replenish the Core SGF to MRC. However, such contribution towards replenishment of Core SGF by the members would be restricted to only once during a period of 30 calendar days regardless of the number of defaults during the period.

Stress testing and back testing

Stress test for credit risk: CC shall carry out daily stress testing for credit risk using at least the standardized stress testing methodology prescribed for each segment viz. equity, equity derivatives and currency derivatives. Apart from the stress scenarios prescribed for cash market and derivatives market segments, CCs shall also develop own scenarios for a variety of 'extreme but plausible market conditions' (in terms of both defaulters' positions and

possible price changes in liquidation periods, including the risk that liquidating such positions could have an impact on the market) and carry out stress testing using self-developed scenarios.

Liquidity stress test and adequacy of liquidity arrangements: CC shall ensure that it maintains sufficient liquid resources to manage liquidity risks from members, settlement banks and those generated by its investment policy.

Reverse stress test: CC shall periodically carry out reverse stress tests designed to identify under which market conditions and under what scenarios the combination of its margins, Core SGF and other financial resources prove insufficient to meet its obligations.

Chapter 8: Regulatory Framework for Exchange Traded Interest Rate Derivatives

Similar to currency derivatives, exchange traded interest rate derivatives are jointly regulated by Reserve Bank of India (RBI) and Securities and Exchange Board of India (SEBI). Within the statutory regulations of RBI and SEBI, the Exchanges and Clearing Corporations will frame the operational rules and procedures under their bye-laws for Exchange traded interest rate derivatives

Securities Contracts (Regulation) Act, 1956 [SC(R)A]

It provides for direct and indirect control of virtually all aspects of securities trading and the running of Stock Exchanges and aims to preventing undesirable transactions in securities.

RBI-SEBI Standing Technical Committee on Exchange Traded Currency and Interest Rate Derivatives

With a view to enable entities to manage volatility in the currency market, RBI issued comprehensive guidelines on the usage of foreign currency forwards, swaps and options in the OTC market. At the same time, RBI also set up an Internal working group to explore the advantages of introducing currency futures. The Report of the Internal Working Group of RBI submitted in April 2008, recommended the introduction of exchange traded currency futures. It was decided in a joint meeting of RBI and SEBI on February 28, 2008, that an RBI-SEBI Standing Technical Committee on Exchange Traded Currency and Interest Rate Derivatives would be constituted.

RBI guideline on Exchange Traded Interest Rate Derivatives

RBI and SEBI have come out with various directions, notifications, circulars with regards to product design for Exchange Traded Interest Rate Derivatives (ETIRD).

- **Interest Rate Derivative (IRD)** is a financial derivative contract whose value is derived from one or more interest rates, prices of interest rate instruments, or interest rate indices.
- **Interest Rate Futures (IRF)** are standardized interest rate derivative contracts traded on a recognized stock exchange to buy or sell a notional security or any other interestbearing instrument or an index of such instruments or interest rates at a specified future date, at a price determined at the time of the contract. Interest Rate Futures include Money Market Futures.
- **Interest Rate Option (IRO)** is an option contract whose value is based on Rupee interest rates or interest rate instruments.

Other points defined include:

- Eligible Participants
- Trading Venues
- Interest Rate Derivatives on Recognized Stock Exchanges
- Transactions by non-residents for the purpose of hedging interest rate risk
- Transactions by non-residents for purposes other than hedging interest rate risk
- Conditions applicable to IRDs on both exchanges and in the OTC market

Regulatory guideline on participation of various entities in ETIRD

Banks & Primary Dealers: Banks are permitted to participate in IRD both for the purpose of hedging the risk in the underlying investment portfolio and also to take trading position. However, banks are not allowed to undertake transactions in IRFs on behalf of clients. All derivative contracts shall be subject to the Suitability and Appropriateness policy prescribed.

Mutual Funds: Mutual funds are allowed to participate in ETIRD. SEBI has provided guideline for mutual funds participation in derivatives and specific to ETIRD.

Insurance Companies: IRDAI has provided guideline for insurance companies' participation in Interest Rate Futures only. According to the guideline, insurance companies are allowed to participate in IRF only and it is only for long hedge.

Foreign Portfolio Investors: A non-resident may undertake Rupee interest rate derivatives transactions in India for following purpose to hedge an exposure to Rupee interest rate risk as stipulated by RBI or purposes other than hedging, to the extent stipulated by RBI.

NBFCs: Applicable NBFCs can participate in the designated interest rate futures (IRF) exchanges recognized by SEBI as clients, for the purpose of hedging their underlying exposures. All non-deposit taking applicable NBFCs with asset size of ₹ 1000 crore and above may also participate in the interest rate futures market permitted on recognized stock exchanges as trading members, subject to RBI/ SEBI guidelines.

Role of FIMMDA in Fixed Income and Derivatives Markets in India

The Fixed Income Money Market and Derivatives Association of India (FIMMDA) is an association of Scheduled Commercial Banks, Financial Institutions, Primary Dealers and Insurance Companies. FIMMDA is a voluntary market body for the bond, money and derivatives markets. FIMMDA has members representing all major institutional segments of the market. The membership includes Nationalized Banks, Private sector banks, Foreign Banks, Financial institutions, Insurance Companies and all Primary Dealers.

Chapter 9: Accounting and Taxation

Accounting Guideline and Disclosure Requirements

RBI Rupee Interest Rate Derivatives (Reserve Bank) Directions, 2019 has specified that for OTC and Exchange traded interest rate derivatives “Accounting, valuation and capital requirement shall be as per the applicable accounting standards and valuation methods prescribed by ICAI or other standard setting organization or as specified by the respective regulators of participants”.

ICAI Guidance Notes on Accounting for Derivatives Contract (Revised 2021): The Institute of Chartered Accountants of India (ICAI) has issued guidance notes on Accounting for Derivatives Contract (Revised 2021). Scope of the note specified that entities such as banking, non-banking finance companies (‘NBFCs’), housing finance companies and insurance entities are required to follow the accounting treatment for derivative contracts, if any, prescribed by the concerned regulators such as the Reserve Bank of India (RBI) in case of banking entities and the NBFCs, National Housing Bank (NHB) in case of housing finance companies and Insurance Regulatory and Development Authority of India (IRDAI) in case of insurance entities.

Recognition of derivatives on the balance sheet at fair value: This Guidance Note requires that all derivatives are recognised on the balance sheet and measured at fair value since a derivative contract represents a contractual right or an obligation.

Hedge Accounting: An entity is permitted but not required to designate a derivatives contract as a hedging instrument. Where it designates a derivative contract as a hedging instrument, it needs to, as a minimum comply with the specified conditions.

Types of hedge accounting:

This Guidance Note recognises the following three types of hedging:

- The fair value hedge accounting model is applied when hedging the risk of a fair value change of assets and liabilities already recognised in the balance sheet, or a firm commitment that is not yet recognised.
- The cash flow hedge accounting model is applied when hedging the risk of changes in highly probable future cash flows or a firm commitment in a foreign currency.
- The hedge of a net investment in a foreign operation.

Presentation in the financial statements

- Derivative assets and liabilities recognised on the balance sheet at fair value should be presented as current and non-current based on the following considerations:
- Derivatives that are intended for trading or speculative purposes should be reflected as current assets and liabilities.
- Derivatives that are hedges of recognised assets or liabilities should be classified as current or non-current based on the classification of the hedged item.
- Derivatives that are hedges of forecasted transactions and firm commitments should be classified as current or non-current based on the settlement date / maturity dates of the derivative contracts.
- Derivatives that have periodic or multiple settlements such as interest rate swaps should not be bifurcated into current and non-current elements. Their classification should be based on when a predominant portion of their cash flows are due for settlement as per their contractual terms.

Computation of Turnover

The Income-tax Act does not contain any provision or guidance for computation of turnover in Exchange traded derivatives trading. However, the Guidance Note on Tax Audit issued by the ICAI prescribes the method of determining turnover which shall be as under:

- a) The total of favourable and unfavourable differences is taken as turnover.
- b) Premium received on sale of options is also to be included in turnover. However, where the premium received is included for determining net profit for transactions, the same should not be separately included.
- c) In respect of any reverse trades, the difference thereon should also form part of the turnover.

Chapter 10: Code of Conduct and Investor Protection Measure

SEBI's Code of Conduct to Brokers

Schedule II of the SEBI (Stock Brokers) Regulations, 1992 prescribes a code of conduct for securities brokers.

It Includes:

- General Duties: Integrity, Exercise of Due Skill and Care, Manipulation, Malpractices, Compliance with Statutory Requirements.
- Duty towards the Investor
- Duty towards other stock-brokers

Investor Grievance Redressal Mechanism

Investors are the backbone of the securities market. Protection of the interests of investors is of paramount importance for the intermediaries, stock exchanges and the regulators associated with the markets. Regulations and compliance efforts have been put in place to protect the investors against any intentional or unintentional wrong doing or activities of any of the participants in the market. The various stages of the same are as follows:

1. Investor Grievance Handling at the Trading Member Level
2. Investor Grievance handling at the Stock Exchanges and SEBI

SEBI Complaints Redressal System (SCORES) SEBI handles the investor grievances through a system called SEBI Complaints Redress System (SCORES). SCORES is a web based centralized system to capture investor complaints against listed companies and registered intermediaries and is available 24x7. It allows the investors to lodge their complaints and track the status online. The system also allows market intermediaries and listed companies to receive complaints lodged against them electronically. SEBI encourages the investors to lodge complaints through electronic mode in SCORES.

Online Resolution of Disputes in the Indian Securities Market

Investors and Listed Companies/Specified Intermediaries/Regulated entities under the ambit of ODR Disputes between Investors/Clients and listed companies (including their registrar and share transfer agents) or any of the specified intermediaries / regulated entities in securities market arising out of latter's activities in the securities market, will be resolved in accordance with this circular and by harnessing online conciliation and/or online arbitration as specified in the SEBI circular on ODR.

Introduction of the common Online Dispute Resolution Portal: The MIIs shall, in consultation with their empanelled ODR Institutions, establish and operate a common Online Dispute Resolution Portal ("ODR Portal"). The MIIs will make joint efforts to develop and operationalize the ODR Platform. For the purposes of implementation of this circular, the MIIs shall enter into an agreement amongst themselves, which will, inter alia, outline the nature of their responsibilities, the cost of development, operating, upgradation, maintenance (including security of data of investors and intermediaries as specified by the Board from time to time) and for inspection and/or audit of the ODR Platform. The SEBI may, from time to time, undertake inspection in order to ensure proper functioning of ODR Portal and MIIs shall provide complete cooperation to the SEBI in this regard.

PLEASE NOTE, THESE ARE SHORT IMPORTANT NOTES EXTRACTED FROM THE NISM BOOK. ITS ADVISABLE TO READ THE NISM BOOK TO GET FULL KNOWLEDGE.

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NISM SERIES XIII - COMMON DERIVATIVES CERTIFICATION



NISM XIII – COMMON DERIVATIVES CERTIFICATION EXAMINATION

SHORT NOTES BY PASS4SURE.IN

PLEASE NOTE – THE COMMON DERIVATIVE EXAM IS A COMBINATION OF 3 EXAMS IE. EQUITY DERIVATIVES, CURRENCY DERIVATIVE AND INTEREST RATE DERIVATIVES.

THE SUMMARY / IMPORTANT POINTS OF THE THREE NISM BOOKS ARE AS UNDER –

1. NISM EQUITY DERIVATIVE SUMMARY/IMPORTANT POINT :

Basics of Derivatives

Derivative is a contract or a product whose value is derived from value of some other asset known as underlying. Derivatives are based on wide range of underlying assets which include metals, energy resources, agricultural commodities and financial assets.

Derivative Markets: History and Evolution

12th Century: Sellers signed contracts promising future delivery in Europe.

13th Century: Multiple examples of contracts English Cistercian Monasteries, who frequently sold their wool up to 20 years in advance, to foreign merchants.

Late 17th century: A futures market in rice was developed in Japan at Dojima near Osaka.

1848: Chicago Board of Trade (CBOT) facilitated trading of forward contracts.

1865: CBOT listed the first ‘exchange traded’ derivative contract (Futures contract) in the US.

1919: Chicago Mercantile Exchange (CME) was re-organized to allow futures trading.

1972: CME introduced International Monetary Market, which allowed trading in currency futures.

1973: Chicago Board Options Exchange became the first marketplace for trading listed options.

1975-77: CBOT introduced Treasury bill futures and T-Bond futures contract.

1982: CME introduced Eurodollar futures contract and Kansas City Board of Trade launched the first stock index futures.

Factors influencing the growth of derivative market globally

- High volatility in financial markets.
- Integration of financial markets globally.
- Use of latest technology in communications has helped in reduction of transaction costs.
- Higher understanding of market participants on sophisticated risk management tools.
- Frequent innovations in derivatives market and newer applications of products.

Indian Derivatives Market

1996: SEBI set up a committee under Dr. L. C. Gupta to develop appropriate regulatory framework for derivatives trading in India.

1998: SEBI set up a group under Prof. J.R.Verma, to recommend measures for risk containment in derivatives market in India.

1999: The Securities Contract Regulation Act was amended to include “derivatives” within the domain of ‘securities’ and regulatory framework was developed for governing it’s trading.

2000: The exchange traded derivatives started with SEBI permitting BSE and NSE to introduce equity derivative segment.

Products in India Derivative Markets

Forwards: It is a contract between two parties to buy/sell an underlying asset at a certain future date for a price that is pre-decided on the date of contract. Both the parties are obliged to honor the transaction irrespective of price of the underlying asset at the time of delivery.

Futures: A futures contract is similar to a forward, except that the deal is made through an organized and regulated exchange rather than being negotiated directly between two parties. Indeed, we may say futures are exchange traded forward contracts.

Options: It is a contract that gives the right, but not obligation, to buy or sell the underlying at a stated date and price. The buyer of option pays the premium for the right, seller of option receives premium with obligation to sell/buy the underlying, if the buyer exercises his right.

Swaps: A swap is an agreement made between two parties to exchange cash flows in the future according to a prearranged formula. Swaps help market participants manage risk associated with volatile interest rates, currency exchange rates and commodity prices.

Market participants

Hedgers: They already have risks with the prices of underlying assets and use derivatives to reduce their risk. Their main objective is to avoid losses from other positions.

Speculators/Traders: They try to predict the future movements in prices of underlying assets and based on the view, take positions in derivative contracts.

Arbitrageurs: Arbitrageurs produce profit by exploiting a price difference in a product in two different markets.

OTC derivatives markets

Over-the-counter market is not a physical marketplace but a collection of broker-dealers scattered across the country. Buying and selling of contracts is matched through negotiated bidding process over a network that links thousands of intermediaries. OTC derivative market is less regulated market because these transactions occur in private.

Significance of Derivatives

- Helps in improving price-discovery
- Helps transfer of risks
- Helps shift of speculative trade from unorganized market to organized markets.

Risks faced by participants in Derivatives

Derivatives, being leveraged instruments have risks like:

- Counterparty risk: Default by counterparty
- Price risk: Loss on position because of price movement
- Liquidity risk: Inability to exit from a position
- Legal or regulatory risk: Enforceability of contracts
- Operational risk: Fraud, inadequate documentation, improper execution, etc.

Understanding Index

An index is a portfolio of securities that represent a particular market or a portion of a market. Each Index has its own calculation methodology and usually is expressed in terms of a change from a base value. It is an indicator of the performance of overall market or a particular sector.

It serves as a benchmark for portfolio performance. It is used as an underlying for financial application of derivatives.

Types of Stock Market Indices

1. Market capitalization weighted index

In this method of calculation, each stock is given weight according to its market capitalization. So, higher the market capitalization of a constituent, higher is its weight in the index. Popular indices in India Sensex and Nifty were earlier designed on market capitalization weighted method.

2. Free-float market capitalization index

Equity holding is divided differently among various stake holders. Market has started to segregate this on the basis of what is readily available for trading or what is not. The one available for immediate trading is categorized as free float. And, if we compute the index based on weights of each security based on free float market cap, it is called free float market capitalization index.

3. Price weighted index

It is a stock index in which each stock influences the index in proportion to its price. Stocks with a higher price will be given more weight and therefore, will have a greater influence over the performance of the Index.

4. Equal weighted index

An equally-weighted index makes no distinction between large and small companies, both of which are given equal weighting. The value of the index is generated by adding the prices of each stock in the index and dividing that by the total number of stocks.

A good market index should have following attributes:

- It should reflect the market behavior.
- It should be computed by independent third party and be free from influence of any market participant.
- It should be professionally maintained.

Impact Cost

Liquidity in the context of stock market means a market where large orders are executed without moving the prices. (Please read the example explained in the book)

Index management

Index construction, maintenance and revision process is generally done by specialized agencies. It includes: Index **construction**, Index **maintenance** and **index revision**.

Application of Indices

- **Index Funds:** These types of funds invest in a specific index with an objective to generate returns equivalent to the return on index. These funds invest in index stocks in the proportions in which these stocks exist in the index.
- **Index Derivatives:** Index Derivatives are derivative contracts which have the index as the underlying asset. Index Options and Index Futures are the most popular derivative contracts worldwide. Index derivatives are useful as a tool to hedge against the market risk.
- **Exchange Traded Funds:** an exchange. They have number of advantages over other mutual funds as they can be bought and sold on the exchange. Since, ETFs are traded on exchanges intraday transaction is possible. Further, ETFs can be used as basket trading in terms of the smaller denomination and low transaction cost.

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Introduction to Forwards and Futures

Forwards

Forward contract is an agreement made directly between two parties to buy or sell an asset on a specific date in the future, at the terms decided today. Forwards are widely used in commodities, foreign exchange, equity and interest rate markets. In other words, Forwards are bilateral over-the-counter (OTC) transactions where the terms of the contract, such as price, quantity, quality, time and place are negotiated between two parties to the contract. Any alteration in the terms of the contract is possible if both parties agree to it.

Limitations of Forwards

Liquidity Risk: Forwards are not listed or traded on exchanges, which makes it difficult for other market participants to easily access these contracts or contracting parties. The tailor made contracts and their non-availability on exchanges creates illiquidity in the contracts.

Counterparty Risk: Counterparty risk is the risk of an economic loss from the failure of counterparty to fulfill its contractual obligation. Thus, a party to the contract may default on his obligation if there is incentive to default. This risk is also called default risk or credit risk.

Futures

Futures markets were innovated to overcome the limitations of forwards. A futures contract is an agreement made through an organized exchange to buy or sell a fixed amount of a commodity or a financial asset on a future date at an agreed price. Simply futures are standardized forward contracts that are traded on an exchange.

Features of a Futures Market

- Contract between parties to exchange on a centralized trading platform i.e. exchange
- Price discovery through free interaction of buyers and sellers
- Margins are payable by both the parties
- Quality and quantity decided today (standardized)

Terminologies in Futures Market

- **Spot Price:** The price at which an asset trades in the cash market.
- **Futures Price:** The price of the futures contract in the futures market.
- **Contract Cycle:** The period over which a contract trades.
- **Expiration Day:** The day on which a derivative contract ceases to exist. It is last trading day of the contract.
- **Ticket size:** It is minimum move allowed in the price quotations. Exchanges decide the tick sizes on traded contracts as part of contract specification.
- **Contract size and contract value:** Futures contracts are traded in lots and to arrive at the contract value we have to multiply the price with contract multiplier or lot size or contract size.

- **Basis:** The difference between the spot price and the futures price is called basis. If the futures price is greater than spot price, basis for the asset is negative. Similarly, if the spot price is greater than futures price, basis for the asset is positive.
- **Cost of carry:** Cost of Carry is the relationship between futures prices and spot prices. It measures the storage cost plus the interest that is paid to 'carry' the asset till delivery less the income earned on the asset during the holding period. For equity derivatives, carrying cost is the interest paid to finance the purchase less (minus) dividend earned.
- **Margin Account:** As exchange guarantees the settlement of all the trades, to protect itself against default by either counterparty, it charges various margins from brokers. Brokers in turn charge margins from their customers.
- **Initial Margin:** The amount one needs to deposit in the margin account at the time of entering a futures contract is known as the initial margin.
- **Marking to market:** In futures market, while contracts have maturity of several months, profits and losses are settled on day-to-day basis – called mark to market (MTM) settlement.
- **Open Interest and volumes traded:** An open interest is the total number of contracts outstanding (yet to be settled) for an underlying asset.
- **Price Band:** Price Band is essentially the price range within which a contract is permitted to trade during a day.

Terminologies in Futures Market

- **Long Position:** Outstanding buy position in a contract is called "Long Position".
- **Short Position:** Outstanding sell position in a contract is called "Short Position".
- **Open Position:** Outstanding either long (buy) or short (sell) position in various derivative contracts is called "Open Position".
- **Naked and calendar spread position:** Naked position in futures market simply means a long or short position in any futures contract without having any position in the underlying asset. Calendar spread position is a combination of two positions in futures on the same underlying - long on one maturity contract and short on a different maturity contract.
- **Opening a position:** Opening a position means either buying or selling a contract, which increases client's open position (long or short).
- **Closing a position:** Closing a position means either buying or selling a contract, which essentially results in reduction of client's open position (long or short). A client is said to be closed a position.

Pay-off charts

Pay off on a position is the likely profit/ loss that would accrue to a market participant with change in the price of the underlying asset at expiry. The payoff diagram is graphical representation showing the price of the underlying asset on the X-axis and profits/ losses on the Y-axis. In case of futures contracts, long as well as short position has unlimited profit or loss potential. This results into linear pay offs for futures contracts.

Differences between Forwards and Futures

Feature	Forward contracts	Futures contracts
Operational mechanism	It is not traded on the exchanges.	It is an exchange-traded contract.
Contract specifications	Terms of the contracts differ from trade to trade (tailor made contract) according to the need of the participants.	Terms of the contracts are standardized.
Counter-party risk	Exists, but at times gets reduced by a guarantor.	Exists but the clearing agency associated with exchanges becomes the counter-party to all trades assuring guarantee on their settlement.
Liquidation profile	Low, as contracts are tailor made catering to the needs of the parties involved. Further, contracts are not easily accessible to other market participants.	High, as contracts are standardised exchange-traded contracts.
Price discovery	Not Efficient, as markets are scattered.	Efficient, centralised trading platform helps all buyers and sellers to come together and discover the price through common order book.
Quality of information and its dissemination	Quality of information may be poor. Speed of information dissemination is week.	Futures are traded nationwide. Every bit of decision related information is distributed very fast.
Examples	Currency markets are an example of forwards. Today currency futures and options have been introduced in India, but yet a market for currency forwards exists through banks.	Commodities futures, Currency futures, Index futures and Individual stock futures in India.

Futures Pricing

There is no single way to price futures contracts because different assets have different demand and supply patterns, different characteristics and cash flow patterns. This makes it difficult to design a single methodology for calculation of pricing of futures contracts. Market participants use different models for pricing futures.

1. Cash and Carry Model for Futures Pricing

Cash and Carry model is also known as non-arbitrage model. This model assumes that in an efficient market, arbitrage opportunities cannot exist. In other words, the moment there is an opportunity to make money in the market due to mispricing in the asset price and its replicas, arbitrageurs will start trading to profit from these mispricing and thereby eliminating these opportunities. This trading continues until the prices are aligned across the products/ markets for replicating assets. The cost of creating a synthetic futures position is the fair price of futures contract. Fair price of futures contract is nothing but addition of spot price of underlying asset and cost of carrying the asset from today until delivery. Cost of carrying a financial asset from today to the future date would entail different costs like transaction cost, custodial charges, financing cost, etc whereas for commodities, it would also include costs like warehousing cost, insurance cost, etc.

Assumptions in cash and carry model

- Underlying asset is available in abundance in cash market.
- Demand and supply in the underlying asset is not seasonal.
- Holding and maintaining of underlying asset is easy and feasible.
- Underlying asset can be sold short.
- No transaction costs.
- No taxes.
- No margin requirements.

Convenience yield: Convenience return for a commodity is likely to be different for different people, depending on the way they use it. Further, it may vary over a period. In fact, convenience is a subjective issue and may be very difficult to price. Convenience yield sometimes may dominate the cost of carry, which leads futures to trade at a discount to the cash market. In this case, reverse arbitrage is also not possible because no one lends traders the assets to sell short in the cash market.

2. Expectancy model of futures pricing

According to the expectancy model, it is not the relationship between spot and futures prices but that of expected spot and futures prices, which moves the market, especially in cases when the asset cannot be sold short or cannot be stored. According to this model-

- Futures can trade at a premium or discount to the spot price of underlying asset.
- Futures price give market participants an indication of the expected direction of movement of the spot price in the future.

Price discovery and convergence of cash and futures prices on the expiry: It is important to understand what actually futures prices indicate? For instance, if say May 2018 index futures contract is trading today (in March 2018) at 10200, what does it mean. We can explain this by saying that that market expects the cash index to settle at 10200 at the closure of the market on last Thursday of May (i.e., on the last trading day of the contract which is May 31, 2018). Accordingly, both futures and spot prices converge at the maturity of futures contract, as at that point in time there cannot be any difference between these two prices. This is the reason why all futures contracts on expiry settle at the underlying cash market price. This principal remains same for all the underlying assets.

Commodity, Equity & Index Futures: The basic concept of a derivative contract remains the same for all the underlying assets, whether the underlying happens to be a commodity or equity or index futures. In the case of financial derivatives, most of these contracts are cash settled whereas in the case of commodity derivatives, some contracts may settle with physical delivery. Even in the case of physical settlement, financial assets are not bulky and do not need special facility for storage, whereas in commodity market, due to the bulky nature of the underlying assets, physical settlement in commodity derivatives creates the need for warehousing.

- ❖ Specific risk or **unsystematic risk** is the component of price risk that is unique to particular events of the company and/or industry. This risk is inseparable from investing in the securities.
- ❖ An investor can diversify his portfolio and eliminate major part of price risk i.e. the diversifiable/unsystematic risk but what is left is the non-diversifiable portion or the market risk-called **systematic risk**.

Important terms in hedging

Long hedge: Long hedge is the transaction when we hedge our position in cash market by going long in futures market.

Short hedge: Short Hedge is a transaction when the hedge is accomplished by going short in futures market.

Cross hedge: When one uses index futures to hedge against the market risk, he is essentially establishing a cross hedge because he is not using the exact underlying to hedge the risk against.

Introduction to Options

An Option is a contract that gives the right, but not an obligation, to buy or sell the underlying asset on or before a stated date/day, at a stated price, for a price. The party taking a long position i.e. buying the option is called buyer/ holder of the option and the party taking a short position i.e. selling the option is called the seller/ writer of the option.

Options may be categorized into two main types: -

- ❖ Call Options
- ❖ Put Options

Option, which gives buyer a right to buy the underlying asset, is called Call option and the option which gives buyer a right to sell the underlying asset, is called a Put option.

Option terminologies:

- **Index option:** These options have index as the underlying asset.
- **Stock option:** These options have individual stocks as the underlying asset
- **Buyer of an option:** The buyer of an option is one who has a right but not the obligation in the contract. For owning this right, he pays a price to the seller of this right called 'option premium',
- **Writer of an option:** The writer of an option is one who receives the option premium and is thereby obliged to sell/buy the asset if the buyer of option exercises his right.
- **American option:** The owner of such option can exercise his right at any time on or before the expiry date/day of the contract.
- **European option:** The owner of such option can exercise his right only on the expiry date/day of the contract. In India, Index options are European.
- **Option price/Premium:** It is the price which the option buyer pays to the option seller.
- **Lot size:** Lot size is the number of units of underlying asset in a contract.
- **Expiration Day:** The day on which a derivative contract ceases to exist. It is the last trading date/day of the contract.
- **Strike price or Exercise price (X):** Strike price is the price per share for which the underlying security may be purchased or sold by the option holder.
- **In the money (ITM) option:** This option would give holder a positive cash flow, if it were exercised immediately. Ex: A call option is said to be ITM, when spot price is higher than strike price.
- **At the money (ATM) option:** At the money option would lead to zero cash flow if it were exercised immediately. Therefore, for both call and put ATM options, strike price is equal to spot price.
- **Out of the money (OTM) option:** Out of the money option is one with strike price worse than the spot price for the holder of option. In other words, this option would give the holder a negative cash flow if it were exercised immediately
- **Intrinsic value:** Intrinsic value refers to the amount by which option is in the money i.e. the amount an option buyer will realize, before adjusting for premium paid.
- **Time value:** It is the difference between premium and intrinsic value.
- **Open Interest:** As discussed in futures section, open interest is the total number of option contracts outstanding for an underlying asset.

Pay-off charts

Long on option: Buyer of an option is said to be "long on option". As described above, he/she would have a right and no obligation with regard to buying/ selling the underlying asset in the contract. When you are long on equity option contract:

- You have the right to exercise that option.
- Your potential loss is limited to the premium amount you paid for buying the option.
- Profit would depend on the level of underlying asset price at the time of expiry of the contract.

Short on option: Seller of an option is said to be "short on option". As described above, he/she would have obligation but no right with regard to selling/buying the underlying asset in the contract. When you are short (i.e., the writer of) an equity option contract:

- Your maximum profit is the premium received.
- You can be assigned an exercised option any time during the life of option contract (for American Options only). All option writers should be aware that it is a distinct possibility.
- Your potential loss is theoretically unlimited as defined below.

Note: Please refer the examples provided in the book to a get a better understanding of the pay-off charts.

- ❖ An opening transaction is one that adds to, or creates a new trading position. It can be either a purchase or a sale.
- ❖ A closing transaction is one that reduces or eliminates an existing position by an appropriate offsetting purchase or sale.
- ❖ An option buyer pays a relatively small premium for market exposure in relation to the contract value. This is known as leverage.

Risk and Return profile of option contracts:

	Risk	Return
Long	Premium paid	Unlimited
Short	Unlimited	Premium paid

Fundamental parameters on which the option price depends:

- 1) Spot price of the underlying asset
- 2) Strike price of the option
- 3) Volatility of the underlying asset's price
- 4) Time to expiration
- 5) Interest rates

Option Greeks

Delta: This measures the sensitivity of the option value to a given small change in the price of the underlying asset. It may also be seen as the speed with which an option moves with respect to price of the underlying asset. **Delta = Change in option premium / Unit change in price of the underlying asset.**

Gamma: It measures change in delta with respect to change in price of the underlying asset. This is called a second derivative option with regard to price of the underlying asset. It is calculated as the ratio of change in delta for a unit change in market price of the underlying asset. **Gamma = Change in an option delta / Unit change in price of underlying asset**

Theta: It is a measure of an option's sensitivity to time decay. Theta is the change in option price given an one-day decrease in time to expiration. It is a measure of time decay. Theta is generally used to gain an idea of how time decay is affecting your option positions. **Theta = Change in an option premium / Change in time to expiry**

Vega: This is a measure of the sensitivity of an option price to changes in market volatility. It is the change of an option premium for a given change (typically 1%) in the underlying volatility. Vega is positive for a long call and a long put. **Vega = Change in an option premium / Change in volatility**

Rho = Change in an option premium / Change in cost of funding the underlying Rho is the change in option price given a one percentage point change in the risk-free interest rate. Rho measures the change in an option's price per unit increase in the cost of funding the underlying. **Rho = Change in an option premium / Change in cost of funding the underlying**

Option Trading Strategies

Options Spread

Spreads involve combining options on the same underlying and of same type (call/ put) but with different strikes and maturities.

1. **Vertical Spread:** Vertical spreads are created by using options having same expiry but different strike prices. Further, these can be created either using calls as combination or puts as combination. These can be further classified as:
 - Bullish Vertical Spread (Using calls and puts)
 - Bearish Vertical Spread (Using calls and puts)
2. **Horizontal spread:** Horizontal spread involves same strike, same type but different expiry options. This is also known as time spread or calendar spread. Here, it is not possible to draw the payoff chart as the expiries underlying the spread are different.
3. **Diagonal Spread:** Diagonal spread involves combination of options having same underlying but different expiries as well as different strikes. Again, as the two legs in a spread are in different maturities, it is not possible to draw pay offs here as well. These are much more complicated in nature and in execution.

Straddle

This strategy involves two options of same strike prices and same maturity. A long straddle position is created by buying a call and a put option of same strike and same expiry whereas a short straddle is created by shorting a call and a put option of same strike and same expiry.

1. **Long Straddle:** If a person buys both a call and a put at these prices, then his maximum loss will be equal to the sum of these two premiums paid. And, price movement from here in either direction would first result in that person recovering his premium and then making profit.
2. **Short Straddle:** Here, trader's view is that the price of underlying would not move much or remain stable. So, he sells a call and a put so that he can profit from the premiums. As position of short straddle is just opposite of long straddle, the payoff chart would be just inverted, so what was loss for long straddle would become profit for short straddle.

Strangle

1. **Long Strangle:** The outlook here is that the market will move substantially in either direction, but while in straddle, both options have same strike price, in case of a strangle, the strikes are different. Also, both the options in this case are out-of-the-money and hence the premium paid is low.
2. **Short Strangle:** This is exactly opposite to the long strangle with two out-of-the-money options (call and put) shorted. Outlook, like short straddle, is that market will remain stable over the life of options. Pay offs for this position will be exactly opposite to that of a long strangle position. As always, the short position will make money, when the long position is in loss and vice versa.

Covered Call

This strategy is used to generate extra income from existing holdings in the cash market. The most important factor in this strategy is the strike of the sold call option. If strike is close to the prevailing price of underlying stock, it would fetch higher premium upfront but would lock the potential gain from the stock early. And, if strike is too far from the current price of underlying, while it would fetch low upfront premium, would provide for longer ride of money on underlying stock.

Protective Put

A protective put payoff is similar to that of long call. This is called synthetic long call position. Any investor, long in the cash market, always runs the risk of a fall in prices and thereby reduction of portfolio value and MTM losses. A mutual fund manager, who is anticipating a fall, can either sell his entire portfolio or short futures to hedge his portfolio. The strategy used here is called protective put.

Collar

A collar strategy is an extension of covered call strategy. Readers may recall that in case of covered call, the downside risk remains for falling prices; i.e. if the stock price moves down, losses keep increasing (covered call is similar to short put). To put a floor to this downside, we long a put option, which essentially negates the downside of the short underlying/futures (or the synthetic short put).

Butterfly Spread

As collar is an extension of covered call, butterfly spread is an extension of short straddle. We may recollect that downside in short straddle is unlimited if market moves significantly in either direction. To put a limit to this downside, along with short straddle, trader buys one out of the money call and one out of the money put. Resultantly, a position is created with pictorial pay-off, which looks like a butterfly and so this strategy is called “Butterfly Spread”. Butterfly spread can be created with only calls, only puts or combinations of both calls and puts. Here, we are creating this position with help of only calls.

Introduction to Trading Systems

- **Trading member:** They are members of Stock Exchanges. They can trade either on behalf of their clients or on their own account. The exchange assigns a trading member ID to each of its trading member. A trading member can have more than one user.
- 1. **Trading cum clearing member:** A Clearing Member (CM) is also a Trading Member (TM) of the exchange. Such CMs may clear and settle their own proprietary trades, their clients' trades as well as trades of other TM's & Custodial Participants.
- 2. **Professional Clearing member:** Professional clearing member clears the trades of his associate Trading Member and institutional clients. PCM is not a Trading Member of the exchange. Typically banks or custodians become a PCM and clear and settle for TM's as well as for Custodial Participants.

3. **Self-Clearing member:** A Self Clearing Member is also a Trading Member on the exchange. Such CMs may clear and settle only their own proprietary trades and their clients' trades but cannot clear and settle trades of other TM's.
- **Participant:** Client of the trading member
 - **Market Timing of Derivative segment:** All working days between 9.15 am to 3:30 pm
 - **Corporate Hierarchy:**
 -

Corporate Manager (1): it is the highest level in a trading firm. Corporate Manager 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. Along with this he can also define exposure limits for the branches of the firm. This facility is available only to the corporate manager.

Branch Manager (2): As a user, it is placed under the corporate manager. Branch Manager can perform and view order and trade related activities for all dealers under that branch.

Dealer (3): Dealer is at the lowest level of the user hierarchy. He can only view his own orders and trades and does not have access to information on other dealers under either the same branch or in other branches.

- **Client Broker Relationship**

Types of Orders

- **Day Order:** A Day order is valid for a single day. If not executed, the trading system cancels it automatically.
- **Immediate or Cancelled:** User is allowed to buy/sell a contract as soon as the order is released into the trading system. An unmatched order will be immediately cancelled.
- **Limit Order:** It is an order to buy or sell a contract at a specified price. The order gets executed only at this specified limit price or at a better price than that.
- **Market Order:** A market order is an order to buy or sell a contract at the best bid/offer price currently available in the market. Price is not specified at the time of placing this order.
- **Stop-Loss order:** A stop loss is an order to buy (or sell) a security once the price of the security climbed above (or dropped below) a trigger price.

In India, F&O platforms offer an order driven market, wherein orders match automatically on price time priority basis. Orders, as and when they are received, are first time stamped and then immediately processed for potential match. If a match is not found, then the orders are stored in different 'books'.

- **Price bands:**

There are no price bands applicable in the derivatives segment. However, in order to prevent erroneous order entry, operating ranges and day minimum/maximum ranges are kept as below:

For Index Futures: at 10% of the base price

For Futures on Individual Securities: at 10% of the base price

For Index and Stock Options: A contract specific price range based on its delta value is computed and updated on a daily basis.

In view of this, orders placed at prices which are beyond the operating ranges would reach the Exchange as a price freeze.

- **The Trader Workstation**

The market watch window

The best way to familiarize oneself with the screen is to spend some time studying a live screen. The windows displayed on the trader workstation screen are title bar, Ticker window of futures and options market, Ticker window of underlying (capital) market, Toolbar, Market watch window, Inquiry window, Snap quote, Order/trade window and System message window.

Placing orders on the trading system

While entering orders on the trading system for both the futures and the options market, trading member are required to identify orders as being proprietary or clients. 'Pro' identifies proprietary orders while 'Cli' identifies client orders. Client account number should be provided for client orders.

- **Adjustments for corporate actions**

Adjustments for Corporate Actions for Stock Options would be as follows:

1. The basis for any adjustment for corporate action shall be such that the value of the position of the market participants on cum and ex-date for corporate action shall continue to remain the same as far as possible. This will facilitate in retaining the relative status of positions viz. in-the-money, at-the-money and out-of-money. This will also address issues related to exercise and assignments.
2. Any adjustment for corporate actions shall be carried out on the last day on which a security is traded on a 'cum' basis in the underlying cash market, after the close of trading hours.
3. Adjustments shall mean modifications to positions and/or contract specifications as listed below such that the basic premise of adjustment laid down in the above paragraph is satisfied:
 - (a) Strike Price
 - (b) Position
 - (c) Market Lot/Multiplier

The adjustments shall be carried out on any or all of the above based on the nature of the corporate action. The adjustments for corporate actions shall be carried out on all open positions. The corporate actions may be broadly classified under stock benefits and cash benefits as follows Bonus, Rights, Merger/De-merger, Amalgamation, Splits, Consolidations, Hive-off, Warrants, Secured Premium Notes

- **Recently approved changes - Inclusion and Exclusion of stocks for derivatives trading**

SEBI in its Board Meeting on March 28, 2018 took the following decisions in order to rationalize and strengthen the framework of the equity derivatives market in India:

(I) To facilitate greater alignment of the cash and derivative market, physical settlement for all stock derivatives shall be carried out in a phased and calibrated manner.

(II) To update and strengthen the existing entry criteria for introduction of stocks into the derivative segment in line with the increase in market capitalization since the last revision of the criteria in 2012.

(III) To begin with, stocks which are currently in derivatives but fail to meet any of the enhanced criteria would be physically settled.

(IV) Stocks which are currently in derivatives and meet the enhanced criteria shall be cash settled

(V) To reflect global initiatives on product suitability, a framework has been approved.

Individual investors may freely take exposure in the market (cash and derivatives) up to a computed exposure based on their disclosed income as per their Income Tax Return (ITR) over a period of time.

Introduction to Clearing and settlement system

Clearing Corporation/ Clearing House is responsible for clearing and settlement of all trades executed on the F&O Segment of the Exchange. Clearing Corporation acts as a legal counterparty to all trades on this segment and also guarantees their financial settlement. The Clearing and Settlement process comprises of three main activities, viz., Clearing, Settlement and Risk Management.

Clearing Member

- Self-clearing member
- Trading member-cum-clearing member
- Professional clearing member

Clearing Banks: Funds settlement takes place through clearing banks. For the purpose of settlement all clearing members are required to open a separate bank account with Clearing Corporation designated clearing bank for F&O segment.

Settlement Schedule: The settlement of trades is on T+1 working day basis. Members with a funds pay-in obligation are required to have clear funds in their primary clearing account on or before 10.30 a.m. on the settlement day.

Mark to Market is a process by which margins are adjusted on the basis of daily price changes in the markets for underlying assets.

Final Settlement: On expiration day of the futures contracts, after the close of trading hours, clearing corporation marks all positions of a clearing member to the final settlement price and the resulting profit/ loss is settled in cash.

Options contracts have two types of settlements

1. **Daily premium settlement:** The clearing members who have a premium payable position are required to pay the premium amount to clearing corporation which in turn passed on to the members who have a premium receivable position. This is known as daily premium settlement.
2. **Final settlement:** Profit/ loss amount for options contract on index and individual securities on final settlement is credited/debited to the relevant clearing members clearing bank account on T+1 day i.e. a day after expiry day. Open positions, in option contracts, cease to exist after their expiration day.

Clearing corporation provides a facility to entities like institutions to execute trades through any trading member, which may be cleared and settled by their own CM. Such entities are called **Custodial Participants (CP)**.

SPAN

In order to manage risk efficiently in the Indian securities market, exchanges have adopted SPAN (Standard Portfolio Analysis of Risk), a risk management and margining product designed by CME, Chicago, USA. This software was developed for calculating initial margins on the various positions of market participants. The objective of SPAN is to identify overall potential risk in a portfolio. The program treats futures and options uniformly, while recognizing the exposures associated with options portfolios. Since SPAN is used to determine initial margins on various positions, its basic objective is to determine the largest possible loss that a portfolio might reasonably be expected to suffer from one day to the next. It then sets the initial margins at a level, which is sufficient to cover this one-day potential loss.

- **Initial Margin:** Initial margin requirements are based on 99% value at risk over a day's time.
- **Premium Margin:** This margin is required to be paid by a buyer of an option till the premium settlement is complete.
- **Assignment Margins:** assignment margin is required to be paid on assigned positions of Clearing Members towards final exercise settlement obligations
- **Exposure margins:** Clearing members are subject to these margins in addition to initial margins.
- **Client Margins:** Clearing Corporation intimates all members of the margin liability of their client.

Legal and Regulatory Environment

Securities Contracts (Regulation) Act, 1956

The Securities Contracts (Regulation) Act, 1956 also known as SCRA is an Act of the Parliament of India enacted to prevent undesirable exchanges in securities and to control the working of stock exchange in India. The Act aims to prevent undesirable transactions in securities. It governs the trading of securities in India. The term "securities" has been defined in the Section 2(h) of SCRA. It came into force on 20 February 1957.

Securities and Exchange Board of India Act, 1992

SEBI Act, 1992 provides for establishment of Securities and Exchange Board of India (SEBI) with statutory powers for:

- Protecting the interests of investors in securities
- Promoting the development of the securities market
- Regulating the securities market.

Its regulatory jurisdiction extends over corporate in the issuance of capital and transfer of securities, in addition to all intermediaries and persons associated with securities market. SEBI has been obligated to perform the aforesaid functions by such measures as it thinks fit.

Major recommendations of Dr. L.C.Gupta Committee

- Margins should be based on Value at Risk Methodology at 99% confidence.
- Volatility and Exposure should be monitored online.
- Daily collection of Mark to Market Margins (on the next trading day).
- Market participants should know volatility and margin methodology.
- Each dealer should pass SEBI approved certification exams (certificate will have a validity of 3 years).
- Derivatives segment must be separate from cash segment and grossing up of margins at client level.
- Separate Investor Protection Fund must be created for derivatives segment.
- Off line order entry is permitted.
- The derivatives segment should attract at least 50 members.
- Clearing Members should have a Minimum Net-worth of Rs 3 Crores.
- Clearing Members should maintain a Minimum Deposit in Liquid Assets of Rs 50 lakhs with the exchange or its Clearing Corporation.
- Mark to Margins should be settled only in Cash.
- Both speculators/traders and hedgers are required for a healthy derivatives market.
- Both Exchanges and SEBI should work together in regulating the derivatives market.
- Exchanges should regulate at operational day to day level, while SEBI will oversee the process and formulate policy.
- Mutual Funds should be allowed to hedge in derivatives segment.
- Derivatives should begin with Index Futures and other products should be introduced in a phased manner.
- Members' exposure should be linked to the amount of liquid assets maintained by them with the clearing corporation.
- Cross margining (linking overall cash and derivative positions for margining) is not permitted.
- All clients should pay margins. Brokers should not fund margins of clients.
- In the long run, India should have a national level clearing corporation.
- Clients should be provided with a Risk Disclosure Document by brokers.
- Brokers should keep margins collected from clients in a separate bank account.
- Brokers cannot use margins for any purpose except for payment of such margins to the clearing corporation.
- Transactions should be entered in the trading system exclusive of brokerage.
- Brokerage should be charged separately in the Contract Note.
- In case of Clearing Member default, margins paid by the Clearing Member on his own account alone would be used to settle his dues.
- All brokers in the derivatives segment should obtain SEBI Registration.
- The clearing function should be organized as a separate entity, preferably in the form of a Clearing Corporation.
- The Clearing Corporation has powers to levy additional margins, special margins, define maximum exposure limits and disable brokers from trading.
- At the time of entering into a transaction, the broker must indicate the client on whose behalf the transaction is being entered into. Proprietary trading must also be clearly identified.
- SEBI should create a Special Derivatives Cell within itself to understand and supervise the market better.
- SEBI should constitute an Advisory Council for derivatives.
- Derivatives segment should have a separate Governing Council.
- No common members should be allowed between the Cash segment Governing Board and the Derivatives segment Governing Council of the exchanges.

- The exchange should set up Arbitration and Investor Grievance Cells in at least 4 regions across the country.
- Derivatives trading must be through on-line systems.
- Disaster recovery site (in case of computer failure) is a must.
- Information about derivatives segment must be disseminated over at least two information vending networks (e.g. Reuters, Bloomberg).
- All brokers of the Cash segment will not automatically become members of the Derivative segment.
- An efficient cash market is a must for a healthy derivatives market.
- Delivery levels in the cash market should improve and increase.
- Uniform settlement cycle across all exchanges is recommended.
- A separate Governing Board should be constituted for the Clearing Corporation of the Derivatives segment.
- No broker members should be allowed to sit on the Governing Board of the Clearing Corporation.
- If your client is a Trust or a Company, you (as a broker) must obtain authorization from the Board of Trustees or Board of Directors for trading in derivatives on their behalf
- Providing Client ID for every transaction is mandatory

Major recommendations of Prof. J.R.Verma Committee

- Calendar spreads on futures will attract lower margins (minimum 1% and maximum 3% - the margin itself being 0.5% per month of spread on the far month value).
- Detailed methodology on Value at Risk provided.
- Volatility should be calculated based on standard deviation of logarithmic daily returns.
- Exponential weighted average method should be used for calculation of Volatility.
- Initial Margin levels should be dynamic and recalculated continuously based on volatility levels.
- Exchange should obtain SEBI approval if it wants to change the Initial Margin calculation methodology.
- Initial Margin, if changed, will apply to all outstanding contracts and not only to fresh contracts.
- Calendar spreads carry only basis risk and no market risk - hence lower margins are adequate.
- Calendar spreads should be treated as open positions as the near month expires.
- Differential margins on conversion of Calendar spread positions to open positions should be collected three days before expiry of the near month (technically, Prof. J.R.Verma Committee recommendation was different, however currently as per SEBI guidelines, this is the regulation).
- Liquid Assets mean Deposits maintained by Clearing Members with the Clearing Corporation.
- Liquid Assets can be in the form of Cash, Cash Equivalents (Government Securities, Fixed Deposits, Treasury Bills, Bank Guarantees, and Investment Grade Debt Securities) and Equity Securities.
- Equity Securities can form maximum 50% of Liquid Assets.
- Cash and Cash Equivalents must form minimum 50% of Liquid Assets.
- Liquid Net-worth is defined as Liquid Assets minus Initial Margin.
- Liquid Net-worth of all Clearing Members at all points of time (including intraday) should be maintained at Rs 50 lakhs minimum level.
- Securities placed with the Clearing Corporation shall be marked to market on weekly basis.
- Hair cut on equity securities is 15% and on debt securities is 10%.

Accounting and Taxation

Accounting for Forward Contract as per Accounting Standard - 11

When forward contract is for hedging

- The premium or discount should be amortized over the life of contract.
- Exchange difference is recognized in Profit & Loss statement of the year.
- Profit/ loss on cancellation/ renewal of forward contract are recognized in P&L of the year.

When forward contract is for trading/ speculation

- No premium or discount is recognized.
- A gain or loss i.e. the difference between the forward rates for remaining maturity period should be recognized in the P&L of the period.
- Profit/ loss on cancellation / renewal of forward contract are recognized in P&L of the year.

Accounting of Equity index and Equity stock futures in the books of the client

The Institute of Chartered Accountants of India (ICAI) has issued guidance notes on accounting of index futures contracts from the view point of parties who enter into such futures contracts as buyers or sellers. Hence in this section we shall largely focus on the accounting treatment of equity index futures in the books of the client.

Taxation of derivative transaction in securities

Prior to Financial Year 2005–06, transaction in derivatives were considered as speculative transactions for the purpose of determination of tax liability. Finance Act, 2005 has amended section 43(5) so as to exclude transactions in derivatives carried out in a “**recognized stock exchange**” for this purpose. This implies that income or loss on derivative transactions which are carried out in a “recognized stock exchange” is **not taxed as speculative income or loss**. Thus, loss on derivative transactions can be set off against any other income during the year (except salary income). In case the same cannot be set off, it can be carried forward to subsequent assessment year and set off against any other non-speculative business income of the subsequent year. Such losses can be carried forward for a period of 8 assessment years. It may also be noted that securities transaction tax paid on such transactions is eligible as deduction under Income-tax Act, 1961.

Sales Practices and Investors Protection Services

Financial Institutions should have customer-oriented approach, where sales of products are customer lead and always accompanied by correspondingly efficient and appropriate advice. It can be summarily stated that: "Customers have the right to get good advice; finance employees have the duty to give good advice."

- Investors should be careful of opportunities that promise spectacular profits or "guaranteed" returns.
- One has to keep in mind no investment is risk-free. Returns are related to the risk taken and hence there cannot be a product in the market that gives high return in risk free manner.

"High Return" or "Risk-Free" Investments

Investors should be careful of opportunities that promise spectacular profits or "guaranteed" returns. The deal sounds too good to resist. An individual may claim that unrealistic returns can be realized from "Low-Risk Investment Opportunities", but one has to keep in mind no investment is risk-free. Returns are related to the risk taken and hence there cannot be a product in the market that gives high return in risk free manner.

Investment Advisor services

Investment advisor is an individual or firm responsible for making investments on behalf of, and/ or providing advice to, investors. He has a duty to act in the best interest of their clients. Sometimes, however, investment advisors take advantage of their positions to misappropriate money directly from their clients. Investors should be careful to review their monthly account statements and to conduct annual reviews of their investment plans with their investment adviser.

Unsuitable Investment Recommendations

Some unscrupulous investment advisers convince clients to purchase investment products that don't meet the objectives of an investor. Unsuitable recommendations can occur when a broker sells speculative transactions such as options, futures, or penny stocks to say a senior citizen with low risk tolerance. Investors should be careful to review the risk profile of each investment recommendation.

Investor Seminars

Investment advisers commonly invite investors to attend seminars. At these seminars, advisers often use sales tactics to pitch unsuitable products. Investors should avoid making rushed decisions at sales seminars and should seek objective third party advice before committing their funds. As sales become an integral part in financial services and proper advice to the customers is important.

Churning refers to when securities professionals making unnecessary and excessive trades in customer accounts for the sole purpose of generating commissions.

Risk profile of the clients:

People invest in various investment products that generally comprise:

- Fixed Income Instruments, and
- Market oriented investments.

Some of the key parameters on which one's risk tolerance can depend is age, personal income, combined family income, dependents, occupation, marital status, education, etc. The objectives of the investors should be made clear to give a proper advice and meet his short term as well as long term needs.

Risk based approach

It is generally recognized that customers can be classified into a higher or lower risk category depending on circumstances such as the customer's background, type of business relationship or transaction etc. As such, the registered intermediaries should apply each of the customers due diligence measures on a risk sensitive basis. The basic principle enshrined in this approach is that the registered intermediaries should adopt an enhanced customer due diligence process for higher risk categories of customers. In line with the risk-based approach, the type and amount of identification information and documents that intermediaries should obtain necessarily depend on the risk category of a particular customer.

- ❖ Clients of special category include NRIs, HNIs, Trust, Charities, PEPs, Non Face to face clients, government executives, etc.

Written Anti Money Laundering Procedures

Each registered intermediary should adopt written procedures to implement the anti-money laundering provisions as envisaged under the Anti-Money Laundering Act, 2002. Such procedures should include inter alia, the following three specific parameters which are related to the overall 'Client Due Diligence Process':

- Policy for acceptance of clients
- Procedure for identifying the clients
- Transaction monitoring and reporting especially Suspicious Transactions Reporting (STR)

Client Identification Procedure

The 'Know your Client' (KYC) policy should clearly spell out the client identification procedure to be carried out at different stages i.e. while establishing the intermediary – client relationship, while carrying out transactions for the client or when the intermediary has doubts regarding the veracity or the adequacy of previously obtained client identification data.

Investors Grievance mechanism

- Each Exchange has a process for grievance redressal.
- All exchanges have a dedicated department to handle grievances of investors against the Trading Members and Issuers.

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2.NISM CURRENCY DERIVATIVES SUMMARY / IMPORTANT POINTS

I. Introduction to Indian Currency Market

Initially, the trading of goods and services was by barter system where in goods were exchanged for each other. Such system had its difficulties primarily because of non-divisibility of certain goods, cost in transporting such goods for trading and difficulty in valuing of services. People tried various commodities as the medium of exchange ranging from food items to metals. The process of evolution of medium of exchange further progressed into development of paper currency. People would deposit gold/ silver coins with bank and get a paper promising that value of that paper at any point of time would be equal to certain number of gold coins. With time, and the growth in international trade resulted in evolution of foreign exchange (FX) i.e., value of one currency of one country versus value of currency of other country. Whenever there is a cross-border trade, there is need to exchange one brand for another, and this exchange of two currencies is called “foreign exchange” or simply “forex” (FX).

The smooth functioning of international trade required a universally accepted foreign currency to settle the internal trade and a way to balance the trade imbalances amongst countries. The documented history suggests that sometime in 1870 countries agreed to value their currencies against value of currency of other country using gold as the benchmark for valuation.

During 1944-1971, countries adopted a system called Bretton Woods System. As part of the system, all currencies were pegged to USD at a fixed rate and USD value was pegged to gold. With adoption of this system, USD became the dominant currency of the world. Finally Bretton Woods system was suspended and countries adopted system of free floating or managed float method of valuing the currency. Developed countries gradually moved to a market determined exchange rate and developing countries adopted either a system of pegged currency or a system of managed rate.

Major Currency Pairs

The most traded currency pairs in the world are called the Majors. The list includes following currencies: Euro (EUR), US Dollar (USD), Japanese Yen (JPY), Pound Sterling (GBP), Australian Dollar (AUD), Canadian Dollar (CAD), and the Swiss Franc (CHF). These currencies follow free floating method of valuation.

- **USD:** The US Dollar is by far the most widely traded currency. In part, the widespread use of the US Dollar reflects its substantial international role as “investment” currency in many capital markets, “reserve” currency held by many central banks, “transaction” currency in many international commodity markets, “invoice” currency in many contracts, and “intervention” currency employed by monetary authorities in market operations to influence their own exchange rates.
- **EUR:** Like the US Dollar, the Euro has a strong international presence and over the years has emerged as a premier currency, second only to the US Dollar.

- **JPY:** The Japanese Yen is the third most traded currency in the world. It has a much smaller international presence than the US Dollar or the Euro. The Yen is very liquid around the world, practically around the clock.
- **GBP:** Until the end of World War II, the Pound was the currency of reference. The nickname Cable is derived from the telegrams used to update the GBPUSD rates across the Atlantic.
- **CHF:** The Swiss Franc is the currency of Switzerland and is represented with the symbol CHF. It is one of the most stable currencies in the world and is used as the reserve currency in many of the international transactions.

Overview of International Currency Markets

For currency market, the concept of a 24-hour market has become a reality. In financial centers around the world, business hours overlap; as some centers close, others open and begin to trade. Given this uneven flow of business around the clock, market participants often will respond less aggressively to an exchange rate development that occurs at a relatively inactive time of day, and will wait to see whether the development is confirmed when the major markets open.

At any moment, the exchange rates of major currencies tend to be virtually identical in all the financial centers where there is active trading. Rarely are there such substantial price differences among major centers as to provide major opportunities for arbitrage. In pricing, the various financial centers that are open for business and active at any one time are effectively integrated into a single market.

Basics of currency markets and peculiarities in India

Currency Pair: The most significant part of currency market is the concept of currency pairs. In currency market, while initiating a trade you buy one currency and sell another currency. Therefore same currency will have very different value against every other currency. This peculiarity makes currency market interesting and relatively complex. For major currency pairs, economic development in each of the underlying country would impact value of each of the currency, although in varying degree.

Base currency/ Quotation currency: Every trade in FX market is a currency pair: one currency is bought with or sold for another currency. We need to identify the two currencies in a trade by giving them a name. The BC is the currency that is priced and its amount is fixed at one unit. The other currency is the QC, which prices the BC, and its amount varies as the price of BC varies in the market. What is quoted throughout the FX market anywhere in the world is the price of BC expressed in QC.

Interbank Bank Market and Merchant Bank Market: Interbank market is the market between banks where dealers quote prices at the same time for both buying and selling the currency. Similarly dealers in interbank market quote prices for both buying and selling i.e., offer two way quotes. In majority of the “merchant” market, merchants are price takers and banks are price givers. Although few large merchants or corporates may ask banks to quote two way prices as such merchants may have both side interest i.e., interest to sell or buy or both.

Two Way Quote: In a two way quote, the prices quoted for buying is called bid price and the price quoted for selling is called as offer or ask price. There are certain market norms for quoting the two way quotes. Some of the important norms are as follows:

1. The bid price (lower price) is quoted first followed by offer price (higher price)

2. The offer price is generally quoted in abbreviated form. In case the currency pair is quoted upto four decimal places then offer price is quoted in terms of last two decimal places and if the currency pair is quoted in two decimal places then offer price is quoted in terms of two decimal places.

Appreciation/ Depreciation: Changes in rates are expressed as strengthening/weakening of one currency to the other currency. Changes are also expressed as appreciation or depreciation of one currency in terms of the other currency. Whenever the base currency buys more of the quotation currency, the base currency has appreciated and the quotation currency has weakened / depreciated.

Market Timing: In India, OTC market is open from 9:00 AM to 5:00 PM. However, for merchants the market is open from 9:00 AM to 4:30 PM and the last half hour is meant only for interbank dealings for banks to square off excess positions.

Price Benchmarks: Banks price large value merchant transactions from interbank rate (IBR). IBR is the price available to the bank in the interbank market. Therefore IBR could differ from bank to bank. For small value transactions, banks publish a standard price for the day called as card rate. For small value transactions, banks publish a standard price for the day called as card rate. On most days for most banks, the card rate is same for the whole day.

Price Discovery: Gradually, market discovers an equilibrium price at which market clears buy and sell orders. This process of discovering an equilibrium price is called as price discovery.

RBI Reference Rate: RBI reference rate is the rate published daily by RBI for spot rate for various currency pairs. The Reserve Bank periodically reviews the procedure for selecting the banks and the methodology of polling so as to ensure that the reference rate is a true reflection of the market activity. There is an increasing trend of large value FX transaction done at RBI rate even on OTC market.

Settlement date or Value date

Unlike currency futures market, the settlement in the OTC spot market happens by actual delivery of currency. The mechanism of settlement where each counterparty exchange the goods traded on the maturity of contract is called as gross settlement and the mechanism where market participants only settle the difference in value of goods is called as net settlement. Please note that value date is different from trade date. On trade date, the two counterparties agree to a transaction with certain terms (currency, price, and amount and value date). The settlement of the transaction, when counterparties actually exchange currency, is called as value date.

The most important value date is the “spot” value date, which is settlement after two business days. The price at which settlement takes before spot date is a derived price from spot price and is not a traded price.

OTC Forward Market

The forward OTC market can provide quotes for booking a forward contract for any maturity. However, the liquidity is high for maturity less than one year and beyond that liquidity is less. With respect to settlement, the market participant could decide to settle it via gross settlement mechanism or net settlement mechanism. One more unique feature of OTC forward market is the requirement of underlying trade contract before executing the forward contract.

Exchange Rate Arithmetic- Cross Rate

For some currency pairs prices are not directly available and are rather derived by crossing the prices of underlying currency pairs. Crossing the prices to arrive at price of the currency pair could involve either multiplication or division of the underlying prices. In market parlance, the price of currency pair for which direct prices is not available is called as cross rate.

Let us start the computation of cross rate, using the buy side argument i.e. price of buying 1 EUR in terms of INR. As understood from underlying currency pairs, the price of EUR is directly available only in terms of USD. Therefore you need to sell INR to buy USD; and further sell the USD received to buy EUR. It is important to identify this FX conversion path of selling one currency and buying another to calculate the cross rate.

Impact of Economic Factors on Currency Prices

There are multiple factors impacting the value of the currency at any given point of time. Some of the factors are of the local country while others could be from global markets. For example, the value of INR against USD is a function of factors local to India like gross domestic product (GDP) growth rate, balance of payment situation, deficit situation, inflation, interest rate scenario, policies related to inflow and outflow of foreign capital. It is also a function of factors like prices of crude oil, value of USD against other currency pairs and geopolitical situation.

To assess the impact of economic factors on the currency market, it is important to understand the key economic concepts, key data releases, their interpretation and impact on market. Since currency market is a globalized market and the value of currency is always determined against another currency, therefore the analysis in FX market also means analysis of economic conditions in other major countries of the world.

Economic Indicators

GDP: GDP represents the total market value of all final goods and services produced in a country during a given year. A GDP growth rate higher than expected may mean relative strengthening of the currency of that country, assuming everything else remaining the same.

Retail Sales: It is a coincident indicator and shows how strong is consumer spending. A retail sales number higher than expected may mean relative strengthening of the currency of that country.

Consumer Price Index (CPI): CPI is a statistical time-series measure of a weighted average of prices of a specified set of goods and services purchased by consumers. The indicator measures level of inflation in the economy for the basket of goods and services which are generally brought by the people.

Non-Farm Payrolls: Nonfarm payrolls represent the number of jobs added or lost in the economy over the last month, not including jobs relating to the farming industry, government jobs, household jobs and employees of non-profit organization that provide assistance to individuals.

Import/Export Growth: For a country like India, the figures pertaining to import / export, current account deficit and balance of payments are very important. During periods of risk aversion, any development resulting in widening current account deficit results in weakening of INR.

Central Bank Meeting and Key Decisions: Market also tracks minutes of the central bank meetings and the key policy decisions. Some of the important announcements from central bank meetings are their interest rate decisions, CRR (cash reserve ratio). Market also actively looks forward to central bank's perspective on state of the economy.

II. Foreign Exchange Derivatives

Derivative is a product whose value is derived from the value of one or more basic variables, called bases. The underlying asset can be equity, foreign exchange, commodity or any other asset. Derivative products initially emerged as hedging devices against fluctuations in commodity prices, and commodity linked derivatives remained the sole form of such products for almost three hundred years. Financial derivatives came into spotlight in the post 1970 period due to growing instability in the financial markets. However, since their emergence, these products have become very popular and by 1990s, they accounted for about two thirds of total transactions in derivative products. In the Indian context the Securities Contracts (Regulation) Act, 1956 [SC(R)A] defines "derivative" to include-

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

Derivative Products

Forwards: A forward contract is a customized OTC contract between two parties, where settlement takes place on a specific date in the future at today's pre-agreed price.

Futures: It is similar to forward except that it is an Exchange-trade product. The term "futures" refer to the derivative and the term "future" to a later point in time. Thus, the "futures price" is the current price of derivatives and the "future" price is the price that will prevail on a later point of time.

Options: Option does not buy or sell the underlying directly but buys or sells the right without obligation on the underlying. The right can be the right to buy (when it is called call option) and the right to sell (when it is called put option).

Swaps: Swaps are agreements between two parties to exchange cash flows in the future according to a prearranged formula. They can be regarded as portfolios of forward contracts. The two commonly used swaps are:

- Interest rate swaps: These entail swapping only the interest related cash flows between the parties in the same currency.
- Currency swaps: These entail swapping both principal and interest between the parties, with the cash flows in one direction being in a different currency than those in the opposite direction.

Growth Drivers of Derivative Products:

- Increased Volatility
- Increased integration of markets
- Marked improvement in communication facilities and sharp decline in their costs
- Development of more sophisticated risk management tools
- Innovations in the derivatives markets

Market players

The following three broad categories of participants - hedgers, speculators, and arbitrageurs - trade in the derivatives market. Hedgers face risk associated with the price of an underlying asset and they use derivative markets to reduce or eliminate this risk. Speculators wish to bet on future movements in the price of an underlying asset. Derivatives give them an ability to buy the underlying without paying for it fully or to sell it without owning it or delivering it immediately. In the process, the potential gains and losses are amplified. Arbitrageurs are in business to take advantage of a discrepancy between prices in two different markets.

- Prices in an organized derivatives market reflect the perception of market participants about the future and lead the prices of underlying to the perceived future level.
- The derivatives market helps to transfer risks
- With the introduction of derivatives, the underlying market witnesses higher trading volumes
- Speculative trades shift to a more controlled environment of derivatives market
- Derivatives trading acts as a catalyst for new entrepreneurial activity.

III. Exchange Traded Currency Futures

A futures contract is a standardized contract, traded on an exchange, to buy or sell a certain underlying asset or an instrument at a certain date in the future, at a specified price. Both parties of the futures contract must fulfill their obligations on the settlement date. Currency futures are a linear product, and calculating profits or losses on these instruments is similar to calculating profits or losses on Index futures. In determining profits and losses in futures trading, it is essential to know both the contract size (the number of currency units being traded) and also the “tick” value.

Futures Terminology

Spot price: The price at which the underlying asset trades in the spot market.

Futures price: The current price of the specified futures contract

Contract cycle: The period over which a contract trades. The currency futures contracts on the SEBI recognized exchanges have one-month, two-month, and three-month up to twelve-month expiry cycles.

Value Date/Final Settlement Date: The last business day of the month will be termed as the Value date date of each contract. The rules for Inter-bank Settlements, including those for ‘known holidays’ and ‘subsequently declared holiday’ would be those as laid down by Foreign Exchange Dealers’ Association of India (FEDAI).

Expiry date: Also called Last Trading Day, it is the day on which trading ceases in the contract; and is two working days prior to the final settlement date.

Contract size: The amount of asset that has to be delivered under one contract. It is also called as lot size.

Initial margin: The amount that must be deposited in the margin account at the time a futures contract is first entered into is known as initial margin.

Marking-to-market: In the futures market, at the end of each trading day, the margin account is adjusted to reflect the investor's gain or loss depending upon the futures closing price. This is called marking-to-market.

Distinction between futures and forward contracts

Forward contracts are often confused with futures contracts. The confusion is primarily because both serve essentially the same economic functions of allocating risk in the probability of future price uncertainty. However futures have some distinct advantages over forward contracts as they eliminate counterparty risk and offer more liquidity and price transparency.

Advantages and Limitations of Futures

Advantages:

- Price transparency.
- Elimination of Counterparty credit risk.
- Access to all types of market participants. The OTC market is restricted to Authorized Dealers (banks which are licensed by RBI to deal in FX), individuals and entities with 36 forex exposures. Retail speculators with no exposure to FX cannot trade in OTC market.
- Futures offer low cost of trading as compared to OTC market.

Limitations:

- The benefit of standardization, though improves liquidity in futures, leads to imperfect hedge since the amount and settlement dates cannot be customized.
- While margining and daily settlement is a prudent risk management policy, some clients may prefer not to incur this cost in favor of OTC forwards, where collateral is usually not demanded.

Interest Rate Parity

This concept of difference between future exchange rate and spot exchange rate being approximately equal to the difference in domestic and foreign interest rate is called the “Interest rate parity”. Alternative way to explain, interest rate parity says that the spot price and futures price of a currency pair incorporates any interest rate differentials between the two currencies assuming there are no transaction costs or taxes.

Please go through the example in the Nism book to get a better understanding of the concept

IV. Strategies Using Currency Futures

Market Participants

Hedgers: These types of participants have a real exposure to foreign currency risk on account of their underlying business and their objective is to remove the FX risk using currency futures. The objective of hedgers is to reduce the volatility in future cash flows by locking in the future currency rates.

Speculators: Speculators play a vital role in the futures markets. Futures are designed primarily to assist hedgers in managing their exposure to price risk; however, this would not be possible without the participation of speculators. Speculators, or traders, assume the price risk that hedgers attempt to lay off in the markets.

Arbitragers: This set of market participants identify mispricing in the market and use it for making profit. They have neither exposure to risk and nor do they take the risk. Arbitrageurs lock in a profit by simultaneously entering opposite side transactions in two or more markets.

Computing payoffs from a portfolio of futures and trade remittances

The market participants may undertake various kinds of currency positions and it is important to understand the payoff from these positions. There are different combinations of positions in futures market on standalone basis and futures positions combined with cash position in OTC market. Examples of such positions would be:

- Combined position of futures and underlying export trade remittance
- Combined position of futures and underlying import trade remittance

Go through the examples given in the Nism book to understand the payoff of the above position under different circumstances.

Currency Futures are used for hedging for following purposes:

- Payment in foreign currency for travel abroad, for education, etc.
- Payment of loan availed in foreign currency
- Investment in assets outside India or repatriation of capital invested outside India
- Payment of loan installments in INR by a person earning in foreign currency

Investment in Gold

A high net worth individual in India is keen to invest in gold with a view of rising gold prices against USD. He invested via ETF gold contract which are exchange traded and priced in INR. After three months of investment in ETF, gold appreciated by 15% against USD while ETF appreciated by only 10%. The low appreciation of ETF was because of 5% appreciation in INR against USD in last three months. Thus to remove the USD INR risk in the ETF contract The investor could short USDINR currency futures for an amount equal to the amount of investment in ETF and for a tenor for which he intends to stay invested in gold ETF. This would reduce the USDINR risk embedded in gold ETF.

Investment in assets outside India and repatriation of profit and capital

Currency futures could also be effectively used to hedge the currency risk when investing abroad. A person has invested USD 100,000 in US equities with a view of appreciation of US stock market. In next one year, his investments in US equities appreciated in value to USD 115,000. The investor decided to sell off his portfolio and repatriate the capital and profits to India. However, at the time of converting USD to INR, he received an exchange price of 64 as against 67 which was the price at which he had converted INR to USD at the time of investing abroad. The investor may short USDINR currency futures for one year. This would allow him to sell USD to INR at a contracted price via futures contract and thus remove currency risk from the portfolio.

Use of currency futures for speculation

A trader has a view that given the buoyant economic condition in India and likelihood of drop in inflation, the INR may appreciate in next six months from current level of 66 to 64. To execute the view, he shorts 100 contracts at a price of 67.5. As expected, INR appreciated. At the expiry of the contract, the settlement price was 64.5. Since the settlement price was lower than the contracted price and the trader had shorted the futures, he made profit. The amount of profit would be equal to the difference in the contracted price and the settlement price. Thus the trader made a profit of Rs 3 per USD.

Use of currency futures for arbitrageurs

A trader notices that 6 month USDINR currency futures was trading at 65.98/66.00 while 6 month forward in OTC market, for same maturity as that of currency futures contract, was available at 65.85/65.86. The trader would short currency futures at price of 65.98 and go long in currency forward at 65.86. At the time of settlement, trader loses 1.02 on futures and makes a profit of 1.14 on OTC forward contract. Thus he makes an arbitrage profit of 0.12 per USD.

Triangular Arbitrage

Triangular arbitrage involves identifying and exploiting the arbitrage opportunity resulting from price differences among three different currencies in the forex market. It involves three trades: exchanging the first currency for a second currency, exchanging the second currency for a third currency and exchanging the third currency for the first currency. Like all other arbitrage opportunities, this triangular arbitrage also possible only when the exchange rates are not aligned with the implicit cross exchange rate. Please note that profitable triangular arbitrage is very rarely possible because when such opportunity arises, traders execute trades that take advantage of the imperfections and prices adjust up or down until the opportunity disappears. Even when those opportunities appear for a very brief period of time, the opportunity (price disparity) may be very small (around 1 basis point or so in many cases) making it not a profitable opportunity after factoring in the transaction costs and taxes. Moreover, there is also a risk of adverse price movement while the arbitrageur is still setting up the arbitrage position.

Trading spreads using currency futures

Spread refers to difference in prices of two futures contracts. A good understanding of spread relation in terms of pair spread is essential to earn profit. Intra-Currency Pair Spread (also called as “calendar spread”): An intra-currency pair spread consists of one long futures and one short futures contract. Both have the same underlying but different maturities. Inter-Currency Pair Spread: An inter-currency pair spread is a long-short position in futures on different underlying currency pairs. Both typically have the same maturity.

Limitations of currency futures for hedgers

Exchange traded currency futures contracts are standard contracts which are settled in cash i.e. without delivery of currencies. For hedgers, there might be a mismatch in the timing of settlement or cancellation of futures contract and the timing of actual trade remittance. This timing mismatch may result in small loss of value as compared to OTC forward contract. However, the transparency, small lot size and ease of trade execution may offset it.

V. Trading in Currency Futures

Currently currency futures contracts on four INR pairs i.e., USDINR, EURINR, GBPINR and JPYINR and on three cross currency pairs i.e., EURUSD, GBPUSD and USDJPY are being traded on the recognized stock exchanges.

- **Base price** of the futures contracts on the first day of its life shall be the theoretical futures price. The base price of the contracts on subsequent trading days will be the daily settlement price of the previous trading day.
- The **closing price** for a futures contract is currently calculated as the last half an hour weighted average price of the contract.
- The **tenor of a contract** means the period when the contract will be available for futures trading, i.e. the “cycle” of the contract.

Entities in the Trading System

Trading Members: Trading members are members of an authorized Exchange. They can trade either on their own account or on behalf of their clients including participants. The exchange assigns a trading member ID to each trading member. Each user of a trading member must be registered with the exchange and is assigned a unique user ID. The unique trading member ID functions as a reference for all orders/trades of different users.

Clearing Members (CM): Clearing members are members of the Clearing Corporation. They carry out risk management activities and confirmation/inquiry of participant trades through the trading system.

Trading-cum-Clearing Member (TCM): A member with a right to trade on its own account as well as on account of its clients. He can clear and settle the trades for self and for others through the Clearing House.

Professional Clearing Members (PCM): A professional clearing member is a clearing member who is not a trading member. Typically, banks and custodians become professional clearing members and clear and settle for their trading members and participants.

Participants: A participant is a client of a trading member- like financial institutions. These clients may trade through multiple trading members but settle through a single clearing member.

Types of Orders

A. Time Conditions

- **Day order:** A day order, as the name suggests is an order which is valid for the day on which it is entered.
- **Immediate or Cancel (IOC):** An IOC order allows the user to buy or sell a contract as soon as the order is released into the system, failing which the order is cancelled from the system.

B. Price Conditions

- **Market Price:** Market orders are orders for which no price is specified at the time the order is entered. For the buy order placed at market price, the system matches it with the readily available sell order in the order book. For the sell order placed at market price, the system matches it with the readily available buy order in the order book.
- **Limit Price:** An order to buy a specified quantity of a security at or below a specified price, or an order to sell it at or above a specified price (called the limit price).
- **Stop Loss:** This facility allows the user to release an order into the system, after the market price of the security reaches or crosses a threshold price.

C. Other Conditions

- **Pro:** 'Pro' means that the orders are entered on the trading member's own account.
- **Cli:** 'Cli' means that the trading member enters the orders on behalf of a client.

Price Limit Circuit Filter

With the view to ensure orderly trading and market integrity, SEBI prescribes stock exchanges to implement a mechanism of Dynamic Price Bands so as to prevent acceptance of orders placed beyond the price limits set by the stock exchanges. These dynamic price bands are applicable to all currency futures positions including the cross currency futures contracts.

Contracts with tenure up to 6 months	± 3% of the theoretical price or the previous day closing price, as applicable
Contracts with tenure greater than 6 months	± 5% of the theoretical price or the previous day closing price, as applicable

The exchanges relax the dynamic price bands in increments of 1% as and when a market-wide trend is observed.

VI. Clearing, Settlement and Risk Management in Currency Futures

- Clearing means computing open positions and obligations of clearing members in the trading system.
- Settlement means honoring the actual pay in or pay out to settle the contract.

Clearing entities

Clearing Members: In the Currency Derivatives segment, trading-cum-clearing member clear and settle category of members, called professional clearing members (PCM) who clear and settle trades executed by TMs their own trades as well as trades of other trading members (TMs). Besides, there is a special.

Clearing Banks: Funds settlement takes place through clearing banks. For the purpose of settlement all clearing members are required to open a separate bank account with the Clearing Corporation designated clearing bank for Currency Derivatives segment.

Clearing Mechanism

The clearing mechanism essentially involves working out open positions and obligations of clearing (trading-cum-clearing/professional clearing) members. This position is considered for exposure and daily margin purposes. The open positions of Clearing Members (CMs) are arrived at by aggregating the open positions of all the TMs and all custodial participants clearing through him. A TM's open position is arrived at as the summation of his proprietary open position and clients' open positions. While entering orders on the trading system, TMs are required to identify the orders, whether proprietary (if own trades) or client (if entered on behalf of clients) through 'Pro/Cli' indicator provided in the order entry screen. Proprietary positions are calculated on net basis (buy - sell) for each contract. Clients' positions are arrived at by summing together net (buy - sell) positions of each individual client. Please note that positions are only netted for each client and not netted across clients and are rather added up across clients. A TM's open position is the sum of proprietary open position, client open long position and client open short position.

Settlement Mechanism

Mark-to-Market settlement (MTM Settlement): futures contracts for each member are marked to market to the daily settlement price of the relevant futures contract at the end of each day. The profits/losses could be computed differently for different types of positions. The computational methodology is given below:

- For squared off position: The buy price and the sell price for contracts executed during the day and squared off.
- For positions not squared off: The trade price and the day's settlement price for contracts executed during the day but not squared up.
- For brought forward positions: The previous day's settlement price and the current day's settlement price for brought forward contracts.

Final Settlement for Futures: On the last trading day of the futures contracts, after the close of trading hours, the Clearing Corporation marks all positions of a CM to the final settlement price and the resulting profit/loss is settled in cash. Final settlement loss/profit amount is debited/ credited to the relevant CM's clearing bank account on T+2 working day following last trading day of the contract (contract expiry day). The final settlement price is the RBI reference rate for the last trading day of the futures contract.

Margin Requirements and Types

Since futures is a leveraged position, it is imperative to have very effective margining framework at exchange to avoid any systemic failure during periods of high volatility. Margins also play the role of acting as a deterrent to excessive speculation. The different types of margins collected by the Exchanges are as follows:

Initial Margin: The initial security deposit paid by a member is considered as his initial margin for the purpose of allowable exposure limits. Initially, every member is allowed to take exposures up to the level permissible on the basis of the initial deposit. The Initial Margin requirement is based on a worst case loss of a portfolio of an individual client across various scenarios of price changes.

Portfolio Based Margin: The Standard Portfolio Analysis of Risk (SPAN) methodology is adopted to take an integrated view of the risk involved in the portfolio of each individual client comprising his positions in futures contracts across different maturities.

Real Time computation: The computation of worst scenario loss has two components. The first is the valuation of the portfolio under the various scenarios of price changes. At the second stage, these scenario contract values are applied to the actual portfolio positions to compute the portfolio values and the initial margin. The latest available scenario contract values are applied to member/client portfolios on a real-time basis.

Calendar spread margin: For a calendar spread position, the extreme loss margin is charged on one-third of the mark-to-market value of the far month contract.

Extreme Loss Margin: Extreme loss margin is computed as percentage of the mark-to-market value of the Gross Open Position. It shall be deducted from the liquid assets of the Clearing Member.

Liquid Net Worth: The initial margin and the extreme loss margin are deducted from the liquid assets of the clearing member. The clearing member's liquid net worth after adjusting for the initial margin and extreme loss margin requirements must be at least Rs. 50 lacs at all points in time.

Liquid Assets: The liquid assets for trading in currency futures are maintained separately in the currency futures segment of the clearing corporation.

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VII. Exchange Traded Currency Options

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

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

Buying an option is also called as taking a long position in an option contract and selling is also referred to as taking a short position in an option contract.

Difference between futures and options

The difference between two contracts is that in futures both the parties are under right as well as obligation to buy or sell and therefore face similar risk. Whereas in options, the buyer has only rights and no obligation and therefore he faces only the risk of premium paid and option seller is under obligation to buy or sell and therefore faces unlimited risk. At the same time, the option buyer has chances to get unlimited upside and the option seller has limited upside equal to the premium received.

The call option buyer would exercise the option only if the price of underlying asset is higher than the strike price and premium paid. Similarly the put option buyer would exercise the option if the price of the underlying asset is less than the strike price and the premium paid.

Options in financial markets

Options market in India: Exchange traded equity index options commenced trading in India on June 4, 2001 followed by single stock specific options on July 2001. Since then, the volume in options is on a continuous growth path. RBI allowed banks to offer foreign currency-INR European options to its customers with effect from July 7, 2003. Banks were allowed to run option book subject to their meeting certain parameters with respect to net worth, profitability, capital adequacy and NPA%. The currency options have now been also allowed for trading on exchanges. The exchanges started trading in currency options from November 10, 2010.

Difference between OTC options and exchange-traded options: In OTC option market, the select scheduled commercial banks are permitted to be market makers in currency options market and resident Indians are allowed to be net buyer of options i.e., they should be paying a net premium when undertaking an option structure and they should not be the net receiver of premium. While for an exchange traded option, the restriction on amount and tenor are not related to the underlying FX transaction but are restricted by open interest and total volume. In terms of currency pair, in OTC market the client can get quotes for any currency pair and in exchange traded market the prices are currently available only for USDINR option contracts.

- European options can be exercised by the buyer of the option only on the expiration date. In India, all the currency options are of European type.
- American options can be exercised by the buyer any time on or before the expiration date. Currently American options are not allowed in currencies in India.

Moneyness of an option indicates whether the contract would result in a positive cash flow, negative cash flow or zero cash flow for the option buyer at the time of exercising it. Based on these scenarios, moneyness of option can be classified in three types:

In the money (ITM) option: An option is said to be in the money, if on exercising it, the option buyer gets a positive cash flow.

Out of the money (OTM) option: An option is said to be out of the money, if on exercising it, the option buyer gets a negative cash flow.

At the money (ATM) option: An option is said to be at the money if spot price is equal to the strike price.

Option Value

Intrinsic value: The intrinsic value of an option is the difference between spot price and the strike price. For a call option, the intrinsic value is $\text{Max}(S_t - K, 0)$ where K is strike price and S_t is the spot price of the asset.

Time value: The difference between option premium and intrinsic value is time value of option. The time value is directly proportional to the length of time to expiration date of the option. Longer the time to expiration, higher is time value.

Option Greeks

- **Delta** is the rate of change of option price with respect to the price of the underlying asset.
- **Vega** measures the rate of change of option value to volatility of price of the underlying asset.
- **Theta** measures the change in the value of the option with respect to passage of time.
- **Rho** measures sensitivity of option value to the risk free rate.

Option pricing methodology

There are two common methodologies for pricing options:

- Black and Scholes: This methodology is more analytical, is faster to compute and is mainly used to price European options.
- Binomial pricing: This methodology is more computational, taken more computing power and is mainly used to price American options.

Option Pay-Offs

Payoff means return from the derivative strategy with change in the spot price of the underlying. Option strategies result in non-linear pay offs (that is not a straight line, but either curve or a line with a sharp bend) because of the optionality of options, which is the right without obligation for the buyer.

Vanilla options: These are four basic option positions, which are long call, long put, short call and short put option. Please note that in all the exchange traded currency option contracts, the final settlement of the contracts happen at RBI reference rate. Following are the four types of options:

- Buying a call option or going long call option
- Selling a call option or going short on call option
- Buying a put option or going long put option
- Selling a put option or going short on put option

Please go through the pay-off examples give in the Nism book to understand them better.

VIII. Account Taxation

Client has to maintain two separate accounting heads for initial margin and mark to market margin. These heads could be called as:

- Initial margin-currency futures
- Mark to market- currency futures

Accounting entries for live positions:

The accounting entries have to be understood separately for any pay-in or pay-out for positions which are live and for positions which are expired or cancelled.

For pay-out: Any cash lay out on account of initial margin or mark to market has to be debited to respective heads i.e., Initial margin-currency futures or Mark to market- currency futures and bank account has to be credited.

For pay-in: Any cash inflow on account of mark to market settlement, mark to market- currency futures has to be credited and Bank account has to be debited.

Accounting entries for expired or cancelled positions

At the expiry of a series of currency futures, the profit/loss should be calculated as the difference between final settlement and contract prices of all the contracts in the series and it should be passed through the profit and loss statement of the client. However, where a balance exist in the provision account created for any anticipated loss, any loss arising on final settlement should be first charged to the provision account and the balance to the profit and loss account.

Accounting entries in case of default by a client

When a client defaults in making payments in respect of a daily settlement, the contract is closed out. The amount not paid by the client is adjusted against the initial margin. In the books of client, the amount so adjusted should be debited to “Mark to market currency futures accounts” with a corresponding credit to “Initial margin- currency futures account”.

Disclosure Requirements

The amount of bank guarantee and book value as also the market value of securities lodged should be disclosed in respect of contracts having open positions at the year end, where initial margin money has been paid by way of bank guarantee and/or lodging of securities.

IX. Regulatory Framework for Currency Derivatives

Securities Contracts (Regulation) Act, 1956 [SC(R)A]

The Act aims to prevent undesirable transactions in securities. It governs the trading of securities in India. The term “securities” has been defined in the Section 2(h) of SCRA.

RBI-SEBI standing technical committee on exchange traded currency and interest rate derivatives

With a view to enable entities to manage volatility in the currency market, RBI on April 20, 2007 issued comprehensive guidelines on the usage of foreign currency forwards, swaps and options in the OTC market. At the same time, RBI also set up an Internal Working Group to explore the advantages of introducing currency futures. The Report of the Internal Working Group of RBI submitted in April 2008, recommended the introduction of exchange traded currency futures. With the expected benefits of exchange traded currency futures, it was decided in a joint meeting of RBI and SEBI on February 28, 2008, that an RBI-SEBI Standing Technical Committee on Exchange Traded Currency and Interest Rate Derivatives would be constituted.

Foreign Exchange Management Act, 1999 - Provisions

The Foreign Exchange Management (Foreign Exchange Derivative Contracts) Regulations, 2000 (Notification No. FEMA 25/RB-2000 dated May 3, 2000) was amended by RBI in exercise of the powers conferred by clause (h) of sub-section 2 of Section 47 of the Foreign Exchange Management Act, 1999 (Act 42 of 1999). This amendment incorporated a new clause after clause (v) in regulation 2 reading "(va) 'Currency Futures' means a standardized foreign exchange derivative contract traded on a recognized stock exchange to buy or sell one currency against another on a specified future date, at a price specified on the date of contract, but does not include a forward contract."

Regulatory framework for exchanges

A recognized stock exchange having nationwide terminals or a new exchange recognized by SEBI may set up currency futures segment after obtaining SEBI's approval. The currency futures segment should fulfill the following eligibility conditions for approval:

- The trading should take place through an online screen-based trading system.
- The clearing of the currency derivatives market should be done by an independent Clearing Corporation.
- The exchange must have an online surveillance capability which monitors positions, prices and volumes in real time so as to deter market manipulation.
- The exchange shall have a balance sheet net worth of at least Rs. 100 crores.
- Information about trades, quantities, and quotes should be disseminated by the exchange in real time to at least two information vending networks which are accessible to investors in the country. The per-half-hour capacity of the computers and the network should be at least 4 to 5 times of the anticipated peak load in any half hour, or of the actual peak load seen in any half-hour during the preceding six months, whichever is higher. This shall be reviewed from time to time on the basis of experience. The segment should have at least 50 members to start currency derivatives trading. The exchange should have arbitration and investor grievances redressal mechanism operative from all the four areas/regions of the country. The exchange should have adequate inspection capability. If already existing, the exchange should have a satisfactory record of monitoring its members, handling investor complaints and preventing irregularities in trading.

Regulatory framework for clearing corporation

- The Clearing Corporation must ensure that all trades are settled by matching of buyers and sellers
- The Clearing Corporation should enforce the stipulated margin requirements, mark to market settlement, electronic funds transfer, etc.
- A separate settlement guarantee fund should be created and maintained for meeting the obligations arising out of the currency futures segment. A separate investor protection

X. Codes of Conduct and Investor Protection Measures

Adherence to SEBI codes of conduct for brokers/ sub-brokers

Code of Conduct for Brokers

General

1. Integrity
2. Exercise of due skill and care
3. Manipulation: A broker should not indulge in manipulative, fraudulent or deceptive transactions or schemes or spread rumors with a view to distorting market equilibrium or making personal gains.
4. Malpractices: A broker should not create false market either singly or in concert with others or indulge in any act detrimental to the investors' interest or which leads to interference with the fair and smooth functioning of the market.
5. Compliance with statutory requirements'

Duty to client

1. Execution of orders
2. Issue of contract note
3. Breach of trust

4. Business and commission: A broker should not encourage sales or purchases of securities with the sole object of generating brokerage or commission.
 5. Business of defaulting client: A broker should not deal or transact business knowingly, directly or indirectly or execute an order for a client who has failed to carry out his commitments in relation to securities with another broker.
 6. Fairness to client
 7. Investment Advice
-
- **A broker should extend fullest cooperation to other brokers in protecting the interests of his clients.**
 - **A broker should carry out his transactions with other brokers and should comply with his obligations in completing the settlement of transactions with them.**

Note: The code of conduct of sub-brokers is majorly similar to that of brokers

Adherence to codes of conduct specific to currency derivatives segment

General Principles

- Adequate Disclosures
- No guarantee against a loss
- Professionalism
- Adherence to Trading practices
- Honesty and Fairness
- Capabilities

Trading Principles

- Trading Members/Participants shall ensure that the fiduciary and other obligations imposed on them and their staff.
- A Trading Member shall be responsible for all the actions including trades originating through.
- No Trading Member or person associated with a Trading Member shall make improper use of constituent's securities/positions in derivatives contracts or funds.
- When entering into or arranging a transaction, Trading Members must ensure that at all times great care is taken not to misrepresent in any way, the nature of transaction.

General Guidelines

- Shielding or assisting
- Suspended Derivative contracts
- Misleading Transactions
- Use of information obtained in Fiduciary capacity

SEBI Complaints Redress System (SCORES)

SEBI launched a centralized web based complaints redress system (SCORES). This would enable investors to lodge and follow up their complaints and track the status of redressal of such complaints from anywhere. This would also enable the market intermediaries and listed companies to receive the complaints from investors against them, redress such complaints and report redressal. All the activities starting from lodging of a complaint till its disposal by SEBI would be carried online in an automated environment and the status of every complaint can be viewed online at any time. An investor, who is not familiar with SCORES or does not have access to SCORES, can lodge complaints in physical form. However, such complaints would be scanned and uploaded in SCORES for processing. SCORES is web enabled and provides online access 24 x 7. It would facilitate easy retrieval and tracking of complaints at any time.

Arbitration

SEBI has instructed the exchange to have arbitration committees so that differences, disputes and claims between trading members and investors can be settled effectively and in a short time. Arbitration is also governed by Exchange Bye-laws. Arbitration is a quasi judicial process of settlement of disputes between Trading Members, Investors, Sub-brokers & Clearing Members and between Investors and Issuers (Listed Companies). Generally the application for arbitration has to be filed at the Arbitration Centers established by the exchanges. The parties to arbitration are required to select the arbitrator from the panel of arbitrators provided by the Exchange. The arbitrator conducts the arbitration proceeding and passes the award normally within a period of four months from the date of initial hearing.

Combination Strategies

Combination strategies mean use of multiple options with same or different strikes and maturities. Numerous strategies can be worked out depending on the view on the market, risk appetite and objective. Following are some of the widely known combination strategies:-

View: Moderately Bullish or Bearish

- Bull Call Spread
- Bull Put Spread
- Bear Put Spread
- Bear Call Spread

View: Range bound view on USDINR or a break out view

- Short Strangle
- Short Straddle
- Long Butterfly

View: Break out view of USDINR

- Long Straddle
- Long Straddle
- Short Butterfly

Strategies complimenting existing positions in futures market

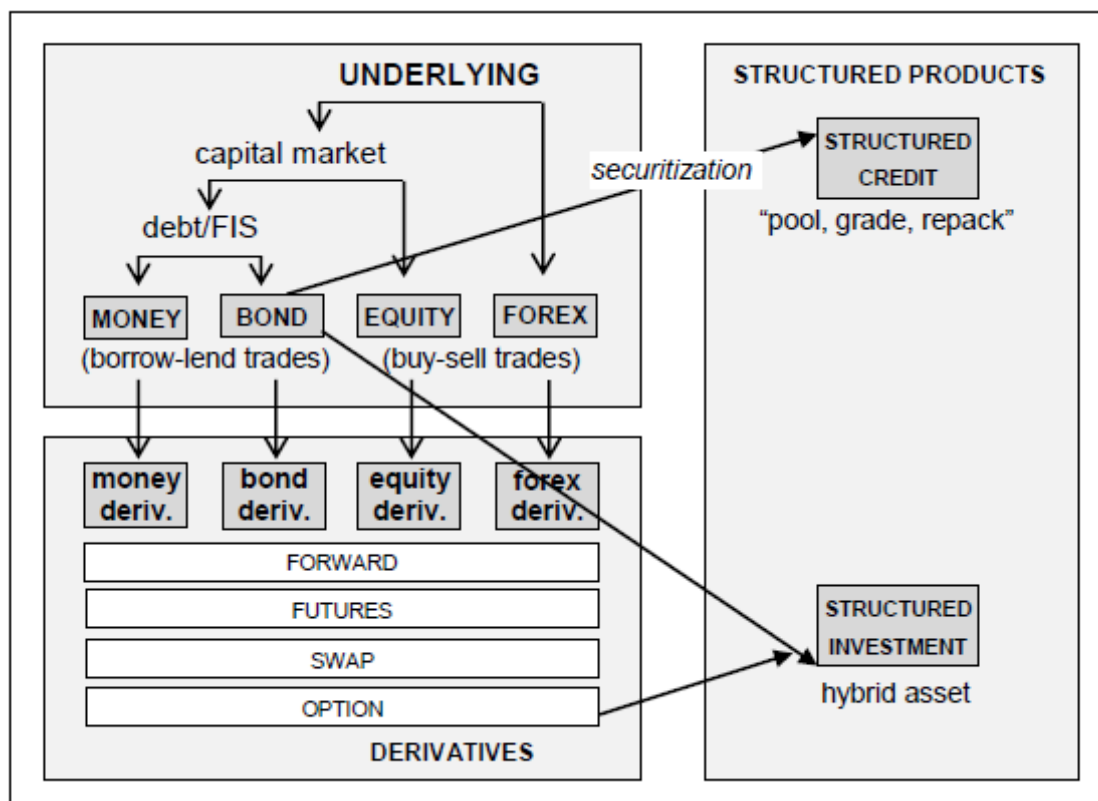
- Covered Call
 - Covered Put
 - Protective Call
 - Protective Put
- =====

3.NISM IV - INTEREST RATE DERIVATIVE SUMMARY/IMPORTANT POINTS

I. Fixed Income and Debt Securities: Introduction

Financial markets are grouped into three super asset classes: underlying, derivative and structured finance. Besides these three, there are collective investment schemes (e.g. mutual funds), physical assets (e.g. real estate, commodities, art, antiques, wine, etc.) and alternative assets (e.g. ETFs, managed futures, hedge funds, private equity, etc.).

- The underlying super asset class consists of fundamental assets and there are four of asset classes: money, bond, equity and forex.
- The derivative super asset class is not independent but derived (whence the name “derivative”) from the underlying super asset class. They are grouped into five asset classes: rate, credit, equity, forex and commodity. In each derivative asset classes, there are four generic products: forward, futures swap and option.
- The structured finance super asset class is further grouped into two asset classes: structured credit and structured investment.



Debt/Fixed-Income Securities: Introduction

Debt market, also known as fixed-income securities (FIS) market, consists of money and bond markets. The difference between the two markets is the period of borrowing/lending. In money market, the period is one year or less; and in bond market, it is more than one year. They are called “fixed-income” securities because of the following “fixed” features.

- Their life is fixed: they will be redeemed on a specified future date because all borrow-lend transactions are for a fixed period.
- In most cases, their cash flows are fixed, too. In other words, the timing and size of cash flows are known in advance.

Even though everything is fixed, it is subject to certain risks;

- **Credit Risk** is the risk of the Company not being able to pay interest and principal on schedule.
- The sale price may be higher or lower than the initial purchase price if the holder wants to sell the security before maturity, resulting in capital gain/loss, which is not known in advance. This is called **market risk** (also known as price risk) in the bond.
- **Reinvestment risk** is the risk that future cash flows—either coupons (the periodic interest payments on the bond) or the final return of principal—will need to be reinvested in lower-yielding securities

Debt/Fixed-Income Securities: Classification

- **Coupon** instrument pays periodic fixed amount called coupon (C), representing the interest rate; and a final fixed amount, representing the principal (P), which is also called redemption amount.
- **Annuity** pays coupon and part of the principal periodically in such a manner that the cash flows are equal in size and equally spaced in time.
- **Zero-coupon bond** (also called “discount” bond) does not pay any amount before maturity date. The interest is accumulated, compounded and paid along with principal at maturity as a single bullet payment.

Based on original maturity of borrowing/lending, FIS securities are classified into money and bond instruments. **Money market** instruments are those with an original maturity of one year or less; and **bond market instruments** are those with original maturity of more than one year.

Money market products are further grouped into two: **OTC** and **Exchange products**. The borrowing may be against collateral (called “secured”) or without collateral (called “clean”). All exchange-traded money market products are clean instruments: they are unsecured promissory notes. The OTC products may be secured or unsecured; and are privately and bilaterally negotiated contracts between two parties.

In the interbank money market, both lender and borrower are banks and the borrowing is on “clean” basis at the **interbank rate**. The period of borrowing is for “standard” tenors. The overnight is the most important and liquid. It is called call money in India and Fed Funds in the US.

Repo/Reverse repo is secured money borrowing/lending with three key features.

- First, being a money market product, it is money borrowing/lending for a period of one year or less.
- Second, it is secured lending against collateral, which is not any collateral but an actively traded, liquid and less volatile instrument.
- Third and most important, the trade is structured not as borrow-lend trade but as buy-sell trade.

Based on the length of repo period, repos is classified into open repo (the period is one day with rollover facility and overnight rate reset) and term repo (the period is specified in advance and the interest rate is agreed for the whole of the term).

- **Treasury bills (TB)** are issued by the central government through RBI. They are issued with original maturity of 91-day, 182-day and 364-day and issued as zero-coupon (or discount) instruments
- **CD** is a negotiable, unsecured instrument issued by scheduled commercial banks and select all-India financial institutions. The minimum and multiple of issue is Rs.1 lakh.
- **CP** is a negotiable, unsecured instrument issued by corporate bodies and primary dealers. The minimum and multiple of issue is Rs.5 lakhs. The maturity of the CP should be a minimum of seven days and a maximum of one year.
- **Sovereign bonds** are those issued by the governments and hence “risk-free” securities.
- **Corporate bonds** are those issued by corporate bodies.

Another way to classify bonds is by the interest type, based on which we can classify them into fixed-rate, floater, and inverse floaters. If the bond's periodic coupon is known in advance, it is called **fixed-rate** (or coupon) bond, and most bonds are issued as fixed-rate bonds. If the coupon is linked to a specified market interest rate, then only its timing but not its amount is known in advance. Such bonds are said to be **floaters**.

By far the most important feature of bond is its credit quality, which is specified by specialist bodies called **credit rating agencies**. Examples of credit rating agencies are CRISIL, ICRA, Moody's etc. The credit ratings above are not numerical measures of default. They are relative measures: AAA is stronger than AA, which in turn is stronger than A, and so on.

Some bonds have a derivative called **option embedded** in it, and the embedded option modifies the redemption date or type of the bond. Three such embedded options are as follows.

Bond type	Redemption feature	Remark
Callable	Issuer has the right to prepay the bond on specified dates before maturity.	Issuer will exercise his right if the interest rates fall so that he can refund at cheaper rate.
Puttable	Investor has the right to demand prepayment on specified dates before maturity.	Investor will exercise his right if the interest rates rise so that he can reinvest at higher rate.
Convertible	Investor has the right to convert the bond into issuer's equity at specified price at maturity.	Investor will exercise his right only when the market price of equity is higher than exercise price.

Debt versus Equity

As stated earlier, the capital of corporate bodies consists of debt and equity. If interest on debt is tax-deductible, every company's capital must have some debt. Because of this, it may seem that the companies should fund themselves only with debt to maximize the return on equity. However, this has a negative side because interest on debt becomes a fixed-cost and will have serious repercussions in recession. We may say that equity is the cost of avoiding bankruptcy. For optimal results, there is always an

optimal level of debt-to-equity ratio. The optimal ratio is such that the weighted average of cost of capital (WACC) should be minimal. The WACC is given as follows:

$$WACC = R_D \left(\frac{D}{E+D} \right) (1-T) + R_E \left(\frac{D}{E+D} \right)$$

Where,

- R_D = cost of debt (which is the interest rate on debt)
- D = market value of debt
- E = market value of equity
- T = tax rate
- R_E = cost of equity.

Primary and Secondary Market for Debt Securities in India

Primary Market

The Reserve Bank of India acts as the issue manager for central and state government borrowing programs. The major factors that affect the issuances of the government debt are:

- Liquidity conditions in the market
- Market Preferences for maturity versus the desired maturity
- Yields in the primary and secondary market

Apart from this, the fiscal deficit of the country also plays a major role in determining the issuances. Keeping this in mind, the RBI releases an issuance calendar for dated securities semiannually (March and September generally). The auctions of these securities are done in one of the following ways:

- Uniform Price Method: All participants are allotted at the same price. The price is the highest price (corresponding to the lowest yield) that the issuer can get their entire issue subscribed.
- Multiple Price Method: All accepted are allotted at different prices and yields quoted in their individual bids. Successful bidders get the issue at the price and yield they bid whilst the bidder at the cut off price or yield gets the best price.

Secondary Market

CCIL provides and maintains the Negotiated Dealing System (NDS) which is the secondary market platform to trade in government securities. CCIL has also developed and currently manages the NDS-CALL electronic trading platform for trading in call money. It has also developed the NDS-Auction module for Treasury Bills auction by RBI. CCIL guarantees settlements of all trades, thus eliminating counterparty risk. It is the counterparty to both the buyer and the seller. It maintains a settlement guarantee fund (SGF) that is made up of margin contributions from each participant with the CCIL. CCIL also provides for Repo instruments for Government Securities –termed as Collateralized Borrowing and Lending Obligations (CBLO) and Clearcorp Repo Order Matching System (CROMS).

II. Interest Rate: Introduction

In borrow-lend transactions, the exchange is “money for money” for different settlement dates. There is no transfer of ownership but only use of money for a period, for which rent is charged. The rent on money is called interest rate. Unlike the price in buy-sell trades, the rate in borrow-lend trades is not the same for all borrowers but borrower-specific. The reason for this is that borrow-lend trades have credit-risk, which is faced only by lender against borrower. Therefore, the price of credit risk has to be priced and incorporated into the trade, which makes the rate borrower-specific.

Risk-Free Rate versus Risky Rate

Consider that the borrower is a sovereign government and the borrowing is in home currency. There is no possibility of default by the borrower because the sovereign can always print money and pay off the lender. In other words, there is no credit risk in this transaction. The interest rate applicable to such transactions is called **risk-free** rate, the risk here being the credit risk. The risk-free rate is the benchmark for all valuations because it represents the return without risk.

For borrowers other than the sovereign government, there is some chance of default. Therefore, the interest rate applicable to such non-sovereign borrowers must be higher than the corresponding rate for sovereign borrower. Thus the rate applicable to them is the **risky rate**. The difference between them is called the **credit spread**.

Nominal vs. Real Interest Rate

The nominal interest rate is the stated interest rate (coupon rate) of a bond. The nominal interest rate denotes the rate that the bond issuer pays to the bond holder. However, the inflation reduces the purchasing power of money. Therefore, the nominal interest rate has to be adjusted for the rate of inflation in order to understand the real growth of money for the bond holder. The nominal interest rate adjusted for inflation is called Real Interest Rate. The relationship between real and nominal interest rates can be described in the equation:

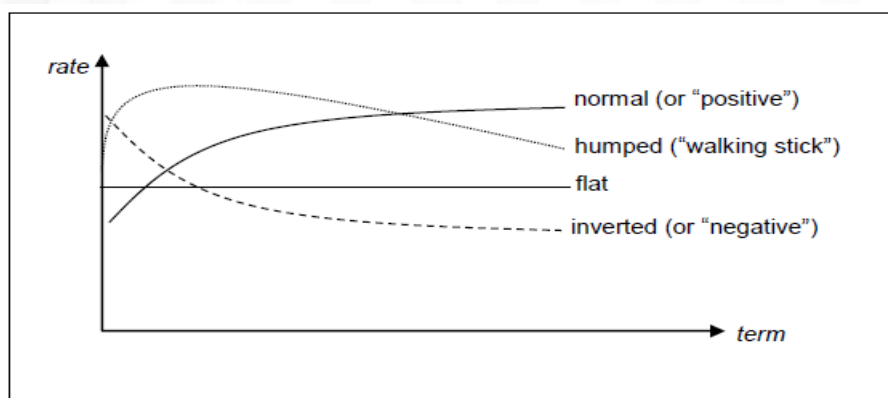
$(1+r) \times (1+i) = (1+R)$; where r is the real rate, i is the inflation rate and R is the nominal interest rate.

Term Structure of Rates: Shapes

When the interest rate (on vertical axis) is plotted against the term (on horizontal axis), it is called the term structure of interest rates (also known as yield curve). The term structure of risk-free rate is the most important tool in valuation because it represents the ultimate opportunity cost. It is the rate an investor can earn without any risk of default or loss for a given term. Any other competing alternative has a risk, which has to be priced and added to the risk-free rate for the same term as the “risk premium.” Without term structure of rates, valuation becomes speculative rather than objective. But what determines the interest rate? The answer is demand-supply for money for different terms.

In developed economies, central bank monitors and controls only the short-term interest rate, but in developing and emerging economies, central bank influences long-term rates, too. The central bank uses the repo and reverse repo with commercial banks to control the short-term rate. The term structure has different shapes but four of the following account for most of the shapes.

Shape	Description
Normal	Longer the term, the higher is the rate
Inverted	Longer the term, the lower is the rate
Flat	Rate is the same for all terms
Humped	Rate is high for medium term and falls off on either side



Term Structure of Rates: Shifts

Term structure is a snapshot of rates at a point of time, and there are many theories and economic arguments to explain the shapes. What is more important is, not the shape, but how it changes over time, which is called term structure "shifts". The shifts describe the relative moves of long-term rate (LR) and short term rate (SR), and they are grouped into three: parallel, steepening and flattening, as summarized below.

Shift	Description
Steepening	Difference between LR and SR rises or widens (from positive to more positive or from negative to less negative). The curve shifts in anti-clockwise direction.
Flattening	Difference between LR and SR falls or narrows (from positive to less positive or from negative to more negative). The curve shifts in clockwise direction.
Parallel	All rates move in the same direction by same extent

Conversion of Rate into Amount

The conversion requires the following parameters to be specified:

- **Payment frequency:** It specifies whether the payment is monthly, quarterly, semiannual, annual or at the end of the term. For money market instruments, the market convention is to pay interest at the end of the term.
- **Compounding frequency:** It specifies whether the interest is compounded or simple. If compounding is applicable, the compounding frequency must be higher than and an integral multiple of payment frequency.
- **Day count fraction (or day count basis):** It specifies how to convert the payment period into year fraction (e.g. 6M = 0.5Y). For this conversion, we must agree on counting the number of days in a year and in the interest accrual period. It is expressed as a fraction.
- **Payment timing:** It specifies whether the interest amount is paid upfront (discount yield) or in arrears (investment yield) of the payment period.

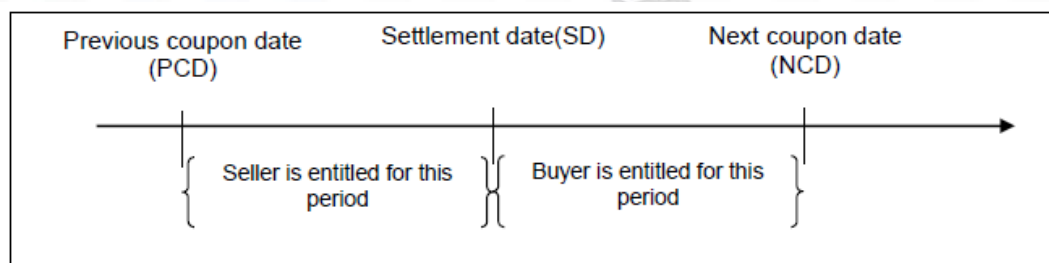
FIMMDA rules in India

Fixed-income and Money Market Derivatives Association (FIMMDA) is the self-regulatory organization in India for money, bond and derivatives markets. According to FIMMDA rules, the following are the market conventions.

- All interest amounts must be **rounded off** to the nearest whole rupee
- Price and yield quotes must be **rounded** to the nearest fourth decimal place when used in interest amount calculations.
- **Day count basis** for all transactions is Actual/365 Fixed except for the accrued interest calculation in the secondary market for sovereign bonds, for which it is 30E/360.
- Yield on money market discount instruments (T Bill, CD, CP) must be quoted on true yield (Y) basis and not on discount yield basis; and for bill rediscounting, it should be in discount yield (DY) basis.

Accrued Interest

For the secondary market trades of such bonds, there are two prices. They are **clean price**: the price at which the bond is negotiated; and **dirty price**: the price at which the bond is settled. Dirty price is always higher than the clean price by the amount of accrued interest rate. In other words, dirty price is clean price plus accrued interest. Accrued interest is the interest accrual at coupon rate from the previous coupon date to the settlement date of the trade. Let us see the timeline of different dates in the following figure:



The settlement date of the secondary market trade falls between two coupon date, which we will designate as previous coupon date and next coupon date. Between previous coupon date and settlement date, it is the seller that owns the bond and therefore is entitled to receive the interest accrual for this period. Similarly, it is buyer that owns the bond between settlement date and next coupon date and therefore he is entitled to the interest accrual only for this period.

A logical question is why not including accrued interest in the market price or clean price of the bond so that the negotiated price recorded in the deal ticket is the same as the settlement price? If we incorporate the accrued interest in the market price of bond itself, the result will be a periodic rise-and-fall pattern in bond price between two coupon dates. Because the daily interest accrual is constant, the price will rise smoothly every day by daily accrual amount from one coupon date to the next, and falls abruptly by the full coupon amount on the next coupon date.

III. Return and Risk measures of Debt Securities

Return on investment is the most important measure of performance. It has the following properties.

- Expressed as a rate per annum
- If there is income before the investment term, the income has to be reinvested until the term
- Compounding at less than yearly intervals, if required, is incorporated

When there is no interim income, true yield can be calculated by;

$$\left\{ \left[\frac{F}{P} \right]^{\frac{1}{N \times C}} - 1 \right\} \times C$$

where

F = final amount received (i.e. face value)

P = initial amount invested (market price)

N = number years

C = compounding frequency

Coupon, Current Yield and Yield-To-Maturity

Coupon is the fixed payment received on the bond. It cannot be considered the return because it does not consider the premium/discount in bond price and the capital gain/loss at redemption.

Current yield is defined as coupon divided by bond price. Current yield is better than coupon but is still unsatisfactory.

Yield-to-maturity (YTM) is the most widely used measure is simply called “yield”. However, it is still not a true return measure. YTM considers the premium/discount in bond price and capital gain/loss at redemption and even handles the reinvestment in a rough way. What it does is:

- Amortizes the capital gain/loss at redemption over the bond’s life and adds it to the current yield;
- Averages the returns for all periods in a complex way; and
- Assumes that interim cash flows are reinvested at the same average return.

Spot Rate, Bond Price and YTM

- Spot rate (also known as zero rates) is the true return on investment. It considers premium/discount in bond price, capital gain/loss at redemption and reinvestment of interim income.
- Since the zero rate is the true return, the present-value of any future cash flow will be its discounted value, the discounting being at the zero rate relevant to the timing of the cash flow.
- The current market price of bond should be its cash flows discounted at the appropriate zero rates from the prevailing term structure of zero rates.

The above brings in two important facts. First, the bond price is determined, not by demand-supply for bond, but by term structure of zero rates. It should be noted that the demand-supply forces do have a play, but that is demand-supply for money, not for bond. The demand-supply for money determines the zero rates, which in turn determine the bond price. Second, in a coupon bond (or annuity), there is no single return measure but multiple of them.

YTM is not a return measure but another way of quoting bond price (because it is derived from bond price). Alternately, given YTM, the bond price can be derived from the above equation. Both bond price and its variant of YTM cannot be used as judgment tools to determine the mispricing. For zero-coupon bond, YTM is the true measure of return because there are no interim cash flows to be reinvested and there is a single zero rate used.

Investor may still have preference for the bonds, which is decided by factors other than price or YTM. These factors are tax considerations and expectations about future interest rates for reinvestment.

Risk Measures

Price risk and reinvestment risk always work in the opposite way. If the market rate rises, the bond price falls but reinvestment income rises. The bond price falls because of discounting at a higher interest rate results in lower present value; and reinvestment income rises because the interim cash flows are reinvested at higher than the original interest rate. Similarly, if the market interest rate falls, the bond price rises but reinvestment income falls. The change in bond price is instant after the change in interest rate but the effect of reinvestment income is slow over a period of time.

Maculay Duration: Macaulay was the first to measure the price risk. He proposed that bond maturity is a rough measure of price risk. The change in the bond price is roughly proportional to the maturity. The sum of (DCF) is the current price of the bond, of course. If we divide the sum of TDCF with the sum of DCF, what we get is T or time, which Macaulay called it as “Duration” (D), which he considered the effective maturity of bond and a measure of price risk.

Modified Duration: Subsequently, a better measure for price risk is derived by computing the sensitivity of bond price to changes in YTM. This measure is called Modified Duration (MD) and is related to Macaulay Duration (D) as follows where n is the frequency of compounding in a year.

$$MD = \left(\frac{D}{1 + YTM/n} \right)$$

MD gives the percentage change in bond price caused by a small change in YTM. For example, if MD is 1.71 and YTM changes by an amount, then the bond price changes by 1.71 times the change in YTM.

- It holds good only for small changes (say, changes in YTM of 0.01% to 0.10%).
- The relationship between bond price and YTM is not linear but convex while MD assumes a linear relationship. To capture the effect of convexity, we require a second derivative of price to yield, which is called *convexity*.
- By using YTM rather than the term structure of zero rates, MD assumes flat term structure at the level of YTM and assumes parallel shifts in term structure. If the shift is steepening or flattening, MD does not hold good even for small changes in rates.

Senior management and risk managers are interested in change in the *total* market value of the bond portfolio for a given change in the YTM. This is called rupee duration (RD). For that, they need to replace bond price with the market value of the bond portfolio in the equation, as follows.

$$\text{Change in portfolio market value} = \text{Portfolio market value} \times \text{Portfolio MD} \times \text{Change in YTM}$$

The change in YTM of 0.01% (or 0.0001) is called a basis point (BP). Bond traders would like to know what would be the change in bond price for a change in YTM of one BP, which is called price value of basis point (PVBP or PV01). Since one BP is 0.0001 in YTM, PVBP can be derived from MD as follows.

$$PVBP = P \times MD \times 0.0001$$

IV. Interest Rate Derivatives

Derivative is something that is derived from another called the underlying. The underlying is independent and the derivative is dependent on and derived from the underlying. The derivative cannot exist without the underlying. This is the general definition of derivative.

Accounting standards like FAS 133 (in the US), IAS 39 (in the EU) and AS 30 (in India) impose more qualifications for derivatives. For example, IAS 39 and AS 30 require the following three criteria to be satisfied for financial derivatives.

1. Value of derivative is linked to the value of underlying
2. Trade settled on a “future” date
3. On trade date, there should be no full cash outlay

FAS 133 requires an additional qualification:

4. Trade must settle (or capable of being settled) on net basis and not on gross basis.

Forward and **Futures** are functionally similar and involve buying or selling of a specified underlying asset at specified price for specified quantity for delivery on a specified *later* date. The difference between them is that the forward is an OTC market instrument (i.e. privately negotiated bilateral contract) and the futures is publicly-traded Exchange contract. Accordingly, they differ in the institutional arrangement for conducting the Trade and Settlement parts of the transaction.

Swap is different in the sense it does not involve exchange of cash for an underlying asset: it involves exchange of *returns* from the underlying against *return* from money. In other words, the cash-for-asset exchange is replaced with return-for-return exchange. The return from money is interest rate and that from the underlying asset is another interest rate (if the underlying is money or bond) or dividend and capital gains/loss (if the underlying is equity) or foreign currency interest rate and capital gain/loss (if the underlying is currency). Swap is traded only in OTC market.

Option does not buy or sell the underlying or its returns: it involves buying or selling certain right on the underlying. It is traded both in OTC and Exchange markets. The following table summarizes the key feature of four generic types of derivatives.

The four asset classes and four generic types give us sixteen types of derivatives as follows, of which “bond swap” does not exist.

Underlying	Derivatives			
	Forward	Futures	Swap	Option
Money	FRA ¹	Interest rate futures	Interest rate swap ²	Interest rate option
Bond	Bond forward	Bond futures		Bond option
Equity	Equity forward	Equity futures	Equity swap	Equity option
Forex	FX forward	FX futures	Currency swap ³	FX option

Economic Role of Derivatives

The economic role of underlying markets is financing and consumption. In contrast, the economic role of derivatives is risk management, and the risk they manage is price risk. Price risk is the uncertainty about future return. The future return may be positive or negative. Thus, risk is a neutral concept: it does not necessarily mean loss. Risk merely says that in future there will be either profit or loss.

Derivatives are tools to manage price risk. How you manage risk depends on your attitude to risk, and there are two attitudes: love and hate. When you love risk, you take risk, which is called speculation, but that word is avoided and instead we use “trading” in banking industry and “investment” in asset management industry. When you hate risk, you manage it one of the three ways: elimination; insurance and minimization. The following table summarizes the approaches to market risk management.

Approach	Explanation
Speculation	Taking risk (more formally called “trading” or “investment”) It results in the possibility of positive return (i.e. profit) or negative return (i.e. loss) in future
Hedging	You are already exposed to risk and hedging eliminates that risk and locks in the future return at a known level
Insurance	You are already exposed to risk and insurance selectively eliminates the negative return but retains the positive return. It has an explicit upfront cost, unlike speculation and hedging, which do not have any cost. It requires a particular derivative called option to implement it.
Diversification	It reduces both return and risk but in such a way that risk is reduced more than return so that risk is minimized per unit return. It does not require derivatives to implement it.

Interest Rate Derivatives

The interest rate derivatives market is the largest derivatives market in the world. The Bank of International Settlements estimates that the global OTC derivatives market as of December 2014 was US\$ 630 trillion out of which around US\$ 500 trillion was contributed by the Interest rate derivatives market.

Feature	Interest Rate Derivative	Bond Derivative
Underlying	Interest rate on money; and the tenor can be short term (less than 1Y) or long term (more than 1Y and up to 30Y)	A specific instrument is issued by a specific borrower
Liquidity	Very High	Very Low
Settlement	Compulsory for each cash settlement	Maybe physical or cash

The following terms are used:

- Tenor: period of notional borrowing/lending in the contract
- Term: The distance of commencement date from trade date.
- Short: Less than one year
- Long: More than one year

Derivative	Interest rate	Bond
Forward	Forward rate agreement (FRA). It is a contract to pay or receive a short-tenor short-term rate	Bond forward It is a contract to buy or sell a short-tenor or long-tenor instrument, usually in short-term
Futures	Interest rate futures (IRF) It is a contract to pay or receive a short-tenor rate for short-term or long-term	Bond futures It is a contract to buy or sell a short-tenor or long-tenor instrument, usually in short-term
Swap	Interest rate swap It is a contract to exchange a fixed long-tenor rate for a variable (“floating”) short-tenor in the long term	Does not exist
Option	Interest rate option It is a contract to pay or receive a short-tenor rate in the short term or long term	Bond option It is a contract to buy or sell a short-tenor or long-tenor instrument, in short-term or long-term

OTC versus Exchange-traded Derivatives

OTC derivatives (OTCD) are privately negotiated and settled contracts between two parties whereas Exchange-traded derivatives (ETD) are publicly negotiated and settled contracts with the aid of Exchange (which conducts the trade negotiation and execution) and Clearing Corporation (which conducts the settlement). OTCDs can be customized to the specific requirements of the parties whereas ETDs are “standardized”. Another difference is that OTCDs have counterparty credit risk and settlement risk (which is the risk of default by the counterparty on settlement date), but both risks do not arise in ETDs because of “trade guarantee” by Clearing Corporation. The trade guarantee is provided by Clearing Corporation becoming a common party. Due to increased competition between OTC and Exchange markets, the differences between them are slowly fading.

Derivatives Market in India

Derivatives are essential for risk management, especially hedging. Though, theoretically, underlying securities can be used for hedging, such a process is cumbersome, costly and non-optimal. In the Indian market, the OTC forex market has had a long-history of using the forward contract for hedging currency risk by exporters and importers; and, in recent years, currency swaps and currency options have been introduced to provide for diverse and flexible hedging strategies. Exchanges have started in 2008 the currency futures to compete with the OTC market, and they were received very well. In the equity market (which is predominantly an Exchange market), derivatives were introduced a decade ago and have overtaken the cash market in daily turnover shortly after they were introduced.

V. Contract Specification for Interest Rate

The “interest rate derivatives” traded on Exchanges in India are not truly interest rate derivatives but bond derivatives. The underlying for interest rate derivatives is the interest rate on money, typically, the interbank money; and the underlying for bond derivatives is a specific debt security issued by a specific borrower.

Underlying

Reserve Bank of India (RBI), whose permission is required for all derivatives on interest rate and debt instruments (whether traded in Exchange or OTC market), has permitted futures on the specific securities. RBI has delegated powers to further define the futures contract terms (e.g. contract amount, expiry months, etc, defined below) to SEBI. According to SEBI guidelines, interest rate derivatives are to be traded in the Currency Derivatives segment of Exchange. Members of Currency Derivatives segment are allowed to participate in the interest rate futures market.

Notional security does not exist and is not traded. Accordingly, for the purpose of delivery, any of the eligible securities are allowed to be substituted for the notional underlying after adjusting the delivery quantity through a “Conversion Factor”. However, currently no Exchange trades a notional security with physical settlement and therefore the procedure for physical settlement is only for reference. All the three Exchanges (NSE, BSE and MSEI) trade bond futures with actual underlying securities only.

Contract Amount (Market Lot)

Contract Amount (or Market Lot) is the minimum and multiple of trade size. In contrast, the market lot in the cash market of wholesale debt market is Rs.5 Cr (which is equal to 250 futures contracts). The face value and market value are linked by the market price. In both cash and futures markets, the prices are quoted for Rs.100 face value so that the relation between face value and market value is:

$$\text{Market Value} = \text{Face Value} \times (\text{Market Price} / 100)$$

Contract Expiry

Contract Month (also known as Expiry Month) is the month in which the contract ceases trading. On any trading day, there will be multiple Contract Months that expire in different months. Expiry Date is the day in Contract Month on which trading ceases. Settlement Day (SD) is the day on which the contract is settled. The following table shows the particulars allowed by SEBI:

	91-day bill futures	10-year bond futures	6-year bond futures	13-year bond futures
Contract Months	Three nearest "serial" months and three nearest "quarterly" months	Three nearest "serial" months and three quarterly contracts	Three nearest "serial" months and three quarterly contracts	Three nearest "serial" months and three quarterly contracts
Last Trading Day	Last Wednesday of Contract Month (or previous day if it is a holiday)	Last Thursday of Contract Month (or the previous trading day if it falls on a holiday)	Last Thursday of Contract Month (or the previous trading day if it falls on a holiday)	Last Thursday of Contract Month (or the previous trading day if it falls on a holiday)
Settlement Day	Last business day of Contract Month	Next working day following LTD	Next working day following LTD	Next working day following LTD

- **Price quotation** refers to the style of quoting the contract price
- **Tick size** is the minimum change in price. The tick size for both contracts is Rs.0.0025. The price quotation for T-bill is 100 minus the discount rate
- **Trading hours** are aligned with those of NDS-OM, which is currently between 9AM and 5PM.
- **Daily settlement price (DSP)** is the price at which margining & mark-to-market is implemented. Because of daily mark-to-market, the carry price of the contract changes every day. DSP is the volume weighted average price (VWAP) during the last 30 minutes of trading in the futures market. If there is no trading during the last 30 minutes, DSP will be the VWAP during the last two hours in the cash NDS-OM market.
- **Final settlement price (FSP)** is the price at which the contract is settled on the SD. For 91-day bill futures, FSP is the weighted average discount yield (Y) in the auction of 91-day T-bill conducted by Reserve Bank of India (RBI) on the expiry date. For the cash-settled 6-year or 10-year or 13-year actual bond, FSP will be the VWAP of the actual bond during the last two hours of trading in the cash market of NDS-OM. If less than five trades occur during that period, FSP shall be the price determined by FIMMDA.
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Delivery under Physical settlement

Currently, no Exchange trades in physically settled bond futures. Hence this discussion is for reference purpose only. To enable physical settlement for imaginary notional bond, other bonds of the central government are to be made eligible for delivery and are designated as Deliverable Bonds, which must satisfy specified criteria.

It is desirable to allow multiple securities for delivery because of two reasons. First, institutional investors generally adopt buy-and-hold strategy. Since the outstanding stock of a bond is much less compared to floating stock of equities, the bond will quickly lose liquidity in cash market, which in turn will affect the liquidity of futures. Second, given the low outstanding stock of bonds, market manipulators can easily create squeeze by simultaneously buying the bond in cash market and buying futures.

The delivery must be through SGL A/c or CSGL A/c and the intention to deliver must be notified on the last trading day. The settlement amount is computed after taking into account the Deliverable Security, Conversion Factor and accrued interest relevant to that security; and the final settlement price fixed by the Exchange.

VI. Trading, Clearing, Settlement and Risk Management

Both the Exchange and CC do not deal with the buyers and sellers directly but through their “members”. The members of Exchange are called Trading Members; and those of CC, Clearing Members. The following types of memberships are permitted under current regulations.

Membership Type	Explanation
Trading Member (TM)	Member of Exchange but not CC so that it can only execute trades but settle them through a designated Professional Clearing Member (PCM). Trade execution can be for own account or for clients.
Trading-cum-Clearing Member (TCM)	Member of both Exchange and CC so that it can execute as well as settle trades. It can settle trades executed by other TMs, too.
Self-Clearing Member (SCM)	Same as TCM but can settle the trades of own account or its clients but not the trades of other TMs.
Professional Clearing Member (PCM)	Member of CC only and settles trades of TMs

The Clearing members have to meet the minimum net worth requirements set by the regulator from time to time. Besides the regulatory minimum net worth, Exchange/CC has additional requirement of deposit to be placed with them. The deposit is partly in cash and partly in qualified securities which are specified in advance and vary over time.

Order Types and Execution

- **Market order** is an order to buy or sell at the prevailing market price.
- **Limit Order** is an order to buy or sell only at the specified price or better. It must be specified as a combination of three inputs: market side + quantity + price limit.
- **Immediate or Cancel (IOC)** is an order to execute the trade immediately. If it cannot be executed, it should be cancelled. Good Till Day, Also known as day order is a limit order that is kept in the market until the close of trading hours, at which any unexecuted portion will be automatically cancelled.
- **Stop-Loss Order** is an order to exit from an existing trade if the market moves against the trade at a pre-defined loss.

When the order is input, the following information is required to be specified.

1. Contract ID, which consists of the derivative and underlying, and expiry month.
2. Market sides (i.e. buy or sell)
3. Quantity (i.e. number of contracts)
4. Order type
5. Whether it is proprietary (“pro”) trade of the Trading Member or client (“cli”) trade. If it is a client trade, the client code that is available with the Exchange.

Spread Orders

Spread order consists of simultaneous buy and sell of two different instruments. For futures, there are two kinds of spread orders: inter-commodity spread and calendar spread. Inter-commodity spread consists of buying futures on one underlying and selling futures on another for the same expiry month and for the same quantity.

Calendar spread consists of buying and selling futures on the same underlying but different expiry months and for the same quantity. Calendar spreads are more popular than inter-commodity spreads and Exchanges allow the facility to enter calendar spread as a single order. Calendar spreads have lesser margin requirements. The margin for both trades in the spread will not be double but less than the margin required for one of them.

Margining and Mark-To-Market

Margining and mark-to-market are tools to mitigate counterparty credit risk and settlement risk of derivatives. Counterparty credit risk is the failure of counterparty before the trade is due for settlement; and settlement risk is the failure of counterparty when the trade is due for settlement. Counterparty credit risk is mitigated by mark-to-market and margining.

Mark-to-market consists of daily valuing the position at the official Daily Settlement Price. The difference between the carry price and Daily Settlement Price is settled in cash, and the position is carried forward to the next day at the Daily Settlement Price.

Even this reduced size of counterparty credit risk (equal to the price change over a single day) is eliminated by collecting it upfront from each party to the trade, and this is called “initial margin”. Both buyer and seller will have to pay initial margin upfront before the trade is initiated. Initial margin is computed through a model called “value-at-risk” (VaR) for each trade, and the total initial margin required for all trades in an investor account is computed through what is called SPAN margining methodology.

Value-at-risk (VaR) is a measure of maximum likely price change over a given interval and at a given confidence level. VaR will be slightly higher for short positions than for long positions. The reason is that the price can theoretically rise to infinity but cannot fall below zero.

SPAN margining: initial margin and variation margin. SPAN is an acronym for Standard Portfolio Analysis, which is a margining system that is devised and owned by Chicago Mercantile Exchange (CME) Group, the largest derivatives Exchange in the world, but is allowed to be used for free by others. Most derivatives Exchanges follow SPAN margining today. Remember that VaR is not an exact measure but the maximum likely change at a given confidence level.

Inter-commodity spread credit is the amount that is deducted from the portfolio-wide margin derived as above. The credit reflects the facts that the related underlying tend to move together in the same direction.

Besides the initial margin and variation margin under SPAN margining, there are two more margins implemented by the Clearing Corporation. They are **extreme loss margin** and delivery margin. Extreme loss margin is applicable to the Clearing Member and is the amount deducted from liquid assets in real-time. It is specified as a percentage of Open Position. **Delivery margin** is applicable for physical delivery of security.

Clearing and Settlement

Clearing Corporation conducts the multilateral netting of obligations for both cash and securities. The netting is applied at the level of Clearing Member (CM). The net position (separately for cash and securities) for each Clearing Member is called the Open Position, which is settled with the Clearing Corporation.

Settlement follows clearing and consists of payment of cash versus delivery of securities after multilateral netting in the clearing. Physical settlement means exchange of cash for the security. Physical settlement does not mean that every sell trade during contract’s life results in physical delivery. The seller can always square up his position with an offsetting buy trade, but it must be done before the close of business on the Last Trading Day. In case of physical delivery, the Open Position at the close on Last Trading Day must be settled with physical delivery of any of the Deliverable Securities.

Bond futures can be either cash settled or physically settled as per the current guidelines. However no exchange has physical settlement of Bond Futures available. The Bond futures that are currently traded are all cash settled. The profit/ loss resulting there from shall be paid to/ received from such member in accordance with the laid down settlement procedures in this regard.

Every Clearing Member must discharge his obligation i.e.:

- In case of Physical Settlement: Deliver securities for sell trades and pay cash for buy trades before he is entitled to receive securities or cash from the counter-party (i.e., pay-in before pay-out), and
- In case of Cash Settlement: Settle his cash obligations first before he is entitled to receive his cash receivables (i.e., pay-in before pay-out).

This is called “pay-in” first and “pay-out” later, both occurring on the same day with few minutes or hours between them. Thus, the settlement is not the delivery-versus-payment (DvP) type practiced for the settlement of government securities which are settled in the SGL A/c at PDO.

Procedure for Delivery

Currently all Bond Futures are all cash settled, hence the following is only for study and reference.

Allocation to Buyer: At the client-level, Clearing Corporation will assign the intentions from the sellers to the buyers, at the client-level, starting from longest maturity/age. If for a maturity/age, the total deliveries are less than the total buy quantity, then the allocation is done randomly.

Clearing Corporation will finalize and announce the security delivery Open Position at the Clearing Member level.

Delivery Margin: Delivery margin is collected on the Day of Intent after the intention to deliver and allocations are completed. The margin amount is the VaR margin computed on the invoice price plus 5% of the face value of the security to be delivered. The delivery margin is applicable from the Day of Intention and released after the settlement is completed, and is collected from both buyer and seller. The mark-to-market margin is applied on the closing price of the security that is delivered.

Security Settlement: Clearing Corporation will receive and deliver Deliverable Bonds either in SGL Accounts with PDO or through the demat accounts system of NDSL/CDSL.

Settlement of Cash Leg: Cash is settled through the Clearing Banks in the same account applicable for the currency derivatives.

Auction Settlement: Auction settlement is a special settlement and distinguished from “normal” settlement. It applies on two occasions. First, seller fails to notify the Intent to Deliver. Second, there is a short-delivery of securities on the settlement day.

VII. Regulations and Compliance

Like currency derivatives, interest rate derivatives are jointly regulated by Reserve Bank of India (RBI) and Securities and Exchange Board of India (SEBI). Within the statutory regulations of RBI and SEBI, the Exchanges and Clearing Corporations will frame the rules and procedures under their bye-laws.

Entity	Authority/Statute	Scope
RBI	Government Securities Act 2006	All dealings in government securities
	Reserve Bank of India Act 1934; and Banking Regulation Act 1949	All dealings by RBI-supervised entities
SEBI	Securities Contract (Regulation) Act 1956; and SEBI Act 1992	All exchange-traded contracts
Exchanges	Bye-laws of the Exchange	Operational rules and procedures for trading, settlement & risk management
Depositories	Depositories Act 1996	Demat accounts
ICAI	Chartered Accounts Act 1949; and Companies Act 1956	Accounting and disclosure on use of derivatives by corporations

RBI: Anything related to the government securities, both in primary and secondary market, is primarily regulated by RBI. In addition, RBI regulates the investment in debt securities by foreign institutional investors.

- Product: The product features, deliverable bonds and settlement method are jointly defined by RBI and SEBI.
- CSDL Account: Under the Government Securities Act 2006, there are specific entities are allowed to open Constituent Subsidiary General Ledger (CSDL) Account with Public Debt Office (PDO), RBI on behalf of their constituents, who maintain Gilt Account.

SEBI: Within the broad regulatory framework specified by RBI, SEBI will further specify the regulations governing the Exchange-traded interest rate futures, as follows.

- Membership Eligibility: There is no separate membership facility for interest rate futures, and membership in the Currency Derivatives Segment of Futures & Options will automatically enable trading in interest rate futures. The minimum net worth as of the latest balance sheet should be Rs.1 Cr for Trading Member (TM) and Rs.10 Cr for Clearing Member (CM).
- Surveillance and Disclosure: The Exchange and Clearing Corporation will conduct the back-testing for the effectiveness of margining method twice in a year and communicate the results to SEBI.
- Exchange and Clearing Corporation: Within the regulatory framework specified by SEBI, the Exchange and Clearing Corporation will specify the detailed rules and procedures for trading, clearing, settlement (including auction settlement) and risk management.

Fixed-income and Money Market Derivatives Association (FIMMDA): FIMMDA is a self-regulatory organization for cash and derivatives markets in money and bond instruments. It publishes yield curve for bonds, which is used by Clearing Corporation to update the SPAN margining risk parameters. It also publishes the market prices for various bonds, which are used in calculation of theoretical prices to determine Base Price and Daily Settlement Price.

Restrictions on Resident and Non-Resident investors

- Residents (as defined in Foreign Exchange Management Act 1999) are allowed to freely buy or sell interest rate futures for hedging and speculation.
- RBI-supervised entities should obtain prior permission from the RBI to deal in interest rate futures; and naked short-sale is allowed only for banks and primary dealers. Entities such as Mutual Funds, Insurance Companies, Housing Finance Companies, NBFCs who are supervised by other regulators should similarly obtain prior permission of the concerned regulator.
- The following exposure limits will apply to FI's registered with SEBI
 1. Purchase/Long Position: total position in cash and interest rate futures should not exceed the limit specified for investment in government securities
 2. Sold/Short Position: short position can be maintained only for hedging (and not for speculation) and the gross short position should not exceed the total long position in government securities in cash and interest rate futures.

Position Limit is the limit on an investor's share in the total open interest. Under the current regulations of SEBI, the following are the position limits for both T Bill and T Bond futures. The limits are set as a percentage of gross open positions across all contracts.

Regulatory Reporting

For banks and all-India financial institutions, the following reports are to be submitted to the RBI at monthly intervals.

- Outstanding futures positions and share in open interest
- Activity during the month (opening notional, notional traded, notional reversed, and notional outstanding)
- Analysis of "effective" hedges
- Analysis of "NOT effective" hedges

In addition, the following disclosures must be made as part of the notes on accounts to the balance sheet.

- Notional amount of futures traded during the year (instrument-wise)
- Notional amount of futures outstanding on balance sheet date (instrument-wise)
- Notional amount of futures outstanding and not effective for hedge (instrument-wise)
- MTM value of futures outstanding and not effective for hedge (instrument-wise)

Role of FIMMDA in Fixed Income and Derivatives Markets in India

The Fixed Income Money Market and Derivatives Association of India (FIMMDA) is an association of Scheduled Commercial Banks, Financial Institutions, Primary Dealers and Insurance Companies. FIMMDA is a voluntary market body for the bond, money and derivatives markets. FIMMDA has members representing all major institutional segments of the market. The membership includes Nationalized Banks, Private banks, Foreign Banks, Financial institutions, Insurance Companies and all Primary Dealers. One of the main objectives of FIMMDA is to recommend and implement healthy business practices, ethical code of conduct, standard principles and practices to be followed by the members in their dealing of securities.

Accounting: The Institute of Chartered Accountants of India (ICAI) is a statutory body to define the accounting, presentation and disclosures by corporations. Its accounting Standard, AS 30, specifies the accounting for all derivative transactions.

VIII. Trading and Hedging

What we trade with T Bill and T Bond futures is the price risk component of interest rate risk. The relationship between changes in interest rate and the price of rate-sensitive instruments is inversely proportional. That is, if the rate goes up, the price of rate-sensitive instrument goes down, and vice versa. For trading, we must decide three parameters:

1. **Instrument** (i.e. T Bill or T Bond futures) will depend on the tenor of interest rate we want to trade. T Bill price is determined by short-term rate of three months and T Bond price is determined by long term rate of 10 years (because the underlying is a 10Y bond).
2. **Market side** will depend on our expectation about the direction of rate change in future. If we expect the rate to go up in future, then the instrument price will fall in future, implying that we should sell futures contract now and subsequently buy it later when its price falls. Similarly, if we expect the rate to go down in future, then the instrument price will rise in future, implying that we should buy futures contract now and subsequently sell it later when its price rises.
3. **Contract Month** will depend on the timing of expected rate change. If we expect the rate change to occur in one month, we should choose a contract that expires in one month; if we expect the rate change to occur in three months, we should choose a contract that expires in three months; and so on. The following summarizes the selection of these parameters.

Hedging Strategies

Hedging is the opposite of trading: eliminating the existing price risk. It is important to note that risk is defined as the uncertainty about the future cash flows. If the futures cash flows are fixed and known (in terms of their size and timing) at the outset, there is no risk. If you have taken a fixed-rate loan, there is no risk because you know in advance how much you will have to pay in future. On the other hand, if you have taken a floating-rate loan, there is risk because you do not know in advance how much you will have to pay in future for the interest. Thus, converting a floating-rate loan into a fixed-rate loan is hedging; and converting fixed-rate loan into floating-rate loan (in the expectation that the rate in future will be lower) is speculation/trading. To understand the application of hedging with bond futures, we must recall the concept of Modified Duration and other risk measures. Let us recall the following definitions.

- *Modified Duration* is a dimensionless number that tells us the percentage change in bond's price caused by a given change in the yield.
- *Rupee Duration* (RD): it is the absolute change in the total market value of bond for a given change in the yield.
- *Price Value of a Basis Point* (PVBP): it is the same as RD except that the change in yield is considered at one basis point (or 0.01%).

To hedge a bond or bond portfolio in futures market, we must match the PVBP of both bond position and the futures position in an offsetting manner: gain on one will be offset by the loss on the other. Bond futures derives its Modified Duration or PVBP from the underlying Cheapest-to-delivery (CTD) bond it tracks and the link between the PVBP of bond futures and that of CTD bond is the Conversion Factor (CF). The relation between equivalent prices in cash and futures market is

Adjusted futures price (or equivalent cash price) = Futures Price * CF

- **Basis risk** arises from standardization of futures contract for amount and expiry date. Since futures contract can be bought or sold only in multiples of 200,000 notional, any amount that needs to be hedged but is not a multiple of contract amount leaves a mismatch between exposure amount and hedged amount.
- **Yield curve spread risk** arises when the term structure shifts are not parallel (see Sec 2.5) but steepening or flattening. This poses problem when the tenor of exposure to be hedged is different from the tenor of futures contract.
- **Market liquidity risk** is the inability to quickly buy or sell futures contract without disturbing the futures price. If there is no market liquidity, the futures price is de-linked from the price of cash markets, and determined by demand-supply in futures market and liable for squeeze. It will be dangerous to trade in market that has no market liquidity.

PLEASE NOTE, THESE ARE SHORT IMPORTANT NOTES EXTRACTED FROM THE NISM BOOK. ITS ADVISABLE TO READ THE NISM BOOK TO GET FULL KNOWLEDGE.

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