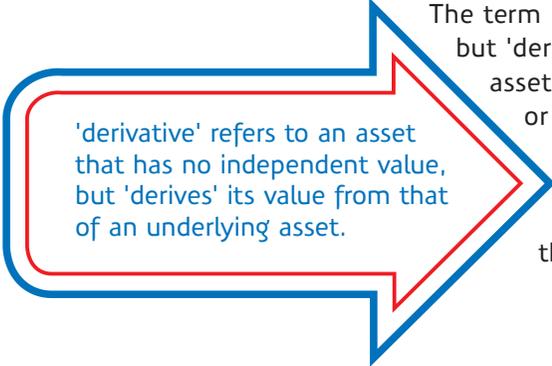


A guide to investing in
Derivatives

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what are derivatives?

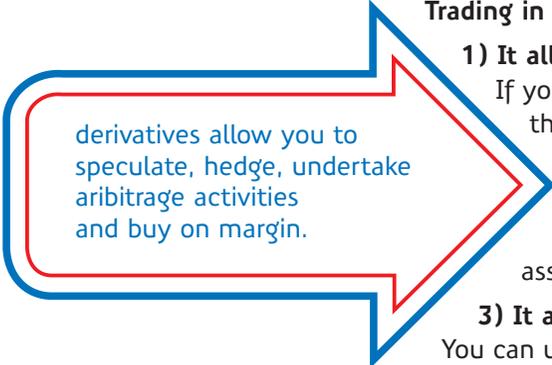


'derivative' refers to an asset that has no independent value, but 'derives' its value from that of an underlying asset.

The term 'derivative' refers to an asset that has no independent value, but 'derives' its value from that of an underlying asset. The underlying asset could be securities, commodities, bullion, currency, livestock or anything else. A very simple example of a derivative is petrol, which is derived from oil. The price of petrol depends upon the price of oil, which in turn depends upon the demand and supply of oil. This booklet discusses derivatives, where the underlying asset is equity or an index.

benefits of trading in derivatives

Trading in derivatives offers 4 advantages:



derivatives allow you to speculate, hedge, undertake arbitrage activities and buy on margin.

1) It allows you to speculate.

If you have a view on where the market will move, you can cash in on this view by using derivatives.

2) It allows you to hedge.

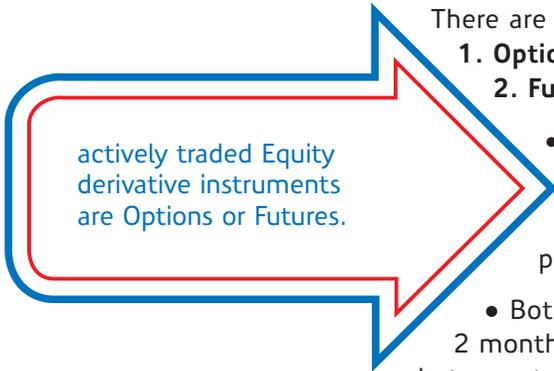
Derivatives are very efficient risk management instruments. You can use derivatives to cap your potential losses in the underlying asset.

3) It allows you to undertake arbitrage activities.

You can use derivatives to take advantage of the differences in prices of the derivative product and the underlying asset.

4) It allows you to buy on margin.

When you purchase a derivative product, you simply have to pay a fraction of the price of the traded value. In other words, you don't have to pay up the full value of the asset at the time of the transaction.



actively traded Equity
derivative instruments
are Options or Futures.

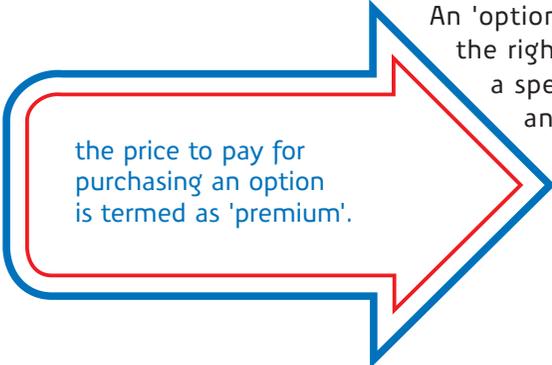
There are broadly 2 types of actively traded equity derivative instruments:

1. Options

2. Futures

- Both options and futures are traded on the stock exchanges and can be bought and sold through a registered stockbroker.
- The values of both these instruments depend on the spot price (current market price) of the underlying asset.
- Both these derivative instruments can have a validity of 1 month, 2 months or 3 months. In other words, if you buy a 1-month derivative instrument, it will expire after the completion of the specified 1-month tenure.

about options



the price to pay for purchasing an option is termed as 'premium'.

An 'option' is a type of derivative contract that gives the buyer the right (but not the obligation or the liability), to buy or sell a specified quantity of the underlying asset (in this case, stocks or an index) at an agreed price (**strike/exercise price**) on or before the specified future date (**expiration date**). You can purchase an option for a price called **premium**.

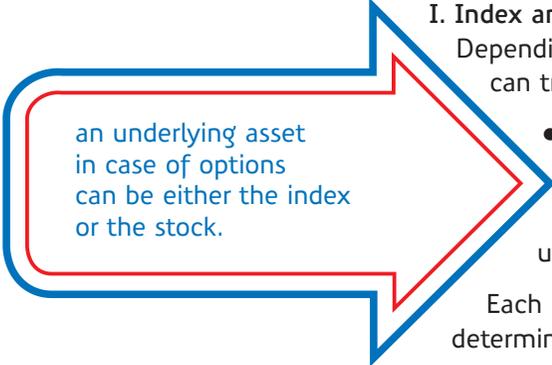
types of options

I. Index and Stock options

Depending on the underlying asset, there are two kinds of options you can trade in – index options and stock options.

- **Index options** are contracts that use an index value (the NSE Nifty, the BSE Sensex, etc.) as the underlying asset.
- **Stock options** are contracts that have equity shares as the underlying asset.

Each index/stock option contract has a 'market lot' or a certain pre-determined number of index units/shares that constitute one contract.



an underlying asset
in case of options
can be either the index
or the stock.

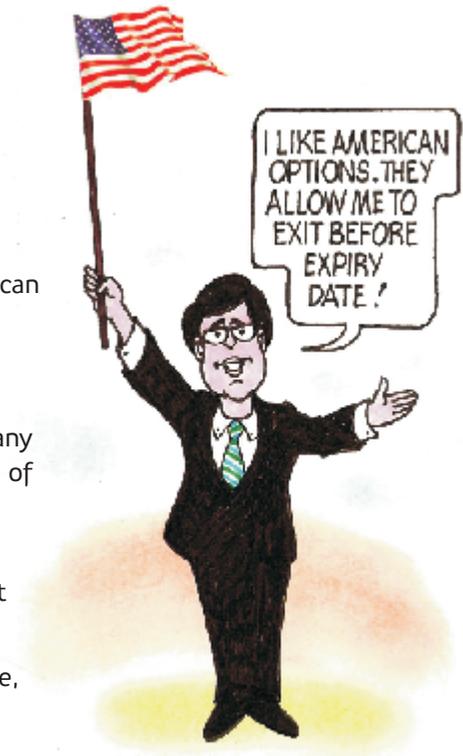
based on the validity period, options can be either American or European.

II. American and European options

Where the validity period is concerned, options can be of two types - American or European options.

- **American options** can be exercised by the holder on or before the expiration date, i.e. any time between the day of purchase of the option and the day of its expiry.
- **European options** can be exercised by the holder on the expiration day only and not any time before that.

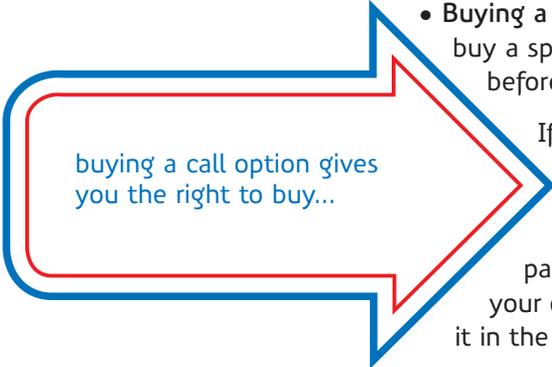
In India, Stock options are of the American type, while Index options are of the European type.



III. Call and Put options

Depending on whether you are bullish or bearish on the underlying asset, you could purchase either a Call option or a Put option.

- **Buying a Call option:** When you buy a Call option, you hold the right to buy a specified quantity of the underlying asset at the strike price on or before the expiration date.



buying a call option gives
you the right to buy...

If you are bullish on a stock, you could purchase a Call option at a pre-determined price (the strike price) that is lower than the appreciation you expect. Then, if all goes well and the stock price does rise beyond the strike price plus the premium you have paid, on or before the expiration of the contract, you can exercise your option to buy the stock at the strike price and simultaneously sell it in the spot market i.e. the cash market, to book your profit.

If, on the other hand, the price of the stock in the cash market does not rise beyond the strike price plus premium you can let the contract lapse, i.e. you do not buy the underlying asset at the strike price. Your loss in such a case would be the premium you have paid. However in India equity options & futures are currently cash settled and are not settled by delivery.

Example 1 Let us assume that you are bullish about ABC Company, whose lot size is 100 shares.

Current spot price (per share)	Rs 100
You buy a call option at a strike price of	Rs 100 (per share)
Premium payable (per share)	Rs 10
Premium you have to pay for 1 contract	Rs 1,000 (100 shares x Rs 10)

If the spot price rises to Rs 120 per share before the contract expires, you could exercise your option to buy the shares at Rs 100 and then sell them in the market for Rs 120. Your profit in this transaction would be Rs 1,000 (sale price of Rs 120 - purchase price of Rs 100 x 100 shares - premium paid by you of Rs 10 x 100 shares).

If, on the other hand, the price does not go beyond Rs 100 until the expiry date, you could just let the contract lapse. In this case, your loss would be equal to the premium that you have paid i.e. Rs 1,000.

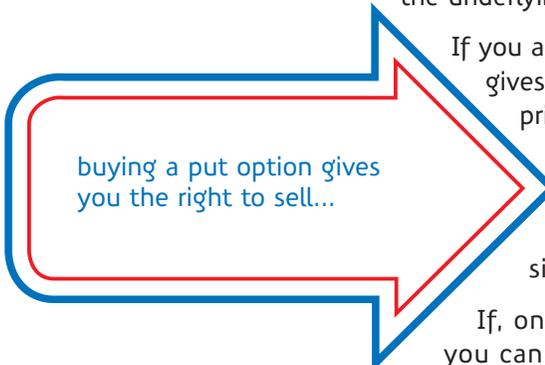
- **Buying a Put option:**

When you buy a Put option, you hold the right to sell a specified quantity of the underlying asset at the strike price on or before the expiration date.

If you are bearish on a stock, you could purchase a Put option (which gives you the right to sell the underlying shares) at a pre-determined price (the strike price) that is lower than the fall that you expect in the price of the stock.

If the stock price does fall below the strike price, you could exercise your option to sell at the strike price and simultaneously, buy the stock in the spot market.

If, on the other hand, the price does not fall to the strike price, you can let the contract lapse, i.e. you do not sell at the strike price. Your loss in such a case would be the premium that you have paid.



buying a put option gives
you the right to sell...

Example 2 Let us assume that you are bullish about ABC Company, whose lot size is 100 shares.

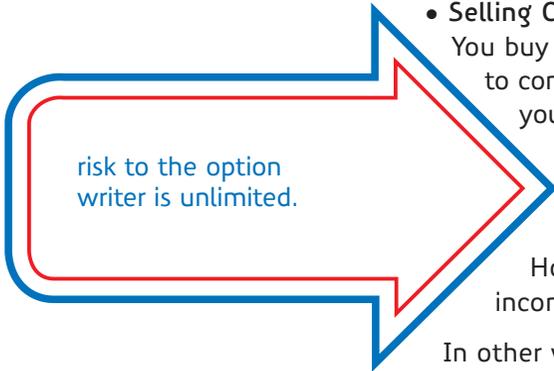
Current spot price (per share)	Rs 100
You buy a put option at a strike price of (per share)	Rs 100
Premium payable (per share)	Rs 10
Premium you have to pay for 1 contract	Rs 1,000 (100 shares x Rs 10)

If the spot price depreciates to Rs 80 per share before the contract expires, you could exercise your option to sell the shares at Rs 100 and then buy them from the cash market for Rs 80. Your profit in this transaction would be Rs 1,000 (sale price of Rs 100 x 100 shares - purchase price of Rs 80 x 100 shares - the premium you have paid of Rs 10 x 100 shares).

If, on the other hand, the price does not fall below Rs 100 until the expiry date, you could just let the contract lapse. In this case, your loss would be equal to the premium that you have paid i.e. Rs 1,000.

- **Selling Call and Put options:**

You buy options from the seller (called an option writer) who is obliged to comply with your decision for which he receives a fee (the premium you pay to buy an option).



risk to the option
writer is unlimited.

If you exercise your option, the option writer bears a loss, which is the price differential between the spot price and the strike price less the premium income he has earned.

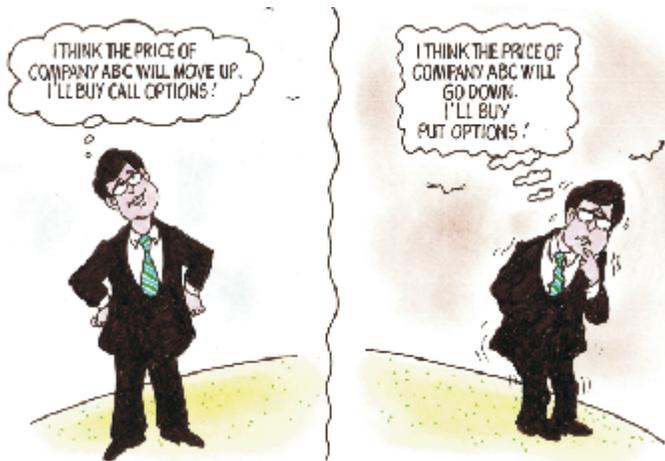
However, when you let your option lapse, the option writer's income is the premium you have paid to buy the option.

In other words, the option writer's return is limited and risk is unlimited.

depending on whether you are bullish or bearish, you can buy or sell, call and put options.

- When to use Call and Put options

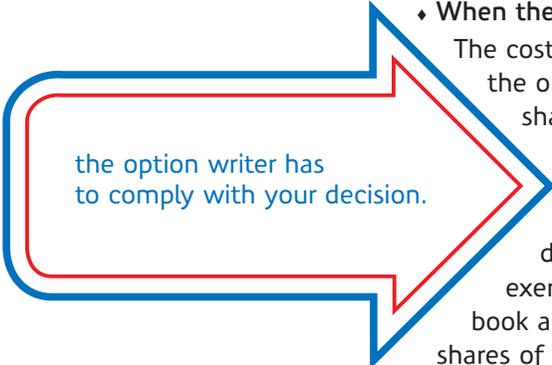
- ▲ If you expect the price of a stock to move upwards, buy a Call option.
- ▲ If you expect the price of a stock to move downwards buy a Put option.
- ▲ If you expect no upward movement in a stock, sell a Call option.
- ▲ If you expect no downward movement in a stock, sell a Put option.



IV. Covered and Naked options

- **Covered options** are options where the option writer already holds the underlying stock. If you act as the option writer, you earn a premium from the option buyer. Now, the option buyer has the right to either exercise his option or let his option lapse depending upon the stock price.

- ♦ **When the buyer exercises his option.**

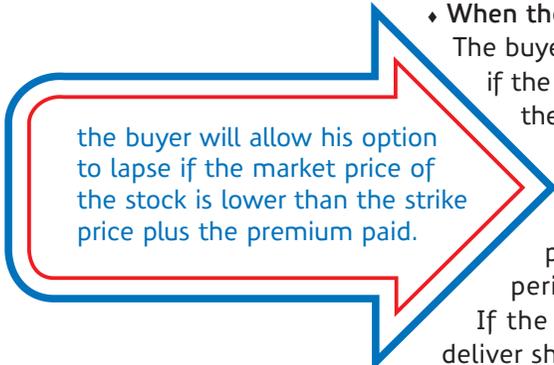


the option writer has
to comply with your decision.

The cost of the option for the buyer is the premium he has paid for the option. He will only make a profit if the price of the underlying share exceeds the strike price plus the premium he has paid.

For example, if the strike price of Company ABC is Rs 100 and the buyer has paid a premium of Rs 10, he will exercise his option only if the market price of Company ABC exceeds Rs 110 during the option period or at option expiry. If the option buyer exercises his right, you are compelled to deliver the shares to him and book a loss. Your loss will be the difference between the market price of shares of Company ABC less the strike price less the premium you have received from the buyer. In this case, if the market price of Company ABC is Rs 120, your loss will be Rs 10 per share of Company ABC (market price of Rs 120 - strike price of Rs 100 - premium of Rs 10).

The buyer of the option will make a profit if the price of the underlying share exceeds the strike price plus the premium paid.

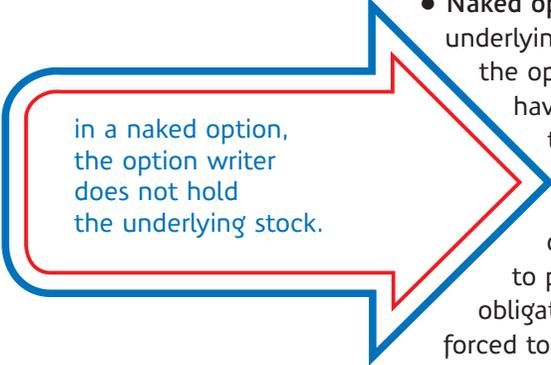


the buyer will allow his option to lapse if the market price of the stock is lower than the strike price plus the premium paid.

◆ **When the buyer allows the option to lapse.**

The buyer will not exercise his option i.e. he will allow his option to lapse if the market price of Company ABC is lower than the strike price plus the premium he has paid. By allowing the option to lapse, his loss will be limited to the premium he has paid. For example, if the strike price of Company ABC is Rs 100 and the buyer has paid a premium of Rs 10, he will allow his option to lapse if the market price of Company ABC is lower than Rs 110 during the option period or at option expiry.

If the option buyer allows his option to lapse, you do not have to deliver shares to him. Your profit will be the premium you have received from the buyer i.e. Rs 10 per share.



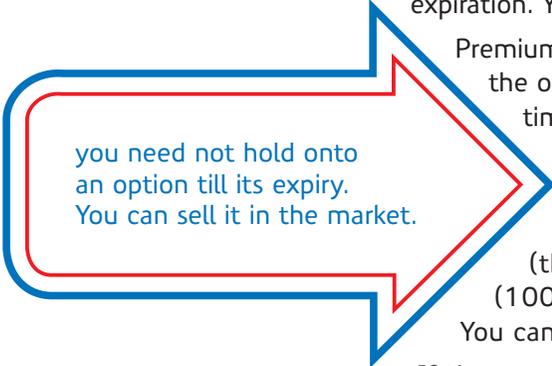
in a naked option,
the option writer
does not hold
the underlying stock.

- **Naked options** are options where the option writer does not hold the underlying stock. If you act as the option writer, you earn a premium from the option buyer. Now, if the option buyer exercises his right, you will have to purchase the stock from the cash market in order to be able to deliver the shares to him. For instance, if you sell a call option of 1 lot (i.e. 100 shares) of Company ABC, and you do not hold 100 shares of this company, the option is known as a 'naked option'. In this case, if the buyer exercises the call, you will have to purchase the stock from the cash market to honour the delivery obligation to the buyer. Your loss will be the price at which you are forced to purchase the shares less the strike price less the premium you have received. However, currently in India, Equity options & futures are cash settled and are not settled by delivery of shares.

- **Trading an option in the market**

Once you have purchased an option (put or call option), you need not hold it till expiration. You can sell it in the market at the then prevailing premium.

Premium on an option continuously changes with the demand/ supply for the option, the current market price of the underlying stock and the time left for expiry of the option (with decrease in time, the premium falls).



you need not hold onto
an option till its expiry.
You can sell it in the market.

Example: If you have purchased a Company ABC call option (lot size - 100 shares) for a premium of Rs 10 per share (the total premium payable on the contract would be Rs 1,000 (100 shares x Rs 10 premium per share)) from an option writer.

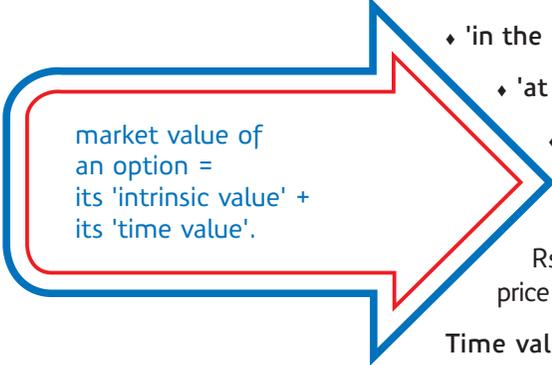
You can sell this option in the market any time before the expiry date.

- ♦ If the premium per share has fallen to Rs 8, you will receive Rs 800 (100 shares x Rs 8 premium per share) on sale of your option.
- ♦ If the premium per share has risen to Rs 11, you will receive Rs 1,100 (100 shares x Rs 11 premium per share) on sale of your option.

- **Valuing an option**

The market value of an option is a combination of two factors – its 'intrinsic value' and its 'time value'. **Intrinsic value:** The intrinsic value of an option is determined by the difference between the spot market price and the strike price. You are said to be

- ♦ 'in the money' if the difference yields a profit to the buyer.
- ♦ 'at the money' if the spot price and the strike price are the same.
- ♦ 'out of the money' if the difference yields a loss.



market value of
an option =
its 'intrinsic value' +
its 'time value'.

Your option has an intrinsic value only if you are 'in the money'. For instance, if the spot price per share of Company ABC is Rs 110 and you hold a Company ABC call option that carries a strike price of Rs 100, it has an intrinsic value of Rs 10 (Rs 110 – Rs 100).

Time value: 'Time value' is the amount that an option buyer is willing to pay for the possibility that the option may become profitable prior to the expiry date, due to a favourable change in the price of the underlying asset. The amount by which an option's total premium exceeds its intrinsic value is called the 'time value portion' of the premium. Generally, an option loses its 'time value' as its expiry date approaches. On expiry, an option is worth only its intrinsic value.

About futures

Futures are derivative contracts that require you to sell or buy a specified quantity of the underlying asset on a specified date (expiration date) at the spot price of the underlying asset prevailing on the expiration date.

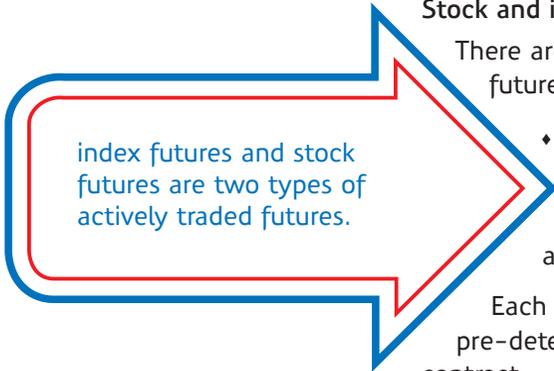
Futures can have a validity of 1 month, 2 months or 3 months. These contracts do not have a strike price. In other words, when the contract expires, the holder gains or incurs a loss depending on the prevailing spot price of the underlying asset in the cash market on the expiration date.

futures contracts
do not have a strike price.



Stock and index futures

There are two kinds of actively traded futures – index futures and stock futures.



index futures and stock futures are two types of actively traded futures.

- ♦ **Index futures** are derivative contracts, which have the index value (NSE Nifty, the BSE Sensex, etc.) as the underlying asset.
- ♦ **Stock futures** are derivative contracts that have an equity share as the underlying asset.

Each index/stock future contract has a 'market lot' or a certain pre-determined number of index units/shares that constitute one contract.

Both these derivative products work in the same manner. The only difference is the underlying asset.

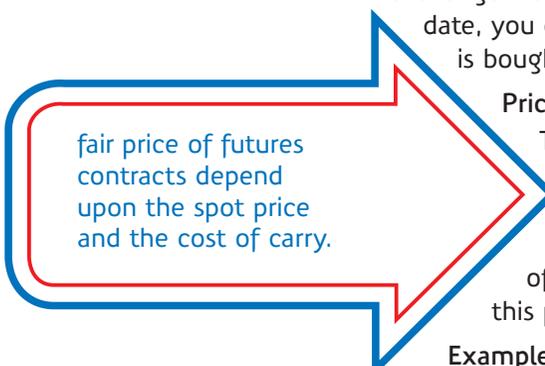
Features of a futures contract

All futures contracts are traded on the futures (derivatives) section of the stock exchange. Although these contracts cannot be liquidated before their expiry date, you can sell them on the exchange. In other words, a futures contract is bought and sold regularly on the market till its expiry.

Pricing a futures contract

The fair price of futures contracts depends upon the spot price and the cost of carry. Cost of carry is the sum of all costs that you would have to bear if you purchased the underlying asset now from the stock market and held on to it until the time of maturity of the futures contract, less any dividends received in this period. The cost typically includes interest costs.

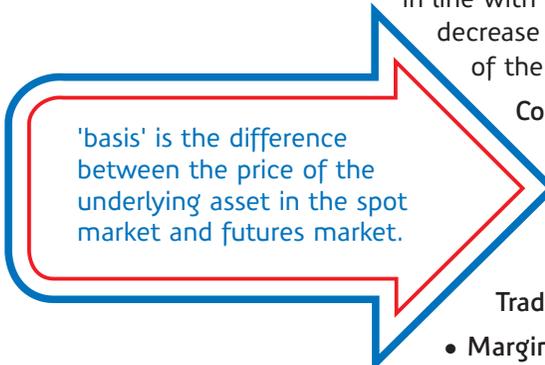
Example: Suppose you purchased stock futures of Company ABC when its price was Rs 1,000. Let's assume that no dividends are expected and that the one-month cost of carry is 1.5 per cent. The fair price for Company ABC's stock futures contract that expires after a month is Rs 1,015 (the current price plus interest). Apart from the theoretical value, the actual value may vary depending on the present demand and supply of the underlying asset and expectations about the future.



fair price of futures contracts depend upon the spot price and the cost of carry.

The basis

The difference between the price of the underlying asset in the spot market and futures market is known as the basis. Although both these prices generally move in line with each other, the basis is not constant. Generally, the basis will decrease with time and on expiry, the basis will become zero and the price of the underlying asset in both the markets will become the same.



'basis' is the difference between the price of the underlying asset in the spot market and futures market.

Contango and Backwardation

Under normal market conditions, the price of the underlying asset in the futures market exceeds its price in the spot market. This is known as the 'Contango Market'. In a reverse situation, the situation is called 'Backwardation'.

Trading in futures

- **Margin money**

When you decide to buy a futures contract, you are not expected to pay for the total value of the contract up front. You are only required to deposit a pre-specified percentage of the value of the contract prevailing on the futures market with your broker at the time of purchase. This is known as Margin money.

Mark-to-market margins / Mark to Market Profit or Loss

The exchange in turn the broker computes the percentage of your margin money to the spot price of the future on a daily basis in order to ensure that the percentage remains constant. In other words, if the spot price rises, the broker will request for additional funds towards the margin in order to keep the margin percent the same. For instance, if the spot price of the future is Rs 1,00,000 at the time of purchase of the future and a 15 per cent margin is required, you will pay the broker Rs 15,000 as the initial margin.

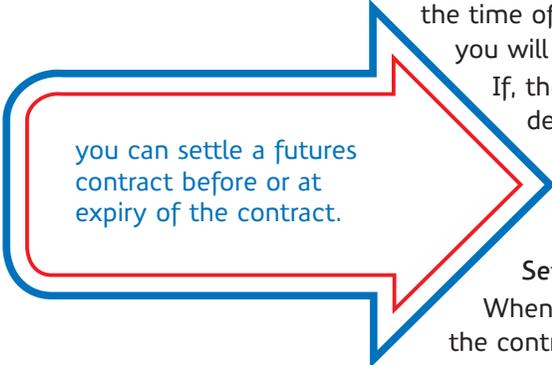
If, the next day, the spot price rises to Rs 1,10,000, the broker will demand an additional sum of Rs 1,500 to re-instate the margin to 15 per cent.

If the spot price of the future falls, your broker will communicate a credit standing in your name in his margin books.

Settling a futures contract

When you wish to settle your futures contract, you could either settle the contract before expiry of the contract or at expiry of the contract.

- **Before expiry of the contract:** Buy/sell your contract on the futures exchange through your broker while the future has still not reached expiry date.
- **At expiry of the contract:** You could hold on to your futures contract till its expiry date and you will pay or receive the difference between your cost price and your selling price.



you can settle a futures contract before or at expiry of the contract.

Working of a futures contract

Let's understand how a futures contract works with 2 examples - one example where you buy a futures contract and the second example where you sell a futures contract.

Example of buying a futures contract

You expect the price of Company ABC to move up from the present level of Rs 100 to Rs 150 in the cash market. To profit from such a scenario, you buy a futures contract of Company ABC. The futures contract will be settled at the prevailing spot price of the shares of Company ABC in the cash market at the time of expiry of the contract. Keep in mind though, that there is no delivery of shares that take place. Presently, the futures contract (1 future contract = 100 shares) of Company ABC is quoting at Rs 12,000 in the futures market. This means 1 share of Company ABC is valued at Rs 120 in the futures market. The share is valued at a higher price in the futures market (vis-à-vis the cash market) because it includes the cost of carry and also accounts for the market sentiment.

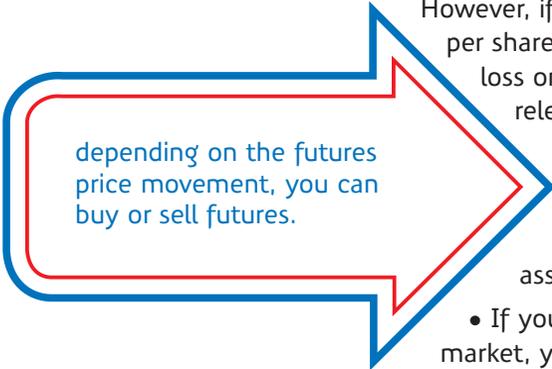
If the share price of Company ABC reaches Rs 150 in the cash market on expiry of the contract, your futures contract will be settled at Rs 15,000 (spot price in cash market of Rs 150 x 100 shares). Your profit would be Rs 3,000 (futures contract value at the time of settlement i.e. Rs 15,000 - futures contract value at the time of purchase i.e. Rs 12,000). On settlement, your broker will refund your margin after reducing relevant charges and pay you your profit. In any case, you will earn profit on the futures contract on shares of Company ABC if the price of the share at the time of expiry in the cash market is above your cost price of Rs 120.

However, if the price of Company ABC is below your cost of Rs 120 per share at the time of expiry of the futures contract, you have incurred a loss on the contract. Your broker will refund your margin after reducing relevant charges and the loss you have incurred.

Example of selling a futures contract

You expect the price of Company ABC to fall from the present value of Rs 100 to Rs 70 in the cash market. To profit from such a scenario, you sell a futures contract of Company ABC. The futures contract will be settled at the prevailing spot price of the shares of Company ABC in the cash market at the time of expiry of the contract. Keep in mind though, that there is no delivery of shares that take place. Presently, the futures contract (1 future contract = 100 shares) of Company ABC is quoting at Rs 10,500 in the futures market. This means that 1 share of Company ABC is valued at Rs 105 in the futures market. The share is valued at a higher price in the futures market (vis-à-vis the cash market) because it includes the cost of carry and also accounts for the market sentiment.

If the share price of Company ABC reaches Rs 70 in the cash market on expiry of the contract, your futures contract will be settled at Rs 7,000 (spot price in cash market of Rs 70 x 100 shares). Your profit would be Rs 3,500 (futures contract value at the time of sale i.e. Rs 10,500 – futures contract value at the time of settlement i.e. Rs 7,000). On settlement, your broker will refund your margin after reducing relevant charges and pay you your profit. In any case, you will earn profit on the futures contract on shares of Company ABC if the price of the share at the time of expiry in the cash market is below your selling price of Rs 105.



depending on the futures price movement, you can buy or sell futures.

However, if the price of Company ABC is above your selling price of Rs 105 per share at the time of expiry of the futures contract, you have incurred a loss on the contract. Your broker will refund your margin after reducing relevant charges and the loss you have incurred.

When to buy and sell a futures contract

- If you expect the price of the underlying asset to rise in the cash market, you could buy a futures contract on that underlying asset.
- If you expect the price of the underlying asset to fall in the cash market, you could sell a futures contract on that underlying asset.

futures versus options

Futures	Options
In case of futures, both the buyer and seller are obligated to buy/sell the underlying asset.	In case of options the buyer enjoys the right and not the obligation, to buy or sell the underlying asset.
In case of futures contracts, both the parties - the buyer and the seller - face the same level of risk.	In case of options, the buyer faces a limited amount of risk (only to the extent of premium paid) while the seller i.e. the option writer, faces unlimited risk since he has to comply with the buyer's decision of exercising or allowing the options contract to lapse.
Futures contract prices are affected mainly by the prices of the underlying asset in the cash market.	The prices of options are affected by the prices of the underlying asset, time remaining for expiry of the contract and volatility of the underlying asset.

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