Webinar Presentation
How Volatility and Other Important Factors Affect the Greeks

BROKERAGE: OPTIONS
Understand the Impact of Implied Volatility

Use Options Analytics Tools

Review Options Greeks

Agenda
Review: Options Greeks and Volatility

Options Greeks

<table>
<thead>
<tr>
<th>Greek</th>
<th>Description</th>
<th>Dimension</th>
</tr>
</thead>
<tbody>
<tr>
<td>Delta</td>
<td>Measures option’s price sensitivity to $1 move in the underlying security</td>
<td>Exposure</td>
</tr>
<tr>
<td>Gamma</td>
<td>Measures change in delta with $1 move in the underlying security</td>
<td>Speed</td>
</tr>
<tr>
<td>Theta</td>
<td>Measures option’s price sensitivity to each passing day toward expiration</td>
<td>Time</td>
</tr>
<tr>
<td>Vega</td>
<td>Measures option’s price sensitivity to 1% change in implied volatility</td>
<td>Volatility</td>
</tr>
</tbody>
</table>

Implied Volatility (IV)

- Market’s expectation of movement in the underlying security
- Measure of how expensive/inexpensive an options contract is

What causes IV to increase or decrease?
Implied Volatility (IV)

IV is determined by supply and demand of options contracts

**Large expected price move**
- Puts and calls are bought to speculate and hedge
- Increased demand makes options more expensive
  - Higher IV

**Minimal expected price move**
- Puts and calls are sold to generate income
- Increased supply makes options less expensive
  - Lower IV
Implied Volatility (IV)

High IV

Normal IV

Low IV

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Extrinsic Value

Options Greeks affect only extrinsic value
Example

Implied Volatility (IV)
- The IV index chart shows a significant drop in IV
- Key statistics shows us that current IV levels are at 0 percentile in the 52-week range

How does an increase or decrease in IV affect the Greeks?
Impact on Delta

ITM deltas decrease
(95 to 87)

ATM deltas stay approximately the same
(53)

OTM deltas increase
(6 to 16)
Impact on Delta
What does it mean to you?

<table>
<thead>
<tr>
<th>DELTAS</th>
<th>ITM CONTRACTS</th>
<th>ATM CONTRACTS</th>
<th>OTM CONTRACTS</th>
</tr>
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<tbody>
<tr>
<td>Increasing IV</td>
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<td>Increase</td>
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<tr>
<td>Decreasing IV</td>
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<table>
<thead>
<tr>
<th>Strategy</th>
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<th>Bid</th>
<th>Ask</th>
<th>Theor Price</th>
<th>IV</th>
<th>Delta</th>
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</table>
Impact on Gamma

(Deep) ITM gamma increases (1.441 to 1.992)

ATM gamma (and near-the-money contracts) decreases (7.12 to 4.747)

(Deep) OTM gamma increases (2.172 to 2.814)
### Impact on Gamma

What does it mean to you?

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<th>OTM CONTRACTS</th>
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Impact on Theta

- **ITM theta increases**
  - (1.574 to 4.217)

- **ATM theta increases**
  - (5.008 to 7.495)

- **OTM theta increases**
  - (1.77 to 5.01)

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### Impact on Theta

**What does it mean to you?**

<table>
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### Strategy Table

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# Impact on Vega

<table>
<thead>
<tr>
<th>VEGA</th>
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<td>Increasing IV</td>
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It’s All Greek to Me

Resources used in this presentation:

• Active Trader Pro® options analytics tools
  - Key Statistics (provided by LiveVol, Inc.)
  - Profit/Loss Calculator (provided by IVolatility.com)
• Options Chain
• IV Index
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