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Chapter 1

Derivatives - Basics

'Risk' is an inseparable part of investing in financial and capital markets. Every instrument that is available in these markets comes with a risk tag attached to it. To some investors, 'high risk' is attractive since it is usually associated with good returns. To others 'high risk' spells danger as it could result in loss of capital. It is the existence of risk in investing coupled with different investor risk profiles and perceptions that has given birth to the market for derivative products.

What are Derivatives*

Derivatives are financial contracts that derive their value from an underlying asset, which could be stocks or stock indices, commodities or currencies or even exchange rates or the rate of interest. As you have noticed, all these assets, which can be considered as 'underlyings' to a derivative product, are subject to change in value. More specifically, the value of a stock may rise or fall, an exchange rate may swing in favour of one currency or the other, the price of a commodity may increase or decrease, and so on. A feature that is common to all underlying assets is that they carry the risk of change in value. Derivative contracts seek to transfer these risks from a counterparty that is not comfortable with the risk to one that is.

From here on, we are going to take a closer look at two specific derivative products, namely futures and options and how they work, specifically with stocks (traded in the Indian equity markets) and indices (such as the Sensex or the CNX S&P Nifty) as the underlying asset.

Use of Derivatives

In the Indian markets, futures and options are standardised contracts, which can be freely traded on exchanges. These could be employed to meet a variety of needs. Using these products can help you to reduce the cost of an underlying asset that you have purchased, earn money on shares that are lying idle, benefit from arbitrage (buying low in one market and selling high in the other market) and protect your securities against

fluctuations in prices. By far, the most important use of these derivatives is the transfer of market risk from risk-averse investors to those with an appetite for risk.

The derivative market in India, like its counterparts abroad, is increasingly gaining significance. Since the time derivatives were introduced in the year 2000, their popularity has grown manifold. This can be seen from the fact that the daily turnover in the futures segment on the National Stock Exchange currently stands at Rs 40,000 crore, which is nearly four times the turnover clocked in the cash markets on the same exchange.

Participants in Derivatives market

On the basis of their trading motives, participants in the derivatives markets can be segregated into four categories - hedgers, speculators, margin traders and arbitrageurs. Let's take a look at why these participants trade in derivatives and how their motives are driven by their risk profiles.

Hedgers

Hedgers are traders who wish to protect themselves from the risk involved in price movements. They look for opportunities to pass on this risk to those who are willing to bear it. They are so keen to rid themselves of the uncertainty associated with price movements that they may even be ready to do so at a predetermined cost. For instance, let's say that you possess 200 shares of company ABC Ltd. and the price of these shares is hovering at around Rs 110 at present. Suppose you plan to sell these shares nearer Diwali, as you wish to utilise the funds to purchase some consumer goods during the season as you are likely to get a good deal on the purchase then. However, since Diwali is around a month from today, you fear that the price of these shares could fall considerably by then. At the same time you do not want to encash your investment today as you may fritter away the money before Diwali. You are very clear about the fact that you would like to receive a minimum of Rs 100 per share and no less. At the same time, in case the price rises above Rs 100, you would like to benefit by selling them at the higher price. By paying a small price, you can purchase an arrangement in the form of a derivative product called an 'option' that incorporates all your above requirements. Fascinating, isn't it?

The derivative market offers products that allow you to hedge yourself against a fall in the price of shares that you possess. It also offers products that protect you from a rise in the price of shares that you plan to purchase. And that's only the tip of the iceberg. There are a wide variety of products available and strategies that can be constructed which allow you to pass on your risk to other market traders, who are more than willing to take it on.

Speculators

You may wonder why someone will willingly take on risks from you. The only explanation is that 'it takes all types to make the world'. So while you may be averse to risks, there are people who embrace them, since risk and return always go hand in hand. Then again, while you believe that the market will go up, there will be people who feel that it will fall. These differences in risk profile and market views distinguish hedgers from speculators. Speculators, unlike hedgers, look for opportunities to take on risk in the hope of making returns. Let's go back to our example, wherein you were keen to sell share of company ABC Ltd. after one month, but feared that the price would fall below your threshold price. In the derivative market, there will be a speculator who expects the market to rise. Accordingly, he will enter into an agreement with you stating that he will buy shares from you at Rs 100 if the price falls below that amount. In return for this risk that he will relieve you off, he must be paid a small compensation. He realises that if his surmise is correct, and the price of ABC Ltd. rises, you will not want to sell shares to him anymore and he will get to pocket this compensation. This is only one instance of how a speculator could gain from a derivative product. For every opportunity that the derivative market offers a risk-averse hedger, it offers a counter opportunity to a trader with a healthy appetite for risk.

In the Indian markets, there are two types of speculators day traders and the position traders. A day trader tries to take advantage of intra day fluctuations and the up and down movement in prices. They do not leave any position open at the end of the day, i.e., they do not have any overnight exposure to the markets. On the other hand, position traders greatly rely on news, tips and technical analysis (the science of predicting trends and prices) and take a longer view, say a month, in order to realise better profits.

Margin traders

Margin traders are speculators who make use of the payment mechanism, which is peculiar to the derivative markets. When you trade in derivative products, you are not required to pay the total value of your position up front. You are only required to deposit a fraction (called margin) of the value of your outstanding position. This is called margin trading and results in a high leverage factor in derivative trades, i.e., with a small deposit, you are able to maintain a large outstanding position. This leverage factor is a multiplier, which allows the speculator to buy three to five times the quantity that his capital investment would otherwise have allowed him to buy in the cash market.

For example, let's say a sum of Rs. 1.8 lakh fetches you 180 shares of XYZ Ltd. in the cash market at the rate of Rs. 1,000 per share. Under margin trading in the derivatives

market, if you are required to deposit a margin of say 30 per cent of the value of your outstanding position, you would be able to purchase 600 shares of the same company at the same price, with your capital of Rs.1.8 lakh, i.e. Rs. 1.8 lakh / (30 per cent of Rs. 1000) = 600 shares. So, in effect, you are allowed a leverage of 3.33 times in this case (100/30). If the price of XYZ Ltd. rises by Rs. 100, your 180 shares in the cash market will deliver a profit of Rs. 18,000, which would mean a return of 10 per cent on your investment. However, your payoff in the derivatives market would be much higher. The same rise of Rs. 100 in the derivative market would fetch Rs. 60,000, which translates into a whopping return of over 33 per cent on your investment of Rs. 1.8 lakh. This is how a margin trader, who is basically a speculator, benefits from trading in the derivative markets.

Arbitrageurs

Life is not perfect and capital markets have their share of imperfections too. Sometimes the price of a stock in the cash market is lower or higher than it should be, in comparison to its price in the derivatives market. Arbitrageurs exploit these imperfections and

inefficiencies to their advantage. Arbitrage trade is a riskless trade where a simultaneous purchase of securities is done in one market and a corresponding sale is carried out in another market. These are done when the same securities are being quoted at different prices in two markets. In the earlier example of XYZ Ltd., suppose the cash market price is Rs 1000 per share, it may be quoting at Rs 1010 in the futures market. An arbitrageur would purchase 100 shares of XYZ Ltd. at Rs 1000 in the cash market and simultaneously, sell 100 shares at Rs 1010 per share in the futures market, thereby gaining Rs 10 per share on the day that the futures contract expires. This is because in the Indian markets, there is no delivery of shares in order to settle positions in the derivatives segment; as you will see later, the cash and future prices converge on the expiry day, and a trader merely pays or receives the difference between his purchase price and the price prevailing in the cash market on the day the contract expires. For now, all you need to know is that by holding your position (purchase 100 shares in the cash market at Rs 100 and selling 100 shares in the futures market at Rs 110) until a specific date in the near future (expiry date of the futures contract), you can make a risk free return of Rs 10 per share that you have bought and sold a neat profit of Rs. 1,000, for taking no risk at all.

Speculators, margin traders and arbitrageurs are the lifeline of the capital markets as they provide liquidity to the markets by taking long (purchase) and short (sell) positions. They contribute to the overall efficiency of the markets.

Chapter 2

Types of Derivatives - Futures

We had briefly mentioned earlier the words 'Futures' and 'Options'. They may have sounded a little magical since they seem to meet everyone's needs so cleverly. Now, let's demystify these derivatives and you will realise that it is you who has to do magic with them by understanding them through and through and using them to your advantage.

About Futures

A futures contact is an agreement between two parties - a buyer and a seller, wherein the former agrees to purchase from the latter, a number of shares or an index at a certain time in the future (expiry date) for a pre-determined price, which is agreed upon when the transaction takes place.

As futures contracts are standardised in terms of expiry dates and contract sizes, they can be freely traded on exchanges. A buyer may not know the identity of the seller and vice versa. Further, every contract is guaranteed and honoured by the stock exchange, or more precisely, the clearing house or the clearing corporation of the stock exchange, which is an agency designated to settle trades of investors on the stock exchanges.

Stock futures

Lot size or Contract size - Every stock futures contract consists of a fixed lot of the underlying share; this lot is determined by the exchange on which it is traded and differs from stock to stock. For instance, a Reliance Industries Ltd. (RIL) futures contract has a lot of 600 RIL shares, i.e., when you buy one futures contract of RIL, you are actually buying 600 shares of RIL. Similarly, a lot size for Infosys Technologies is 100 shares.

Duration

Futures contracts are available in durations of 1 month, 2 months and 3 months (called near month, middle month and far month, respectively). The month in which a contract expires is called the contract month for that contract. All three maturities are traded simultaneously on the exchange and expire on the last Thursday of their respective contract

months. If the last Thursday of the month is a holiday, they expire on the previous business day. In this system, as near month contracts expire, the middle month contracts become near month contracts and the far month contracts become middle month contracts. Fresh far month contracts are issued from the business day after the last Thursday of each month.

Illustration of a stock futures contract

If you want to purchase a single future of ABC Ltd. (consisting of 200 shares; contract month July), you would have to do so at the price at which ABC Ltd. July futures are currently available in the futures market. Let's say that ABC Ltd. July futures are trading at Rs 1,000 per share. Since it is a contract that will expire on the last Thursday in July, you are locking in your purchase at a price of Rs 1,000 per share until the end of July. The price in the cash market at the time when you purchase the futures contract could be Rs 992 or Rs 1,005 or anything else in the vicinity of Rs 1,000, depending on the prevailing market conditions.

Index futures

A stock index is a mathematical formula that is used to measure changes in stock prices over a period of time. It is constructed by selecting a statistically appropriate sample of stocks that represent a certain segment or the overall market in terms of price movements. For instance the BSE Sensex comprises 30 liquid and fundamentally strong companies. Since these scrips are market leaders, any change in the fundamentals of the economy or industries will be reflected in this index through movements in the prices of these stocks on the BSE. Similarly, there are other popular indices like the S&P CNX Nifty 50, S&P500, etc, which represent price movements on different exchanges or in different segments.

Contract size

So, how can you go about buying a futures on an index, which itself is a derivative product of sorts? Well, naturally, you are not expected to purchase futures on all the stocks that make up an index to be able to buy index futures. Stock indices are represented in index points. For instance, you will hear that the Nifty was at 3545 points yesterday and it is 3550 points today. For purposes of trading in index futures, the exchange converts each point of the index into a number of rupees and as a result, you can purchase index futures on that index. In the case of the S&P CNX Nifty, one point of the index is equivalent to Rs 100. So, in other words, you could say that you have to buy the S&P CNX Nifty in lots of 100, since you have to pay 100 times the value of the index in terms of points.

Duration

As in the case of stock futures, index futures too have three series open for trading at any point in time - the near month (1 month), middle month (2 months) and far month (3 months) futures.

Illustration of an index futures contract

If the index stands at 3550 points in the cash market today and you decide to purchase one Nifty 50 July future, you would have to purchase it at the price prevailing in the futures market. This price of one July futures contract could be anywhere above, below or at Rs 3.55 lakh (i.e., 3550*100), depending on the prevailing market conditions.

Pricing of Futures Contracts on Stocks and Indices

There are various models that try to explain how futures are priced. Naturally, since futures are a derivative product, they derive their value largely from the price of the underlying stock or index. However, what these models try to explain is what constitutes the difference between the spot price (i.e., the current price of the stock in the cash market or the value of an index on that day) and the futures price. There are two popular theories that explain how futures contracts are priced the cost of carry model and the expectancy model. While these models merely give you a scaffolding on which to base your understanding of futures prices, being aware of these theories gives you a feel of what you can expect from the futures price of a stock or an index.

The Cost of Carry model

This model assumes that arbitrage between the cash market and the futures market eliminates all imperfections in pricing, i.e., unaccounted for differences between the cash price and futures price. The difference that remains is due to a factor called 'The Cost of Carry'. The model also assumes, for simplicity sake, that the contract is held till maturity, so that a fair price can be arrived at.

To put it briefly, once all distortions in the futures price have been erased by arbitrage, a fair futures price = the spot price + the net cost of carry of the asset from today to the date on which the contract expires.

The net cost of carry involves all costs that you may have had to incur in order to hold a similar position open in the cash market, less the returns that you would have received from this position. The costs typically include financing charges, at the prevailing rate of interest. This is because you may have borrowed to finance a similar position in the cash market, and if not, you may have lost interest on the capital that you invested to keep your position open. In contrast in the futures market, you merely have to deposit a fraction of the value of your position in the form of a margin. The returns that you receive could consist of dividends or bonuses that you may have received in case you had held stocks in the cash market. In the case of an index future, your returns may be gauged by the average return that an index delivers.

As this theory is modified to become more realistic, by discarding assumptions or including variables, it becomes more complex. However, what you must absorb from this theory is the fact that there are costs and benefits involved in keeping a position open in a cash market and the price of a futures contract charges you or compensates you to reflect these.

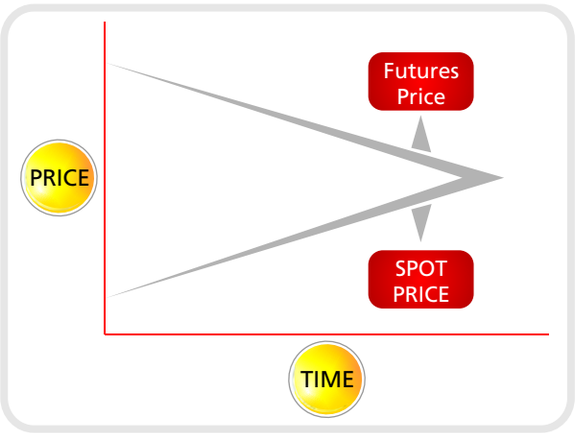
Expectancy model of futures pricing

This model argues that the futures price is nothing but the expected spot price of an asset in the future. If there are more traders who expect the future price of an asset to rise in the future than those who expect it to fall, the current futures price of that asset will be positive. In fact, the theory suggests that it is not the relation between the cash market price and the futures price that is relevant, but the relationship between the expected spot price on the date of expiry of the contract and the futures price that is.

Basis

While both these models do explain some part of the movement in futures prices, at a practical level, what you will observe is that there is usually a difference between the future price and the spot price. This difference is called the basis. The basis normally remains positive when the markets are not volatile or are in a secular run (not affected by short term, speculation driven volatility). However, when the markets are in a bear grip and cash market prices are expected to fall in the near term, the basis could turn negative.

Since a futures contract is settled at the cash market price on the date of the expiry of the contract, as it reaches expiration, the futures price and spot price converge. This is illustrated below:



How to buy futures

In general, buying stock futures contracts is similar to buying a number of shares of the same underlying stock but without taking delivery of the same. In the case of index futures too, the number of index points move up or down, replicating the movement of a stock price. So, you can actually trade in index and stock contracts in just the same way as you would trade in shares.

Before you actually begin trading, you must tie up with a broker who is a member of the stock exchange on which you plan to trade. Alternatively, you could trade through a sub-broker, who routes your trades through a broker to the stock exchange. As per SEBI rules, all clients have to enter into a Client Broker Agreement with the broker with

whom they wish to trade. In addition, you will have to furnish personal and financial information in a form called the Know Your Client or KYC form. Once these legal formalities are complete, the broker sets up an account for you and allots you a client code, which is a unique alphanumeric code that will be used to represent all your trades through the broker. Once you have been allotted a client code and you deposit a margin (some amount of money) as per the business rules of the broker, you can commence placing orders with your broker. There are different categories of orders and depending on your requirements, you can specify which category your broker should choose on your behalf. The main order types are:

Market orders:

When you place a market order, it is executed at the prevailing market price.

Limit orders:

When you place a limit order to buy or sell, it gets executed at a specific price as stated by you. Such types of orders are shown as 'pending orders' in the system till such time the market price of the share in question reaches the 'limit' price.

Stop loss orders:

As a security measure, when you have a long or short position open in the market, you can direct your broker to square up your position at a predetermined price, in order to limit your losses.

Maintaining margins

Unlike purchasing stocks from the cash market, when you purchase futures contracts you are required to deposit only a percentage of the value of your outstanding position with the stock exchange, irrespective of whether you buy or sell futures. This mandatory deposit, which is called margin money, covers an initial margin and an exposure margin. These margins act as a risk containment measure for the exchanges and serve to preserve the integrity of the market.

You are expected to deposit the initial margin upfront and the exchange/clearing house prescribes the magnitude (percentage of your open position) of this margin for different positions, taking into account the average volatility of a stock over a specified time period and the interest cost. This initial margin is adjusted daily depending upon the market value of your open positions.

The exposure margin is used to control volatility and excessive speculation in the futures markets. This margin is also stipulated by the exchange and levied on the value of the contract that you buy or sell.

Besides the initial and exposure margins, you also have to maintain Mark-to-Market (MTM) margins, which cover the daily difference between the cost of the contract and the closing price on the day the contract is purchased. Thereafter, the MTM margin covers the differences in closing price from day to day.

Settling stock futures contracts

On expiry

In the Indian markets, buying a stock futures contract does not result in delivery of the underlying shares. The futures contract has to be settled (sold off if purchased or bought back if sold, as the case maybe) on the expiry day at the closing price of the underlying stock in the cash market.

So, let's get back to our example, wherein you have purchased a single future of ABC Ltd. (consisting of 200 shares; contract month July). If on the last Thursday of July, ABC Ltd. closes at a price of Rs 1,050 in the cash market, your futures position will be settled at that price. You will receive a profit of Rs 50 per share (the settlement price of Rs 1,050 less your cost price of Rs 1,000), which adds up to a neat little sum of Rs 10,000, since you have purchase one lot of 200 shares. For simplicity, we have not mentioned the process of maintaining margins, but once your contract expires, you receive profits, the margins that you have deposited to keep this position open will be added to these and if you made a loss, you are required to payoff the loss, net of the margins that you have deposited

Illustration of Mark-to-Market margins for 100 Nifty bought at 3550

	Index closed at	MTM margin	Explanation
Day of purchase	3600	Credit of Rs 5,000	Difference between purchase price and closing price, i.e. (3600-3550)*100
Day 2	3500	Debit of Rs 10000 (100*100)	Difference between the closing price on date of purchase day 2 closing price, i.e., (3500-3600)*100
Day 3	3490	Debit of Rs 1000	Difference between day 2 and day 3 closing prices, i.e., (3490-3500)*100

Before expiry

Although futures expire on a particular date, most traders do not hold on to their positions until the expiry date of the contract. They usually exit much before the expiry date by offsetting or cancelling their position, i.e. selling their long positions or buying back their short positions. Here again, your profits or losses will be returned to or collected from you, after adjusting them for the margins that you have deposited till the day on which you square off your position.

Settling index futures contracts

On expiry

Index futures contracts are settled in cash and the closing index value on the date of the expiry of the contract is considered as the settlement price for index futures.

To explain, let's consider a case where you purchase one contract of Nifty future at 3560, say on July 7. This particular contract expires on July 27, being the last Thursday of the contract series. If you have left India for a holiday and are not in a position to sell the future till the day of expiry, the exchange will settle your contract at the closing price of the Nifty prevailing on the expiry day. So, if on July 27, the Nifty stands at 3550, you will have made a loss of Rs 1,000 (i.e., difference in index levels 10* contract size 100). Your broker will deduct the amount from your margins deposited with him and forward it to the stock exchange, which in turn will forward it to the seller who has made that profit.

Before expiry

However, as you know by now, you do not have to wait till the expiry date of the contract in order to exit a position in the futures market. In the above case, you could have sold your long position on the day of purchase itself or on any day till the expiry date of the contract, if the price in the futures market looked attractive. You would also base the timing of your sale on your perception of which way the market may move and your investment horizon.

Using Futures

As explained earlier, speculators, hedgers and arbitrageurs all stand to benefit from trading in derivative products. Let's take a look at what types of positions they would take in futures and what payoffs they could receive.

By Speculators

Speculators take long or short positions in index and stock futures, depending on their perceptions of the market.

Let's take the case of stock futures of RIL;
Contract size: 600 shares; Price of Future: 960;
Spot Price: 955;
Margin Required: 10 per cent of the contract value.

Perception	Action	Margin Required for one lot (600 shares)	Purchase/ Sell Price	Amount required for purchase of similar qty in cash market	Leverage
Bullish	Buy Futures	57600	960	576000	10 times
Bearish	Sell futures	57600	960	-	10 times

in the above case, any movement in the stock prices to say Rs 980 would make the futures buyer richer by Rs 12,000 (600 x 20) for each contract. Similarly in the case of a fall in prices to say Rs 950, the investor would lose Rs 6,000 (600x10) for each contract. The seller, on the other hand, would lose when the buyer gains and gain when the buyer loses, to the same extent.

By Arbitrageurs

Arbitrageurs stay focused on both cash market and futures markets in order to benefit from unexplained price differences. Let's look at the same scrip - RIL; Contract size: 600 shares; Price of Future: 960; Spot Price: 950; Margin Required: 10 per cent of the contract value.

Price in cash market	Rs 950
Price in futures market	Rs 960
Action	Buy in cash market and sell in futures market
Condition	Basis is more than the cost of carry and opportunity cost of investing

Since the arbitrageur looks for inefficiencies between the prices in the two markets, in the above case, he buys 600 shares of RIL in the cash market and takes delivery of the same. At the same time, he sells 600 shares in the futures market by paying a 10 per cent margin on the contract value. As we have seen earlier, the cash and the futures prices converge on the expiry date and therefore, the arbitrageur would sell the physical shares on the expiry date and buy back the futures, which he had sold. In this transaction, the arbitrageur has made a profit of Rs 6000 (600x10).

By Hedgers

We explained that a hedger enters the futures market to protect himself from the risk of an adverse price movement. Let's see how a hedger with assets in the stock market as described in the table below, makes the most of futures.

If the hedger wants to protect his portfolio, which consists of a variety of blue chip stocks, from the possibility of a fall in prices in the market, he may consider selling Nifty futures as this index generally represents the movement of market leaders. In order to completely cover his portfolio value, he will have to purchase 2 Nifty contracts (No. of contracts = Value of portfolio/Nifty value, i.e., 6 lakh/3 lakh).

Since our hedger is bearish about the market for the next one month, he will short sell two contracts of Nifty futures with a maturity period of 1 month each. Let us illustrate the above. If the market falls by 10 per cent, i.e., the value of the Nifty falls by 300 points to 2700, the value of the hedger's portfolio would be reduced to Rs 5.4 lakh (Rs 6 lakh less 10 per cent), assuming that his portfolio is extremely well represented by the index. At the same time, since he has sold futures worth Rs 6 lakh, he will make a gain of Rs 60,000 due to the fall in the index. As a result, the value of his overall holdings remains unaffected by the fall in the market.

However, in the case of a rise in the market, the hedger would lose out on the upside, since he will have to bear losses on account of his short selling of futures contracts. Here, we have assumed a 1:1 ratio between the portfolio and the futures value. Ideally, you

Value of Portfolio Holdings	Rs 6 lakh
View	Bearish for the next one month
Action	Sell Index futures
Nifty futures level	3000 points
Value of 1 Nifty contract	Rs 3 lakh

would have to take into account the overall volatility of your portfolio and then develop a strategy accordingly. Based on the above data, in case the hedger had decided to sell only one contract and the market rose by 10 per cent, the losses from selling futures would be only Rs 30,000 while the gain in the value of his portfolio would have been Rs 60,000.

If our hedger's portfolio consisted exclusively of shares of RIL, he could have sold 1-month RIL futures that match the quantum of RIL that he holds in his portfolio.

Futures advantages and risks

The existence and the utility of a futures market benefits a lot of market participants

- It allows hedgers to shift risks to speculators.
- It gives traders an efficient idea of what the future price of a stock or value of an index is likely to be.
- Based on the current future price, it helps in determining the future demand and supply of the shares.
- Since it is based on margin trading, it allows small speculators to participate and trade in the futures market by paying a small margin for the purchase of the contract instead of the entire value of physical holdings.

However, you must be aware of the risks involved too. The main risk stems from the temptation to speculate excessively due to a high leverage factor could amplify losses in the same way as it multiplies profits. Further, as derivative products are slightly more complicated than stocks or tracking an index, lack of knowledge among market participants could lead to losses.

Chapter 3

Types of Derivatives - Options

About options

An option contract goes one step beyond a futures contract, towards capping risks. These contracts give you the right but not the obligation to buy or sell shares or an index, at a specified price (strike price or exercise price), on or before a given date in future (expiration date). So, if you have purchased an option contract, you have the right to simply ignore the terms of the contract if the price of the underlying shares or index goes against you. Of course you have to pay a price, called a premium, for this privilege.

On the other side of this transaction, there is an option seller, also called the option writer. This trader gives you the right to buy or sell the underlying asset in exchange for the premium that you pay. He, himself, has no rights and is obligated to comply with the contract if you choose to exercise your option.

Remember that while the term 'writer of an option' is used to denote the seller of the option, there are no physical documents that are exchanged between the buyer and the seller of an option. All transactions are merely recorded by the stock exchange through which they are routed.

Lot sizes

The lot sizes in the case of option contracts are the same as those for futures. For instance, if you want to buy an option contract on Reliance Industries Ltd, your underlying asset is a lot of 600 shares of Reliance, just as in the case of futures. Similarly, if you want to purchase one option contract on the Nifty 50, your contract multiplier is 100; the same as it is for a Nifty 50 futures contract.

Expiration dates

The expiration dates for option contracts are also standardized to match those of futures contracts. As in the case of futures contracts, there are contracts of three durations being traded simultaneously - the near month (1 month), middle month (2 months) and far/distant month (3 months). All these contracts also expire on the last Thursday of their respective contract months, after which the options are worthless. Fresh contracts with a three month duration begin trading the next business day after the last Thursday of each month, after which the 2 month contracts become 1 month contracts and the three month contracts become two month contracts.

Strike Price intervals

Strike price intervals are the various levels of strike prices for each index and stock options. The exchange authorities determine the strike prices. For every option type, the exchanges provide a minimum of five strike prices during the month. Two contracts will be above the spot price (the previous days closing price), two below the spot price and the last one will be equivalent at the spot price. Although the intervals are fixed, the strike prices that are added to the existing ones that are traded keep on changing with the change in spot prices.

American and European Options

When an option can be exercised anytime on or before it reaches its expiry date it is called an American option. Options on stocks in India are American styled and can be exercised anytime during their life. If, on the other hand, an option can be exercised only on the date of expiry and not before, it is called a European option. In India, all index options are European options.

Open Interest

Open interest comprises the total number of outstanding positions in a particular type of contract of all market participants at any given time. In other words, it is the sum of all the net long outstanding positions of all buyers of a particular type of contract.

To explain with an illustration - For every buyer of a contract, there is a corresponding seller. Let us assume that the trader A has bought 100 Nifty futures and trader B is the opposite party. Let us also assume that the brought forward volume is nil in this case and trader A and B are entering the market for the first time. In this case, the open interest would be 100 futures or one contract. Let us assume the price rises on the next day and trader A sells his futures to say trader C. Here, the open interest would not increase since the new position created by trader C would be offset by the reduction of an existing position of trader A. However, in the event of trader A buying another 100 shares from say trader D, who has short sold, the open position would increase by 100 futures or one contract, since none of the parties are offsetting their existing positions.

All open interest would become nil at the expiry date of the contract for the particular series. For instance, open interest in July futures would be nil after the last Thursday of the month of July. However, open interest for the contracts of August and September would still continue till their expiry dates in August and September, respectively.

An analogy of an option

To explain an option on a lighter note, let's say you book tickets for a particular movie in advance. You have bought the right to view the movie but are not under any obligation to do so. You could either exercise your right to view the movie on the appointed date at the appointed time or you simply sell off your tickets, for a higher or lower price, depending on the demand for the movie. Lastly, you may just decide to let your tickets go waste and not show up for the show at all. On the flip side, the person who sells an option can be compared to the theatre owners. Once they have sold movie tickets to you, they are obliged to show you the movie. This is broadly how options in the capital market work too, but at a slightly more complex level since there are a variety of options available, which are suitable for different market conditions and can be chosen on the basis of your expectations and risk profile.

Call and Put Options

On the basis of whether you want the option to buy shares or sell them at a specific price in the future, there are two types of options available in the derivatives markets. They are called the 'Call option' and the 'Put option'. The former gives you the right to buy shares or an index whereas the latter gives you the right to sell them, with no obligation. Let's take a look at these two options, one at a time.

Call Option

When you purchase a 'call option', you purchase the right to buy a certain number of shares or an index, at a predetermined price (strike or exercise price), on or before a specific date in the future (expiry date). In exchange for this facility, you have to pay an option premium to the seller/writer of the option. This is because the writer of the option assumes the risk that the market price will rise beyond your strike price on or before the expiry date of your contract and he will be obliged to sell you shares at the strike price, although it means making a loss. The premium payable is a small amount that is also market driven.

Illustration of a Call Option on an index

As a trader, you would choose to purchase an index option if you have a view on the price movement of the index rather than any expectation about the price movement of a particular share. Indices on which you can trade include the S&P Nifty CNX 50, CNX IT and Bank Nifty on the NSE and the Sensex on the BSE.

Suppose the Nifty is quoting around 3000 points today. If you are bullish about the market and foresee this index reaching the 3100 mark within the next one month, you may buy a one month Nifty call at 3100. Let's say that this call is available at a premium of Rs 30 per share. Since the current contract size of the Nifty is 100 units, you will have to pay a total premium of Rs 3000 to purchase one call option on the index.

If the index remains below 3100 points for the whole of the next month, until the contract expires, you would certainly not want to purchase it at 3100 levels. And you have no obligation to purchase it either. You could simply ignore the contract and all you have lost is your premium of Rs 3000.

If, on the other hand, the index does cross 3100 points, as you expected, you have the right to buy at 3100 levels. Naturally, you would like to exercise your call option. But remember that you will start making profits only once the Nifty crosses 3130 levels, since you must add the cost that you have incurred by paying the premium to the cost of the index. This is called your break even point a point where you make no profits and no losses. When the index is anywhere between 3100 and 3130 points, you begin to recover your premium cost, so it still makes sense to exercise your option at these levels, if you do not expect the index to rise further or the contract reaches its expiry date at these levels.

Now, let's look at how the writer of this option is fairing. As long as the index does not cross 3100 and you do not exercise the option, he benefits from the option premium that he has received from you. If you exercise your option when the index is between 3100 and 3130, he is forced to part with some of the premium that you have paid him. Once the index is above 3130 and you exercise your option, his losses are equal in proportion to your gains and both depend upon how much the index rises.

In a nutshell, the option writer has taken on the risk of a rise in the index for a sum of Rs 30 per share. Further, while your losses are limited to the premium that you pay and your profit potential is unlimited, the writer's profits are limited to the premium and his losses could be unlimited.

Illustration of a call option on a stock

In the Indian market, options cannot be sold or purchased on any and every stock. SEBI has permitted options trading on only certain stocks that meet its stringent criteria. These stocks are chosen from amongst the top 500 stocks in terms of average daily market capitalisation and average daily traded value in the previous six months on a rolling basis, amongst other technical criteria.

Suppose the AGM of RIL is due to be held shortly and you believe that an important announcement will be made at the AGM. While the share is currently quoting at Rs 950, you feel that this announcement will drive the price upwards, beyond Rs 950. However, you are reluctant to purchase Reliance in the cash market as it involves too large an investment and you would rather not purchase it in the futures market as futures leave you open to an unlimited risk, in case the market goes against you. Yet you do not want to lose the opportunity to benefit from this rise in price due to the announcement and you are ready

Index Levels	Payoff for the Index Call Purchaser	Payoff for the Index Call Writer
Below 3100 levels	Call purchaser loses the premium	The premium is the option writer's income
Between 3100 and 3130 levels	Call purchaser recovers part of the premium element but still making an overall loss	The option writer loses part of the premium
At 3130 levels	Call purchaser breaks even	The option writer also breaks even
Above 3130 levels	Profit starts for the call owner	Losses start for the option writer

to stake a small sum of money to rid yourself of the uncertainty. An option is ideal for you. Depending on what is available in the options market, you may be able to buy a call option of Reliance at a strike price of 970, although the spot price is Rs 950 at present, by paying a premium of Rs 10 per share. The total premium that you will have to pay is Rs 6,000, since one contract of Reliance consists of 600 shares.

You start making profits once the price of Reliance in the cash market crosses Rs 980 per share (i.e., your strike price of Rs 970 + premium paid of Rs 10).

Now let's take a look at how your investment performs under various scenarios. If the AGM does not result in any spectacular announcements and the share price remains static at Rs 950 or drifts lower to Rs 930 because market players are disappointed, you could allow the call option on Reliance to lapse. In this case, your loss would be Rs 10 per share, amounting to a total of Rs 6,000. However, things could have been worse if you had purchased the same shares in the cash market or in the futures segment.

On the other hand, if the company makes an important announcement, it would result in a good amount of buying and the share price may move to Rs 1,000. You would stand to gain Rs 20 per share, i.e., Rs 1,000 less Rs 980 (strike price of Rs 970 + premium of Rs 10), which was your cost per share.

As in the case of the index call option, the writer of this options would stand to gain only when you lose and vice versa, and to the same extent as your gain/loss.

Price of Reliance	Payoff for the Reliance Call Purchaser at Strike Price of Rs 970	Payoff for the Reliance Call Seller at Strike Price of Rs 970
Below Rs 970	Call purchaser loses the premium	The premium is the option writer's income
Between Rs 970 and Rs 980	Call purchaser recovers part of the premium element but still making an overall loss	The option writer loses part of the premium
At Rs 980	Call purchaser exercises the option and breaks even	The option writer also breaks even
Above Rs 980	Call owner exercises the option and makes profits	Option writer makes losses that are equivalent to the call owner's profits

Purchasing a call option

As in the case of a futures contract, if you wish to purchase an option contract, you must register with a broker by entering into Client Broker Agreement and completing all the legal formalities. Remember that you will have to enter into a Client Broker Agreement with each and every broker you intend to trade with. Once registered, you can place an order for an option contract based on your perceptions about the future movements in the market.

Payments/margins involved in buying and selling call options

Buying options

When you buy an option contract, you pay only the premium for the option and not the full price of the contract. The premium is payable to the broker based on the contract issued to you at the end of the day. Your broker then passes on this premium to the exchange on the next working day. Then exchange pays this premium to the broker of the seller of the option, who in turn passes it on to his client.

Selling options

Remember, while the buyer of an option has a liability that is limited to the premium that he must pay, the seller has a limited gain but his potential losses are unlimited. Therefore, the seller of an option has to deposit a margin with the exchange, via his broker, as security in case of an adverse movement in the price of the options that he has sold. The margins are levied on the contract value and the amount (in percentage terms) that the seller has to deposit is dictated by the exchange. This amount typically ranges from 15 per cent to as high as 60 per cent in times of extreme volatility. So, the seller of a call option of Reliance at a strike price of 970, who receives a premium of Rs 10 per share would have to deposit a margin of Rs 1,16,400, assuming a margin of 20 per cent (20 per cent of 970 x 600), although the value of his outstanding position is Rs 5,82,000.

Settling a call option

When you sell or purchase an index option, since these are European style options, you can either exit your position before the expiry date, through an offsetting trade in the market, or hold your position open until the option expires. Subsequently, the clearing house settles the trade. In the case of stock options, since these are American style options, you can either sell your long positions or buy back your short positions before the expiry of the contract or exercise your option anytime on or before the expiry date of the contract.

For a buyer of a call option :

If you decide to square off your position before the expiry of the contract, you will have to sell the same number of call options that you have purchased, of the same underlying stock and maturity date. If you have purchased 2 options (lot size 500) at a strike price of Rs 100, on XYZ Ltd. which expire at the end of March, you will have to sell the above 2 options (strike price Rs 100, expiry end-March) of XYZ Ltd., in order to square off your position.

When you square off your position by selling your options in the market, as the seller of an option, you will earn a premium. The difference between the premium at which you bought the options and the premium at which you sold them will be your profit or loss.

In case you exercise your option on or before the expiration date, the stock exchange will calculate the profit/loss on your positions. This is basically the difference between closing market price on the day you exercise the option and the strike price. Your account will be credited or debited for the amount of your profit or loss. However, your maximum loss will be restricted to the premium paid.

For the seller of a call option :

If you have sold call options and want to square off your position, you will have to buy back the same number of call options that you have written and these must be identical in terms of the underlying scrip and maturity date to the ones that you have sold.

In case the option gets exercised on or before the expiration date, the stock exchange will calculate the profit/loss on your position, based on the difference between the strike price and the closing market price on the day that the option is exercised and you will have to bear the losses, if any. These will be adjusted against the margin that you have provided to the exchange and the balance margin will be credited to your account with the broker.

Put Option

When you purchase a 'put option' it gives you the right to sell the underlying stock or index at a pre-determined price (strike price/exercise price) on or before a specified date in the future (expiry date).

In a number of ways, a 'put' is similar to a 'call' option. Just as in the case of a call option:

- A strike price and expiry date are predetermined by the stock exchange.
- The buyer of a put option places a buy order, through his broker, for an option that is available in the market, specifying the strike price and the expiry date and how much he is ready to pay for the option.
- The buyer of the put option must pay a premium, which is passed on to the seller by the exchange.
- The seller must maintain margins with his broker.
- The buyer of a put option can exercise his option to sell the shares on or before the expiry date in the case of stock options and only on the expiry date in case of index options.
- The buyer could also sell off the put option to another buyer before the expiry date and receive a premium.

However, the major difference between a call and a put option is that a put option is used when market conditions and expectations are diametrically opposite to those that call for a call option. Let's take a look.

Illustration of a put option on an index

Suppose the Nifty is currently 3000 points and you feel bearish about the market and expect the Nifty to fall from its present levels to around 2900 levels within a month. To make the most of your view of the market, you could purchase a 1-month put option with a strike price of 2950. If the premium for this contract is Rs 10 per share, you will have to pay up Rs 1,000 for the Nifty put option (100 units x Rs 10 per unit).

Let's see what outcomes you and the seller of the option derive from this transaction under various market conditions.

Index Levels	Payoff for the index put purchaser	Payoff for the index put seller
Above 2950 levels	Put lapses and the purchaser loses the premium	The premium is the option writer's income
Between 2950 and 2940 levels	Put Purchaser recovers part of his premium but still makes an overall loss	The option writer loses part of the income that he has received
At 2940 levels	Put purchaser breaks even if the option is exercised	The option writer also breaks even
Below 2940 levels	Put owner makes profits if the option is exercised	Option writer makes losses

Illustration of a put option on stocks

Put options on stocks also work the same way as call options on stocks. However, the option buyer is bearish about the price of a stock and hopes to profit from a fall in its price. Getting back to the example of Reliance shares, assume that bad news is expected at the AGM and you believe the price of Reliance will fall from its current level of Rs 950 per share. To make the most of a fall in the price, you could buy a put option on Reliance, at the strike price of Rs 930 at a market determined premium of say Rs 10 per share. You would have to pay Rs 6,000 as premium (600 shares x Rs 10 per share) to purchase one put option on Reliance.

Here's what you and the seller of the option derive from this transaction under various market conditions.

Price of Reliance	Payoff for the Reliance Put Purchaser	Payoff for the Reliance Put seller
Above Rs 930	Put lapses and the purchaser loses the premium	The premium is the option writer's income
Between Rs 920 and Rs 930	Put purchaser recovers part of his premium but still makes an overall loss	The option writer loses part of the income that he has received
At Rs 920	Put purchaser breaks even if the option is exercised	The option writer also breaks even
Below 920 levels	No major announcement in AGM. Share price tumbles to say Rs 900 and the put owner exercises his option to make profits	The put seller makes losses that are equivalent to the put purchaser's profits

Covered options and Naked options

Now, you may have noticed that while the buyer of the option has limited scope for losses, he could make unlimited profits, if the market moves strongly in his favour. The seller of an option, on the other hand, only stands to benefit from the premium that he receives but could lose considerably, if the market moves against him. So, does this mean that an option seller must necessarily be an intrepid speculator? Not really. You could sell call options in order to hedge your investments or reduce the cost of your investments. However, the difference is that you must actually hold the underlying shares of the calls that you sell. These are called '**covered call**' options.

Reducing the price of existing shares

Suppose you actually hold 600 share of Reliance in your demat account. If you do not expect any major movements in the price of Reliance in the cash market and wish to reduce the cost of these shares, you could sell a call option to the extent of the shares that you hold. This becomes a covered call. Here's how it works. If you do not expect the price of Reliance to go beyond Rs 950 per share, you may sell a Reliance call at a strike price of Rs 950 for a premium of Rs 20. You will receive a total premium of Rs 12,000 (Rs 20 x 600 shares).

If all goes well and the price does not increase above Rs 950, your shares are safe with you and the premium that you receive goes towards reducing the cost of the shares that you hold by Rs 20 each. However, if the price does go above Rs 950, you always have your shares to fall back on. You could sell off your shares to settle off the buyer of the call. It is assumed that you will have chosen a strike price that is above the cost at which your purchased the shares so that in case the option is exercised, you do not make an actual loss, only a notional one. This is because you are not able to benefit from selling your shares at a price that is higher than the strike price, although the market has crossed that level.

You could also use the covered call strategy to limit the risk of an open position that you have in the futures market, by likening your long futures position to the long cash market position explained in the covered call illustration above.

Simply speculating

A covered call could also benefit a speculator who does not want to take undue risks but merely make the most of a bearish expectation from the price of an underlying share or index. Let's say that you expect the price of Reliance to fall. You could purchase a put option to benefit from this situation, but that would mean that you have to pay a premium. So, instead, you may decide to sell a Reliance call option and receive a premium. If the price of Reliance moves in your favour (i.e., actually falls), the call will not be exercised. But if it rises beyond the strike price, you could use the shares that you hold to settle off the buyer of the call.

Naked calls or puts

When you sell a naked call or put option, you have no underlying assets or open position in the futures market to protect you from an unlimited loss, if the market goes against you. These types of options are sold by speculators who feel very strongly about the direction of an index or the price of a stock. And, if the market does go against them, they may try to salvage the situation by offsetting their option sale by purchasing identical options or they may consider taking up a position in the futures market that will nullify the losses made through selling a naked call or put.

Options Pricing

So far, you have come to understand that the price that you pay to purchase an option is called the premium. You also know that it is a small fixed amount and that it is market driven. Now let's look a little deeper at how this premium is arrived at in the market and the science beneath it. However, before that, you must familiarize yourself with certain terms, which will facilitate a better understanding of pricing of options.

In-the-money, out-of-the-money and at-the-money

Irrespective of whether you buy a call or a put option, you will find yourself in one of three situations - in-the-money, out-of-the-money or at-the-money. A call option is said to be in-the-money, if the price of the stock in the cash market is greater than the strike price, i.e., you could make money by executing the option. If the strike price is higher than the spot price of the share, the call is said to be out-of-the-money, i.e., you will not make money by exercising the option. However, if the stock price matches the strike price, the call is said to be at-the-money.

In the case of a put option, things are the other way around. When the strike price is greater than the spot price, you are in-the-money, since this is a situation that could be profitable to you. If the strike price is lower than the spot price, you are out-of-the-money (no scope for profit) and when the two are equal, you are at-the-money.

Scenario	Buy a Call Option	Buy a Put Option
Spot Price > Strike Price	In-the-money	Out-of-the-money
Spot Price < Strike Price	Out-of-the-money	In-the-money
Spot Price = Strike Price	At-the-money	At-the-money

Intrinsic value and Time value

An option premium is the sum of two components. These are the 'intrinsic value' and the 'time value'.
Option price = Intrinsic value of the option + Time value of the option.

The intrinsic value
is the difference between the cash market spot price and the strike price and is considered to be either positive (if you are in-the-money) or zero (if you are either at-the-money or out-of-the-money). Putting it simply, if a contract is in-the-money, it offers some value to a prospective buyer but if it is at-the-money or out-of-the-money, the buyer sees no sense in buying it; as a result, it has no value, i.e., its value is zero. There is no question of an option having a negative intrinsic value.

The time value
of an option contract is directly dependent on the time left between the current date and the expiry date of the contract, i.e., the time to expiry. The greater the time to expiry, the higher will be the time value in any contract. This is because at the beginning of the contract month, the buyer of the option has more time during which he can exercise or offset an option. In comparison, options that are nearer expiry allow a buyer less leeway to wriggle out of a tricky situation. It is the extra time and therefore lower risk, that gives a contract with a longer time to expiry a higher time value.

Combined effect of the intrinsic value and time value

At the beginning of a contract period, an option may fetch a slightly higher price than it will later on, due to the time value. However, as time elapses and the expiry date approaches, the value of an option diminishes, all other factors being constant. Side by side, an option will always fetch an intrinsic value, as long as it remains in-the-money till the expiry date. If it goes out-of-the-money or stays at-the-money, the option may not have any intrinsic value but its time value remains and diminishes as the expiry date draws near.

This is best explained with a couple of examples.

Intrinsic and Time value in case of Call Option

Option	Strike Price	Spot Price	Call Option Price	Classification	Intrinsic Value (C–B)	Time Value (D-F)
A	B	C	D	E	F	G
1	950	970	30	In-the-money	(970-950)=20	30-20=10
2	980	970	15	Out-of-the money	At the money	15-0=15

Intrinsic and Time value in case of Put Option

Option	Strike Price	Spot Price	Put Option Price	Classification	Intrinsic Value (B–C)	Time Value (D-F)
A	B	C	D	E	F	G
1	980	970	30	In-the-money	(980-970)=10	30-10=20
2	950	970	15	Out-of-the money	(950-970)=0	15-0=15

Other factors that affect the option premium

While option premiums are largely a function of the strike price, spot price and the time to expiry, there are other major factors that affect the pricing of an option. These are volatility (ups and downs in the price of the underlying stock), interest rate and dividends, if any, between the current date and the expiry date.

There are advanced models like the Black and Scholes' model, which try to determine the price of an option on the basis of a number of variables. These models also enable a trader to track the changes in pricing of options as the parameters and variables used in the model change.

A summary of what these models suggest can be concisely presented as in the table below.

Variable	Change	Effect on Call Value	Effect on Put Value
Spot Rate	+	+	–
Strike Rate	+	–	+
Time	+	+	+
Volatility	+	+	+
Interest Rate	+	–	+

When to use Call and Put Options and the associated Risks

Variable	Strategy	Potential Losses	Potential Returns
When You are Bullish	Buy call Options	Limited to the loss of Premium amount	Unlimited Profits
When you are Bearish	Buy Put Options	Limited to the loss of Premium amount	Unlimited Profits
When you are Bullish in a Bearish market	Sell Put Options of a lower strike price	Unlimited losses in the event of markets going against your views	Limited to the Premium Income
When you are Bearish in a Bullish market	Sell Call Options of higher strike price	Unlimited losses in the event of markets going against your views	Limited to the Premium Income

Difference between Futures and Options

- An option gives the buyer the right but not the obligation while the seller has an obligation to comply with the contract. In the case of a futures contract, there is an obligation on the part of both the buyer and the seller. When you purchase call or put options you have the right to let your option lapse but if you choose to exercise it, the counter-party (seller) must comply. A futures contract, on the other hand, is binding on both counter-parties as both parties have to settle on or before the expiry date.
- Purchasing a futures contract requires an up front margin and normally involves a larger outflow of cash than in the case of options, which require only the payment of premium.
- A future contract carries unlimited profit and loss potential whereas a buyer of a call or put option's loss is limited but the profit potential is unlimited.
- Futures are a favourite with speculators and arbitrageurs whereas options are widely used by hedgers.

Criteria	Futures	Options
Rights and obligations	Futures contracts are binding on both the buyer and the seller	Buyer has the right but no obligation to comply with the contract. Seller is obligated to comply if the buyer chooses to do so
Cash outflow	Up front margin from both the buyer and the seller.	Buyer pays a premium. Seller receives the premium but has to deposit margins
Payoff	Both buyers and sellers face the possibility of unlimited profit or loss	Buyers could benefit from the possibility of unlimited profit but their losses are restricted to the premium paid. Sellers could benefit only to the extent of the premium received but they are exposed to the possibility of unlimited losses
Used by	More popular with speculators	Widely used by hedgers

Chapter 4

Option Trading Strategies

While options contracts offer immense trading possibilities since these products can be used in tandem with stock futures or equity shares for the construction of various derivative strategies. A thorough understanding how options can be used is the basis for further improvisation. Here are some commonly used strategies that deal with options alone.

Strategy Scenario: High bullishness

Action: Buy an out-of-the-money call option

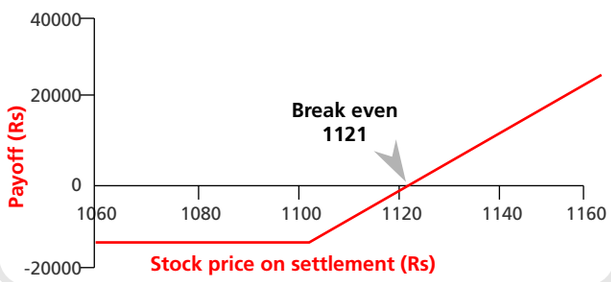
Assumptions

Underlying Stock: Reliance Industries Ltd.
Current cash market price: Rs 1,060
Contract size: 600 shares
Strike prices available: Rs 1,060, Rs 1,080, Rs 1,100, Rs 1,140.
Premium: Rs 41, Rs 31, Rs 21, Rs 12, respectively, for the above strike prices.

If you are bullish about Reliance and expect the price to go beyond Rs 1,150, you could buy a call with a strike price of Rs 1,100, which is available at a premium of Rs 21. The payoff would start once the share price exceeds Rs 1,121. You stand to lose Rs 12,600 (600 x 21) if the share price remains below Rs 1,100 until the expiry date.

Price on Settlement	Payoff
1060	-12600
1100	-12600
1121	0
1130	5400
1140	11400
1150	17400
1160	23400

Buying an out-of-the-money call option



Strategy Scenario: Sluggishness or a possible fall in price

Action: Sell an at-the-money naked call

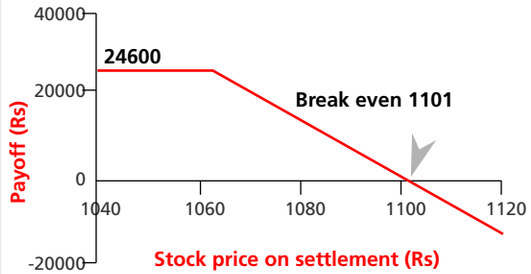
Assumptions

Underlying Stock: Reliance Industries Ltd.
Current cash market price: Rs 1060
Contract size: 600 shares
Strike prices available: Rs 1,060, Rs 1,050, Rs 1,040
Premium: Rs 41, Rs 48, Rs 53, respectively, for the above strike prices.

If you do not envisage any major movement, i.e., a listless market, then you may use this opportunity to sell a call option at the current rate. You need to short a call option at a strike price of Rs 1,060 for which you will receive a premium of Rs 41. This will yield you a short gain of Rs 24,600, if the market remains static at the current levels. The payoff is immediate and you will be affected only beyond the price level of Rs 1,101 (1060+41). You do not stand to lose till such time the price of Reliance exceeds Rs 1,101. Beyond that, every rise of Re 1 in the price of Reliance will cost you Rs 600 (since the lot size is 600 shares).

Price on Settlement	Payoff
1040	24,600
1050	24,600
1060	24,600
1070	18,600
1080	12,600
1090	6,600
1100	600
1101	0
1110	-5,400
1120	-11,400

Selling an at-the-money call option



Strategy Scenario: Possible sharp fall in the price of a stock or index

Action: Buy a put option at a high out-of-the-money level

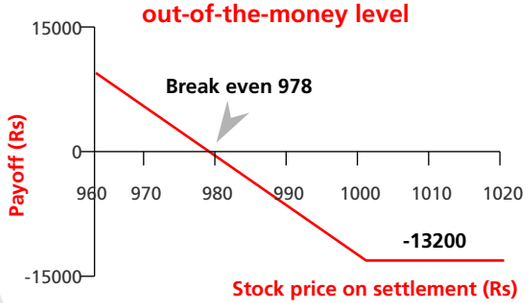
Assumptions

Underlying Stock: Reliance Industries Ltd.
Current cash market price: Rs 1,060
Contract size: 600 shares
Strike prices available: Rs 1,040, Rs 1,020, Rs 1,000
Premium: Rs 33, Rs 26, Rs 22, respectively, for the above strike prices .

If you have a bearish view, you could buy a put option with a strike price of Rs 1,000 for a premium of Rs 22. This will involve a payment of Rs 13,200. If the price of Reliance falls below Rs 1,000, the above strategy would yield a gain of Rs 600 per fall of Re 1 in the price and you stand to lose a sum of Rs 13,200, if the share price of Reliance does not fall below Rs 1,000.

Price on Settlement	Payoff
960	10800
970	4800
978	0
980	-1200
990	-7200
1000	-13200
1010	-13200
1020	-13200

Buying a put option at a high out-of-the-money level



Strategy Scenario: Sluggishness or a possible rise

Action: Sell an at-the-money put option (naked put)

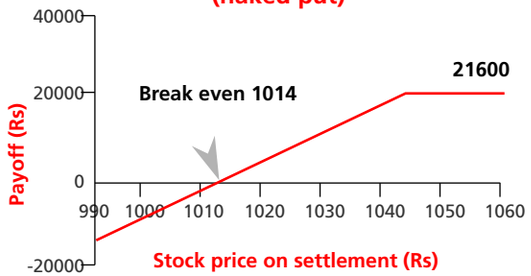
Assumptions

Underlying Stock: Reliance Industries Ltd.
Current cash market price: Rs. 1,060
Contract size: 600 shares
Strike prices available: Rs 1,020, Rs 1,040, Rs 1,050.
Premium: Rs 26, Rs 33, Rs 36, respectively, for above strike prices.

If you do not expect any major movement in the price or at the most, a possible rise, then you could use this opportunity to sell a put option at the current rate. You may short a put option for a strike price of Rs 1,050 and receive a premium of Rs 36 per share. This will yield a short gain of Rs 21,600 if the market remains static at the current levels or rises subsequently. The payoff is immediate and you would be affected only beyond the price level of Rs 1,014 (Rs 1,050 - Rs 36). You do not stand to lose till such time the price of Reliance stays above Rs 1,014. However, beyond that you lose at Rs 600 per fall of Re 1 in the price of Reliance.

Price on Settlement	Payoff
990	-14400
1000	-8400
1010	-2400
1020	3600
1030	9600
1040	15600
1050	21600
1060	21600

Selling an at-the-money call option (naked put)



Spreads

A spread strategy involves taking a position in two or more options of the same type, i.e., either calls or puts. These spreads could be constructed by taking positions in options on the same underlying stock or index, with the same expiry date but with different strike prices, these are called 'Vertical spreads'. Similarly, there are 'Horizontal spreads', wherein the underlying stock and strike prices of the options used are the same but the expiry date is different. There are also 'Diagonal spreads' that are constructed using options on a single underlying stock or index but with different strike prices and different expiry dates too. And spreads can get still more complicated. To illustrate how spreads work, we have used different Vertical spreads

only, i.e., in each of the strategies described below, the expiry date of the options used are the same. These will give you a fair idea of how spreads work and with practice and experience you could use your ingenuity to construct spreads of other types, too.

Strategy Scenario: Moderate bullishness

Action: Bull Spread using call options

A bull spread is created by buying a call option and simultaneously selling a call option while ensuring that the strike price of the purchased call is lower than the strike price of the call that you sell. A bull spread can also be constructed by buying a put option and selling another. Here again, the strike price of the purchased put must be lower than the strike price of the put that you sell.

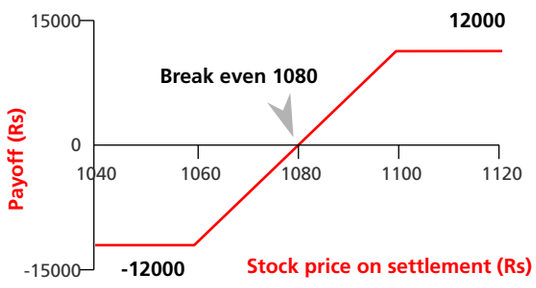
Assumptions

Underlying Stock: Reliance Industries Ltd.
Current cash market price: Rs 1,060
Contract size: 600 shares
Strike prices available: Rs 1,060, Rs 1,080, Rs 1,100.
Premium: Rs 41, Rs 31, Rs 21, respectively, for the above strike prices.

If you are moderately bullish on Reliance and foresee the price of Reliance going beyond Rs 1,100, you could buy a call with a strike price of Rs 1,060, which is available at a premium of Rs 41, and simultaneously sell a call option with a strike price of Rs 1,100, which would fetch you Rs 21 per share. The net cost of the spread would be Rs 41 less Rs 21, i.e., Rs 12,000 (for a lot size of 600 shares). If the price of Reliance stays below Rs 1,060, you will stand to lose Rs 12,000 and neither of the calls will be executed. The break even point for this spread position is at Rs 1080, which is the lower strike price plus the net premium payable, i.e. Rs 1,060 + Rs 20. But what if the price remains above Rs 1,060 but below Rs 1,080 or what if the price exceeds Rs 1,080. The different payoffs for each scenario are illustrated below. However, here you have capped your selling price at Rs 1,100 and would not be able to take advantage of any gain that could accrue, if the share price exceeds Rs 1,100.

Price on Settlement	Profit from Long call	Profit from Short call	Total Payoff
1040	24600	12600	-12000
1050	24600	12600	-12000
1060	24600	12600	-12000
1070	18600	12600	-6000
1080	12600	12600	0
1090	6600	12600	6000
1100	600	12600	12000
1110	5400	6600	12000
1120	11400	600	12000

Bull Spread using call options



Strategy Scenario: Moderate bearishness

Action: Bear Spread using call options

In contrast to a bull spread, a bear spread is used when one is bearish about the market. A bear spread can be created by selling a call option of a lower strike price and simultaneously buying a call option of a higher strike price. Alternatively, you could create a bear spread by selling a put option of a lower strike price and simultaneously buying a put option of a higher strike price. Irrespective of whether you use calls or puts, the option that you purchase in a bear spread should have a higher strike price than the one that you sell.
The bear spread strategy explained here uses call options.

The payoff from the bear spread is given in the following table.

Price on Settlement	Profit from Short call	Profit from Long call	Total Payoff
1040	24600	-12600	12000
1050	24600	-12600	12000
1060	24600	-12600	12000
1070	18600	-12600	6000
1080	12600	-12600	0
1090	6600	-12600	-6000
1100	600	-12600	-12000
1110	-5400	-6600	-12000
1120	-11400	-600	-12000

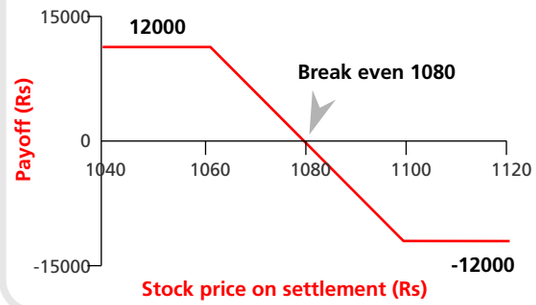
Assumptions

Underlying Stock: Reliance Industries Ltd.
Current cash market price: Rs 1,060
Contract size: 600 shares
Strike prices available: Rs 1,060, Rs 1,080, Rs 1,100.
Premium: Rs 41, Rs 31, Rs 21, respectively, for the above strike prices.

If you are moderately bearish on Reliance and expect the price of Reliance to fall, you could sell a call option with a strike price of Rs 1,060 and receive a premium of Rs 41 per share and simultaneously
buy a call option with a strike price of Rs 1,100 at the rate of Rs 21 per share. The net inflow would be Rs 12,000 (Rs 41 less Rs 21 multiplied by 600).

For any market price below Rs 1,060 both the options would expire worthless and the total profit on the position would be the net premium received at Rs 20 per share. Here, the break-even price would be at a market price that equals the lower strike price plus the net premium received, i.e., Rs 1,080 (Rs 1,060 + Rs 20). At the higher strike price, both options would get exercised but your loss will be limited to Rs 12,000 since the profit from the long call offsets the losses from the short call to an extent.

Bear Spread using call options



Strategy Scenario: Uncertainty in price movements and expected movement in either direction will be large.

Action: Long Strangle.

Simultaneously buying a call option and a put option and ensuring that the strike price of the call option is higher than the strike price of the put option.

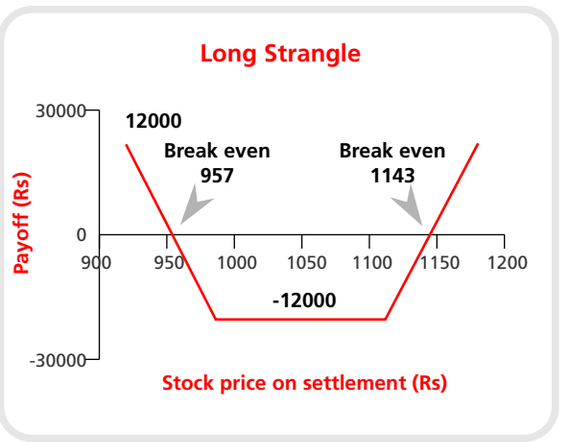
This strategy is generally used when company results are due or election results are expected.

Assumptions

Underlying Stock: Reliance Industries Ltd.
Current cash market price: Rs 1060
Contract size: 600 shares
Strike prices available for call option: Rs 1,060, Rs 1,080, Rs 1,100.
Strike prices available for put option: Rs 1,020, Rs 1,000.
Premium: Rs 41, Rs 31, Rs 21, respectively, for above call options
Premium: Rs 26, Rs 22, respectively, for above put options

If you are expecting large movements in the price of a particular stock or index which may be triggered by an announcement of the outcome of an event, you could use a long strangle strategy, which involves simultaneously buying a call option and a put option wherein the strike price of the call option is higher than that of the put. You stand to benefit if the price movements are outside the boundary of the call and put option and the difference is more than the cost of buying the call and the put option. In our example, you buy a call option with a strike price of Rs 1,100 for a premium of Rs 21 per share and buy a put option with a strike price of Rs 1,000 for a premium of Rs 22 per share. The total outflow as a result of premium payments will be Rs 21 plus Rs 22, i.e., Rs 43 per share. You will benefit if the share price shoots up above Rs 1143 (i.e., the higher strike price + the premium paid) or dips to below Rs 957 (i.e., the lower strike price + the total premium paid). The payoff from a strangle is given in the table hereunder.

Price on Settlement	Profit from Call	Profit from Put	Total Payoff
920	-12600	34800	22200
940	-12600	22800	10200
960	-12600	10800	-1800
980	-12600	-25200	-37800
1000	-12600	-13200	-25800
1020	-12600	-13200	-25800
1080	-12600	-13200	-25800
1100	-12600	-13200	-25800
1120	-600	-13200	-13800
1140	11400	-13200	-1800
1160	23400	-13200	-10200
1180	35400	-13200	-22200



Strategy Scenario: Uncertainty in price movements but movement in either direction will be large

Action: Long Straddle.

Simultaneously purchasing a call option and a put option, with the same strike price.

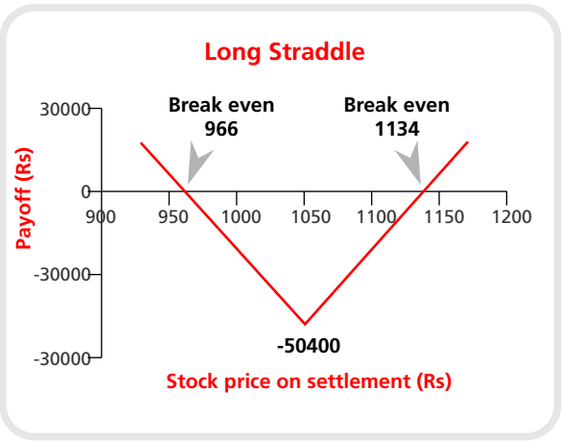
This strategy is also used when company results are due or election results are expected. However, a straddle differs from a strangle in that the strike price of both the call and the put are the same, whereas in the case of a strangle, the strike price of the call option is higher than the strike price of the put option.

Assumptions

Underlying Stock: Reliance Industries Ltd.
Current cash market price: Rs 1,060
Contract size: 600 shares
Strike price available for call option: Rs 1,050
Strike price available for put option: Rs 1,050
Premium: Rs 48 for the above call option
Premium: Rs 36 for the above put option

If you are expecting a large movement in the price of a stock or an index due to some forthcoming announcement, you could use the long straddle strategy to make the most of these movements. This strategy involves buying a call and a put option with the same strike price and the same expiry date. In the case of our example, you will buy a call option with a strike price of Rs 1,050 per share and pay a premium of Rs 48 per share. You must also buy a put option with a strike price of Rs 1,050 for a premium of Rs 36 per share. Your total outflow on account of premium in this case would be Rs 48 plus Rs 36, i.e., Rs 84 per share. You will benefit from this strategy if the share price climbs to above Rs 1134 (i.e., the strike price + the premium paid) or falls below Rs 966 (i.e., the strike price + the total premium paid). The payoff from this straddle is given in the table hereunder.

Price on Settlement	Profit from Call	Profit from Put	Total Payoff
950	-28800	38400	9600
966	-28800	28800	0
970	-28800	26400	-2400
990	-28800	14400	-14400
1010	-28800	2400	-26400
1030	-28800	-9600	-38400
1050	-28800	-21600	-50400
1070	-16800	-21600	-38400
1090	-4800	-21600	-26400
1110	7200	-21600	-14400
1130	19200	-21600	-2400
1134	21600	-21600	0
1150	31200	-21600	9600



Strategy Scenario: Large price changes are unlikely.

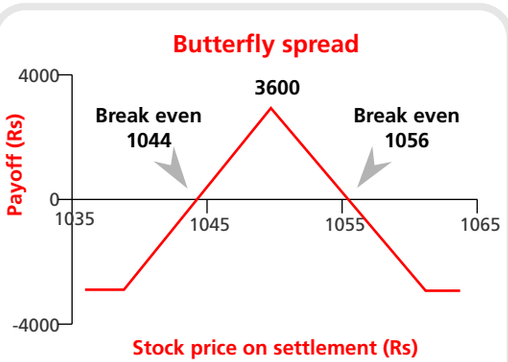
Action: Butterfly Spreads

Assumptions

Underlying Stock: Reliance Industries Ltd.
Current cash market price: Rs 1,060
Contract size: 600 shares
Strike prices available for call option: Rs 1,040, Rs 1,050, Rs 1,060
Premium: Rs 53, Rs 45, Rs 41, respectively, for the above call options

Bull and bear spreads involve taking positions in two options. Butterfly spreads involve taking positions in options with three different strike prices. It involves buying a call at the lower strike price, a call at the highest strike price and selling two options at a strike that is between the strike prices of the two calls that you have bought (strike price between the lower strike and the higher strike price). In the example, you would buy two calls, one with a strike price of Rs 1,040 and the other with a strike price of Rs 1,060 and, simultaneously, you would sell two call options, both at a strike price of Rs 1,050. Taking into account the premiums that you have to pay and those that you receive for these four options, your net premium payable would be Rs 4 (i.e., Rs 45 + Rs 45 - Rs 53 - Rs 41). The median strike price is generally close to the spot price of the underlying shares as possible. If the stock price remains close to the median price (in this case Rs 1,050), it would result in profits. If it extends either above Rs 1056 (i.e., the highest strike price - net premiums, in this case Rs 1,060 - Rs 4) or below Rs 1044 (i.e., the lowest strike price + net premiums, in this case Rs 1,040 + Rs 4), you would make a loss. The payoff from a butterfly spread is given in the table hereunder.

Price on Settlement	Profit from 1st call	Profit from 2nd call	Profit from selling median two calls	Total Payoff
1035	-31800	-24600	54000	-2400
1040	-31800	-24600	54000	-2400
1045	-28800	-24600	54000	600
1050	-25800	-24600	54000	3600
1055	-22800	-24600	48000	600
1060	-19800	-24600	42000	-2400
1065	-16800	-21600	36000	-2400



Strategy Scenario: Large price changes may take place with more likelihood of decrease in stock price than increase.

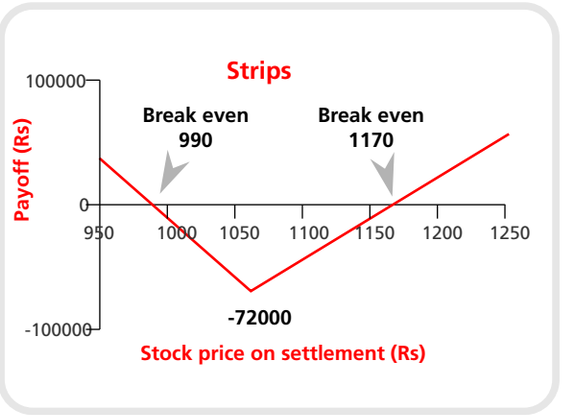
Action: Strips

Assumptions

Underlying Stock: Reliance Industries Ltd.
Current cash market price: Rs 1,060
Contract size: 600 shares
Strike prices available for call option: Rs 1,050
Strike price available for put option: Rs 1,050
Premium: Rs 48 for the call and Rs 36 for the put

In a strip, you are expecting the put option to be more profitable than the call option. This strategy involves buying one call option and buying two put options with the same strike price. The payoff from a strips spread is more profitable if there is a big difference between the strike price and spot price on the expiry date due to a fall in the spot price.

Price on Settlement	Profit from Call	Profit from two Puts	Total Payoff
950	-28800	76800	48000
975	-28800	46800	18000
990	-28800	28800	0
1000	-28800	16800	-12000
1050	-28800	-43200	-72000
1125	16200	-43200	-27000
1150	31200	-43200	-12000
1170	43200	-43200	0
1175	46200	-43200	3000
1200	61200	-43200	18000



Strategy Scenario: Large price changes may take place with more likelihood of increase in stock price than decrease.

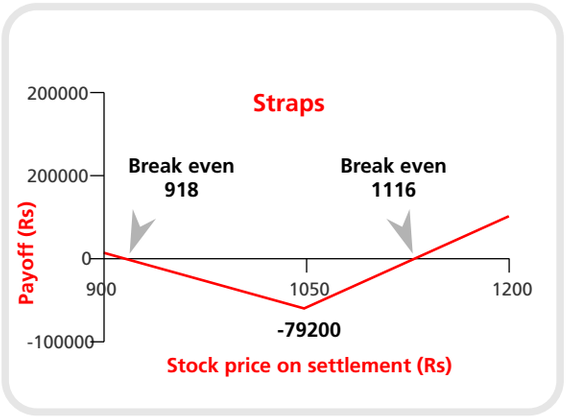
Action: Straps

Assumptions

Underlying Stock: Reliance Industries Ltd.
Current cash market price: Rs 1,060
Contract size: 600 shares
Strike prices available for call option: Rs 1,050
Strike price available for put option: Rs 1,050
Premium: Rs 48 for the call and Rs 36 for the put

In a strap, you are expecting the call option to be more profitable than the put option. This strategy involves buying one put option and buying two call options with the same strike price. The payoff from a strap spread is more profitable if there is a big difference between the strike price and the spot price on the expiry

Price on Settlement	Profit from Call	Profit from Puts	Total Payoff
900	-57600	68400	10800
918	-57600	57600	0
950	-57600	38400	-19200
1000	-57600	8400	-49200
1050	-57600	-21600	-79200
1100	2400	-21600	-19200
1116	21600	-21600	0
1150	62400	-21600	40800



To summarize: Strategies you should adopt

View	Option Strategy		Futures Strategy
	Calls	Puts	
Simply Bullish	Buy calls	Sell puts at-the-money and out-of-money	Buy futures
Simply Bearish	Sell at-the-money and out-of-money calls	Buy puts	Sell futures
Very Bullish	Buy out-of-money calls	Sell puts at-the-money and out-of-money	Buy futures
Narrow movement and possibility of fall	Sell at-the-money call option	Do nothing	Do nothing
Sharp Fall	Do nothing	Buy a put option at higher out-of-money	Sell futures
Sluggishness or a possible rise	Do nothing	Sell at-the-money put option (naked put)	Do nothing
Moderate bullish	Buy a call option of a lower strike price and sell a call option of a higher strike price	Do nothing	Do nothing
Moderate bearish	Sell a call option of a lower strike price and buy a call option of a higher strike price	Do nothing	Do nothing
Uncertain about price movements but certain that price direction will be large	Buy a call option of a higher strike price. Make use of long strangle	Buy a put option of a lower strike price. Make use of long strangle	Do nothing, stay away
Uncertain about price movements but certain that price direction will be large	Buy a call and put option of the strike price. Make use of Long straddle	Buy a call and put option of the strike price . Make use of Long straddle	Do nothing, stay away
Large price changes are unlikely	Buy a call of lower and a higher strike price and sell two options of the median strike price. Use Butterfly spread	Do nothing	Do nothing
Large price changes may take place with more likelihood of decrease in stock price than increase	Buy one call option – A strip strategy	Buy two put options	Do nothing
Large Price changes may take place with more likelihood of increase in stock price than decrease	Buy two call options – Strap strategy	Buy one put option	Do nothing

Chapter 5

Tax aspects on derivatives

There are two types of taxes that are applicable to derivative transactions in the Indian capital markets.

Securities Transaction Tax (STT) is levied on all trades that result in a sale in the derivatives segment of a recognized stock exchange. Effective June 01, 2006, such transactions (both futures and options) attract STT at the rate of 0.017% of the value of the transaction. Additionally Service Tax is applicable @ 12.24% brokerage.

Since 2006-07, income from derivative transactions is treated as business income.

We wish you all the best **for** Trading in Derivatives**.**