OIC The Options Industry Council

Critical Options Pricing Factors

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Presentation Outline

- Options Pricing Basics
- Time Decay/Theta
- Implied Volatility
- Buying Calls/Puts
- Selling Calls/Puts

Options in the Marketplace

Who makes options prices?

- All market participants (buyers & sellers)
- Individual & institutional investors
- Professional market-makers
- Best bid/ask is consensus of all bids and offers

What is an option ultimately worth?

- What the market is willing to pay
- Pricing models used as guideline
- **Supply/demand** & market dynamics override theoretical values

Option Premium

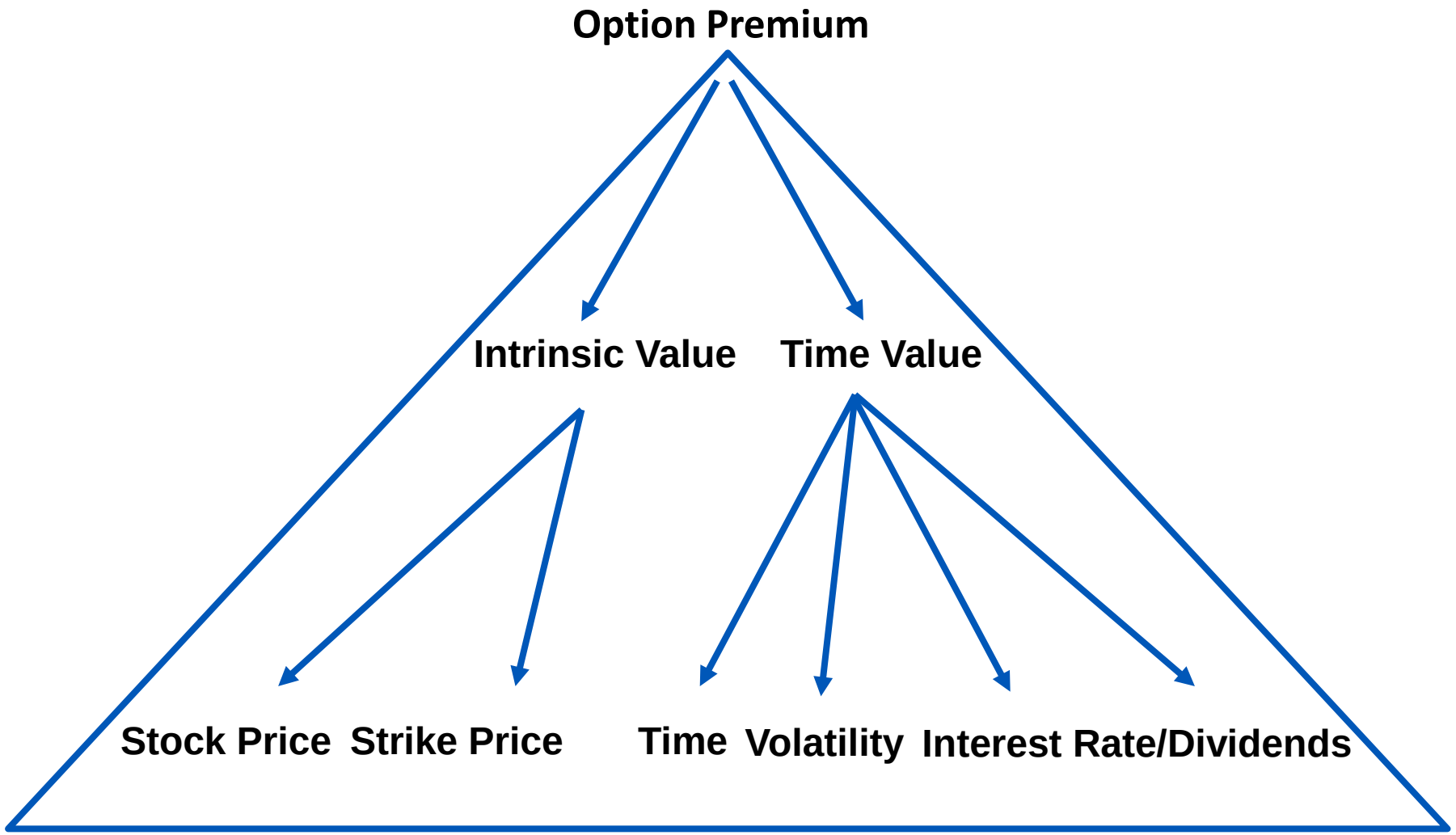
- An option **buyer** pays premium
- An option **seller** receives premium
- Option buyers/sellers can often trade back the contract to close
- Premium quoted on a per share basis
  - total paid/received = quoted price x 100 shares
  - example: $3.00 quoted x 100 = $300.00 total
  - excluding commissions

Intrinsic Value vs. Time Value

Option Premium: Intrinsic Value (if any) + Time Value

- Intrinsic value
  - in-the-money amount
- Time value
  - any premium in excess of intrinsic value
  - decays with time as expiration approaches (“time decay”)
- At expiration option worth only **intrinsic value**
  - no time remaining
  - when exercised, only the intrinsic value of an option is received/delivered—time value (if any) is **lost**

Intrinsic Value vs. Time Value



Time Decay/ Theta

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Theta

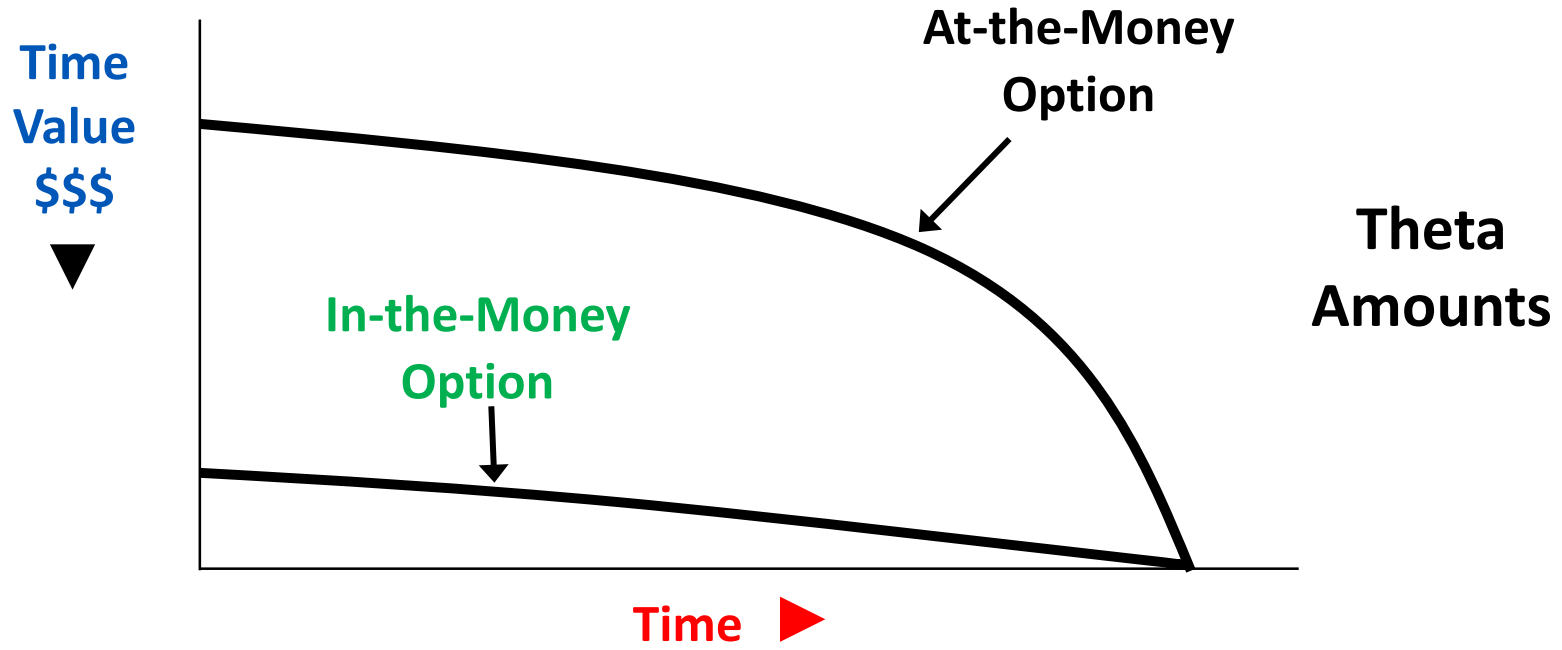
Theta: Option value's sensitivity to time

Expected time decay in option value

- With the passage of 1 day
- Expressed in decimal form (-.080)
- Represents cash amount per option
- Decay is per calendar day, not trading day
- All other pricing factors constant

Calls and puts both have negative theta amounts

Time Decay Not Constant



Overall rate of time decay is exponential (**accelerates** towards expiry)

ATM = decay exponential = volatility is key decay factor

ITM = decay linear = cost-to-carry is key decay factor

Implied Volatility

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Volatility

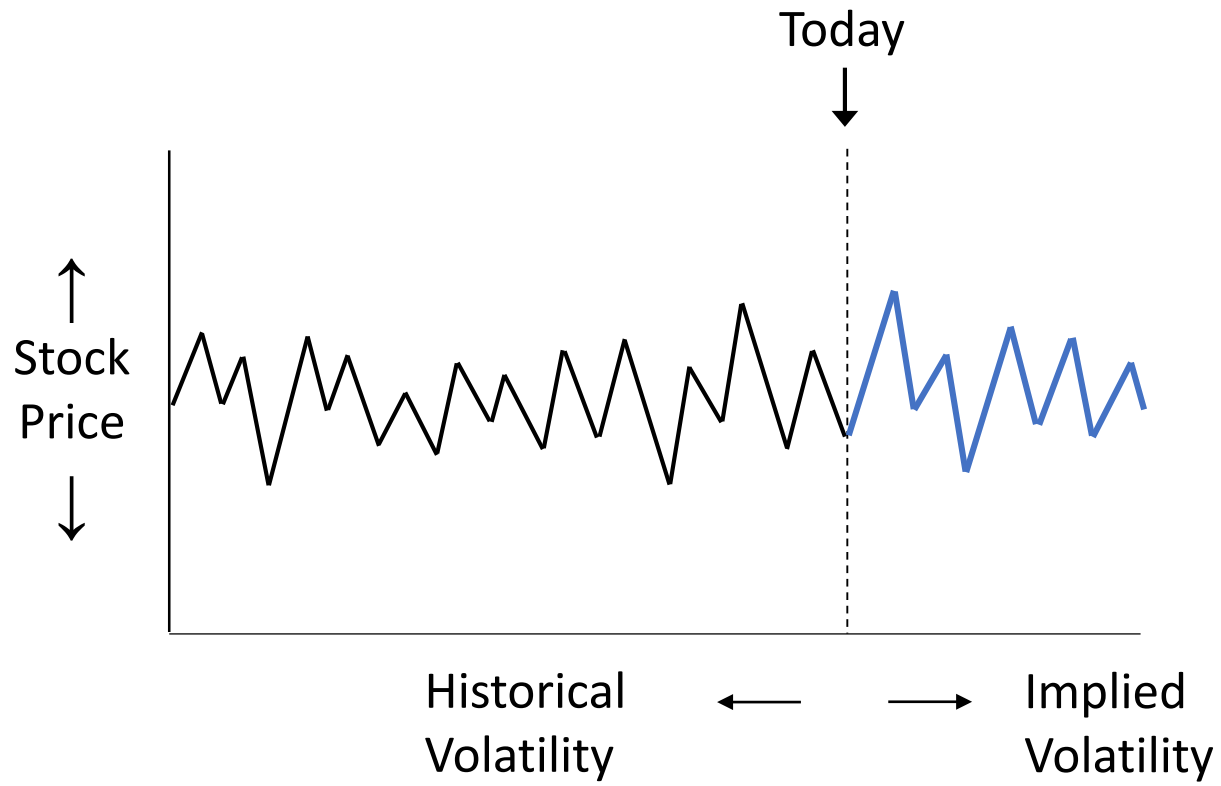
Historical Volatility:

- Price movement of the stock in the past
- Factual/measurable/quantifiable
- No future guarantees

Implied Volatility:

- Volatility that is in the market price of an option
- Implied volatility is the market's forecast of the future volatility of the stock's price.

Volatility



- Only options have implied volatility
- IV predicts a stocks future volatility

Buying/Selling Calls and Puts

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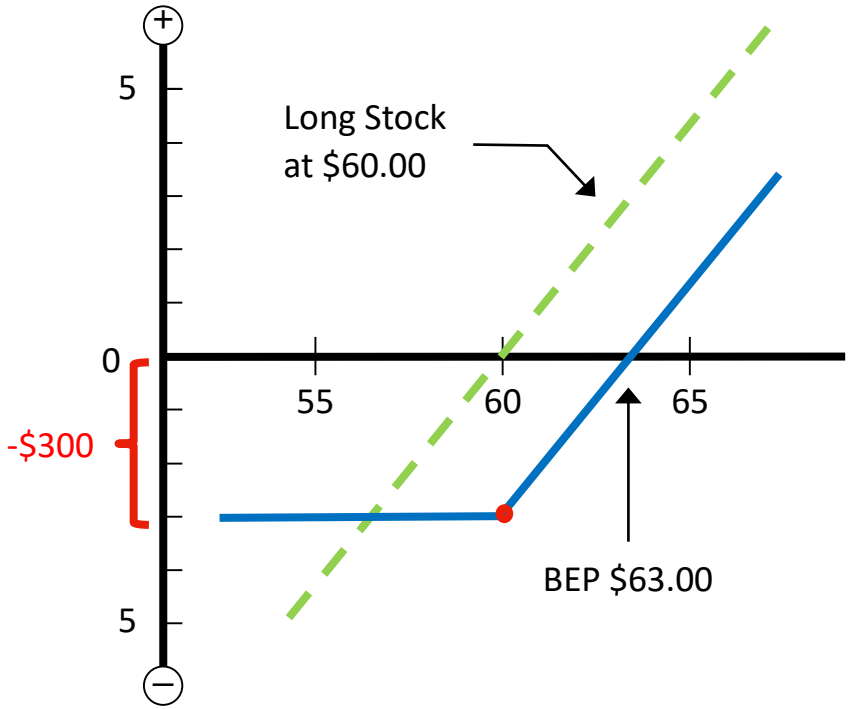
Call Buying Example

Buy 60.00 strike call at $3.00

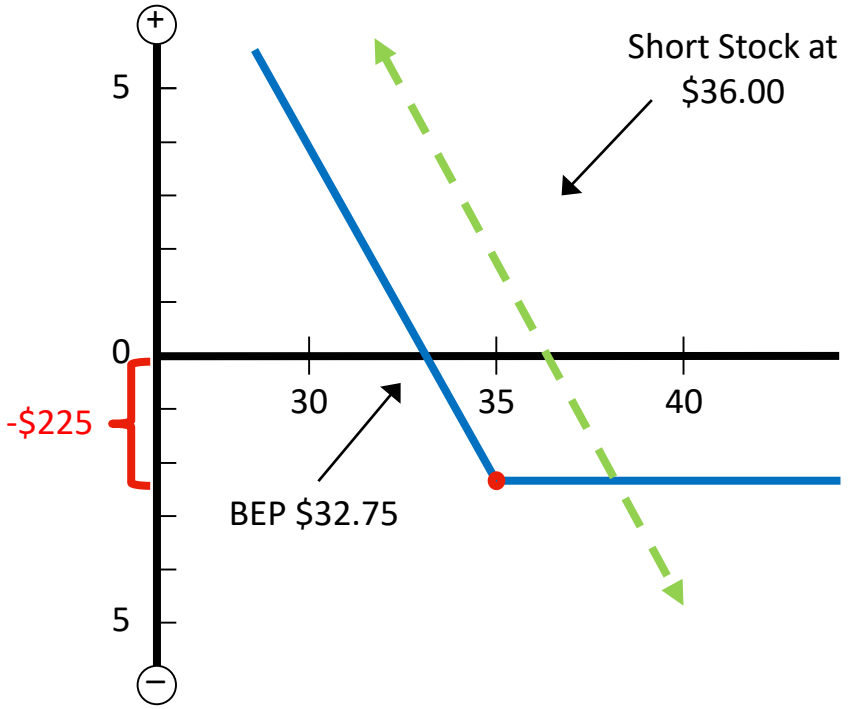


Break-even at Expiration:
Strike Price + Call Premium Paid
$60.00 + $3.00 = $63.00

Maximum Loss:
$3.00 Call Premium Paid
$300.00 Total

Put Buying Example

Buy 35.00 strike put at $2.25

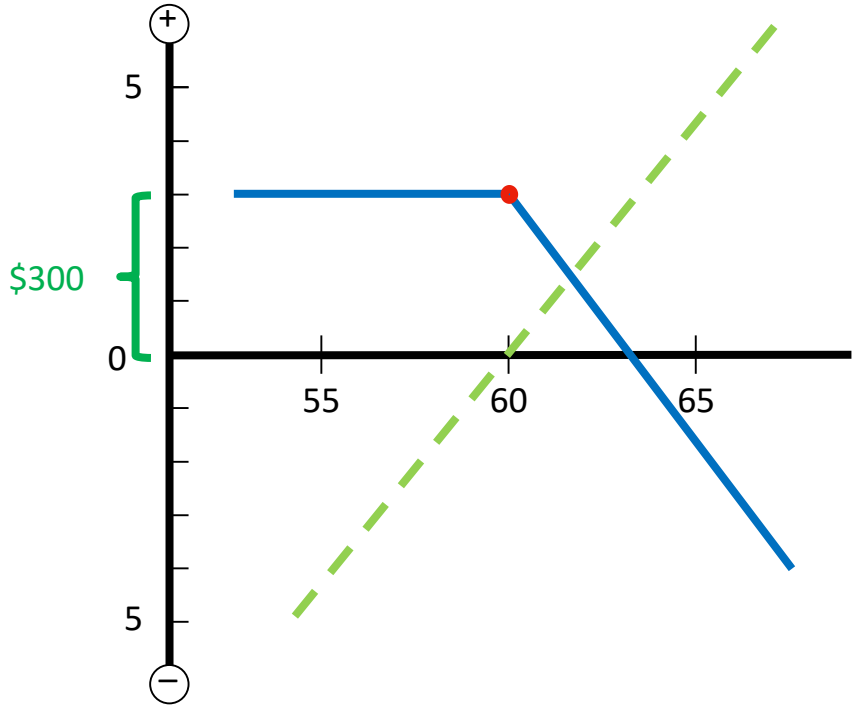


Break-even at Expiration:
Strike Price – Put Premium Paid
$35.00 – $2.25 = $32.75

Maximum Loss:
$2.25 Put Premium Paid
$225.00 Total

Call Selling Example

Sell 60.00 strike call at $3.00



Break-even at Expiration:
Strike Price + Call Premium Rec'd
$60.00 + $3.00 = $63.00

Maximum Profit:
$3.00 Call Premium Received
$300.00 Total

Maximum Loss: UNLIMITED

Risks/Reward with Covered Call substantially different!

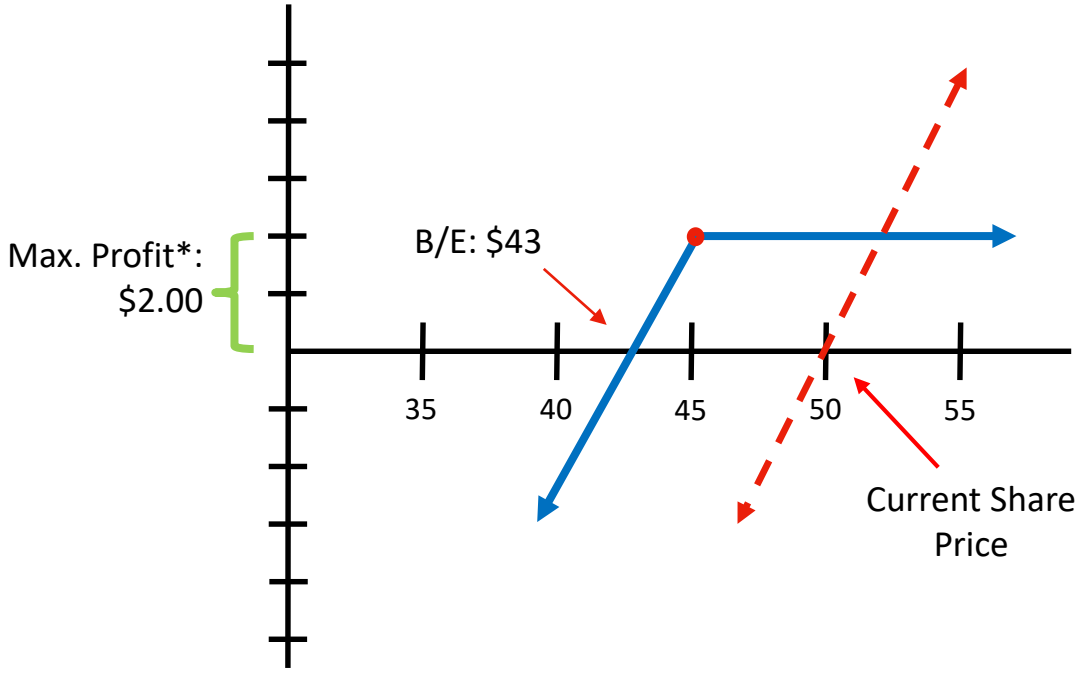
Cash Secured Put Example

Stock trading $50
Sell 1 XYZ 60-day 45 put at $2.00

Max profit = Premium received

B/E: Strike minus premium

*Maximum profit does not consider potential long stock position, if assigned



Excludes transaction costs

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