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Interactive Brokers Webcast

Focus on Theta and Vega

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Focus on Theta and Vega

Outline

- **Greeks Near Expiration**
- **Time Decay**
- **Implied Volatility**

Greeks Near Expiration

Overview

- **Every option trade begins with a price and timing outlook for the underlying market**
- **When using short dated options the consideration of the underlying market takes on even more importance**
- **As expiration approaches the option Greeks take on less importance**
- **However, time decay and implied volatility still have some impact on a trading decision**

Greeks Near Expiration

Example

AAPL @ 114.00 5-Day Options

IV	Delta	Gamma	Theta	Vega	Price	Strike	Price	IV	Delta	Gamma	Theta	Vega
19.28%	0.96	0.03	-0.02	0.01	5.13	109	0.08	20.62%	-0.05	0.03	-0.03	0.02
17.47%	0.94	0.05	-0.03	0.02	4.15	110	0.12	19.12%	-0.08	0.05	-0.03	0.02
16.77%	0.88	0.07	-0.04	0.03	3.23	111	0.19	17.89%	-0.13	0.08	-0.04	0.03
16.93%	0.79	0.11	-0.06	0.05	2.40	112	0.33	16.85%	-0.21	0.11	-0.06	0.05
16.03%	0.67	0.14	-0.07	0.06	1.63	113	0.57	16.22%	-0.33	0.14	-0.07	0.06
15.71%	0.52	0.16	-0.07	0.06	1.03	114	0.95	15.63%	-0.48	0.16	-0.07	0.06
15.67%	0.36	0.15	-0.07	0.06	0.60	115	1.53	15.76%	-0.64	0.15	-0.07	0.06
15.79%	0.22	0.12	-0.05	0.05	0.32	116	2.26	16.00%	-0.77	0.12	-0.05	0.05
16.14%	0.13	0.08	-0.04	0.03	0.17	117	3.10	16.28%	-0.87	0.08	-0.04	0.04
16.70%	0.07	0.05	-0.03	0.02	0.09	118	4.03	17.10%	-0.92	0.05	-0.03	0.02
17.43%	0.04	0.03	-0.02	0.01	0.05	119	5.00	18.94%	-0.95	0.04	-0.02	0.02

Greeks Near Expiration

Example

Delta

IV	Delta	Gamma	Theta	Vega	Price	Strike	Price	IV	Delta	Gamma	Theta	Vega
19.28%	0.96	0.03	-0.02	0.01	5.13	109	0.08	20.62%	-0.05	0.03	-0.03	0.02
17.47%	0.94	0.05	-0.03	0.02	4.15	110	0.12	19.12%	-0.08	0.05	-0.03	0.02
16.77%	0.88	0.07	-0.04	0.03	3.23	111	0.19	17.89%	-0.13	0.08	-0.04	0.03
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17.43%	0.04	0.03	-0.02	0.01	0.05	119	5.00	18.94%	-0.95	0.04	-0.02	0.02

Deep in the money very close to |1|

Greeks Near Expiration

Delta

- Delta for a 5 point ITM call 0.96
- Delta for a 5 point ITM put -0.95

Each option price was close to 5.00

**Basically you can get 1 for 1
exposure for 5.00 on a 114.00 stock**

Greeks Near Expiration

Example

Gamma

IV	Delta	Gamma	Theta	Vega	Price	Strike	Price	IV	Delta	Gamma	Theta	Vega
19.28%	0.96	0.03	-0.02	0.01	5.13	109	0.08	20.62%	-0.05	0.03	-0.03	0.02
17.47%	0.94	0.05	-0.03	0.02	4.15	110	0.12	19.12%	-0.08	0.05	-0.03	0.02
16.77%	0.88	0.07	-0.04	0.03	3.23	111	0.19	17.89%	-0.13	0.08	-0.04	0.03
16.93%	0.79	0.11	-0.06	0.05	2.40	112	0.33	16.85%	-0.21	0.11	-0.06	0.05
16.03%	0.67	0.14	-0.07	0.06	1.63	113	0.57	16.22%	-0.33	0.14	-0.07	0.06
15.71%	0.52	0.16	-0.07	0.06	1.03	114	0.95	15.63%	-0.48	0.16	-0.07	0.06
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16.14%	0.13	0.08	-0.04	0.03	0.17	117	3.10	16.28%	-0.87	0.08	-0.04	0.04
16.70%	0.07	0.05	-0.03	0.02	0.09	118	4.03	17.10%	-0.92	0.05	-0.03	0.02
17.43%	0.04	0.03	-0.02	0.01	0.05	119	5.00	18.94%	-0.95	0.04	-0.02	0.02

ATM Gamma Very High

Deltas Will Change Dramatically With Stock Price Change

Time Decay

Example

Theta

IV	Delta	Gamma	Theta	Vega	Price	Strike	Price	IV	Delta	Gamma	Theta	Vega
19.28%	0.96	0.03	-0.02	0.01	5.13	109	0.08	20.62%	-0.05	0.03	-0.03	0.02
17.47%	0.94	0.05	-0.03	0.02	4.15	110	0.12	19.12%	-0.08	0.05	-0.03	0.02
16.77%	0.88	0.07	-0.04	0.03	3.23	111	0.19	17.89%	-0.13	0.08	-0.04	0.03
16.93%	0.79	0.11	-0.06	0.05	2.40	112	0.33	16.85%	-0.21	0.11	-0.06	0.05
16.03%	0.67	0.14	-0.07	0.06	1.63	113	0.57	16.22%	-0.33	0.14	-0.07	0.06
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15.79%	0.22	0.12	-0.05	0.05	0.32	116	2.26	16.00%	-0.77	0.12	-0.05	0.05
16.14%	0.13	0.08	-0.04	0.03	0.17	117	3.10	16.28%	-0.87	0.08	-0.04	0.04
16.70%	0.07	0.05	-0.03	0.02	0.09	118	4.07	17.10%	-0.92	0.05	-0.03	0.02
17.43%	0.04	0.03	-0.02	0.01	0.05	119	5.05	18.94%	-0.95	0.04	-0.02	0.02

ITM / OTM Options have very little time value
ATM is another story

Time Decay

Example

5 Day Option Time Values

Call Price	Time Value	Strike	Put Price	Time Value
5.13	0.13	109	0.08	0.08
4.15	0.14	110	0.12	0.12
3.23	0.23	111	0.19	0.19
2.40	0.40	112	0.33	0.33
1.63	0.63	113	0.57	0.57
1.03	1.03	114	0.95	0.95
0.60	0.60	115	1.53	0.53
0.32	0.32	116	2.26	0.26
0.17	0.17	117	3.10	0.10
0.09	0.09	118	4.07	0.07
0.05	0.05	119	5.05	0.05

5 Trading Day ITM / OTM Time Decay

Time Decay

Example

5 Day Option Time Values

Call Price	Time Value	Strike	Put Price	Time Value
5.13	0.13	109	0.08	0.08
4.15	0.14	110	0.12	0.12
3.23	0.23	111	0.19	0.19
2.40	0.40	112	0.33	0.33
1.63	0.63	113	0.57	0.57
1.03	1.03	114	0.95	0.95
0.60	0.60	115	1.53	0.53
0.32	0.32	116	2.26	0.26
0.17	0.17	117	3.10	0.10
0.09	0.09	118	4.07	0.07
0.05	0.05	119	5.05	0.05

5 Trading Day ATM Time Decay

Implied Volatility Vega

Example

Vega

IV	Delta	Gamma	Theta	Vega	Price	Strike	Price	IV	Delta	Gamma	Theta	Vega
19.28%	0.96	0.03	-0.02	0.01	5.13	109	0.08	20.62%	-0.05	0.03	-0.03	0.02
17.47%	0.94	0.05	-0.03	0.02	4.15	110	0.12	19.12%	-0.08	0.05	-0.03	0.02
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17.43%	0.04	0.03	-0.02	0.01	0.05	119	5.00	18.94%	-0.95	0.04	-0.02	0.02

IV is more 'smile like'
Vega is relatively high for ATM options

Implied Volatility / Vega

Different Expirations

- **Option prices adjust in anticipation of company events such as earnings**
- **With Weeklys this is even more obvious than when we only had one expiration a month**

Implied Volatility / Vega

Different Expirations

AAPL Options

Trading Days to Expiration	Series IV
5 Days	15.64
10 Days	16.30
15 Days	28.09
20 Days	27.11
25 Days	25.92
30 Days	25.33

AAPL set to report earnings

Focus on Theta and Vega

Summary

- For trades with short dated options the Greeks have a little less significance
- ITM call or put options may be a good substitute for a short term stock trade due to a high delta and low time value
- Time decay (or lack of time decay) may be the reason traders have been attracted to short dated options

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Questions / Contact

Questions?

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