

Lecture 2: Characteristics of Options

A **stock option** is a contract that gives the owner the right but not the obligation to buy or sell a particular asset (the underlying stock) at a fixed price (the strike price) for a specific period of time (until expiration).

Another way of looking at a stock option is that it is the right to buy or sell a specific stock at a certain price for a limited period of time.

The seller of an option is entitled to a premium.

Without an underlying stock there could be no option. Stock options are paper contracts that give you the right to buy or sell a stock.

The option is derived from the value tied up in an underlying financial instrument which is why it is sometimes referred to as a derivative security.

There are exchange written options on more than 2,500 stocks trading on the various exchanges --- the most active options are generally on stocks that are familiar and have a large following in terms of buyers and sellers.

Penny stocks, stocks that trade for under \$3 per share are not allowed to have options on them. 1 option contract controls 100 shares of stock. So one standard option gives a person the rights on 100 shares of stock, however since they don't own the shares, the owner of the option will not receive dividends [which goes to the writer of the option] during the option period.

Movement of the Option with the Underlying Stock:

When the underlying stock goes up, so does the option. If the stock goes high enough, eventually the stock and option prices will move on a one-to-one basis. **No matter whether you are an options buyer or seller, the key to success in options is choosing the right underlying stock.**

Expiration: At the stock of midnight on Saturday following the third Friday of the month of expiration, the option disappears forever.

Another unique characteristic of options is that they always expire. After a certain date and time, called the expiration date, options are worthless. The expiration date is listed on every options contract. The third Friday of each quarter is a time when thousands of options contracts expire simultaneously, and is sometimes referred to as the "triple witching day." Because options contracts expire they have greater risk than the underlying stock because you have to be right not only in terms of price direction but also the time.

Terminology:

A call option is similar to “going long” in a stock --- you are optimistic that the stock price will increase.

A put option represents a “short position” in a stock to the buyer --- you are looking for the stock price to decline over the life of the contract. So if the underlying stock price declines, the value of the put option will increase. One advantage to buying a put option is that there is less downside risk to this strategy than shorting the underlying stock.

The predetermined fixed price of a stock option is the strike price from which the leverage characteristics of the option come into play. One way of looking at the strike price is to consider it as a target price for the underlying stock. When you buy an option you are actually buying a privilege to buy or sell the underlying stock at a certain price.

Consider the following option listing for Corning [GLW] on February 10, 2012 when GLW closed at a price of \$13.60

View By Expiration: [Feb 12](#) | [Mar 12](#) | **[May 12](#)** | [Aug 12](#) | [Jan 13](#) | [Jan 14](#)

Call Options				Expire at close Friday, May 18, 2012			
Strike	Symbol	Last	Chg	Bid	Ask	Vol	Open Int
8.00	GLW120519C00008000	5.75	0.00	5.55	5.65	2	112
9.00	GLW120519C00009000	4.85	0.00	4.55	4.70	10	20
10.00	GLW120519C00010000	3.85	0.00	3.65	3.70	4	510
11.00	GLW120519C00011000	2.90	↓0.05	2.76	2.80	12	444
12.00	GLW120519C00012000	1.99	↓0.08	1.96	1.98	116	4,713
13.00	GLW120519C00013000	1.32	↓0.08	1.28	1.31	131	4,855
14.00	GLW120519C00014000	0.81	↓0.03	0.77	0.79	1,901	9,101
15.00	GLW120519C00015000	0.43	↓0.03	0.42	0.44	4,272	13,280
16.00	GLW120519C00016000	0.22	0.00	0.21	0.22	529	8,261
17.00	GLW120519C00017000	0.10	0.00	0.10	0.12	5	5,084
18.00	GLW120519C00018000	0.04	0.00	0.04	0.06	30	3,122
19.00	GLW120519C00019000	0.02	0.00	0.02	0.03	10	2,392
20.00	GLW120519C00020000	0.02	0.00	N/A	0.03	15	3,562

Put Options				Expire at close Friday, May 18, 2012			
Strike	Symbol	Last	Chg	Bid	Ask	Vol	Open Int

5.00	GLW120519P00005000	0.08	0.00	N/A	0.02	10	18
6.00	GLW120519P00006000	0.03	0.00	N/A	0.02	162	167
7.00	GLW120519P00007000	0.09	0.00	0.01	0.03	40	126
8.00	GLW120519P00008000	0.05	0.00	0.03	0.04	10	2,003
9.00	GLW120519P00009000	0.05	0.00	0.06	0.08	40	4,124
10.00	GLW120519P00010000	0.11	↑0.01	0.11	0.14	216	2,772
11.00	GLW120519P00011000	0.19	0.00	0.22	0.24	36	6,474
12.00	GLW120519P00012000	0.42	↑0.08	0.42	0.44	57	14,563
13.00	GLW120519P00013000	0.74	↑0.10	0.75	0.77	4,668	8,675
14.00	GLW120519P00014000	1.24	↑0.15	1.23	1.26	1,666	5,450
15.00	GLW120519P00015000	1.68	0.00	1.88	1.91	19	2,547
16.00	GLW120519P00016000	2.47	0.00	2.66	2.70	10	2,563
17.00	GLW120519P00017000	2.80	0.00	3.40	3.60	10	1,879
18.00	GLW120519P00018000	3.90	0.00	4.40	4.55	14	360
19.00	GLW120519P00019000	5.30	0.00	5.45	5.55	43	119
20.00	GLW120519P00020000	5.70	0.00	6.20	6.90	25	737
21.00	GLW120519P00021000	6.57	0.00	5.80	9.05	3	3

If you were to purchase a call option on GLW you could a strike price anywhere from \$8 to \$20. The strike prices vary by \$1 for each line in the option's chart. Those options with strike prices between \$8 to \$13 are in the money. The in-the-money options have higher option premiums because the strike plus option premium > price of the underlying stock GLW.

Some perspectives on strike prices: (1) If you select a high strike price such as \$20 you must be quite optimistic, because in order for you to make money, the stock price of GLW will need to traverse the \$7 difference between today's approximate price of \$13 and the strike price you chosen of \$20. (2) The higher the strike price the lower the option price. On the other hand, if you select a low strike price so that the option is in-the-money, you will have a greater investment in the option and if GLW stock price doesn't move up in the next 3 months you will lose the expensive premium unless you decide to exercise the option . (3) The more distant an option is out to expire, the more valuable the option will be ---- you have many more days for GLW's stock price to go up. Choosing a near option introduces greater risk of losing the option premium.

The option premium is extremely important to your option trading strategy. If you are an option buyer, it is the price you pay for an option. If you are a seller, the option premium is what you will receive for writing the option. The option premium goes up and down based on the supply and demand of the market. The option premium is quoted in terms of a bid/ask spread. The ask price is what someone wants from you if you were buying the option. The bid price is what someone is willing to give you if you own the option and want sell it.

Because options traders want to know immediately what options they are buying or selling, they have a combined four options characteristics into a single quote:

GLW May 14 Call =====> Underlying Stock: GLW; Type of Option Call; Last day of Trading: Third Friday May; Strike Price: \$14

Although many different web sites provide free option chains, the most known source is the Chicago Board of Options Exchange web site at: www.cboe.com. To look up an option quote, enter the ticker symbol of the underlying stock and then link to the options chain.

Historical Information on Option Coding by the Option Exchanges

Before the advent of internet trading, the exchanges created special symbols to let traders know quickly the most important information on a particular contract. For example say you put through an order for an IBM July 90 Call, on the exchange this order would be coded as IBMGR. The last two symbols GR refer to the Call/Put Code [G] and the Strike Price Code [R]

The first symbol G comes from the following table:

Month	Call Code	Put Code
January	A	M
February	B	N
March	C	O
April	D	P
May	E	Q
June	F	R

July	G	S
August	H	T
September	I	U
October	J	V
November	K	W
December	L	X

The second symbol R comes out of the IBM strike price table:

Code	Strike Prices		
A	5	105	205
B	10	110	210
C	15	115	215
D	20	120	220
E	25	125	225
F	30	130	230
G	35	135	235
H	40	140	240
I	45	145	245
J	50	150	250
K	55	155	255
L	60	160	260
M	65	165	265
N	70	170	270
O	75	175	275
P	80	180	280

Q	85	185	285
R	90	190	290
S	95	195	295
T	100	200	300
U	7.5		
V	12.5		
W	17.5		
X	22.5		

What is the option trading symbol for the IBM January 65 Call? IBMAM

What is the option trading symbol of the IBM March 95 Put? IBMOS

Basic Elements of Option Pricing Relating to Option Characteristics

There are 4 Main Factors that Determine the Option Premium

- (1) The Intrinsic Value of the Option
- (2) Volatility
- (3) Time
- (4) The Risk Free Interest Rate

The Intrinsic Value of the Option = Market Price of the Stock - Strike Price on the Option Contract

Consider the previous Option Chain listing, GLW shares are selling in the market for \$13.60

Going down the call option listing we see that the May 2012 call with a strike price of \$15 has a bid/ask spread of :

GLW: Current Market Price \$13.60

Strike	Bid	Ask	Vol.
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15

.42

.44

4,272

Intrinsic value increases as the stock price moves up for calls, or as the stock price declines for puts.

The intrinsic value of the GLW call option is: $\$13.60 - \$15 = -\$1.40$. The dominant characteristic producing this negative number is that it is out of the money [the stock price is less than the strike price]. However other factors such as time, volatility and market rates of interest may also influence this result.

Volatility tends to increase option premiums. The rationale being that a more volatile contract is more likely to generate values significantly above or below the strike price.

A longer time period also tends to increase the option premium. A contract that has more days left to expire provides more opportunity for the stock price to move above the strike price [in the case of calls] or below the strike price [in the case of puts]. Once a contract reaches its expiration date, its value becomes zero.

If you bought an option for January 2013, and it is February 2011, then the option is a fair amount of time before expiration and that advantage will be priced into the option premium. However, as time moves forward the time value of the option gradually decreases. Typically the last two months of an option contract is where the decay in time value will occur at the greatest pace.

Consequently, if you are wrong about the size and direction of the underlying stock, it is important to determine whether to get out of an option prior to those last few months in order to preserve some value in the trade by getting out early through offset.

Measures of how option premiums may change due to the 4 factors:

Delta – measures the change in the underlying price of the stock to the change in the price of the option. It provides a way of understanding the correlation between the price of the stock relative to the price of the option contract. So, for example if there is a 1% change in the underlying stock price that causes a 1% change in the price of the option then Delta = 1.

Generally, out- of- the- money stock options will have a low delta, and in- the- money options will have a high delta value.

Gamma – is a measure of the change in Delta in relation to the change in the underlying stock price. So, it offers a way of looking at the rate of acceleration in option prices due to a change in stock price.

Theta – is a measure of time decay, or how quickly the value of the option premium will decrease in relation to time. If the option you are investigating has a Theta of $-.085$ the implication is that for each day towards expiration, the value of the option premium will decline by $\$.085$ until the contract ceases to exist.

Vega – offers a way of understanding volatility in relation to option pricing, it is a measure of the change in an option premium compared to a 1% change in a stock's implied volatility.

Rho – measures the rate of change in an option premium compared to a change in the risk-free rate of interest. The risk-free rate of return most often used is the 3-month T-Bill rate.

When looking at option chains provided by online brokers, these measures may be provided as a link to what is called, "Theoretical Option Price Controls."

Option Trading Strategies

Buy a Call:

Bullish Strategy

Option value increases as the stock price increases

Gives the owner the option, but not the obligation to buy shares of a stock at a specified price

At expiration the owner will be assigned shares of the underlying stock if the stock price is above the strike price

At expiration the option will expire worthless if shares of the underlying stock are below the strike price

Buy a Put:

Bearish Strategy

Option value increases as the stock price decreases

Gives the owner the option but not the obligation to sell shares of stock at a specified price

At expiration the owner will have his/her shares assigned [Sold] to the writer [Seller] of the put options

At expiration the options will expire worthless if shares of the underlying stock are above the strike price

Write a Call

Bearish to neutral strategy

The writer collects the option premium

Gives the writer the ability to sell shares of the underlying stock at a specified price

At expiration the writer will need to sell shares of the underlying stock if the stock closes above the exercise price

At expiration the writer simply keeps the premium if the underlying stock price closes below the strike price

Write a Put

Bullish to neutral strategy

The writer collects the option premium

Gives the writer the premium plus the ability to buy shares of the underlying stock at a specified price

At expiration the writer will need to purchase shares of the underlying stock if the stock price closes below the strike price

At expiration the writer simply keeps the premium if the underlying stock closes above the strike price.

Strategy 1: Writing Covered Calls

Advantages: Easy to Implement

Mitigates some downside risk associated with owning a stock

Allows you to gain additional income from either selling your stock or continuing hold your stock.

Disadvantages: May leave you holding onto a stock that you wished you had sold

Places a cap on the upside of the underlying stock move if the stock rises

Since this strategy involves owning the underlying stock, it requires a larger portion of your capital to be tied up in the trade.

This strategy is most beneficial to those who research their stock purchases in detail and are long term holders of a particular company [core holdings]. These investors will typically plan their purchase point as well as exit point for the stock holding.

Mechanics of the trade: You need to first get level 1 trading status on your account. To place the trade you will look up the stock symbol, and click on the option chain for your broker, choose the

month, strike price and locate the appropriate symbol then execute a sell to open trade. Note here you are shorting the stock through an option contract. If you should decide to get out of this position, you can do so by offset executing a buy to close order.

Whenever you do any option trade it is important to double check your option symbol to make sure trade it is important to double check your option symbol to make sure you are selecting the right parameters – expiration date, strike price, sell to open or buy to close, because once you've put through the order it's yours until its unwound.