**Options Basics**

**General Information on Options**

Option = A contract that gives the purchaser the right but not the obligation (the option) to buy or sell the underlying security

Put = Option to sell the security to the person who sold (wrote) you the contract

Call = Option to buy the security from the person who sold (wrote) you the contract

Strike Price = Exercise Price = The price that the owner of the option can sell or buy the security for.

Note: The person who writes a call is obligated to sell the security at the strike price if the owner exercises his option to buy.

The person who writes a put is obligated to buy the security at the strike price if the owner exercises his option to sell.

The owner (buyer) of the option is never obligated to exercise the option.

Premium = Price = the price paid by the buyer of the option to the writer for the option. It is paid at the time the option is written – not at delivery.

Note: An option is always of some value (prior to the exercise date). Thus it is worth money and must be paid for.

American Options – Can be exercised at any time up to the exercise date.

European Options – Can be exercised only on the exercise date.

Options are usually traded on an organized exchange such as the Chicago Board Options Exchange (CBOE) or the Chicago Board of Trade (CBOT).

The underlying instrument can be

* Shares of stock
* Commodities
* Futures contracts on Treasury Bonds, Notes, or Bills
* An Index (such as the S&P 500)
* An Interest Rate
* Electricity

We will focus on stock options

E.g.: Call Option on 100 shares of XOM stock at an exercise price of $80, expiring on the 3rd Friday of December.

On the exercise date the option has positive value only if the stock price is greater than the exercise price.

Call Option = Max {0, (S-E)}

XOM Stock Option Value

$70 $0 (out of the money)

$80 $0 (at the money)

$82 $2 (in the money)

$95 $15 (in the money)



• A Call Option has Unlimited up-side potential and limited down side potential

E.g.: Put Option on 100 shares of XOM stock at an exercise price of $70, expiring on the 3rd Friday of December.

The Put Option has positive value if the stock price is lower than the exercise price.

Put Option = Max {0, (E-S)}

XOM Stock Option Value

$55 $15 (in the money)

$65 $5 (in the money)

$70 $0 (at the money)

$90 $0 (out of the money)



• A put option has limited up-side and limited downside potential.





Exchanges:

Contract = 100 shares

Agreement is with exchange

Mark-to-market is for seller only

In the money – it is profitable to exercise the option

Call: spot price > strike price

Put: spot price < strike price

Out of the money – it is not profitable to exercise the option. If an option is still held, and is out of the money on the exercise date, it is worthless.

Value of a Call Option on the expiration date:

In the money: Stock Price – Strike Price

Out of the money: Zero

Value of a Put Option on the expiration date:

In the money: Strike Price – Stock Price

Out of the money: Zero

Example: You own a call for 100 shares of XOM stock with a strike price of $80. Today is the expiration date. The spot price of XOM is $100.

Since you have the option to purchase something worth $100 for $80, you will exercise the option.

You can purchase the shares for $80 and immediately sell them on the spot market for $100, realizing a profit of $20 per share. Thus the value is $20 per share – or $2,000 total.

If you owned a put for 100 shares of XOM, with a strike price of $70, you would tear up the option – it is worthless. Why exercise an option to sell XOM at 70 when you can sell it at 100?

Note the diagram of the value of a call option. Note that the call cannot have a negative value. It is either worth zero or a positive value. Its value is determined by the value of the underlying stock.

Note the diagram of the value of a put. The put cannot have a negative value either. Again, its value is determined by the value of the underlying stock.

**Writing Options**

Writing = Selling

The person who writes a call is obligated to sell the stock at the strike price if the owner exercises the option.

The person who writes a put is obligated to purchase the stock at the strike price if the owner exercises the option.

If the owner exercises the option, the writer will lose as much money as the owner makes. In our example above, if the owner of the call option on XOM exercises his option to buy XOM at $80 when the price is $100, he makes $20 per share, and the writer of the option loses $20 per share (because she is selling something for $80 when it is worth $100).

Note the graph of the value of the Seller’s position of a put and a call. It is the mirror image of the owner’s position.

Note also the graph of the value of a share of common stock. It is the same as the value of a call (owning the call) when the strike price is zero. Purchasing stock is the same thing as purchasing a call option with a strike price of zero.