

## Options Basics

Purchasing an option gives the buyer the right, but not the obligation, to buy or sell a specific amount of an underlying security at a specific price within a specified time period. By comparison, a futures contract requires both the buyer and the seller to perform under the terms of the contract, if an open futures position is not offset before expiration.

The decision whether or not to exercise an option is entirely that of the options buyer.

An option buyer cannot lose more than the amount he or she invested in the options premium. The same cannot be said, however, for the buyer of a futures contract.

An option buyer is never subject to margin calls. This enables the buyer to maintain a market position, despite any adverse moves, without putting up additional funds.

Following are some further options basics:

- Buying an option gives you the right to buy or sell an underlying security.
- As an options buyer, you have the right, but not an obligation, to buy or sell an underlying security at a specified price.
- As an option seller (writer), you have obligations to the options buyer.
- There are two types of options:
  - Calls (call options) - give you the right to buy an underlying security.
  - Puts (put options) - give you the right to sell an underlying security.
- Each option corresponds to 100 shares of an underlying security.
- The price of an option depends on several factors:
  - The current price of the underlying security;
  - The strike price of the option;
  - The amount of time remaining until the option expires;
  - The volatility of an underlying security.
- **Strike Price.** The price at which an underlying security can be purchased

or sold, if an option is to be exercised.

- **Expiration Date.** The date on which an option expires. It is the 3rd Friday of the expiration month. Each option has an expiration day. After expiry, you have lost the right to buy or sell the underlying security at the strike price.
- **Premium.** The price of an option. If an option costs \$3 per contract, your total premium is \$300 (one contract = 100 shares), plus commission (transaction) costs.
- Please note that options are not available on every stock (i.e., not all stocks are optionable).

## Expiration Date

On an options exchange, every 3rd Friday of the month is an expiration day – this means that a number of options series expire on this day.

At the end of the expiration date, all those call options whose strike prices are higher than the price of the underlying stock or index will be worthless. On the other hand, those options series, whose strike prices are lower, will have some intrinsic value and may be exercised. In the case of put options, the opposite applies.

**The options expiration date is the most important factor in calculating options prices:**

- The Black Scholes model is used to price European style options. This is done by factoring in current stock prices, strike prices, time left until expiration, interest rates, any dividends, as well as the volatility of the underlying security.
- The binomial model is used to price American style options. The binomial model calculates a tree of stock prices for various given time intervals within the expiration period. Using the volatility of a stock and the time left to expiration, the model determines how much a stock might increase or decrease in value. This calculation gives all possible prices for a stock. Then, working backward from the expiration date to the present, option prices are calculated using a risk neutral valuation. Ultimately, a each option is priced .

**Option Style:** There are American style and European style options. American style options can be exercised at any time up to the expiration date. European style options may be exercised only on the expiration date itself.

## Open Interest

For a given option, the open interest is the number of open contracts - either puts or calls - that have not been exercised, closed or expired on a particular day. While each open transaction has a buyer and a seller, for the purposes of calculating the open interest, only one side of the contract is counted. Open interest increases when a buyer opens a put or call position and, vice versa, it decreases when a buyer sells/closes a put or call position.

For Example:

Time	Trading Activity	Open Interest
Jan 1st	<b>A</b> buys 1 options and <b>B</b> sells 1 options contract	1
Jan 2nd	<b>C</b> buys 5 options and <b>D</b> sells 5 options contracts	6
Jan 3rd	<b>A</b> sell his 1 options and <b>D</b> buys 1 options contract	5
Jan 4th	<b>E</b> buys 5 options from <b>C</b> who sells 5 options contracts	5

- On Jan 1 A buys an option which leaves an open interest and also creates trading volume of 1.
- On Jan 2 C and D create trading volume of 5 and there are also 5 more options left open.
- On Jan 3 A takes an offsetting position and therefore open interest is reduced by 1, and trading volume is 1.
- On Jan 4, E simply replaces C and therefore open interest does not change, trading volume increases by 5

Volume and open interest are important indicators in futures and equities markets.