

# Options

## Topics to be Discussed

- Description of options
- History of options
- Reading option quotes
- Components of option's price
- Advantages of options
- Option strategies

## Description of Options

Option - gives the holder the right to buy or sell a security at a specified price and within a given time

- ☛ **call options** - gives the owner the right to **buy** a given number of shares of a security at a specified price during a given time period (usually from three to nine months)
- ☛ **put options** - gives the owner the right to **sell** a given number of shares of a security at a specified price during a given time period

## History of Options

Chicago Board Options Exchange (CBOE)

- ☛ prior to formation of CBOE (in 1973) call options were purchased only in the OTC market
  - option was purchased from an options dealer
  - option terms (exercise price, expiration price) not standardized
  - limited secondary market in options
- ☛ creation of CBOE resulted in an organized market in call options on selected securities
  - the striking price or exercise price (the per share price at which the option buyer may purchase a security) now standardized
  - listed options have standardized expiration dates

Options Clearing Corporation (OCC)

- ☛ OCC's participant exchanges include: Boston Options Exchange; Chicago Board Options Exchange, Incorporated; International Securities Exchange, LLC; NASDAQ OMX PHLX; NASDAQ Options Market, NYSE Amex LLC; and NYSE Arca, Inc.
- ☛ OCC sets option terms, ensures a continuous market for securities, and supplies daily quotations to financial press
- ☛ OCC acts as principal in every options transaction for listed options contracts
  - issues all listed options
  - guarantees contracts
  - legal entity on other side of every transaction

## Reading Option Quotes

International Business Machines (IBM)  
Options155.00 View By Expiration: [Jan 11](#) | [Feb 11](#) | [Apr 11](#) | [Jul 11](#) | [Jan 12](#) | [Jan 13](#)

Call Options		Expire at close Friday, January 21, 2011					
Strike	Symbol	Last	Chg	Bid	Ask	Vol	Open Int
45.00	IBM110122C00045000	102.00	0.00	108.25	110.55	0	3
50.00	IBM110122C00050000	98.91	0.00	103.10	105.55	1	3
60.00	IBM110122C00060000	86.50	0.00	93.15	95.55	0	11
65.00	IBM110122C00065000	84.90	0.00	89.50	90.55	1	61
80.00	IBM110122C00080000	73.26	<span style="color: green;">↑ 3.19</span>	74.40	75.55	1	9
85.00	IBM110122C00085000	59.86	0.00	68.15	70.55	0	3
90.00	IBM110122C00090000	63.10	<span style="color: green;">↑ 9.10</span>	64.00	65.40	1	11
95.00	IBM110122C00095000	54.70	0.00	59.30	60.10	3	497
100.00	IBM110122C00100000	50.85	0.00	55.00	55.25	2	1,239
105.00	IBM110122C00105000	48.22	<span style="color: green;">↑ 2.12</span>	49.95	50.10	4	65
110.00	IBM110122C00110000	43.30	<span style="color: green;">↑ 2.50</span>	45.00	45.20	7	748
115.00	IBM110122C00115000	39.40	<span style="color: green;">↑ 3.40</span>	40.00	40.15	1	515
120.00	IBM110122C00120000	34.70	<span style="color: green;">↑ 3.52</span>	34.95	35.10	7	1,394
125.00	IBM110122C00125000	29.55	<span style="color: green;">↑ 3.85</span>	29.95	30.15	10	1,978
130.00	IBM110122C00130000	24.80	<span style="color: green;">↑ 4.20</span>	24.95	25.10	26	8,443
135.00	IBM110122C00135000	20.35	<span style="color: green;">↑ 4.65</span>	19.95	20.10	15	10,131
140.00	IBM110122C00140000	15.03	<span style="color: green;">↑ 4.18</span>	14.95	15.10	269	11,910
145.00	IBM110122C00145000	10.04	<span style="color: green;">↑ 3.79</span>	9.95	10.10	896	12,542
150.00	IBM110122C00150000	5.05	<span style="color: green;">↑ 2.48</span>	5.05	5.10	5,091	22,309
155.00	IBM110122C00155000	0.97	<span style="color: green;">↑ 0.32</span>	0.96	0.98	7,294	10,921
160.00	IBM110122C00160000	0.03	<span style="color: red;">↓ 0.11</span>	0.03	0.04	1,381	6,964
165.00	IBM110122C00165000	0.01	<span style="color: red;">↓ 0.03</span>	N/A	0.02	21	1,986
170.00	IBM110122C00170000	0.02	0.00	N/A	0.01	135	641
175.00	IBM110122C00175000	0.02	0.00	N/A	0.01	4	761
180.00	IBM110122C00180000	0.06	0.00	N/A	0.02	0	760
185.00	IBM110122C00185000	0.04	0.00	N/A	0.01	0	365
190.00	IBM110122C00190000	0.03	0.00	N/A	0.01	4	385
195.00	IBM110122C00195000	0.02	0.00	N/A	0.02	0	242

## International Business Machines (IBM) Options

**155.00** 

Put Options		Expire at close Friday, January 21, 2011					
Strike	Symbol	Last	Chg	Bid	Ask	Vol	Open Int
20.00	IBM110122P00020000	0.01	0.00	N/A	0.01	0	2,160
22.50	IBM110122P00022500	0.03	0.00	N/A	0.01	0	777
25.00	IBM110122P00025000	0.05	0.00	N/A	0.01	0	1,138
30.00	IBM110122P00030000	0.01	0.00	N/A	0.01	0	3,356
35.00	IBM110122P00035000	0.04	0.00	N/A	0.02	0	1,300
40.00	IBM110122P00040000	0.06	0.00	N/A	0.02	0	2,372
45.00	IBM110122P00045000	0.09	0.00	N/A	0.02	0	1,853
50.00	IBM110122P00050000	0.05	0.00	N/A	0.01	0	3,697
55.00	IBM110122P00055000	0.01	↓ 0.06	N/A	0.01	1	979
60.00	IBM110122P00060000	0.01	↓ 0.04	N/A	0.01	1	1,443
65.00	IBM110122P00065000	0.02	0.00	N/A	0.01	0	2,068
70.00	IBM110122P00070000	0.02	0.00	N/A	0.01	0	2,381
75.00	IBM110122P00075000	0.01	0.00	N/A	0.01	0	2,871
80.00	IBM110122P00080000	0.01	0.00	N/A	0.01	7	4,451
85.00	IBM110122P00085000	0.01	0.00	N/A	0.01	17	3,921
90.00	IBM110122P00090000	0.01	0.00	N/A	0.01	30	4,593
95.00	IBM110122P00095000	0.01	0.00	N/A	0.01	14	6,006
100.00	IBM110122P00100000	0.02	0.00	N/A	0.01	33	8,438
105.00	IBM110122P00105000	0.01	0.00	N/A	0.01	29	6,381
110.00	IBM110122P00110000	0.01	0.00	N/A	0.01	20	16,305
115.00	IBM110122P00115000	0.01	0.00	N/A	0.01	5	12,409
120.00	IBM110122P00120000	0.01	0.00	N/A	0.01	3	14,323
125.00	IBM110122P00125000	0.02	0.00	N/A	0.02	5	9,661
130.00	IBM110122P00130000	0.02	0.00	N/A	0.02	1	14,163
135.00	IBM110122P00135000	0.03	↓ 0.01	N/A	0.02	45	8,913
140.00	IBM110122P00140000	0.01	↓ 0.11	0.01	0.02	471	10,521
145.00	IBM110122P00145000	0.04	↓ 0.51	0.02	0.03	2,158	16,179
150.00	IBM110122P00150000	0.07	↓ 1.79	0.06	0.08	2,630	18,059
155.00	IBM110122P00155000	0.88	↓ 4.07	0.86	0.89	2,154	1,160
160.00	IBM110122P00160000	4.90	↓ 4.50	4.95	5.05	150	1,113
165.00	IBM110122P00165000	9.60	↓ 4.65	9.90	10.05	4	42
170.00	IBM110122P00170000	24.50	0.00	14.90	15.10	2,000	469
175.00	IBM110122P00175000	40.80	0.00	19.80	21.20	0	5
195.00	IBM110122P00195000	73.55	0.00	39.60	41.70	0	10

Striking price

- ☛ price fixed in the options contract at which the options can be exercised
- ☛ striking price interval \$2.50 for stocks selling under \$25 per share, \$5 for stock selling at or under \$100 per share, \$10 for stocks selling up to \$200 per share, and \$20 for stocks selling over \$200 per share.
- ☛ “in the money” - striking price is less than current price of the stock
- ☛ “at the money” - striking price is equal to the current price of the stock
- ☛ “out of the money” - striking price is above the current price of the stock

Expiration date

- ☛ the month in which the contract expires
- ☛ set by the OCC for all listed options
- ☛ all listed options expire on the Saturday following the third Friday of the month in which it can be exercised

Premium

- ☛ the cost of the option for 100 shares
- ☛ factors influencing options premium
  - a change in price of the underlying security
  - the strike price
  - time until expiration
  - volatility of the underlying security

Change

- ☛ the difference between the current premium and the prior day’s closing premium

Bid

- ☛ the highest price currently offered for the call option

Ask

- ☛ the lowest price at which a call option is offered for sale

Volume

- ☛ the amount of options that have been traded that day, multiplied by 1,000

Open Interest

- ☛ the amount of open options, at this strike price, multiplied by 1,000

Price	Open Interest	Interpretation
Rising	Rising	Market is Strong
Rising	Falling	Market is Weakening
Falling	Rising	Market is Weak
Falling	Falling	Market is Strengthening

## Components of Option's Price

### Intrinsic Value

- ☛ the value that the option holder would receive by exercising the option is known as the intrinsic value
- ☛ example
  - IBM Jan 11 call option with a striking price of 145
    - current market value = 155.00
    - intrinsic value =  $\$155.00 - \$145.00 = \$10.00$
    - note premium (\$10.04) exceeds the intrinsic value (\$10.00)

### Time Value

- ☛ any part of the option's price in excess of the intrinsic value
- ☛ for IBM Jan 11 call option with a strike price of 145, the intrinsic value equals  $\$155.00 - \$145.00 = \$10.00$ .  
the time value equals  $\$10.04 - \$10.00 = \$0.04$
- ☛ time value caused by
  - time remaining before exercise date
    - ⇒ longer time until expiration, more likely that option's value will increase
  - volatility of underlying common stock
    - ⇒ other things being the same, options on high volatility stocks will have larger time values than those on low volatility stocks

## Advantages of Options

### Leverage

- ☛ option can be bought/sold for fraction of the cost of its underlying stock
- ☛ small swings in price of stock can generate large gains or losses for the options trader
- ☛ example
  - buy 100 shares of IBM @ \$155.00 = \$15,500.00
    - ⇒ assume market value goes to \$160
    - ⇒ profit  $(\$5 \times 100 \text{ sh}) / \$15,500.00 = \$500.00 / \$15,500.00 = 3.2\%$
  - buy Jan 11 call option for 100 shares of IBM @ striking price of \$150
    - ⇒ premium/cost =  $100 \times \$5.05 = \$505$
    - ⇒ assume market value goes to \$160
    - ⇒ profit
      - ▶ exercise option and sell stock  
 $(\$16,000 - (\$15,000 + \$505)) / \$505$   
 $\$495 / \$505 = 98.0\%$
      - ▶ sell option (assume @ \$10.00[\$160 - \$150])  
 $(\$1,000 - \$505) / \$505 = 98.0\%$

### Reducing Maximum Loss

- ☛ maximum loss is price of option, not higher cost of stock

## Option Strategies

### Hedges

- ☛ hedging against unpredictable turns in an uncertain market
- ☛ hedges are strategies similar to insurance policies
  - example
    - ⇒ buy 100 shares of IBM at \$155.00
    - ⇒ buy 1 IBM Jan 11 put option at 170 for premium of \$24.50 or \$2,450
    - ⇒ put guarantees being able to sell the stock at 170; thus the loss cannot exceed  $[\$2,450 - (\$17,000 - \$15,500)] = \$950$ , the premium on the put less the gain on sale of stock
    - ⇒ no profit will be realized until stock price rises enough to cover premium

### Straddles

- ☛ straddle is the simultaneous buying (or writing) of a put and a call on the same stock with the same expiration date and strike price
  - buyer expects movement in the stock but is unsure whether it will rise or fall
  - example
    - ⇒ stock is not bought
    - ⇒ buy 1 IBM Jan 11 call option at 165 for premium of \$0.01 or \$1.00
    - ⇒ buy 1 IBM Jan 10 put option at 165 for premium of \$9.60 or \$960.00
    - ⇒ assume stock goes to 180; the call is exercised, the stock is purchased for the option price (\$165) and is sold in the market (at \$180); the put expires
      - ▶ holder has paid  $(\$960.00 + \$1.00) = \$961.00$  in premiums and earned  $((\$180 - \$165) \times 100) = \$1,500$  from exercise of the option
    - ⇒ assume stock goes to 150; the stock is purchased (at \$150) and the put is exercised (selling stock at \$165); the call expires
      - ▶ holder has paid \$961.00 in premiums and earned  $(\$16,500 - \$15,000) = \$1,500$  from exercise of the option
    - ⇒ if stock increased or decreased \$9.61 per share, the cost of the options would be covered and the investor would make a profit on any additional change

### Spreads

- ☛ buying and selling a call or buying and selling a put on one security with either different expiration dates or different strike prices or both is a spread
  - the term “spread” refers to the difference between the premium paid and the premium received on the two positions, and determines the gain or loss
  - example, with Bristol-Myers Squibb at \$24.60
    - ⇒ buy 1 IBM January 11 call option at \$150 for premium of \$5.05 or \$505.00
    - ⇒ sell 1 IBM January 11 call option at \$160 for premium of \$0.03 or \$3
    - ⇒ net difference (spread)  $(\$505.00 - \$3.00) = \$502.00$
    - ⇒ maximum loss would come if the market price drops below \$150 -- both calls expire “out” and the \$502 net premium is lost
    - ⇒ maximum gain occurs if the price rises above \$160. The held call would be exercised at \$150, the securities used to satisfy the written option at \$160, for a gain of \$1,000.00 less net premium of \$502.00 or a total of \$498.00 (on a \$502 investment)

### Covered Call Options

- ☛ the writing of call contracts on shares owned by the writer

### Naked Calls

- ☛ the writing of call contracts on shares not owned by the writer