STERN IAG

2004 - 2005

Introduction to Options

What Is An Option?

- A Contract!! – Not equity or ownership
  - One contract is the right to buy or sell 100 shares of the underlying stock
- The price of the option depends on the price of the underlying share, plus a risk premium
- It is an OPTION, not a binding contract
- Call Option: Right to buy a share
- Put Option: Right to sell a share
- Options traded the same as stocks

What Makes Up An Option?

- The strike price is the price at which you can buy or sell shares
- Expiration date is the last day you can exercise an option
  - Automatically executed on this day
- Underlying asset is the stock on which the option is written
- Price of the option is how much investor pays for the right to buy or sell (a.k.a. premium)
- Options can be either “American” or “European”
  - American-style options can be executed on any day
  - European-style options can be executed only on the expiration date

What Is Contained In An Option?

CALL

- Right to buy 100 shares
- Holder of option can buy shares at the strike price
- Thus, seller of option MUST sell shares at strike price if exercised
- Calls are in-the-money if the strike price is below the stock price
- Calls are out-of-the-money if the strike price is greater than the stock price
- Calls are at-the-money if the strike price is equal to the stock price

PUT

- Right to sell 100 shares
- Holder of option can sell shares at strike price
- Thus, seller of option MUST buy shares at strike price if exercised
- Puts are in-the-money if the strike price is greater than the stock price
- Puts are out-of-the-money if the strike price is less than the stock price
- Puts are at-the-money if the strike price is equal to the stock price

Examples - Calls

- Call Option for IBM at a strike of $85 expiring in November
  - IBM underlying value = $89/share
  - Option value (as per market) = $4.40
    - $4.00 from spread ($89-$85)
    - $0.40 from time and risk premium
  - In the money
- Call Option for IBM at a strike of $90 expiring in November
  - IBM underlying value = $89/share
  - Option value (as per market) = $0.95
    - $0.00 from spread ($89 - $90 < $0)
    - $0.95 from time and risk premium
  - Out of the money

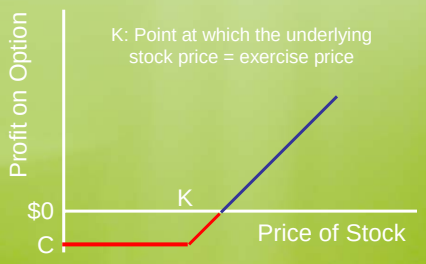
Examples - Puts

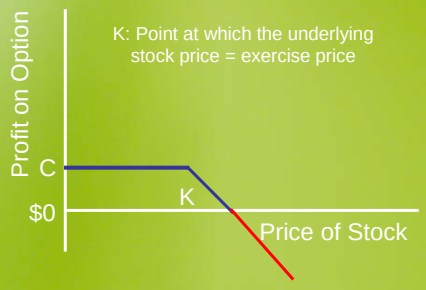
- Put Option for IBM at a strike of $85 expiring in November
  - IBM underlying value = $89/share
  - Option value (as per market) = $0.35
    - $0.00 from spread ($85 - $89 < $0)
    - $0.35 from time and risk premium
  - Out of the money
- Put Option for IBM at a strike of $90 expiring in November
  - IBM underlying value = $89/share
  - Option value (as per market) = $2.15
    - $1.00 from spread ($90 - $89)
    - $1.15 from time and risk premium
  - In the money

How Do I Find The Price Of An Option?

- Three components of the price of an option:
  - Intrinsic Value: value of the option if exercised
    - Call: Underlying Stock Price - Strike Price
    - Put: Strike Price - Underlying Stock Price
  - Volatility: premium for protection against price fluctuations in the underlying stock
    - Black Sholes Model based on this
  - Time Value: value of buying option instead of stock
    - The longer the time till expire, the higher the price of the option

What are the Profits For a Call?

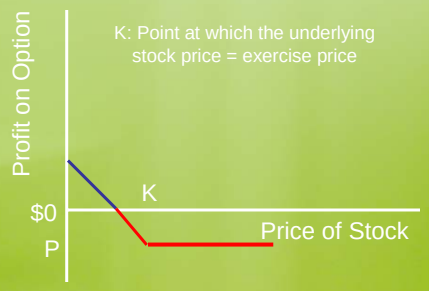


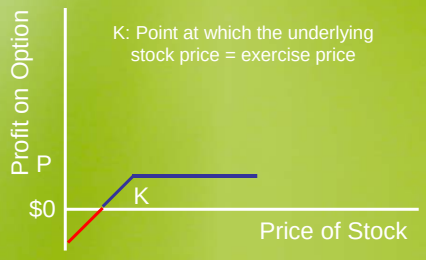


- LONG CALL
  - Initially, buyer pays out price of Call (C)
  - Value of long Call increases as value of Stock increases

- SHORT CALL (Writing a Call)
  - Initially, writer receives price of Call (C)
  - Value of short Call decreases as value of stock increases

What are the Profits For a Put?





- LONG PUT
  - Initially, buyer pays out price of Put (P)
  - Value of long Put decreases as value of Stock increases
- SHORT PUT (Writing a Put)
  - Initially, writer receives price of Put (P)
  - Value of short Put decreases as value of stock increases

How Do I Use Options?

- Portfolio Insurance
- Speculation/Leverage
- Hedging (Whish is actually a type of insurance!)
- Risk Control
- Targeted Returns
- Much more…

What Are Some Basic Calls Strategies?

- Buy Call at K1
- Write Call at K2
- Lower Cost of Portfolio, but limit upside
- Best if you think stock will rest b/w K1 and K2 at maturity

- Write Call at K1
- Buy Call at K2
- Take advantage of bearish sentiment by selling a call
- Hedge your bearish option by limiting downside

YOU Draw the Diagram: Put Spreads

- Bullish Put Spread is the same as a Bullish Call Spread, Using Puts
  - Buy Put at K1
  - Write Put at K2

- Bearish Put Spread is the same as a Bearish Call Spread, using Puts
  - Write Put at K1
  - Buy Put at K2

What Is a Straddle?

- BUY a Call and a Put at K
- Betting that the stock will move, but not in which direction
- Profit increases as price moves away from K

- WRITE a Call and a Put at K
- Betting that the stock will NOT move much
- Profit from initial sale of options

What Is a Butterfly?

- For Puts, the Butterfly Spread is:
  - Long put at K1
  - Write 2 Puts at K2
  - Long Put at K3

- A Butterfly Spread is the most widely used options combination.
- Investors make money on the premiums of the the calls sold, plus a potential payoff on the underlying stock price from the long positions
- The same profit structure exists for Call Butterflies:
  - Buy Call at K1
  - Write 2 Calls at K2
  - Buy Call at K3