Derivatives
(Source: BSE Website- www.bseindia.com)

BASICS OF DERIVATIVES

1. What are derivative instruments?

A derivative is an instrument whose value is derived from the value of one or more underlying things, it may be commodities, precious metals, currency, bonds, stocks, stocks indices, etc. Four most common examples of derivative instruments are Forwards, Futures, Options and Swaps.

2. What are Forward contracts?

A Forward Contract is a customized contract between two parties where settlement takes place on a specific date in future at a price agreed today. The main features of Forward Contracts are:

- They are bilateral contracts and hence exposed to counter-party risk.
- Each contract is custom designed, and hence is unique in terms of the contract size, expiration date and the asset type and quality.
- The contract price is generally not available in public domain.
- The contract has to be settled by delivery of the asset on the expiration date.
- In case, the party wishes to reverse the contract, it has to compulsorily go to the same counter party, which being in a monopoly situation can command the price it wants.

3. What are Futures?

Futures are exchange-traded contracts to sell or buy financial instruments or physical commodities for Future delivery at an agreed price. There is an agreement to buy or sell a specified quantity of financial instrument/commodity in a designated Future month at a price agreed upon by the buyer and seller. To make trading possible, the exchange specifies certain standardized features of the contract.

4. What is the difference between Futures contracts and Forward contracts?

<table>
<thead>
<tr>
<th>Sr. No.</th>
<th>Basis</th>
<th>Futures</th>
<th>Forwards</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Nature</td>
<td>Traded on organized exchange</td>
<td>Over the Counter</td>
</tr>
<tr>
<td>2</td>
<td>Contract terms</td>
<td>Standardized</td>
<td>Customised</td>
</tr>
<tr>
<td>3</td>
<td>Liquidity</td>
<td>More Liquid</td>
<td>Less Liquid</td>
</tr>
<tr>
<td>4</td>
<td>Margin Payments</td>
<td>Requires Margin Payments</td>
<td>Not required</td>
</tr>
<tr>
<td>5</td>
<td>Settlement</td>
<td>Follows daily settlement</td>
<td>At the end of the period.</td>
</tr>
<tr>
<td>6</td>
<td>Squaring off</td>
<td>Can be reversed with any</td>
<td>Contract can be reversed only</td>
</tr>
</tbody>
</table>
INDEX FUTURES

1. What is the underlying for INDEX futures?

The underlying for the INDEX futures is its corresponding BSE Index. For example, the underlying for SENSEX futures is BSE Sensitive Index of 30 scrips, popularly called the SENSEX.

2. What is the contract multiplier?

The contract multiplier is 15. This means that the Rupee notional value of a sensex futures contract would be 15 times the contracted value. The following table gives a few examples of this notional value.

<table>
<thead>
<tr>
<th>Contracted Price of Futures</th>
<th>Notional Value in Rs. (based on Market Lot of 15)</th>
</tr>
</thead>
<tbody>
<tr>
<td>17800</td>
<td>267000</td>
</tr>
<tr>
<td>17850</td>
<td>267750</td>
</tr>
<tr>
<td>17900</td>
<td>268500</td>
</tr>
<tr>
<td>17950</td>
<td>269250</td>
</tr>
<tr>
<td>18000</td>
<td>270000</td>
</tr>
</tbody>
</table>

3. What is the ticker symbol and trading hours?

The ticker symbol is the selected alphabets of the underlying for e.g. the ticker for BSE Sensex is BSX while that for the Sensex ’mini’ contract is MSX, for Reliance Industries Ltd., it is RIL, etc.

The trading timings for the Derivatives Segment of BSE are the same as that of the Equity Segment - from 9:55 a.m. to 3:30 p.m. (except in cases of Sun Outage when the timings are extended on account of a halt in trading during the day). Trading session’s timings can be viewed at the Calendar Section.

4. What is the maturity of the Futures Contract?

Presently, SEBI has permitted Exchanges to offer futures products of 1 month, 2 months and 3 months maturity only on a rolling basis- e.g. say for May, June and July months. When the May contract expires there will be a fresh contract month available for trading, viz. the August contract. These months are called the Near Month, Middle Month and Far Month, respectively. On 9th June 2000, when Equity Derivatives were first introduced in India at the Bombay Stock Exchange, started with the three monthly series for June, July and August 2000.
5. What is the tick size?

Tick size refers to the minimum price fluctuation in the value of a contract. The tick size is presently "0.05" or 5 paisa. In Rupee terms, this translates to a minimum price fluctuation of Rs. 0.75 for a single transaction of S & P BSE SENSEX Futures Contract (Tick size X Contract Multiplier = 0.05 X Rs. 15).

6. How is the final settlement price determined?

The closing value of S & P BSE SENSEX the cash market is taken as the final settlement price of the Futures Contract on the last trading day of the contract for settlement purposes.

7. What is margin money?

The aim of collecting margin money from the client / broker is to minimize the risk of settlement default by either counterparty. The payment of margin ensures that the risk is limited to the previous day's price movement on each outstanding position. However, even this exposure is offset by the initial margin holdings.

Margin money is like a security deposit or an insurance against a possible future loss of value. Once the transaction is successfully settled, the margin money held by the exchange is released / adjusted against the settlement liability.

8. Are there different types of Margin?

Yes, there are different types of margins like Initial Margin, Variation margin (commonly called Mark to market or M-T-M), Exposure Margin and Additional Margin.

9. What is the objective of Initial margin?

The basic aim of Initial margin is to cover the largest potential loss in one day. Both buyer and seller have to deposit margins. The initial margin is deposited before the opening of the position in the Futures transaction. This margin is calculated by SPAN by considering the worst case scenario.

10. What is Variation or Mark-to-Market Margin?

Variation or mark to market Margin is the daily profit or loss obtained by marking the member's outstanding position to the market (closing price of the day).

11. What are long / short positions?

In simple terms, long and short positions indicate whether you have a buy position (long) or a sell position (short).

12. Is there a theoretical way of pricing Index Future?

The theoretical way of pricing any Futures is to factor in the current price and holding costs or cost of carry.
Theoretically, the Cost of carry is the sum of all costs incurred, if a similar position is taken in cash market and carried to maturity of the futures contract minus any revenue which may result in this period. The costs typically include interest in the case of financial futures (also insurance and storage costs in case of commodity futures). The revenue may be dividends in case of index futures.

Apart from the theoretical value, the actual value may vary according to the depending on demand and supply of the underlying at present, and expectations about the future. These factors play a much more important role in commodities, especially perishable commodities, than in the financial futures.

In general, the Futures price is greater than the spot price (in case of a bullish sentiment in the market). In special cases, when cost of carry is negative (on account of a bearish trend in the market), the Futures price may be lower than the Spot prices.

13. What is the concept of Basis?

The difference between the Spot price and Futures price is known as Basis. Although the Spot price and Futures prices generally move in line with each other, the basis is not constant. Generally, the basis decreases with time and on the expiry. The basis becomes zero as the Futures price equals Spot price.

14. What are the profits and losses in case of a Futures position?

The profits and losses would depend upon the difference between the price at which the position is opened and the price at which it is closed. Let us take some examples.

Example 1

**Position**: Long - Buy June Sensex Futures @ 25500  
**Payoff**: Profit - if the futures price goes up  
Loss - if the futures price goes down.  
**Calculation**: The profit or loss would be equal to fifteen times the difference in the two rates.

If June S & P BSE Sensex Futures is sold @ 25600 there would be a profit of 100 points which is equal to Rs. 1500 (100 X 15).

However, if the June Sensex is sold @ 25450 there would be a loss of 50 points, which is equal to Rs. 750 (50 X 15).

Example 2

**Position**: Short Sell June Sensex Futures @ 25500  
**Payoff**: Profit - if the futures price goes down  
Loss - if the futures price goes up  
**Calculation**: The profit or loss would be equal to fifteen times the difference in the two rates.

If June S & P BSE Sensex Futures is bought @ 25700 there would be a loss of 200 points,
which is equal to Rs. 3,000 (200 X 15).

However, if the June Sensex Futures is bought @ 25400, there would be a profit of 100 points, which is equal to Rs. 1,500(100 X 15).

15. What happens to the profit or loss due to daily settlement?

In case the position is not closed the same day, the daily settlement would alter the cash flows depending on the settlement price fixed by BSE everyday. However, the net total of all the flows everyday would always be equal to the profit or loss calculated above. Profit or loss would only depend upon the opening and closing price of the position, irrespective of how the rates have moved during the intervening days.

Let us take the illustration where a long position is opened at 25550 and the closed one at 25650 resulting in a profit of 100 points or Rs. 1500.

Let us assume that the daily closing settlement prices are as shown below:

**Example 3**

<table>
<thead>
<tr>
<th>Daily Closing Settlement Prices</th>
</tr>
</thead>
<tbody>
<tr>
<td>Case 1</td>
</tr>
<tr>
<td>Day 1 25500</td>
</tr>
<tr>
<td>Day 2 25580</td>
</tr>
<tr>
<td>Day 3 25560</td>
</tr>
<tr>
<td>Day 4 25600</td>
</tr>
<tr>
<td>Position Closed 25600</td>
</tr>
</tbody>
</table>


<table>
<thead>
<tr>
<th>Case 1</th>
<th>Settlement</th>
<th>Prices Calculation</th>
<th>Profit/Loss</th>
</tr>
</thead>
<tbody>
<tr>
<td>Position Opened - Long @ 25550</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Day 1 25500</td>
<td>25500 - 25500</td>
<td>+50</td>
<td></td>
</tr>
<tr>
<td>Day 2 25580</td>
<td>25580 - 25580</td>
<td>+30</td>
<td></td>
</tr>
<tr>
<td>Day 3 25560</td>
<td>25560 - 25560</td>
<td>+20</td>
<td></td>
</tr>
<tr>
<td>Day 4 25600</td>
<td>25600 - 25600</td>
<td>+40</td>
<td></td>
</tr>
<tr>
<td>Position Closed - Short @ 25600</td>
<td>100</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

In all the cases the net result is a profit of 100 points, which is the difference between the closing and opening prices, irrespective of the daily settlement price and different MTM flows.

16. How does the Initial Margin affect the above profit or loss?

The initial margin is only a security provided by the client through the clearing member to the exchange. It can be withdrawn in full after the position is closed. Therefore, it does not affect the above calculation of profit or loss.
However, there would be a funding cost / transaction cost in providing the security. This cost must be added to the total transaction costs to arrive at the true position. Other items in transaction costs would include brokerage, stamp duty, etc.

17. What is a Spread Position?

A Calendar Spread is created by taking simultaneously two positions:

a. A long position in a Futures series expiring in any calendar month
b. A short position in the same Futures as 1 above but for a series expiring in any month other than the 1 above

Examples of Calendar Spreads

1. Long June Sensex Futures Short July S & P BSE Sensex Futures
2. Short July Sensex Futures Long August S & P BSE Sensex Futures

A spread position must be closed by reversing both the legs simultaneously. The reversal of 1 above would be a sale of June S & P BSE Sensex Futures while simultaneously buying the July S & P BSE Sensex Futures.

STOCK FUTURES

1. What are Stock Futures?

Stock Futures are financial contracts where the underlying asset is an individual stock. Stock Futures contract is an agreement to buy or sell a specified quantity of underlying equity share for a future date at a price agreed upon between the buyer and the seller. The contracts have standardized specifications, like market lot, expiry day, and unit of price quotation, tick size and method of settlement.

2. How Stock Futures are priced?

The theoretical price of a future contract is the sum of the current spot price and the cost of carry. However, the actual price of Futures contract very much depends upon the demand and supply of the underlying stock. Generally, the Futures prices are higher than the spot prices of the underlying stocks.

Futures Price = Spot Price + Cost of Carry

Cost of carry is the interest cost of a similar position in cash market and carried to maturity of the Futures contract, minus any dividend expected till the expiry of the contract.

Example:

Spot Price of Infosys = 1600, Interest Rate = 7% p.a. Futures Price of 1 month contract=1600 + 1600*0.07*30/365 = 1600 + 11.51 = 1611.51
3. How are Stock Futures different from Stock Options?

In stock options, the option buyer has the right and not the obligation to buy or sell the underlying share. In case of stock Futures, both the buyer and seller are obliged to buy/sell the underlying share.

Risk-return profile is symmetric in case of single stock Futures, whereas in case of stock options payoff is asymmetric.

Also, the price of stock futures is affected mainly by the prices of the underlying stock whereas in case of stock options, volatility of the underlying stock affect the price along with the prices of the underlying stock.

4. What are the opportunities offered by Stock Futures?

Stock futures offer a variety of usage to the investors. Some of the key usages are mentioned below:

Investors can take a long-term view on the underlying stock using Stock Futures.

Stock Futures offer high leverage. This means that one can take large position with less capital. For example, paying 20% initial margin one can take position for 100, i.e., 5 times the cash outflow.

Futures may look overpriced or underpriced compared to the spot, and can offer opportunities to arbitrage or earn risk-less profit. Single Stock Futures offer arbitrage opportunity between Stock Futures and the underlying cash market. It also provides arbitrage opportunity between Synthetic Futures (created through options) and Single-Stock Futures.

When used efficiently, single-stock futures can be an effective risk management tool. For instance, an investor with position in cash segment can minimize either market risk or price risk of the underlying stock by taking reverse position in an appropriate Futures Contract.

5 How are Stock Futures settled?

Presently, Stock Futures are settled in physically. The final settlement price is the closing price of the underlying stock.

6. Can I square up my position?

The investor can square up his position at any time till the expiry. The investor can first buy and then sell Stock Futures to square up, or can first sell and then buy Stock Futures to square up his position. For example: a long (buy) position in December ACC Futures, can be squared up by selling December ACC Futures.

7. When I am required to pay initial margin to my broker?

The initial margin needs to be paid to the broker on an up-front basis before taking the
8. Do I have to pay mark-to-market margin?

Yes. The outstanding positions in Stock Futures are marked to market daily. The closing price of the respective Futures Contract is considered for marking to market. The notional loss / profit arising out of mark to market is paid / received on T+1 basis.

9. What are the profits and losses in case of a Stock Futures position?

The profits and losses would depend upon the difference between the price at which the position is opened and the price at which it is closed. Suppose, an investor has a long position of November Stock "A" Futures @ 430. If the investor squares up his position by selling November Stock "A" futures @ 450, the profit would be Rs. 20 per share. In case, the investor squares up his position by selling November Stock "A" futures @ 400, the loss would be Rs. 30 per share.

10. Why are the market lots differ for different stocks?

According to L C Gupta Committee Report on Derivatives at the time of the introduction of Derivatives Contracts on any underlying, the value of the contract should be at least Rs. 2 lakhs. This value of Rs. 2 lakhs is divided by the market price of the individual stock to arrive at the initial 'market lot' for it. It may be mentioned here that the only exception to this rule is the 'mini' contract on the S&P BSE Sensex (both Futures and Options).

Similarly, you can enter an order for Sell Nov Dec stating the difference you want to receive. This would mean that you are selling a December Contract and buying a November Contract and receiving the difference.

11. What are the different contract months available for trading?

1, 2 and 3 months contracts are presently available for trading. However, in case of S&P BSE SENSEX Options, SEBI has allowed the introduction of Long-Dated Options, or options with maturities of upto 3 years.

12 What is Spread Trading on BSE?

One can trade in spread contracts on the Derivative Segment of BSE. Spreads are the contracts for differential price. This means that in case you want to buy a December contract and sell November contract, you can enter an order for Buy Nov Dec stating the difference you want to pay. This would mean that you are buying a December Contract and selling a November contract.

Similarly, you can enter an order for Sell Nov Dec stating the difference you want to receive. This would mean that you are selling a December Contract and buying a November Contract and receiving the difference.

13. As an investor, how do I start trading in Stock Futures?

You need to first register yourself as a client with a Registered Broker by fulfilling all the
KYC or Know Your Client rules. Then sign up the client agreement form and risk disclosure document provided to you by your broker.

Deposit upfront the initial margin.

Now start trading!!

14. **What securities can I submit to the broker as collateral?**

You can pay initial margin in non-cash (bank guarantee, securities) form also. This is an arrangement between you and your broker, as to which securities he/she is willing to accept. However, the mark-to-market loss incurred on a daily basis has to be settled in terms of cash only.

15. **How does an investor, who has the underlying stock, use Stock Futures when he anticipates a short-term fall in stock price?**

The holder of the physical stock can sell a futures to avoid making a loss without having to sell the share. Any loss caused by the fall in the price of the stock is offset by gains made on the stock futures’ position.

16. **How can an investor benefit from a predicted rise or fall in the price of a stock?**

An investor can benefit from a predicted rise in the price of a stock by buying Futures. As the price of the Futures rises, the investor will make a positive return. As the investor will have to pay only the margin (which forms a fraction of the notional value of contract), his return on investment will be higher than on an equivalent purchase of shares.

An investor can benefit from a predicted fall in the price of stock by selling futures. As the price of the future falls in line with the underlying stock, the investor will make a positive return.

17. **What is pair trading?**

This trading strategy involves taking a position on the relative performance of two stocks. It is achieved by buying futures on the stock expected to perform well, and selling Futures on the stock anticipated to perform poorly. The overall gain or loss depends on the relative performance of the two stocks.

Similarly, it is possible to take a position in the relative performance of a stock versus market index. For example, traders who would like to take only company-specific risk could buy/sell the relative index futures.

**OPTIONS ON S&P BSE SENSEX AND INDIVIDUAL STOCKS**

1. **What are the important terminologies in Options?**

**Option Premium**: Premium is the price paid by the buyer to the seller to acquire the right to buy or sell.
Strike Price or Exercise Price: The strike or exercise price of an option is the specified/predetermined price of the underlying asset at which the same can be bought or sold, if the option buyer exercises his right to buy/sell on or before the expiration date.

Expiration date: The date on which the option expires is known as Expiration Date. On Expiration date, either the option is exercised or it expires worthless.

Exercise Date: The date on which the option is actually exercised is called Exercise Date. In case of European Options the exercise date is same as the expiration date, while in that of the American, the options contract may be exercised any day between the purchase of the contract and its expiration date (see European/American Option). In India, options on "S&P BSE Sensex" are in European style, whereas options on individual stocks are in American style.

Open Interest: The total number of options contracts outstanding in the market at any given point of time.

Option Holder is the one who buys an option, which can be a call, or a put option. He enjoys the right to buy or sell the underlying asset at a specified price on or before the specified time. His upside potential is unlimited, while losses are limited to the Premium paid by him to the option writer.

Option seller/writer is the one who is obligated to buy (in case of Put option) or to sell (in case of Call option) the underlying asset in case the buyer of the option decides to exercise his option. His profits are limited to the premium received from the buyer while his downside is unlimited.

Option Series: An option series consists of all the options of a given class with the same expiration date and strike price. For example, BSXCMAY15500 is an option series which includes all S&P BSE Sensex Call options that are traded with Strike Price of 15500 & Expiry in May. BSX Stands for BSE S&P BSE Sensex (underlying index), C is for Call Option, May is expiry date & Strike Price is 15500.

2. What is Assignment?

When holder of an option exercises his right to buy/sell, a randomly selected (by computer) option seller is assigned the obligation to honour the underlying contract, and this process is termed as Assignment.

3. What are European and American Style options?

The American style option is the one which can be exercised by the buyer at any time, till the expiration date, i.e., anytime between the day of purchase of the option and the day of its expiry. The European kind of option is the one which can be exercised by the buyer only on the expiration day and not at any time before that.

4. What are Call Options?

A call option gives the holder (buyer/one who is Long Call) the right to buy specified
quantity of the underlying asset at the strike price on or before expiration date in case of the American option. The seller (one who is Short Call) however, has the obligation to sell the underlying asset if the buyer of the call option decides to exercise his option to buy.

**Example:** An investor buys One European call option on Stock "A" at the strike price of Rs. 3500 at a premium of Rs. 100. If the market price of Stock "A" on the day of expiry is more than Rs. 3500, the option will be exercised. The investor will earn profits once the share price crosses Rs. 3600 (Strike Price + Premium, i.e., 3500+100). Suppose stock price is Rs. 3800, the option will be exercised and the investor will buy 1 share of Stock "A" from the seller of the option at Rs 3500 and sell it in the market at Rs 3800 by making a profit of Rs. 200 {(Spot price - Strike price) - Premium}.

In another scenario, if at the time of expiry stock price falls below Rs. 3500 say suppose it touches Rs. 3000, the buyer of the call option will choose not to exercise his option. In this case the investor loses the premium (Rs 100) paid which shall be the profit earned by the seller of the call option.

5. **What are Put Options?**

A Put option gives the holder (buyer/ one who is Long Put) the right to sell specified quantity of the underlying asset at the strike price on or before an expiry date in case of the American option. The seller of the put option (one who is short Put) however, has the obligation to buy the underlying asset at the strike price, if the buyer decides to exercise his option to sell.

**Example:** An investor buys one European Put option on Stock ‘B’ at the strike price of Rs. 300, at a premium of Rs. 25. If the market price of Stock ‘B’, on the day of expiry is less than Rs. 300, the option can be exercised as it is ‘in the money’. The investor’s Break-even point is Rs. 275 (Strike Price - premium paid) i.e., investor will earn profits if the market falls below 275. Suppose stock price is Rs. 260, the buyer of the Put option immediately buys Stock ‘B’ from the market @ Rs. 260 & exercises his option of selling the Stock ‘B’ at Rs 300 to the option writer, thus making a net profit of Rs. 15 {(Strike price - Spot Price) - Premium paid}.

In another scenario, if at the time of expiry, market price of Stock ‘B’ is Rs 320; the buyer of the Put option will choose not to exercise his option to sell, as he can sell in the market at a higher rate. In this case the investor loses the premium paid (i.e., Rs 25), which shall be the profit earned by the seller of the Put option.

<table>
<thead>
<tr>
<th></th>
<th><strong>CALL OPTIONS</strong></th>
<th><strong>PUT OPTIONS</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Option buyer</strong></td>
<td>Buys the right to buy the underlying asset at the specified price</td>
<td>Buys the right to sell underlying asset at the specified price</td>
</tr>
<tr>
<td>or option holder</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Option seller</strong></td>
<td>Has the obligation to sell the underlying asset (to the option holder) at the specified price.</td>
<td>Has the obligation to buy the underlying asset (from the option holder) at the specified price</td>
</tr>
<tr>
<td>or option writer</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
6. How are Options different from Futures?

The significant differences in Futures and Options are as under:

- Futures are agreements/contracts to buy or sell specified quantity of the underlying assets at a price agreed upon by the buyer & seller, on or before a specified time. Both the buyer and seller are obligated to buy/sell the underlying asset.
- In case of options the buyer enjoys the right & not the obligation, to buy or sell the underlying asset.
- Futures Contracts have symmetric risk profile for both the buyer as well as the seller, whereas options have asymmetric risk profile. In case of Options, for a buyer (or holder of the option), the downside is limited to the premium (option price) he has paid, while the profits may be unlimited. For a seller or writer of an option, however, the downside is unlimited, while profits are limited to the premium he has received from the buyer.
- The Futures contracts prices are affected mainly by the prices of the underlying asset. The prices of options are, however, affected by prices of the underlying asset, time remaining for expiry of the contract, interest rate & volatility of the underlying asset.

7. Explain "In the Money", "At the Money" & "Out of the money" Options?

An option is said to be "at-the-money" when the option’s strike price is equal to the underlying asset price. This is true for both puts and calls.

A call option is said to be "in the money" when the strike price of the option is less than the underlying asset price. For example, a Stock A" call option with strike of 3900 is "in-the-money" when the spot price of Stock "A" is at 4100, as the call option has a positive exercise value. The call option holder has the right to buy the Stock "A" at 3900, no matter by what amount the spot price exceeds the strike price. With the spot price at 4100, selling Stock "A" at this higher price one can make a profit.

On the other hand, a call option is out-of-the-money when the strike price is greater than the underlying asset price. Using the earlier example of S&P BSE SENSEX® call option, if the S&P BSE SENSEX® falls to 3700, the call option no longer has positive exercise value. The call holder will not exercise the option to buy S&P BSE SENSEX® at 3900 when the current price is at 3700 and allow his "option" right to lapse.

<table>
<thead>
<tr>
<th>CALL OPTIONS</th>
<th>PUT OPTIONS</th>
</tr>
</thead>
<tbody>
<tr>
<td>In-the-money</td>
<td>Strike Price&lt; Spot Price of underlying asset</td>
</tr>
<tr>
<td>At-the-money</td>
<td>Strike Price = Spot Price of underlying asset</td>
</tr>
<tr>
<td>Out-of-the-money</td>
<td>Strike Price &gt; Spot Price of underlying asset</td>
</tr>
</tbody>
</table>
A put option is in-the-money when the strike price of the option is greater than the spot price of the underlying asset. For example, a Stock "A" Put at strike of 4400 is in-the-money when the spot price of Stock "A" is at 4100. When this is the case, the Put option has value because the put option holder can sell the Stock "A" at 4400, an amount greater than the current Stock "A" of 4100. Likewise, a Put option is out-of-the-money when the strike price is less than the spot price of underlying asset. In the above example, the buyer of Stock "A" Put option won't exercise the option when the spot is at 4800. The Put no longer has positive exercise value, and therefore, in this scenario, the Put option holder will allow his "option" right to lapse.

8. What are Covered & Naked Calls?

A Call option position that is covered by an opposite position in the underlying instrument (for example shares, commodities, etc) is called a covered call. Writing covered calls involves writing call options when the shares that might have to be delivered (if option holder exercises his right to buy), are already owned. For example, a writer writes a call on Reliance and at the same time holds shares of Reliance so that if the call is exercised by the buyer, he can deliver the stock.

Covered calls are far less risky than naked calls (where there is no opposite position in the underlying), since the worst that can happen is that the investor is required to sell shares already owned at below their market value. When a physical delivery uncovered/naked call is assigned on exercise, the writer will have to purchase the underlying asset to meet his call obligation and his loss will be the excess of the purchase price over the exercise price of the call reduced by the premium received for writing the call.

9. What is the Intrinsic Value of an option?

The intrinsic value of an option is defined as the amount by which an option is in-the-money, or the immediate exercise value of the option when the underlying position is mark-to-market.

For a call option: Intrinsic Value = Spot Price - Strike Price For a put option: Intrinsic Value = Strike Price - Spot Price The intrinsic value of an option must be a positive number or 0. It can't be negative. For a call option, the strike price must be less than the price of the underlying asset for the call to have an intrinsic value greater than 0. For a put option, the strike price must be greater than the underlying asset price for it to have intrinsic value.

10. Explain Time Value with reference to Options?

Time value is the amount option buyers are willing to pay for the possibility that the option may become profitable prior to expiration due to favorable change in the price of the underlying. An option loses its time value as its expiration date nears. At expiration an option is worth only its intrinsic value. Time value cannot be negative.

11. What are the factors that affect the value of an option (premium)?

There are two types of factors that affect the value of the option premium:
Quantifiable Factors:
- underlying stock price
- the strike price of the option
- the volatility of the underlying stock
- the time to expiration, and
- the risk free interest rate

Non Quantifiable Factors:
- Market participants varying estimates of the underlying asset's future volatility
- Individuals’ varying estimates of future performance of the underlying asset, based on fundamental or technical analysis
- The effect of supply & demand- both in the options market place and in the market for the underlying asset
- The "depth" of the market for that option - the number of transactions and the contract’s trading volume on any given day.

12. What are different pricing models for options?

The theoretical option pricing models are used by option traders for calculating the fair value of an option on the basis of the earlier mentioned influencing factors. The two most popular option pricing models are: Black Scholes Model which assumes that percentage change in the price of underlying follows a lognormal distribution. Binomial Model assumes that percentage change in price of the underlying follows a binomial distribution.

13. Who decides on the premium paid on options & how is it calculated?

Options premium is not fixed by the Exchange. The fair value/ theoretical price of an option can be known with the help of pricing models & then depending on market conditions the price is determined by competitive bids & offers in the trading environment. An option’s premium / price is the sum of intrinsic value & time value (explained above). If the price of the underlying stock is held constant, the intrinsic value portion of an option premium will remain constant as well. Therefore, any change in the price of the option will be entirely due to a change in the option's time value. The time value component of the option premium can change in response to a change in the volatility of the underlying, the time to expiry, interest rate fluctuations, dividend payments & to the immediate effect of supply and demand for both the underlying & its option.

14. Explain the Option Greeks?

The price of an Option depends on certain factors, like price and volatility of the underlying, time to expiry etc. The option Greeks are the tools that measure the sensitivity of the option price to the above-mentioned factors. They are often used by professional traders for trading & managing the risk of large positions in options & stocks. These Option Greeks are:

- **Delta** is the option Greek that measures the estimated change in option premium/price for a change in the price of the underlying.
- **Gamma** measures the estimated change in the Delta of an option for a change in the
price of the underlying

- **Vega** measures the estimated change in the option price for a change in the volatility of the underlying.
- **Theta** measures the estimated change in the option price for a change in the time to option expiry.
- **Rho** measures the estimated change in the option price for a change in the risk free interest rates.
- **Volatility** is a measure of stock price fluctuation. Mathematically, volatility is the annualized standard deviation of a stock's daily price changes.
- **Premium** is the price of an option and is equal to its intrinsic value plus time value.
- **Theoretical value** is the estimated value of an option derived from a mathematical model.

**15. What is an Option Calculator?**

An option calculator is a tool to calculate the price of an Option on the basis of various influencing factors, like the price of the underlying and its volatility, time to expiry, risk free interest rate, etc. It also helps the user to understand how a change in any one of the factors or more, will affect the option price. The option calculator is available at the Option Calculator Section.

**16. Who are the likely players in the Options Market?**

Developmental institutions, Mutual Funds, Domestic & Foreign Institutional Investors, Brokers and Retail investors are the likely players in the Options Market.

**17. Why should I invest in Options? What do options offer me?**

Besides offering flexibility to the buyer in the form of right to buy or sell, the major advantage of options is their versatility. They can be as conservative or as speculative as one’s investment strategy dictates. Some of the benefits of Options are as under:

- High leverage as by investing small amount of capital (in the form of premium) one can take exposure in the underlying asset of much greater value.
- Pre-known maximum Risk for an option buyer
- Large profit potential & limited risk for Option buyer
- One can protect his equity portfolio from a decline in the market by way of buying a protective put wherein one buys puts against an existing stock position. This option position can supply the insurance needed to overcome the uncertainty of the marketplace. Hence, by paying a relatively small premium (compared to the market value of the stock), an investor knows that no matter how far the stock drops, it can be sold at the strike price of the Put anytime until the Put expires. For example an investor holding 1 share of Stock "A" at a market price of Rs 3800 thinks that the stock is over-valued and therefore decides to buy a “Put option” at a strike price of Rs. 3800/-, by paying a premium of Rs 200/- If the market price of Stock "A" comes down to Rs 3000/-, he can still sell it at Rs 3800/- by exercising his put option. Thus by paying a premium of Rs. 200 he insured his position in the underlying stock.
18. How can I use options?

If you anticipate a certain directional movement in the price of a stock, the right to buy or sell that stock at a predetermined price for a specific duration of time can offer an attractive investment opportunity. The decision as to what type of option to buy is dependent on whether your outlook for the respective security is positive (bullish) or negative (bearish). If your outlook is positive, buying a call option creates the opportunity to share in the upside potential of a stock without having to risk more than a fraction of its market value (premium paid). Conversely, if you anticipate downward movement, buying a Put option will enable you to protect against downside risk without limiting profit potential. Purchasing options offer you the ability to position yourself according to your market expectations in a manner such that you can both profit and protect hedge) with limited risk.

19. Once I have bought an option & paid the premium for it, how does it get settled?

Option is a contract which has a market value like any other tradable commodity. Once you buy an option is bought there are following alternatives that as an option holder you have: You can sell an option of the same series as the one you had bought & close out /square off your position in that option at any time on or before its expiration date. You can exercise the option on the expiration day in case of European Option, or on or before the expiration day in case of an American option. In case the option is "Out of Money" at the time of expiry, one will not exercise his option, not being profitable and therefore, it will lapse or expire worthless.

20. What are the risks for an Option buyer?

The risk/ loss of an option buyer is limited to the premium that he has paid.

21. What are the risks for an Option writer?

The risk of an Options Writer is unlimited, whereas his gains are limited to the premiums earned. When an uncovered call is exercised for physical delivery, the call writer will have to purchase the underlying asset and his loss will be the excess of the purchase price over the exercise price of the call, reduced by the premium received for writing the call.

The writer of a Put option bears a risk of loss if the value of the underlying asset declines below the exercise price. The writer of a put bears the risk of a decline in the price of the underlying asset potentially to zero. When put option holder exercises his option in the falling market, the put writer is bound to purchase the underlying at strike price, even if the underlying is otherwise available in the spot at a lower price.

22. How can an option writer take care of his risk?

Option writing is a specialized job, which is suitable only for the knowledgeable investor who understands the risks, has the financial capacity, and has sufficient liquid assets to meet applicable margin requirements. The risk of being an option writer may be reduced by the purchase of other options on the same underlying asset, and thereby assuming a spread position or by acquiring other types of hedging positions in the Options/ Futures and other
correlated markets.

23. Who can write Options in Indian Derivatives market?

In the Indian Derivatives market, SEBI has not created any particular category of options writers. Any market participant can write options. However, the margin requirements are stringent for options writers.

24. What are Stock Index Options?

The Stock Index Options are options where the underlying asset is a Stock Index, e.g., Options on "S&P BSE SENSEX". Index Options were first introduced by Chicago Board of Options Exchange (CBOE) in 1983 on its Index "S&P 100". As opposed to options on Individual stocks, index options give an investor the right to buy or sell the value of an index which represents group of stocks.

25. What are the uses of Index Options?

Index options enable investors to gain exposure to a broad market, with one trading decision and frequently with one transaction. To obtain the same level of diversification using individual stocks or individual equity options, numerous decisions and trades would be necessary. Since, broad exposure can be gained with one trade, transaction cost is also reduced by using Index Options. As a percentage of the underlying value, premiums of Index options are usually lower than those of equity options as equity options are more volatile than the Index.

26. Who would use index options?

Index Options are effective enough to appeal to a broad spectrum of users, from conservative investors to more aggressive stock market traders. Individual investors might wish to capitalize on market opinions (bullish, bearish or neutral) by acting on their views of the broad market, or one of its many sectors. The more sophisticated market professionals might find the variety of index option contracts excellent tools for enhancing market timing decisions and adjusting asset mixes for asset allocation. To a market professional, managing the risk associated with large equity positions may mean using index options to either reduce their risk or to increase the market exposure.

27. What are Options on individual stocks?

Options contracts where the underlying asset is an equity stock, are termed as Options on stocks. They are mostly American style options cash settled or settled by physical delivery. Prices are normally quoted in terms of the premium per share, although each contract is invariably for a larger number of shares, e.g., 100.

28. On which stocks, options are available?

Stocks are selected on the basis of their satisfying various eligibility and selection criteria. The various stocks, available for trading on the Derivatives Segment of the exchange can be viewed at the List Of Products Section.
29. What is the market lot size of different stock option contracts?

The market lots for the stocks available for trading on the Derivatives Segment of the exchange can be viewed at the Contract Specifications Section.

30. How will introduction of options in specific stocks benefit an investor?

Options can offer an investor the flexibility one needs for countless investment situations. An investor can create hedging position or an entirely speculative one through various strategies that reflect his tolerance for risk. Investors of equity stock options will enjoy more leverage than their counterparts who invest in the underlying stock market itself in form of greater exposure by paying a small amount as premium. Investors can also use options in specific stocks to hedge their holding positions in the underlying (i.e., long in the stock itself), by buying a Protective Put. Thus they will insure their portfolio of equity stocks by paying premium. ESOPs (Employees’ stock options) have become a popular compensation tool with more and more companies offering the same to their employees. ESOPs are subject to lock-in periods, which could reduce capital gains in falling markets - Derivatives can help arrest that loss.

31. Whether the holders of equity options contracts have all the rights that the owners of equity shares have?

Holder of the equity options contracts do not have any of the rights that owners of equity shares have - such as voting rights and the right to receive bonus, dividend, etc. To obtain these rights a Call option holder must exercise his contract and take delivery of the underlying equity shares.

32. What is Over the Counter Options?

OTC ("over the counter") options are those dealt directly between counter-parties and are completely flexible & customized. There is some standardization for ease of trading in the busiest markets, but the precise details of each transaction is freely negotiable between the buyer and seller.

33. Where can I trade in Options and Futures contracts?

In Addition to stocks, Options and Futures are traded on BSE On Line Trading (BOLT) system.

34. What is the underlying in case of S&P BSE SENSEX Options?

The underlying for the S&P BSE SENSEX® options is the BSE 30 S&P BSE SENSEX, which is the benchmark index of Indian Capital markets, comprising of 30 scrips.

35. What will be the new margining system in the case of Options and Futures?

A portfolio based margining model, i.e. Standard Portfolio Analysis of Risk (SPAN) system,
has been adopted. This will take an integrated view of the risk involved in the portfolio of each individual client comprising of his positions in all the derivatives contract traded on the Derivatives Segment. The Initial Margin would be based on worst-case loss of the portfolio of a client to cover 99% VaR over two day's horizon. The Initial Margin would be netted at client level and shall be on gross basis at the Trading/Clearing member level. The Portfolio will be marked to market on a daily basis.

36. How will the assignment of options take place?

On Exercise of an Option by an Option Holder, the trading software will assign the exercised option to the option writer on random basis based on a specified algorithm.

WEEKLY OPTIONS

1. What are Weekly Stock and Index Options?

Exchange Traded Options based on a Stock or Index with shorter maturity of One or Two weeks are known as Weekly Options.

2. How many Weekly Options will be available for trading?

One week and Two week Options will be available for the market participants for trading.

3. How are Weekly Options different from Monthly Options?

Weekly Options differ mainly in terms of maturity period. Currently Monthly Options have maturity of 1 month, 2 months or 3 months. As 1 month options expire, another options series get generated. In case of Weekly Options, the maturity will be either 1 week or 2 weeks.

Monthly Options Series will expire on last Thursday falling two weeks prior to the last Thursday. In case of Weekly Options, series will expire on Friday of every week. For Example:

<table>
<thead>
<tr>
<th>Week</th>
<th>Start Date</th>
<th>Option</th>
<th>Expiry Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>03/12/2014</td>
<td>2 week Option</td>
<td>16/12/2014</td>
</tr>
<tr>
<td>2</td>
<td>10/12/2014</td>
<td>2 week Option</td>
<td>23/12/2014</td>
</tr>
<tr>
<td>3</td>
<td>17/12/2014</td>
<td>2 week Option</td>
<td>30/12/2014</td>
</tr>
<tr>
<td>4</td>
<td>24/12/2014</td>
<td>2 week Option</td>
<td>06/01/2015</td>
</tr>
</tbody>
</table>

4. What will happen if expiry day is a Trading Holiday?

If the expiry day of Weekly Options fall on a trading Holiday , then the expiry (as per SEBI guidelines) will be on the previous trading day.

If that previous trading day is the last Thursday of the month (i.e. on the same day, the Monthly series is expiring), then the relevant Weekly series expiring on that day will not be
5. What are the similarities between Monthly and Weekly Options?

The parameters, viz., Underlying, Contract Multiplier, Tick size, Price Quotation, Trading Hours, Strike price Intervals of the Weekly Options will remain exactly the same as that of Monthly Options.

6. What are the benefits of Weekly Option Contracts?

- Weekly Options will command lower premium due to shorter maturity. Thus the Weekly Options will cost less than the Monthly Options.
- For similar capital outlay as Monthly Options, participants can take larger positions.
- Weekly Options will provide opportunity for Arbitrage between:
  - "One week to maturity" options and "two week to maturity" options.
  - Weekly Options and Monthly Options.
- On account of low cost, the liquidity will improve, as more participants would come in.
- Weekly Options would lead to better price discovery and improvement in market depth.
- The market participants would be able to take a short-term view in the underlying also.
- Weekly Options would provide market participants short term insurance for their short-term portfolio. This would result in better price discovery and improvement in market efficiency.

7. What are the Risk Management measures taken at the Exchange level?

As the introduction of Weekly Options is an addition of new series and not a new product as such, the Risk Containment measures adopted for the Weekly Options would be similar to those applied for Monthly Options.

8. Can we compare the premium quoted for Weekly Options with that of Monthly Options?

The theoretical cost of an at-the-money S&P BSE SENSEX call option with one month to expiry where the underlying is at 20000 with annual volatility of 50% is Rs.1189, and that of an at-the-money call option with 7 days to expiry is Rs.564.

LONG DATED OPTIONS

1. What are Long-dated Options on "SENSEX"?

BSE has introduced 'Long-Dated Options on "SENSEX "whereby the members can trade in S&P BSE Sensex (normal lot of 15 only and not 'mini' Sensex) Options contracts with an expiry upto 3 years. These long-term options provide the holder the right to purchase, in the case of a call, or sell, in the case of a Put, a specified number of quantity at a pre-
determined price up to the expiration date of the option, which can be three years in the future.

2. What are Equity Long-dated Options?

Equity Long dated Options are currently not available in BSE. However, these are long-dated put and call options on stock.

3. When do Long-dated Options expire?

As with normal options, its expiration date is the last Thursday of the month. If it's a holiday then expiry will be a day before Thursday.

4. What are the trading hours for Long-Dated Options?

As with regular equity options, the trading hours for Long-Dated Options are from 9:55 a.m. to 3:30 p.m. IST.

5. What are the features of Long-dated Options?

Longer Tenure

Investor can use long-term calls to diversify their portfolios. Long-term put provide investors with means to hedge current stock holdings.

Longer term Options offer a good alternative to a longer-term trader to gain exposure to a prolonged period in a given security, without having to roll several short-term contracts.

6. What option series are available for Long-dated Options?

The options series available for the Sensex (normal lot of 15) Options contracts will be as follows:

a. The 3 existing serial month contracts (i.e.,Near middle and Far month) would continue.

b. The following additional 3 quarterly months of the cycle Mar/Jun/Sep/Dec would be available.

c. Further, 5 additional semi-annual months of the cycle Jun/Dec would be available, so that at any point in time there would be options contract with up to 3 years tenure available.

CHHOTA(MINI) "SENSEX"

Chhota SENSEX was launched on January 1, 2008, with a small or ‘mini’ market lot of 5. It allows for comparatively lower capital outlay, lower trading costs, more precise hedging and flexible trading. It is a step to encourage and enable small investors to mitigate risk and enable easy access to India’s most popular index, SENSEX, through Futures & Options. The Security Symbol for SENSEX Mini Contracts is MSX. The contract is available for one,
two or three months along with weekly options.

**CALCULATIONS**

1. **What are the profits and losses in case of a Futures position?**

The profits and losses would depend upon the difference between the price at which the position is opened and the price at which it is closed. Let us take some examples.

**Example 1**

- **Position** - Long - Buy June S&P BSE Sensex Futures @ 15000
- **Payoff** -
  - Profit - if the futures price goes up
  - Loss - if the futures price goes down
- **Calculation** - The profit or loss would be equal to fifteen times the difference in the two rates.
  - If June S&P BSE Sensex Futures is sold @ 15500 there would be a profit of 500 points which is equal to Rs. 7500 (500*15).
  - However, if the June S&P BSE Sensex Futures is sold @ 14700, there would be a loss of 300 points which is equal to Rs. 4500 (300*15).

**Example 2**

- **Position** - Short - Sell June S&P BSE Sensex Futures @ 15500
- **Payoff** -
  - Profit - if the Futures price goes down
  - Loss - if the Futures price goes up
- **Calculation** - The profit or loss would be equal to fifteen times the difference in the two rates.
  - If June S&P BSE Sensex Futures is bought @ 15900 there would be a loss of 400 points, which is equal to Rs. 6000 (400*15).
  - However, if the June S&P BSE Sensex Futures is bought @ 15200, there would be a profit of 300 points, which is equal to Rs. (300*15).

2. **What happens to the profit or loss due to daily settlement?**

In case the position is not closed the same day, the daily settlement would alter the cash flows depending on the settlement price fixed by the exchange every day. However the net total of all the flows everyday would always be equal to the profit or loss calculated above. Profit or loss would only depend upon the opening and closing price of the position, irrespective of how the rates have moved in the intervening days.

Let’s take the illustration given in example 1 where a long position is opened at 15000 and closed at 15800 resulting in a profit of 800 points or Rs. 12000. Let’s assume that the position was closed on the fifth day from the day it was taken. Let’s also assume three different series of closing settlement prices on these days and look at the resultant cash flows.
Example 3

Daily closing settlement price

<table>
<thead>
<tr>
<th>Case 1</th>
<th>Case 2</th>
<th>Case 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Day 1</td>
<td>14900</td>
<td>14800</td>
</tr>
<tr>
<td>Day 2</td>
<td>15350</td>
<td>15300</td>
</tr>
<tr>
<td>Day 3</td>
<td>15280</td>
<td>15400</td>
</tr>
<tr>
<td>Day 4</td>
<td>14950</td>
<td>14700</td>
</tr>
<tr>
<td>Position closed</td>
<td>15800</td>
<td>15800</td>
</tr>
</tbody>
</table>

### Case 1

<table>
<thead>
<tr>
<th>Settlement Price</th>
<th>Calculation</th>
<th>Profit / Loss</th>
</tr>
</thead>
<tbody>
<tr>
<td>Position opened</td>
<td>15000</td>
<td></td>
</tr>
<tr>
<td>Day 1</td>
<td>14900</td>
<td>14900-15000</td>
</tr>
<tr>
<td>Day 2</td>
<td>15350</td>
<td>15350-14900</td>
</tr>
<tr>
<td>Day 3</td>
<td>15280</td>
<td>15280-15350</td>
</tr>
<tr>
<td>Day 4</td>
<td>14950</td>
<td>14950-15280</td>
</tr>
<tr>
<td>Position closed</td>
<td>15800</td>
<td>15800-14950</td>
</tr>
<tr>
<td>Net Profit/ Loss</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Case 2

<table>
<thead>
<tr>
<th>Settlement Price</th>
<th>Calculation</th>
<th>Profit / Loss</th>
</tr>
</thead>
<tbody>
<tr>
<td>Position opened</td>
<td>15000</td>
<td></td>
</tr>
<tr>
<td>Day 1</td>
<td>14800</td>
<td>14800-15000</td>
</tr>
<tr>
<td>Day 2</td>
<td>15300</td>
<td>15300-14800</td>
</tr>
<tr>
<td>Day 3</td>
<td>15400</td>
<td>15400-15300</td>
</tr>
<tr>
<td>Day 4</td>
<td>14700</td>
<td>14700-15400</td>
</tr>
<tr>
<td>Position closed</td>
<td>15800</td>
<td>15800-14700</td>
</tr>
<tr>
<td>Net Profit/ Loss</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Case 3

<table>
<thead>
<tr>
<th>Settlement Price</th>
<th>Calculation</th>
<th>Profit / Loss</th>
</tr>
</thead>
<tbody>
<tr>
<td>Position opened</td>
<td>15000</td>
<td></td>
</tr>
<tr>
<td>Day</td>
<td>Opening Price</td>
<td>Closing Price</td>
</tr>
<tr>
<td>----------</td>
<td>---------------</td>
<td>---------------</td>
</tr>
<tr>
<td>Day 1</td>
<td>14500</td>
<td>14500 - 15000</td>
</tr>
<tr>
<td>Day 2</td>
<td>15100</td>
<td>15100 - 14500</td>
</tr>
<tr>
<td>Day 3</td>
<td>14950</td>
<td>14950 - 15100</td>
</tr>
<tr>
<td>Day 4</td>
<td>15200</td>
<td>15200 - 14950</td>
</tr>
<tr>
<td>Position closed</td>
<td>15800</td>
<td>15800 - 15200</td>
</tr>
</tbody>
</table>

Net Profit/ Loss: 800

In all the cases the net resultant is a profit of 800 points, which is the difference between the closing and opening price, irrespective of the daily settlement price and different MTM flows.

3. How does the Initial Margin affect the above profit or loss?

The initial margin is only a security provided by the client through the clearing member to the exchange. It can be withdrawn in full after the position is closed. Therefore, it does not affect the above calculation of profit or loss. However, there may be a funding cost / transaction cost in providing the security. This cost must be added to your total transaction costs to arrive at the true picture. Other items in transaction costs would include brokerage, stamp duty, etc.

4. What is a spread position?

A calendar spread is created by taking simultaneously two positions:

1. A long position in a Futures series expiring in any calendar month
2. A short position in the same Futures as 1 above, but for a series expiring in any month other than the 1 above

Examples of Calendar Spreads

1. Long June S&P BSE Sensex Futures - Short July S&P BSE Sensex Futures.
2. Short July S&P BSE Sensex Futures - Long August S&P BSE Sensex Futures

A spread position must be closed by reversing both the legs simultaneously. The reversal of 1 above would be a sale of June S&P BSE Sensex Futures while simultaneously buying the July S&P BSE Sensex Futures.

5. How are spread rates calculated? Please illustrate with an example.

The profit or loss in case of spreads depends only upon the difference between the rates for the two different calendar months. The real position is only of the differential - irrespective of the two rates.

Let’s take an example.
Example 4 - assuming the futures are being traded at the following rates

<table>
<thead>
<tr>
<th></th>
<th>June</th>
<th>July</th>
<th>August</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rate</td>
<td>16200</td>
<td>16250</td>
<td>17000</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>17100</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>17500</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>17550</td>
</tr>
</tbody>
</table>

The spread calculations are as follows

<table>
<thead>
<tr>
<th>Spread</th>
<th>Calculation</th>
<th>Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>June - July</td>
<td>17000 - 16200</td>
<td>800</td>
</tr>
<tr>
<td>July - August</td>
<td>17500 - 17000</td>
<td>500</td>
</tr>
<tr>
<td>June - August</td>
<td>17500 - 16200</td>
<td>1300</td>
</tr>
</tbody>
</table>

6. How do we calculate spreads in case of two way quotations?

In case the prices are quoted as bid and offer, the spreads would also have a two way quotation. While calculating use the thumb rule that the spread rate calculated must have the maximum spread possible from the two given rates.

Example 5 - Lets assume the Futures are being traded at the following rates:

<table>
<thead>
<tr>
<th></th>
<th>June</th>
<th>July</th>
<th>August</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rate</td>
<td>16200</td>
<td>16250</td>
<td>17000</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>17100</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>17500</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>17550</td>
</tr>
</tbody>
</table>

The spreads would be calculated as follows.

<table>
<thead>
<tr>
<th>Spread</th>
<th>Calculation</th>
<th>Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>June - July</td>
<td>17000 - 16250 &amp; 17100- 16200</td>
<td>750</td>
</tr>
<tr>
<td>July - August</td>
<td>17500 - 17100 &amp; 17590- 17000</td>
<td>400</td>
</tr>
<tr>
<td>June - August</td>
<td>17500 - 16250 &amp; 17590-16200</td>
<td>1250</td>
</tr>
</tbody>
</table>

Another thumb rule to check the correctness of calculation is that the bid-offer difference of the spread must be equal to the sum of the bid-offer differences of the two futures contract. For example the bid-offer difference for June-August spread is 140 points which is equal to the sum of the bid-offer difference of June Futures 50 points, and August Futures 90 points.

7. Please give a simple illustration to explain the mechanics of spread trading?
To illustrate lets assume that the market is in Contango, i.e., the Futures price is higher than the cash underlying price and the Futures price of farther month is higher than that of the the futures price of the near month.

<table>
<thead>
<tr>
<th></th>
<th>June</th>
<th>July</th>
<th>August</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rates</td>
<td>15500</td>
<td>16200</td>
<td>17000</td>
</tr>
</tbody>
</table>

The spread calculations are as follows

<table>
<thead>
<tr>
<th>Spread</th>
<th>Calculation</th>
<th>Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>June - July</td>
<td>16200 - 15500</td>
<td>700</td>
</tr>
<tr>
<td>July - August</td>
<td>17000 - 16200</td>
<td>800</td>
</tr>
<tr>
<td>June - August</td>
<td>17000 - 15500</td>
<td>1500</td>
</tr>
</tbody>
</table>

Example 6

- Position:
  - Receiving the spread: Buy near month futures + Sell farther month futures
  - Paying the spread: Sell near month futures + Buy farther month futures

- Payoff:
  - Profit: Spread received > spread paid
  - Loss: Spread received < spread paid

- June- July spread is paid at 700 points. If June -July spread can be reversed at higher than 700 points it would result in profit. Assuming that the spread is reversed at 800 points a profit of 100 points or Rs1500 would result.

<table>
<thead>
<tr>
<th>Open</th>
<th>Spread</th>
<th>Sell June</th>
<th>Buy July</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pay</td>
<td>700</td>
<td>15500</td>
<td>16200</td>
</tr>
<tr>
<td>Close</td>
<td></td>
<td>Buy June</td>
<td>Sell July</td>
</tr>
<tr>
<td>Receive</td>
<td>800</td>
<td>15500</td>
<td>16300</td>
</tr>
<tr>
<td>Profit</td>
<td>100</td>
<td>0</td>
<td>100</td>
</tr>
</tbody>
</table>

Please note that the spread profit depends only upon the differential received or paid, irrespective of the Futures rates. In the above example let’s take three cases where reversal is done at 900 points but with substantially different levels for June and July.
**Case 1 - 17000 and 17900**

<table>
<thead>
<tr>
<th>Open</th>
<th>Spread</th>
<th>Sell June</th>
<th>Buy July</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pay</td>
<td>700</td>
<td>15500</td>
<td>16200</td>
</tr>
<tr>
<td>Close</td>
<td></td>
<td>Buy June</td>
<td>Sell July</td>
</tr>
<tr>
<td>Receive</td>
<td>900</td>
<td>17000</td>
<td>17900</td>
</tr>
<tr>
<td>Profit</td>
<td>200</td>
<td>1500</td>
<td>1700</td>
</tr>
</tbody>
</table>

**Case 2 - 16550 and 17450**

<table>
<thead>
<tr>
<th>Open</th>
<th>Spread</th>
<th>Sell June</th>
<th>Buy July</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pay</td>
<td>70</td>
<td>15500</td>
<td>16200</td>
</tr>
<tr>
<td>Close</td>
<td></td>
<td>Buy June</td>
<td>Sell July</td>
</tr>
<tr>
<td>Receive</td>
<td>900</td>
<td>16550</td>
<td>17450</td>
</tr>
<tr>
<td>Profit</td>
<td>200</td>
<td>1050</td>
<td>1250</td>
</tr>
</tbody>
</table>

**Case 3 - 16000 and 16900**

<table>
<thead>
<tr>
<th>Open</th>
<th>Spread</th>
<th>Sell June</th>
<th>Buy July</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pay</td>
<td>700</td>
<td>15500</td>
<td>16200</td>
</tr>
<tr>
<td>Close</td>
<td></td>
<td>Buy June</td>
<td>Sell July</td>
</tr>
<tr>
<td>Receive</td>
<td>900</td>
<td>16000</td>
<td>16900</td>
</tr>
<tr>
<td>Profit</td>
<td>200</td>
<td>500</td>
<td>700</td>
</tr>
</tbody>
</table>

You would notice that the profit is always 200 points, irrespective of the rates as the spread received is constant at 900 points.
Risk In Derivatives Markets

1. What are the various Risks associated with trading in equity derivatives?

The different types of risks associated with derivative instruments are as follows:

- **Credit Risk**: These are the usual risks associated with counterparty default and which must be assessed as part of any financial transaction. However, in India the two major stock exchanges that offer equity derivative products have Settlement / Trade Guarantee Funds that address this risk.

- **Market Risk**: These are associated with all market variables that may affect the value of the contract. For example, a change in price of the underlying instrument.

- **Operational Risk**: These are the risks associated with the general course of business operations and include:
  - Settlement Risk arises as a result of the timing differences between when an institution either pays out funds or deliverables assets before receiving assets or payments from a counterparty, and it occurs at a specific point in the life of the contract.
  - Legal Risk arises when a contract is not legally enforceable, reason being the different laws that may be applicable in different jurisdictions - relevant in case of cross border trades.
  - Deficiencies in information, monitoring and control systems, which result in fraud, human error, system failures, management failures, etc. Famous examples of these risks are the Nick Lesson case, Barings’ losses in derivatives, Society General’s debacle, etc.

- **Strategic Risk**: These risks arise from activities, such as:
  - Entrepreneurial behavior of traders in financial institutions
  - Misreading client requests
  - Costs getting out of control
  - Trading with inappropriate counterparties

- **Systemic Risk**: This risk manifests itself when there is a large and complex organization of financial positions in the economy. "Systemic risk" is said to arise when the failure of one big player, or of one clearing corporation somehow puts all other clearing corporations in the economy at risk. Simply, suppose that an index arbitrageur is long, the index, on one exchange and short the futures on another exchange. Such a position generates a mechanism for transmission of failure - the failure of one of the exchanges could possibly influence the other. Systemic risk also appears when very large positions are taken on the OTC
derivatives market by any one player. Neither of these scenarios is in the offing in India. Hence, it is hard to visualize how Exchange-traded derivatives could generate systemic risk in India.

2. What is meant by the terms Short Squeeze and Long Squeeze?

A Short Squeeze is a rapid increase in the price of a stock that occurs when there is a lack of supply and an excess of demand for the stock.

Short squeezes result when short sellers cover their positions on a stock. This can occur if the price has risen to a point where these people simply decide to cut their losses and get out. (This may happen in an automated manner if the short sellers had previously placed stop-loss orders with their brokers to prepare for this eventuality.) Since covering their positions involves buying shares, the short squeeze causes an ever further rise in the stock's price, which in turn may trigger additional covering. Short squeezes are more likely to occur in stocks with small market capitalization and small floats.

A Long Squeeze is a situation in which investors who hold long positions feel the need to sell into a falling market to cut their losses. This pressure to sell usually leads to a further decline in market prices. This situation is less common than the opposite one, the Short Squeeze, because a rapid decline in price is seen as a buying opportunity more often than a rapid rise in price seen as a shorting opportunity.

3. Is it possible to manipulate in terms of Index Derivatives?

Derivatives market in India is presently cash-settled, so short squeeze conditions are less likely to occur. Typically, the index derivatives are more liquid than the underlying stocks. If the manipulator will try to manipulate the index than the process would be something like this - firstly he will take the position on the index in the derivatives market and then try to move the index to maximize the profits by trying to influence the price of certain large weighted stocks comprising that Index.

The Exchange's surveillance department normally observes this kind of behaviour and it would take appropriate corrective action. Importantly, this is where the composition of an Index and its methodology becomes very crucial.

Usually the two major methods of market-wide Index construction are the Full Market Capitalisation Method and the Free-float Methodology. Under the Free-float Methodology, only the free float or the non-promoter holding is considered for the purpose of reckoning the share capital (for ascertaining market capitalisation, i.e., share capital times the share price of that stock) and thus weightage of the particular stock in the Index. However, the Full Market Capitalisation Method includes the entire share capital (including the share capital of the promoters and promoter group, Government, etc. which is normally static in nature and is not available for trading,) thus affecting the
market capitalisation of that stock and resulting in different weights being attached to that stock in the Index. Thus, an Index based on the Free-float Methodology is to that extent a better indicator of the market movement than a Full Market Capitalisation based Index and therefore it's less capable of being manipulated.