

Introduction to Options

Part Two – Greek Risk Measurements

Disclosure of Risks

Options involve risk and are not suitable for all investors. For more information, read the “Characteristics and Risks of Standardized Options” before investing in options. For a copy call 203- 618-5800 or click [here](#).

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In order to simplify the computations, commissions, fees, margin interest and taxes have not been included in the examples used in these materials. These costs will impact the outcome of all stock and options transactions and must be considered prior to entering into any transactions. Investors should consult their tax advisor about any potential tax consequences.

Any strategies discussed, including examples using actual securities and price data, are strictly for illustrative and educational purposes only and are not to be construed as an endorsement, recommendation or solicitation to buy or sell securities. Past performance is not a guarantee of future results.

Most strategies involving futures and/or options spreads require a margin account.

Multiple leg strategies involve multiple commissions charges.

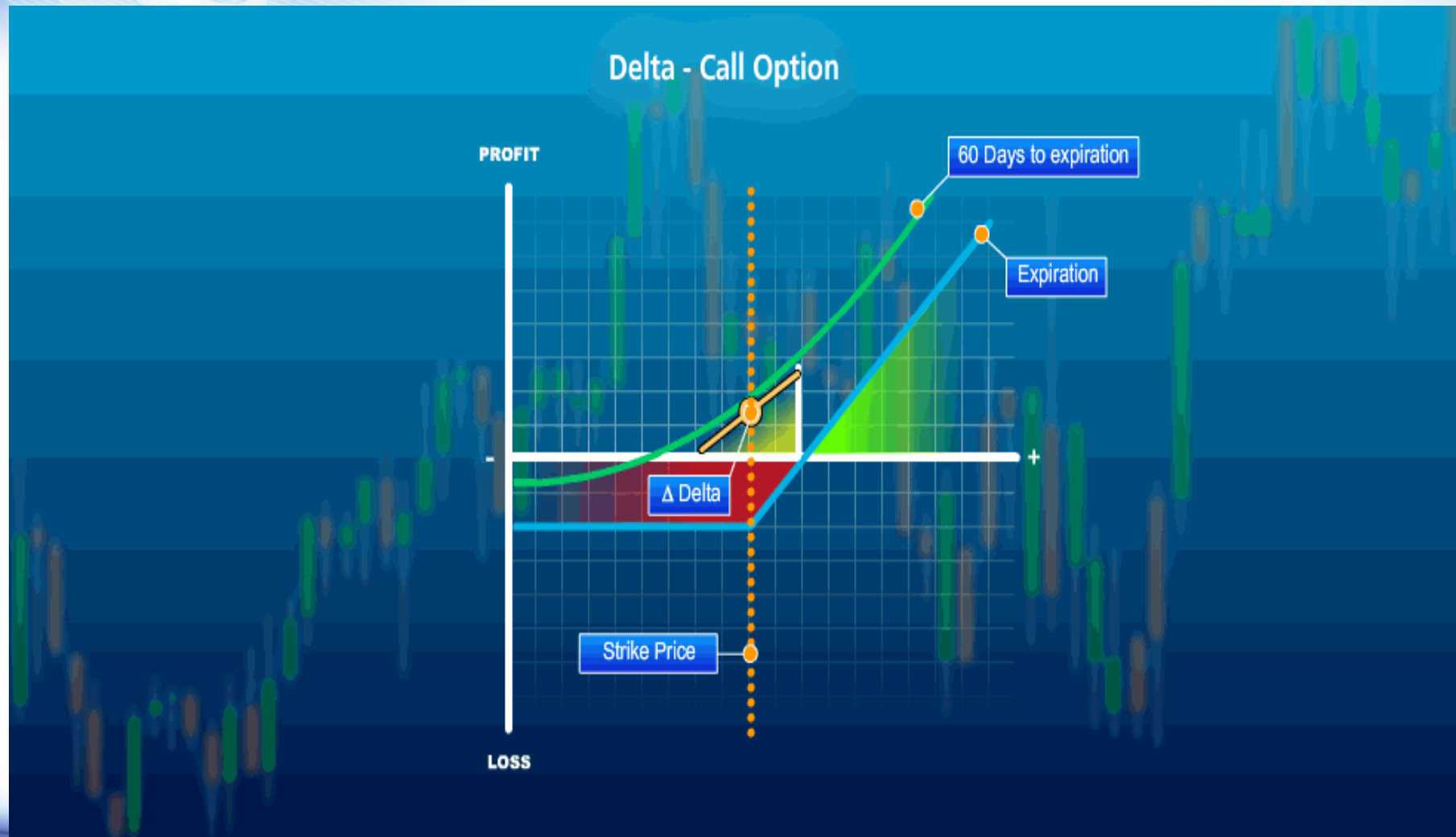
Supporting documentation for any claims and statistical information will be provided upon request.



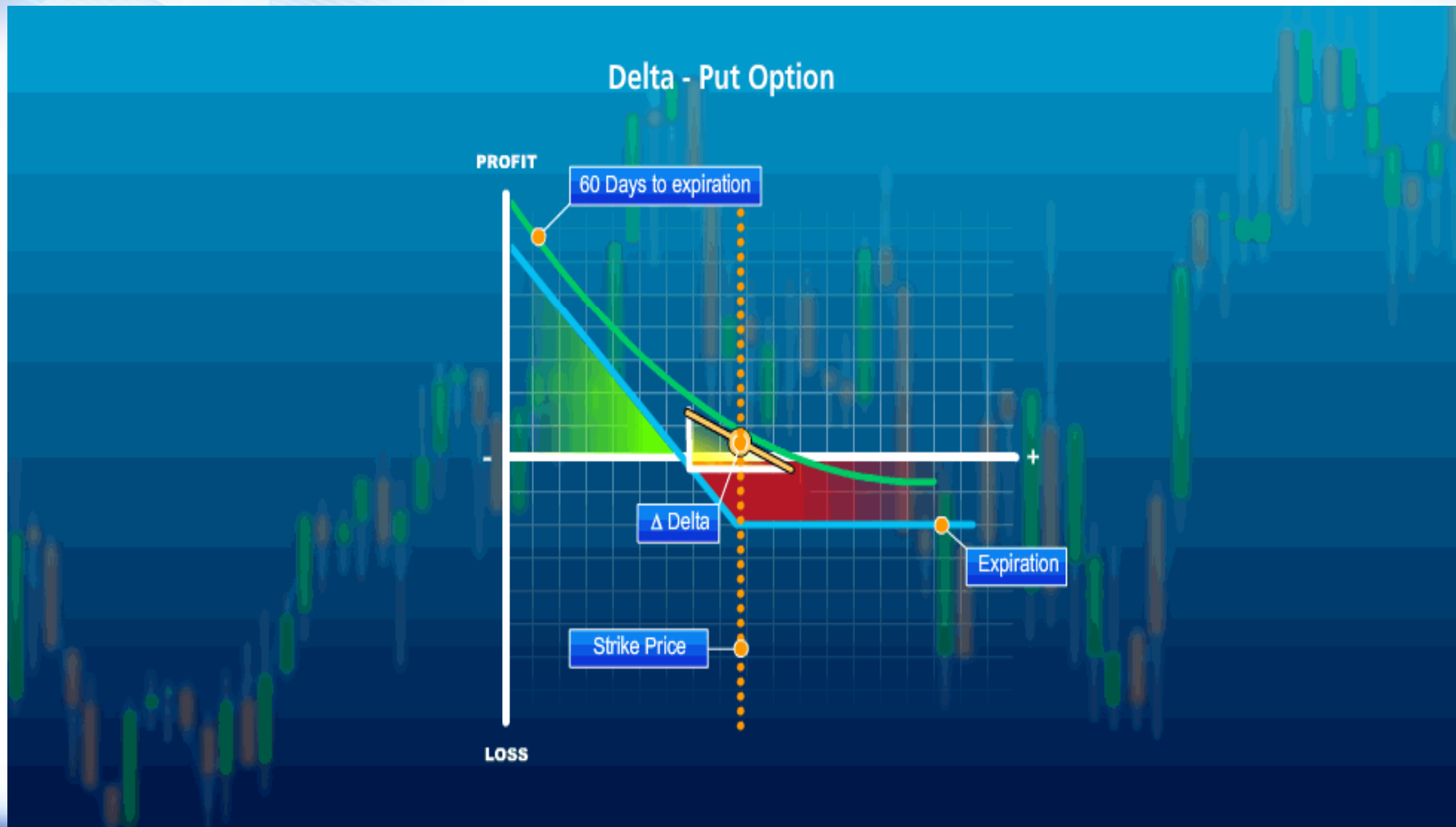
Options Pricing

- ☐ Input Variables
- ☐ **Greek Risk Measurements**
- ☐ Combining Options
 - IB Options Calculator

Risk Measures - Delta



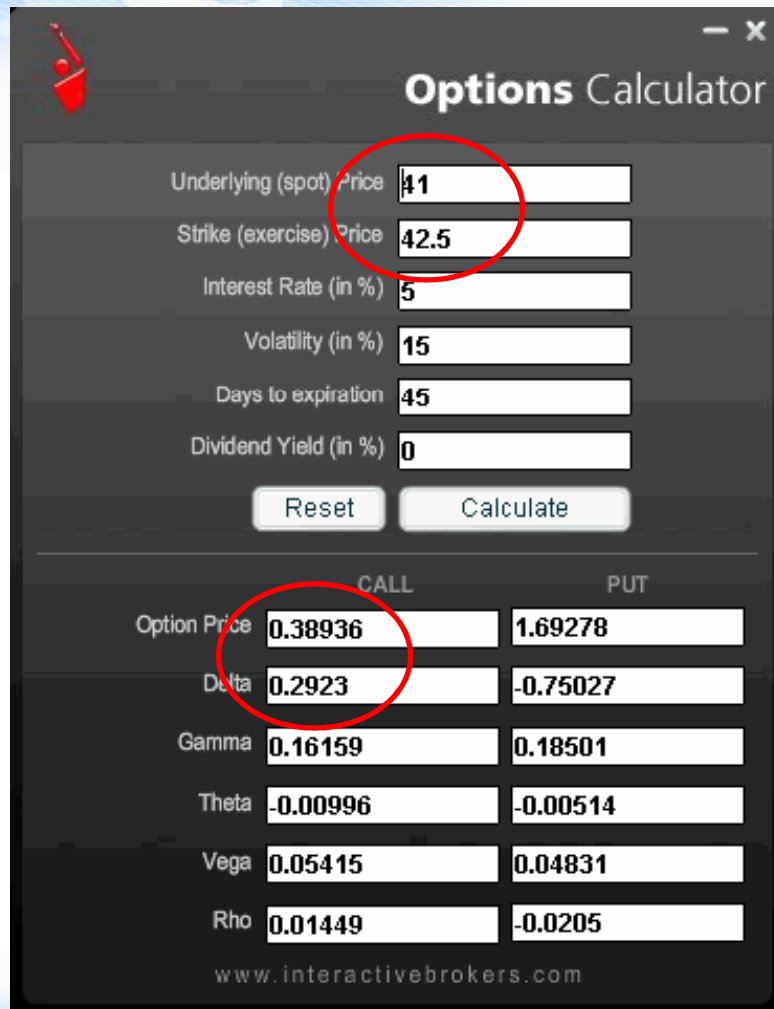
Risk Measures - Delta



Risk Measures - Delta



Risk Measures - Delta



Options Calculator

Underlying (spot) Price **41**

Strike (exercise) Price **42.5**

Interest Rate (in %) **5**

Volatility (in %) **15**

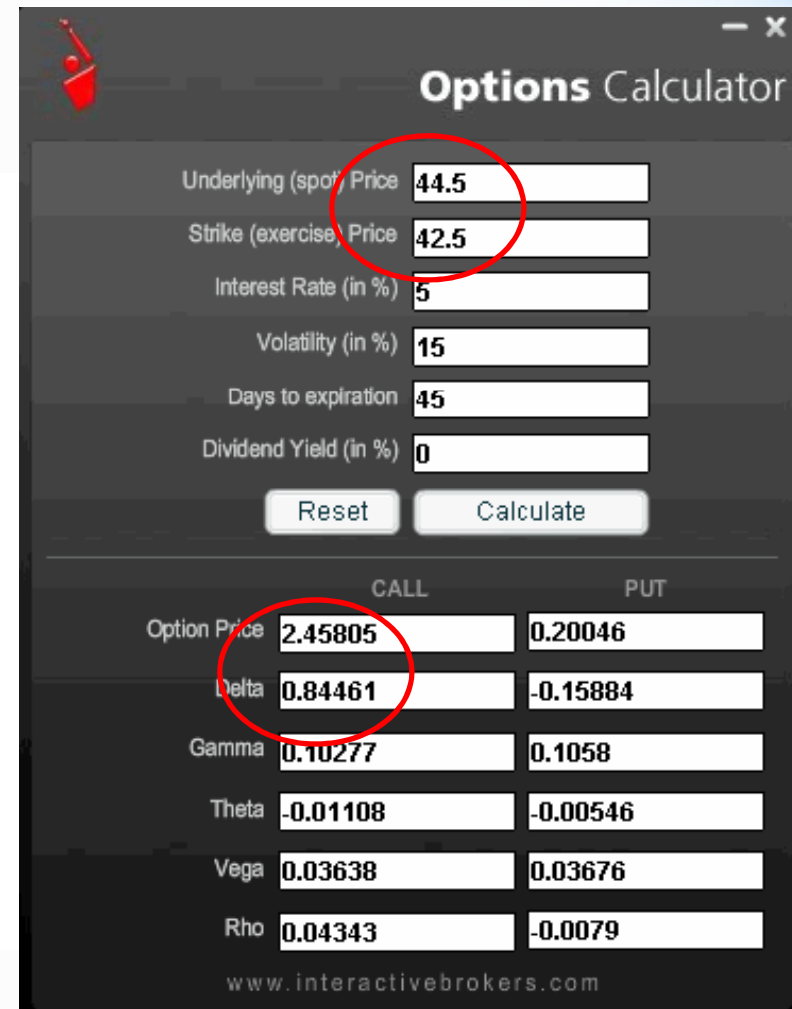
Days to expiration **45**

Dividend Yield (in %) **0**

Reset **Calculate**

	CALL	PUT
Option Price	0.38936	1.69278
Delta	0.2923	-0.75027
Gamma	0.16159	0.18501
Theta	-0.00996	-0.00514
Vega	0.05415	0.04831
Rho	0.01449	-0.0205

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Options Calculator

Underlying (spot) Price **44.5**

Strike (exercise) Price **42.5**

Interest Rate (in %) **5**

Volatility (in %) **15**

Days to expiration **45**

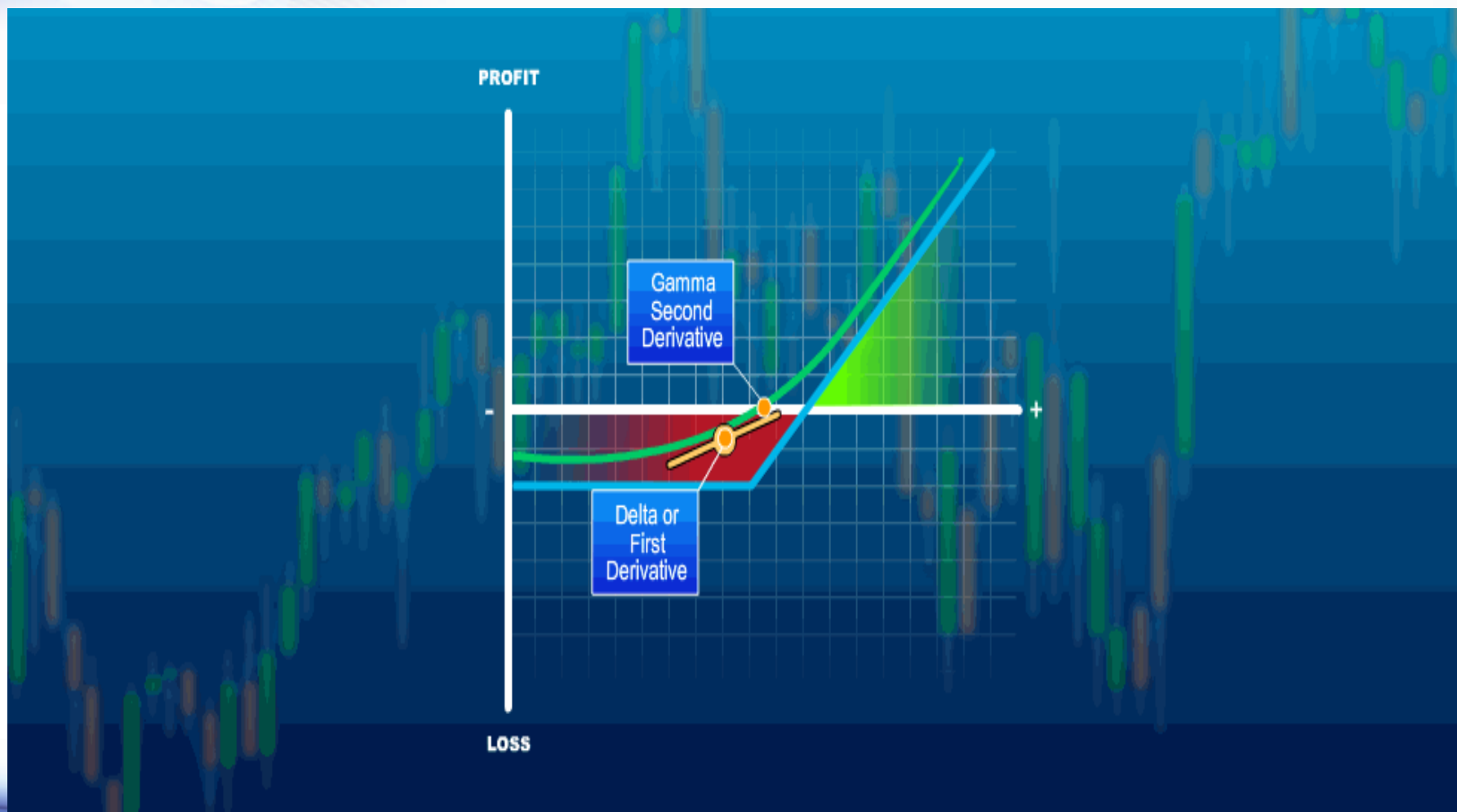
Dividend Yield (in %) **0**

Reset **Calculate**

	CALL	PUT
Option Price	2.45805	0.20046
Delta	0.84461	-0.15884
Gamma	0.10277	0.1058
Theta	-0.01108	-0.00546
Vega	0.03638	0.03676
Rho	0.04343	-0.0079

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Risk Measures - Gamma



Risk Measures - Gamma

Underlying (spot) Price **34.30**

Strike (exercise) Price 35

Interest Rate (in %) 4

Volatility (in %) 20

Days to expiration 90

Calculate Reset

↑ Rise \$1.00

Underlying (spot) Price **35.30**

Strike (exercise) Price 35

Interest Rate (in %) 4

Volatility (in %) 20

Days to expiration 90

Calculate Reset

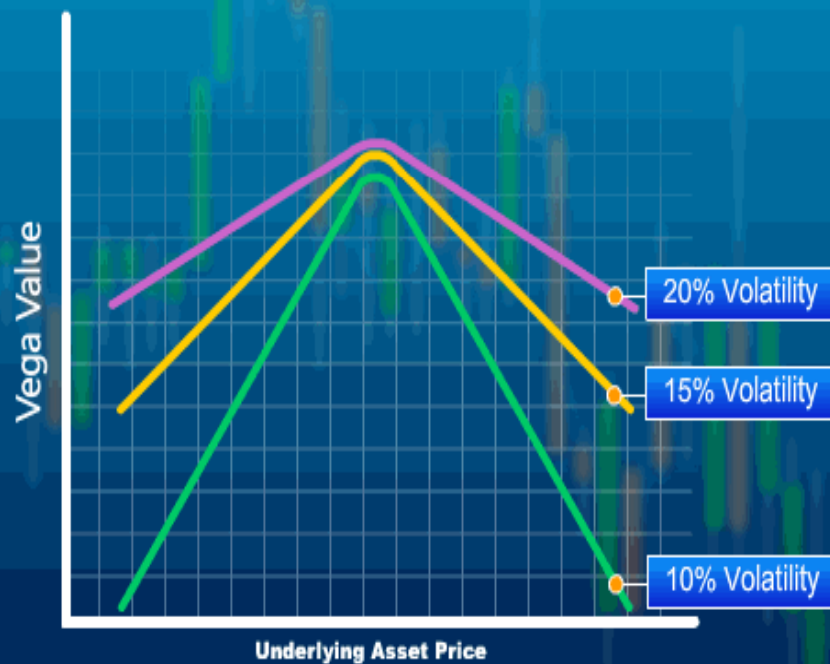
	Call	Put
Option Price	1.19461	1.5511
Delta	0.47829	-0.52171
Gamma	0.11694	0.11694

	Call	Put
Option Price	1.7307	1.0872
Delta	0.59286	-0.40714
Gamma	0.1107	0.1107

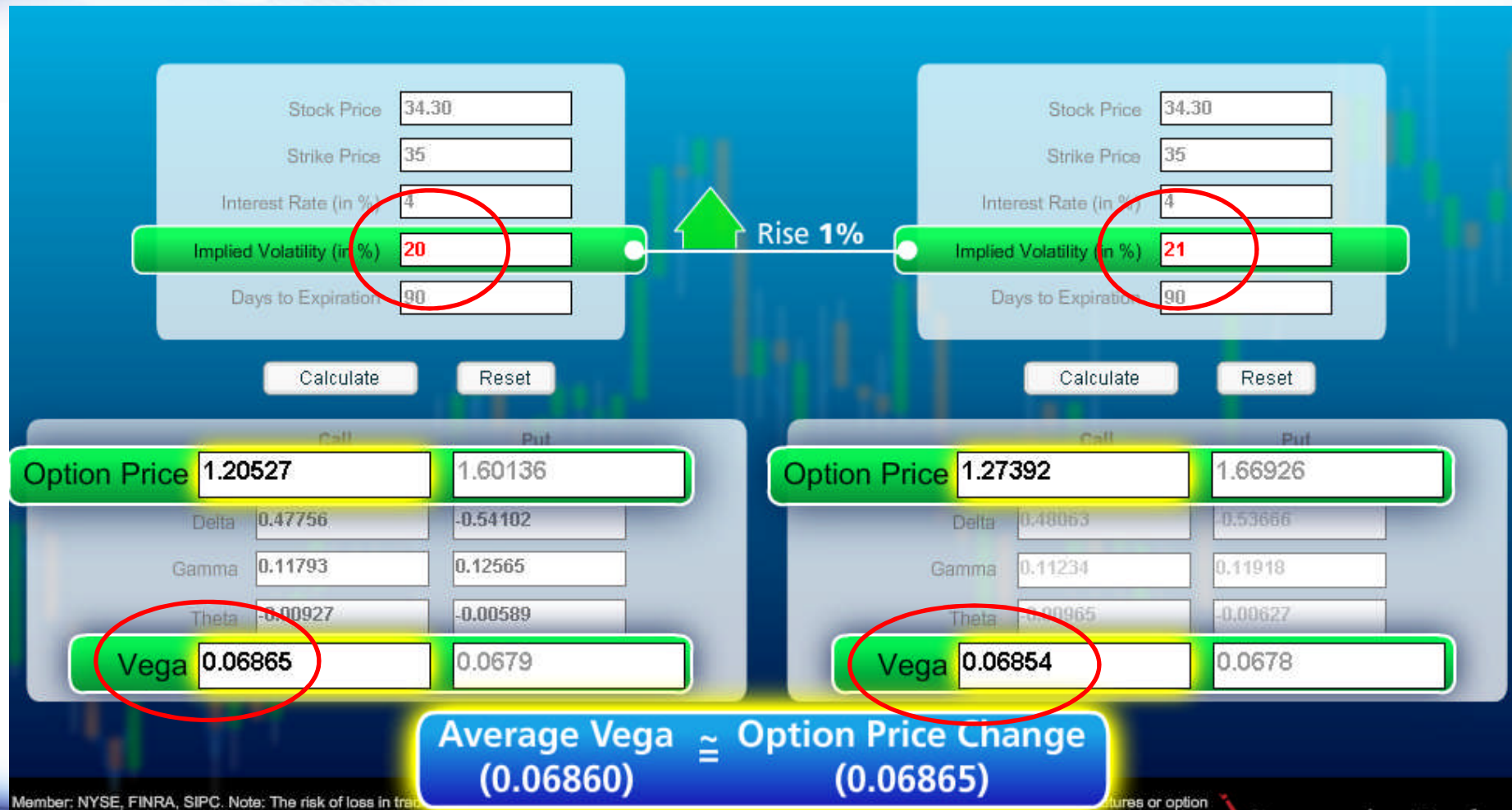
Old Delta + Average Gamma ≈ New Delta

(0.47829) + (0.11382) ≈ (\$0.59286)

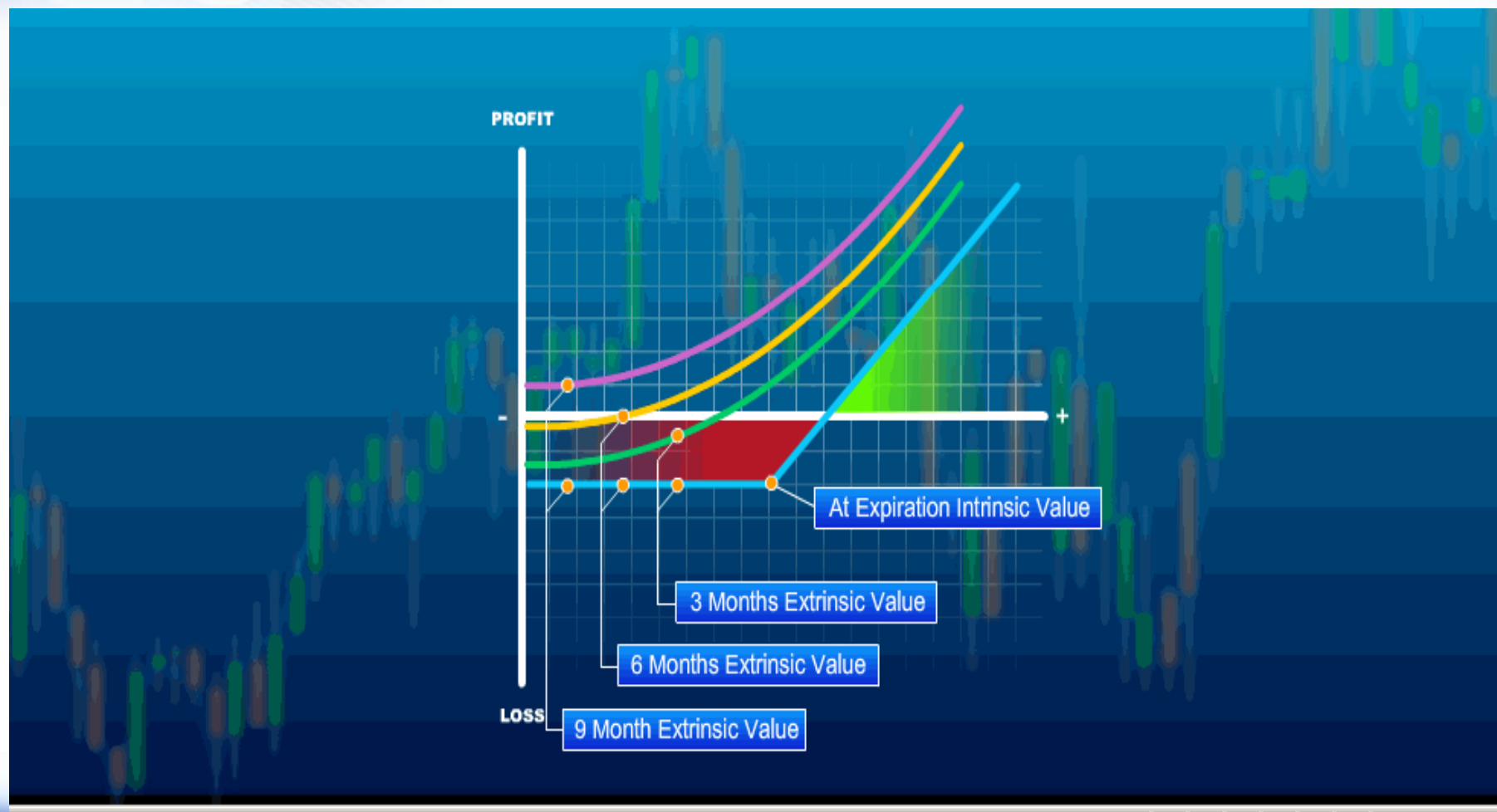
Risk Measures - Vega



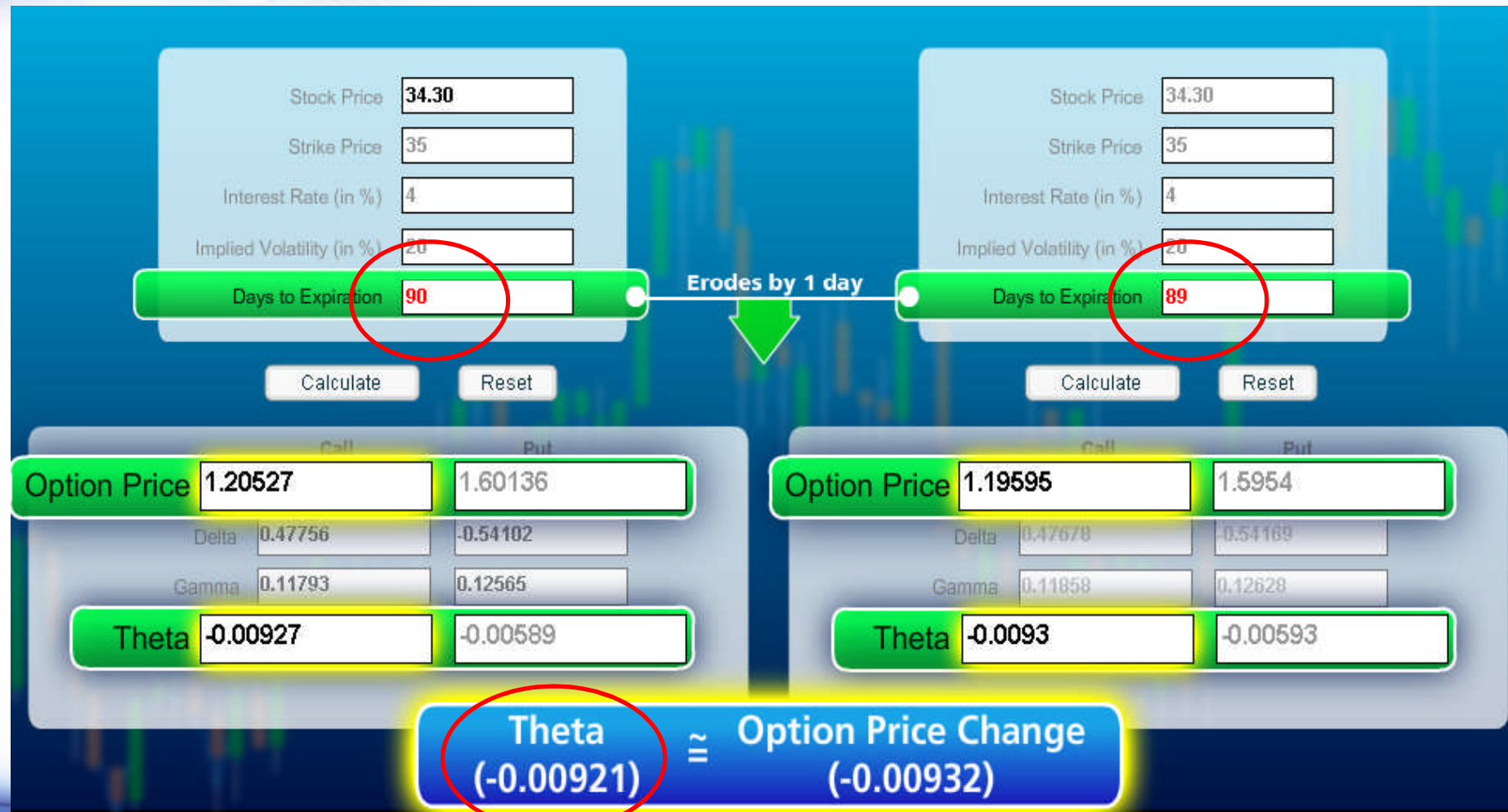
Risk Measures - Vega



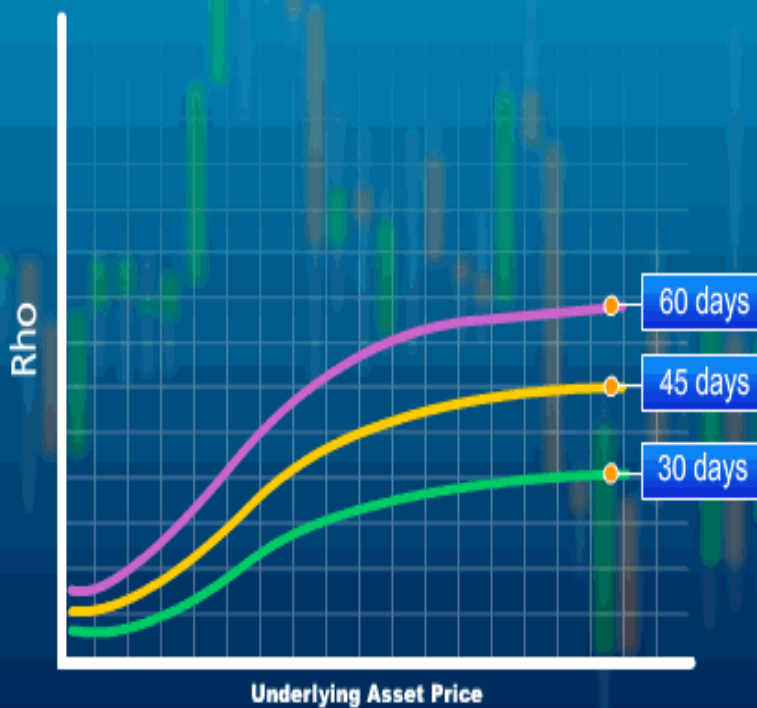
Risk Measures - Theta



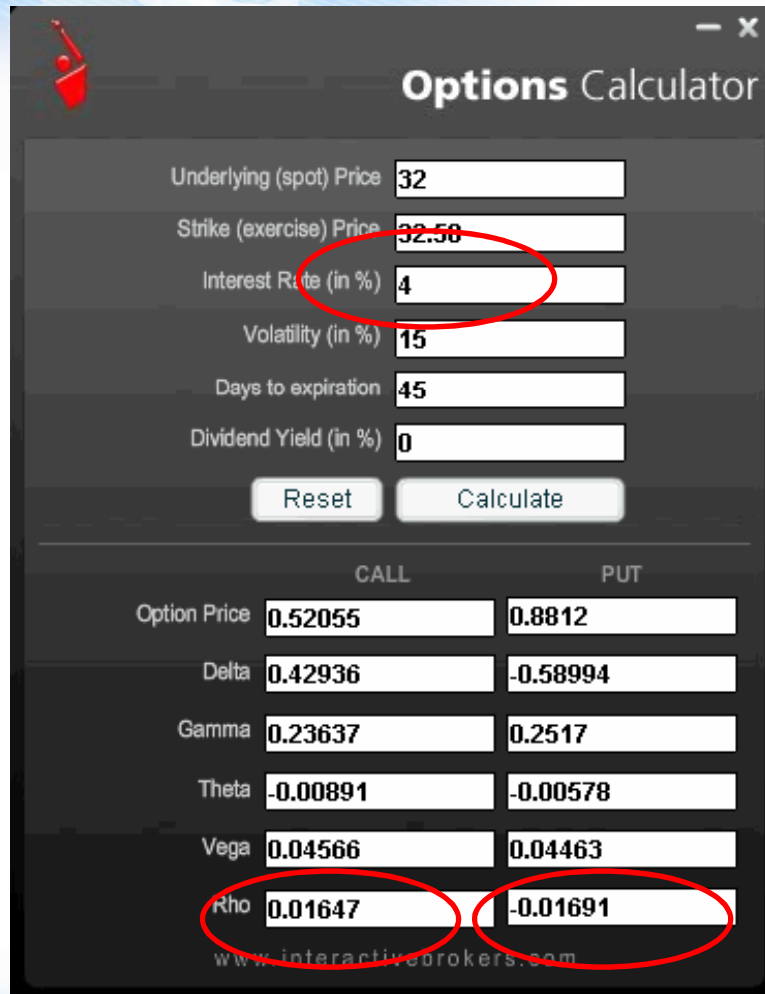
Risk Measures - Theta



Risk Measures - Rho



Risk Measures - Rho



Options Calculator

Underlying (spot) Price

Strike (exercise) Price

Interest Rate (in %)

Volatility (in %)

Days to expiration

Dividend Yield (in %)

	CALL	PUT
Option Price	<input type="text" value="0.52055"/>	<input type="text" value="0.8812"/>
Delta	<input type="text" value="0.42936"/>	<input type="text" value="-0.58994"/>
Gamma	<input type="text" value="0.23637"/>	<input type="text" value="0.2517"/>
Theta	<input type="text" value="-0.00891"/>	<input type="text" value="-0.00578"/>
Vega	<input type="text" value="0.04566"/>	<input type="text" value="0.04463"/>
Rho	<input type="text" value="0.01647"/>	<input type="text" value="-0.01691"/>

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Risk Measures - Rho

Options Calculator

Underlying (spot) Price

Strike (exercise) Price

Interest Rate (in %)

Volatility (in %)

Days to expiration

Dividend Yield (in %)

	CALL	PUT
Option Price	0.52055	0.8812
Delta	0.42936	-0.58994
Gamma	0.23637	0.2517
Theta	-0.00891	-0.00578
Vega	0.04566	0.04463
Rho	0.01647	-0.01691

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Options Calculator

Underlying (spot) Price

Strike (exercise) Price

Interest Rate (in %)

Volatility (in %)

Days to expiration

Dividend Yield (in %)

	CALL	PUT
Option Price	0.53701	0.86429
Delta	0.43839	-0.58738
Gamma	0.23731	0.25821
Theta	-0.00934	-0.00545
Vega	0.04582	0.04451
Rho	0.0168	-0.01618

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Conclusion and Questions

- ☐ Session 3 – Option combinations and strategies
- ☐ Question time