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ODTE Options – The Move to Shorter Duration and What It Means for Risk

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0DTE Options – Time and Optionality Explained

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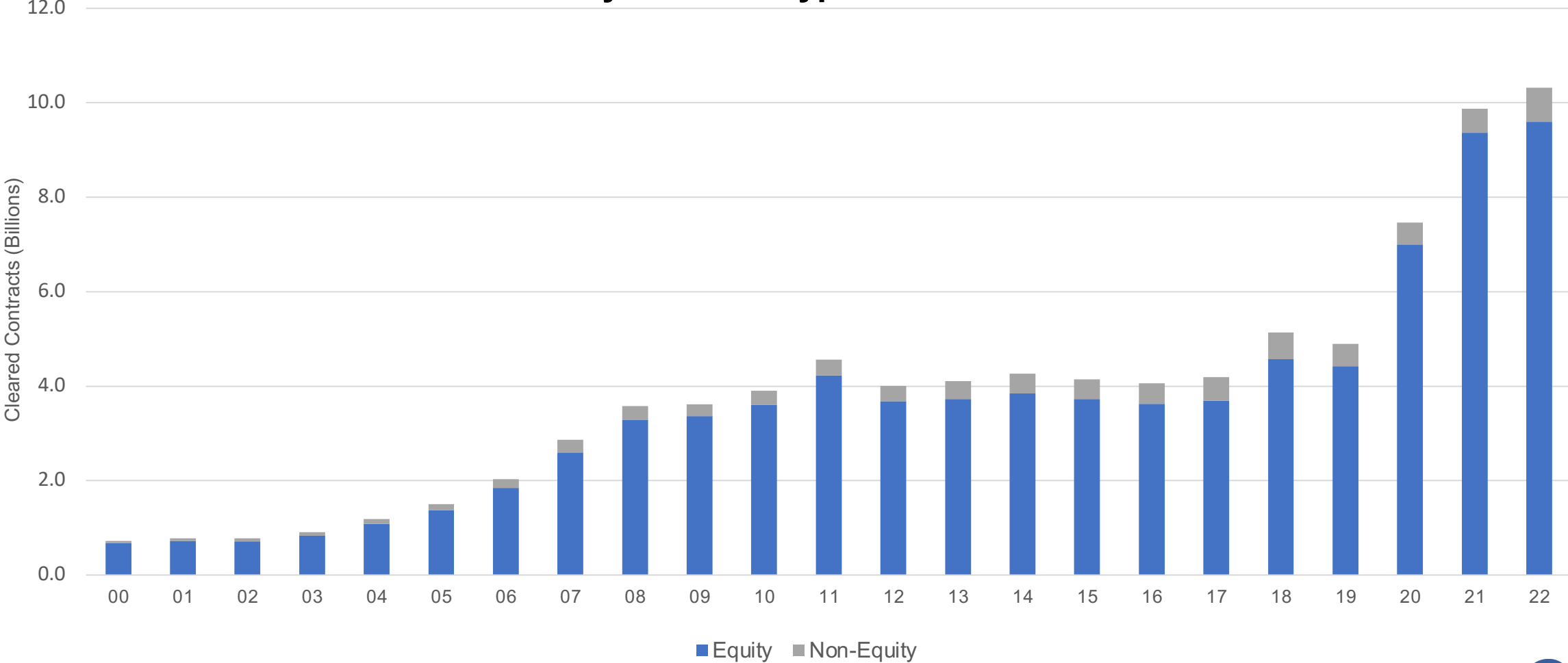
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Annual Options Volume 2000-2022

OCC Annual Contract Volume by Contract Type



Presentation Outline

- The Steps Toward Daily Expirations
- Sensitivity of Options as Time passes
- Gamma of Options over Time
- Vega of Options over Time
- Delta of Options over Time
- Move Comparison
- Q & A



DTE = Days To Expiration

DTE = Days to Expiration

30 DTE = 30 Days to Expiration

10 DTE = 10 Days to Expiration

5 DTE = 5 Days to Expiration

0 DTE = 0 Days to Expiration



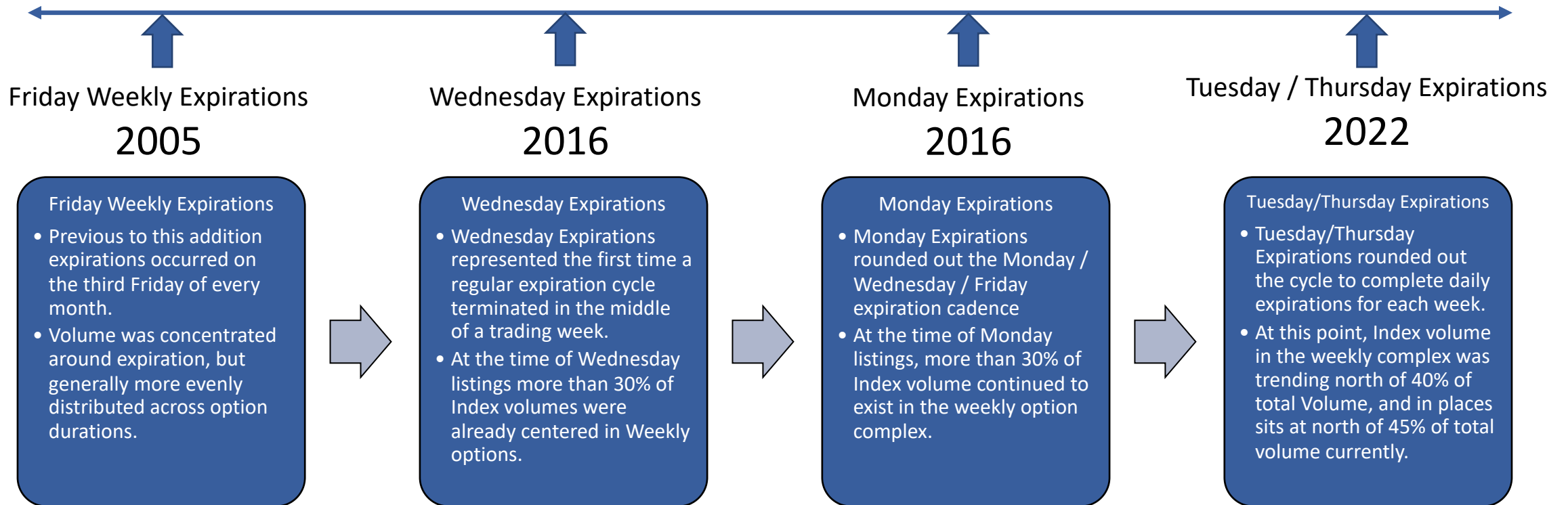
*A **0 DTE** Option is merely an option that has reached its expiration date*

The Steps Toward Daily Expirations



The Steps Toward Daily Expirations

The Timeline of Adding Expirations



Sensitivity of Options as Time Passes



How Does Time Influence Option Pricing

- **Delta Δ**

- As expiration approaches, In-the-money options tend toward the upper bound of 100 Delta and Out-of-the-money options tend toward the lower bound of zero Delta.

- **Gamma Γ**

- Gamma is highest in short term options and at-the-money options.
- As time passes, Gamma increases for at-the-money options, and decreases for out-of-the-money options.

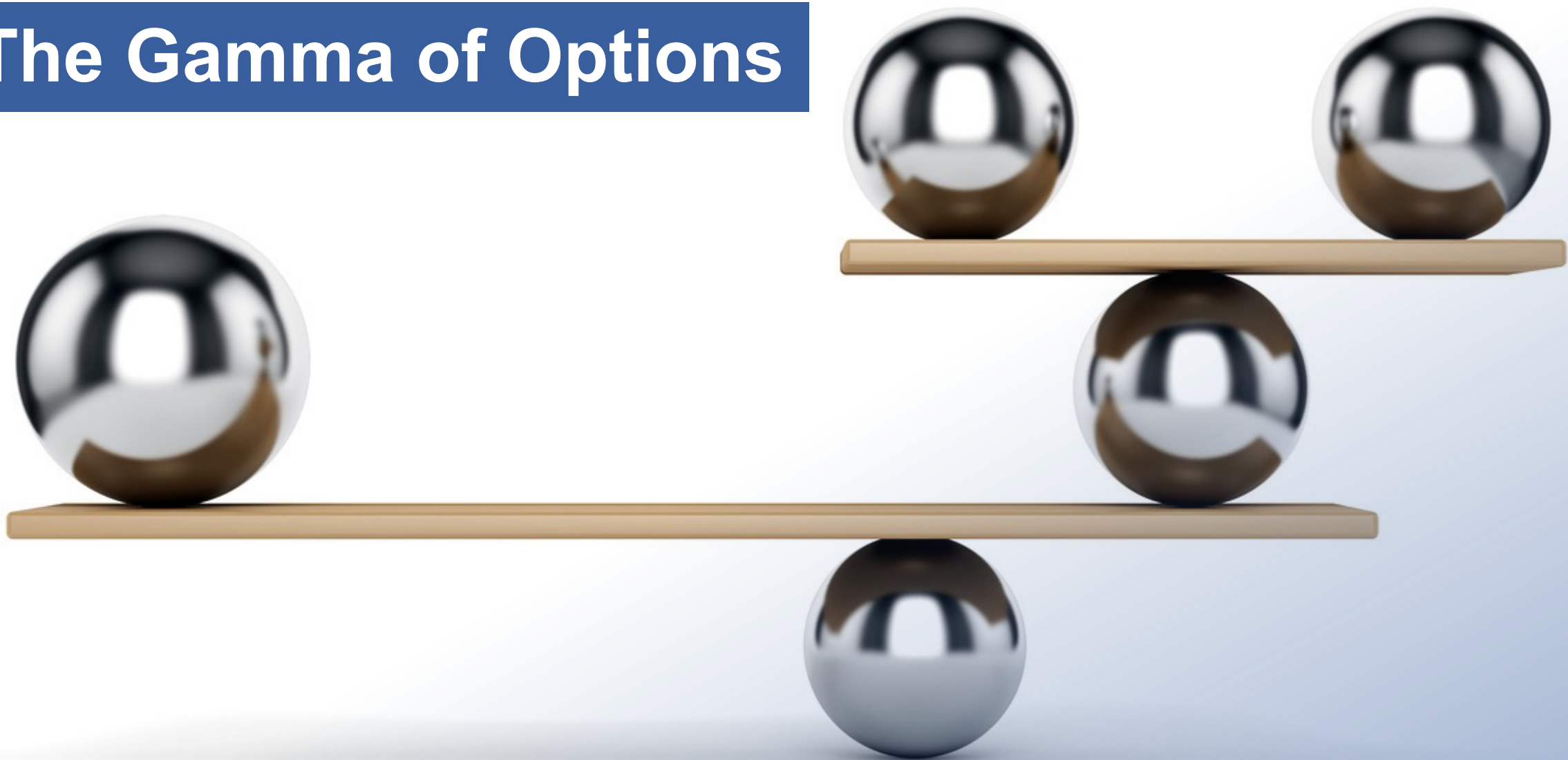
- **Theta Θ**

- Theta of an option is the one-day theoretical decay
- Generally centered around extrinsic value portion of an options value
- With ODTE options, Theta is concentrated because of the limited amount of time

- **Vega K**

- Vega is proportional to time and is more impactful for longer term options.

The Gamma of Options



Option Gamma – A definition

Gamma: Delta's sensitivity to stock price

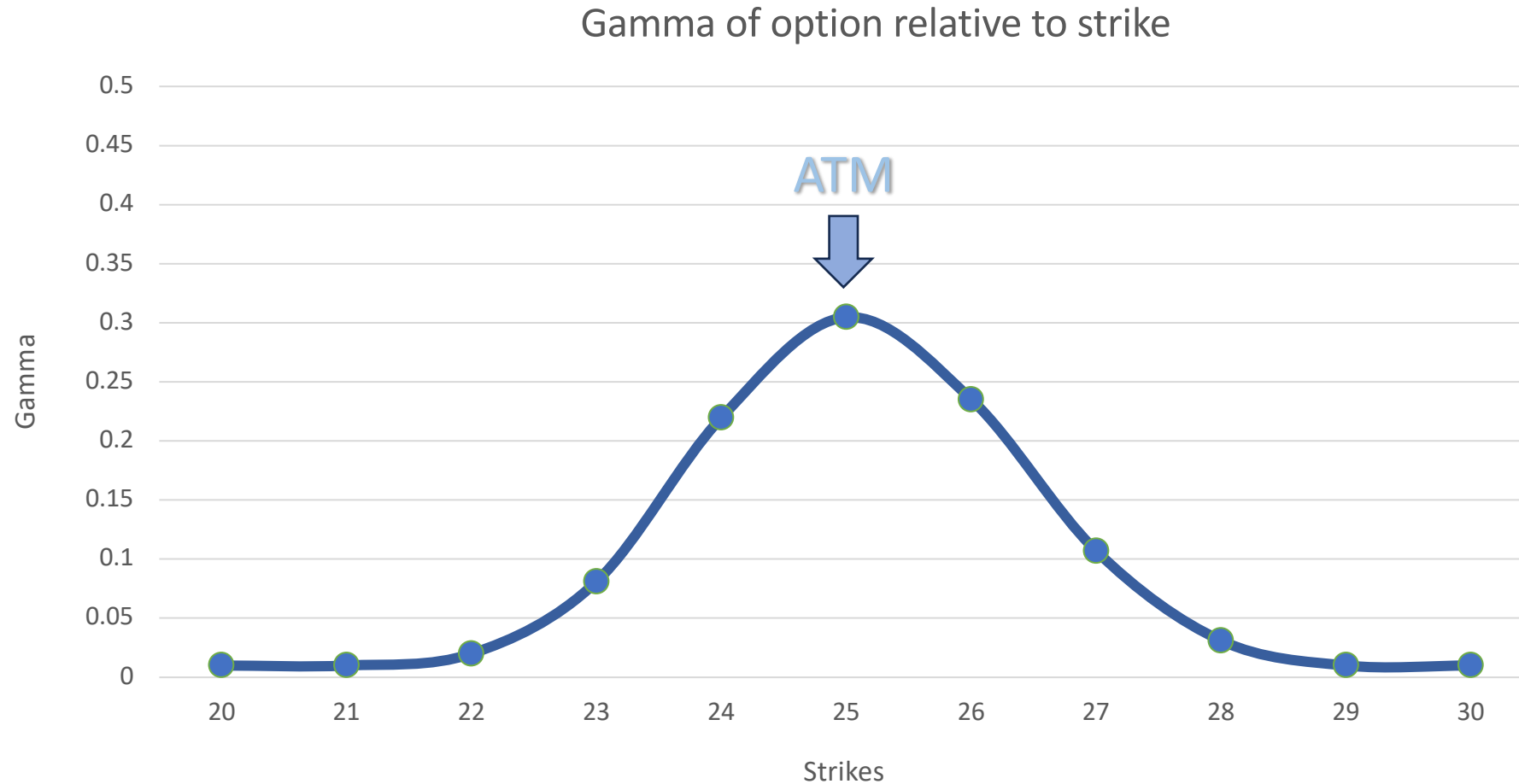
The anticipated change in the Delta value for a \$1.00 move in the underlying security

- All other pricing factors constant
- In decimal form (e.g., .002)
- **Adjustment to Delta**

Only options have Gamma

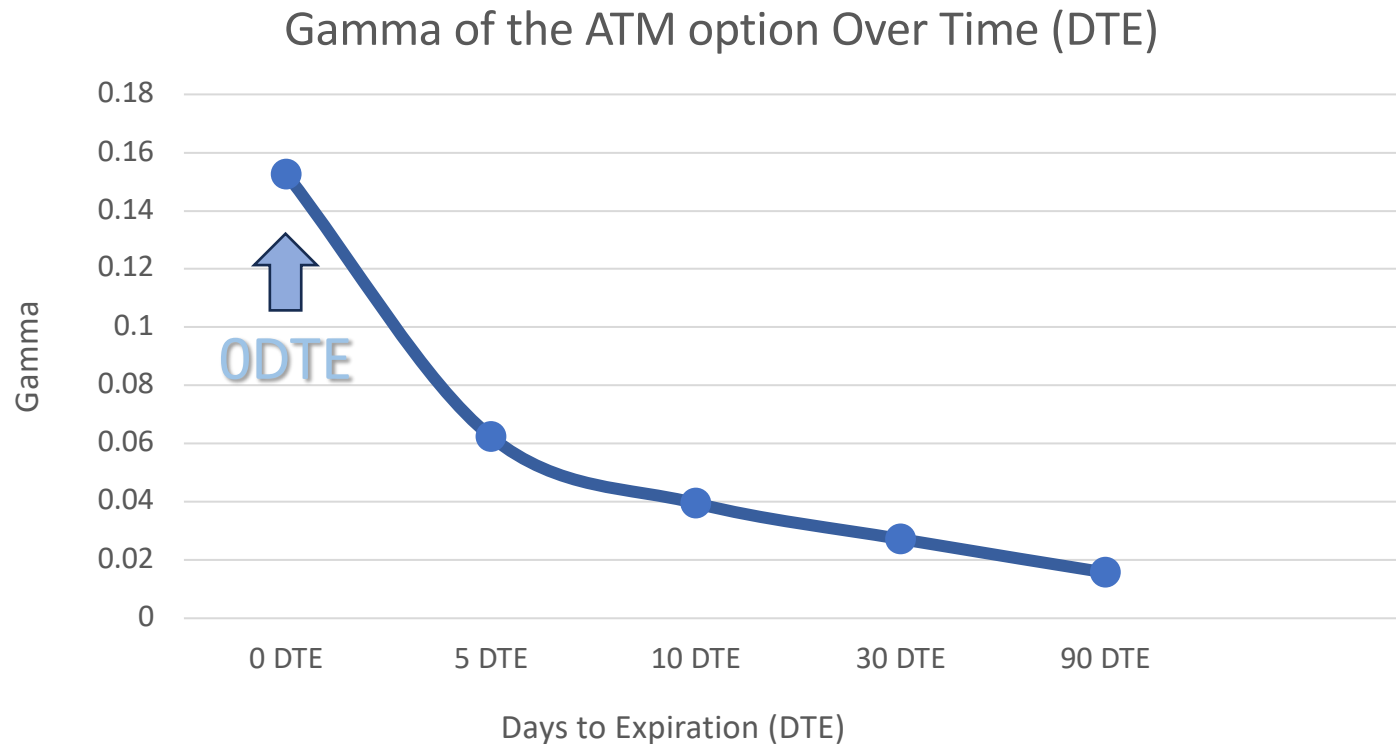
Gamma

Gamma of Options Across Strikes



Gamma as a function of Time (Days to Expiration)

	0 DTE	5 DTE	10 DTE	30 DTE	90 DTE
Gamma of the ATM option	.1526	.0623	.0395	.0272	.0157

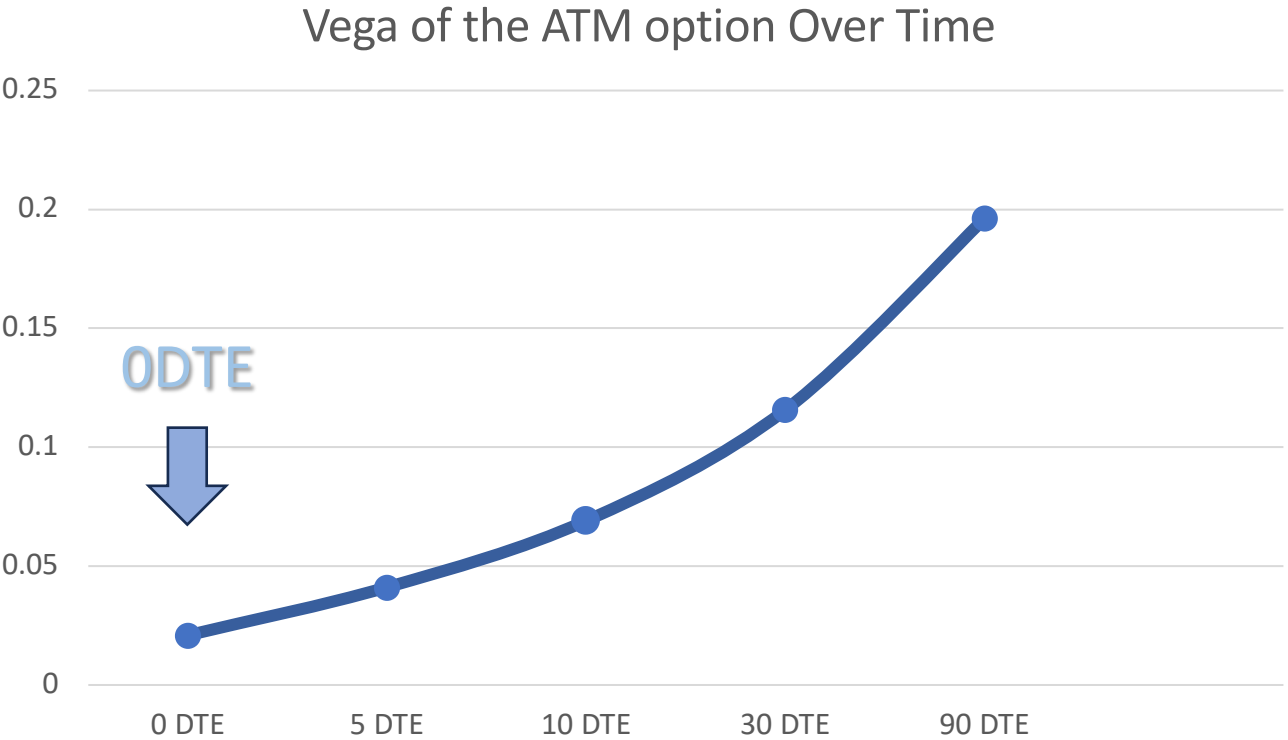


The Vega of Options over Time

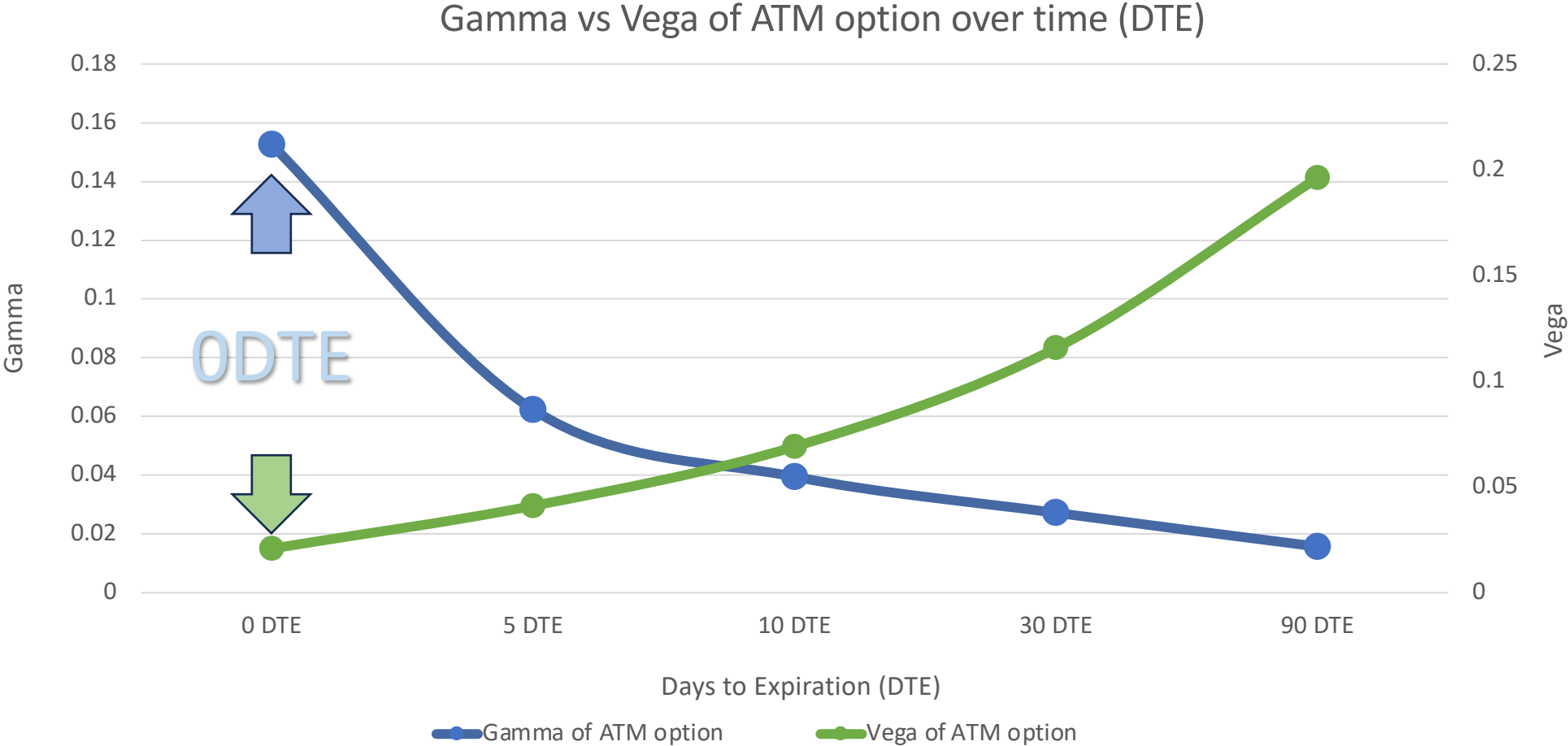


Vega as a function of Time (Days to Expiration)

	0 DTE	5 DTE	10 DTE	30 DTE	90 DTE
Vega of the ATM option	.0209	.0411	.0691	.1157	.1962



Gamma vs Vega as a function of time (DTE)



Delta of Options Over Time



Option Delta – A definition



Delta: Option Value's sensitivity to stock price

The ***expected*** change in an option's price (up or down) for each \$1.00 move in underlying security price

Deep in-the-money options

- High Delta approaching 100% (or 1.00)

At-the-money options

- Deltas around 50% (or .50)

Far out-of-the-money options

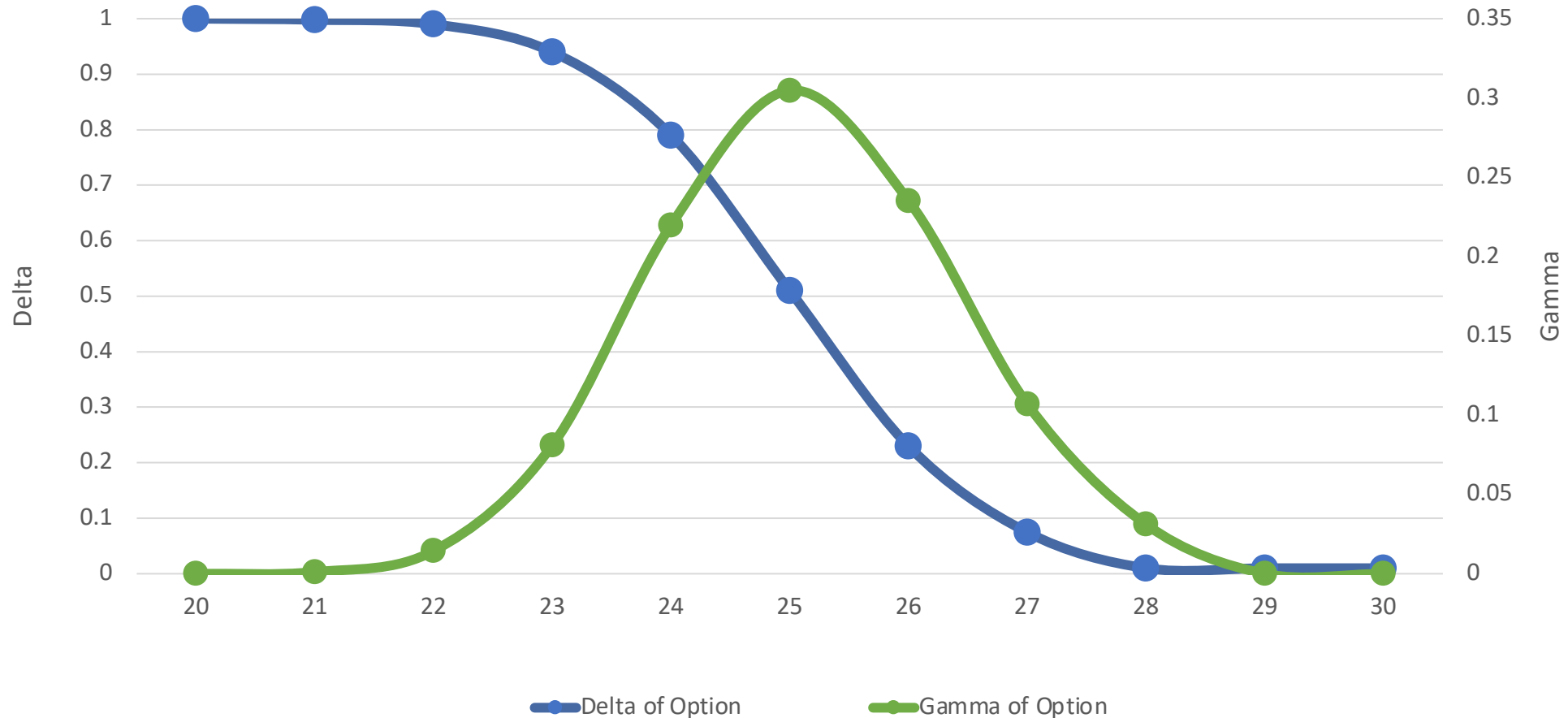
- Low Delta approaching 0% (or 0)



Delta

Delta vs Gamma as a function of strike (ODTE)

Delta vs Gamma of Call option relative to strike



Same Move – Different Delta



Same Move – Different Result

0DTE 50 Delta Call

DTE: 0

Underlying \$100

Implied Vol: 50%

Call Price: \$1.05

0.1524 Gamma

+ Stock up \$5.00 to \$105

New Call Price: \$5.02

+3.97 in Price

+378%

10DTE 50 Delta Call

DTE: 10

Underlying \$100

Implied Vol: 50%

Call Price: \$3.53

.0459 Gamma

+ Stock up \$5.00 to \$105

New Call Price: \$6.70

+3.17 in Price

+89%

30DTE 50 Delta Call

DTE: 30

Underlying \$100

Implied Vol: 50%

Call Price: \$ 6.01

.0272 Gamma

+ Stock up \$5.00 to \$105

New Call Price: \$9.04

+3.03 in Price

+50.4%

Same Move – Different Result

0DTE 50 Delta Call

DTE: 0

Underlying \$100

Implied Vol: 50%

Call Price: \$1.05

-1.05 Theta

Stock Unchanged

New Call Price: \$0.00

-1.05 in Price

-100%

10DTE 50 Delta Call

DTE: 10

Underlying \$100

Implied Vol: 50%

Call Price: \$3.53

-0.1639 Theta

Stock Unchanged

New Call Price: \$3.36

-0.17 in Price

-5%

30DTE 50 Delta Call

DTE: 30

Underlying \$100

Implied Vol: 50%

Call Price: \$ 6.01

-.0999 Theta

Stock Unchanged

New Call Price: \$5.91

-0.10 in Price

-2%

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