

Introduction to Options

Part One – Option Input Variables



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](#).

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.

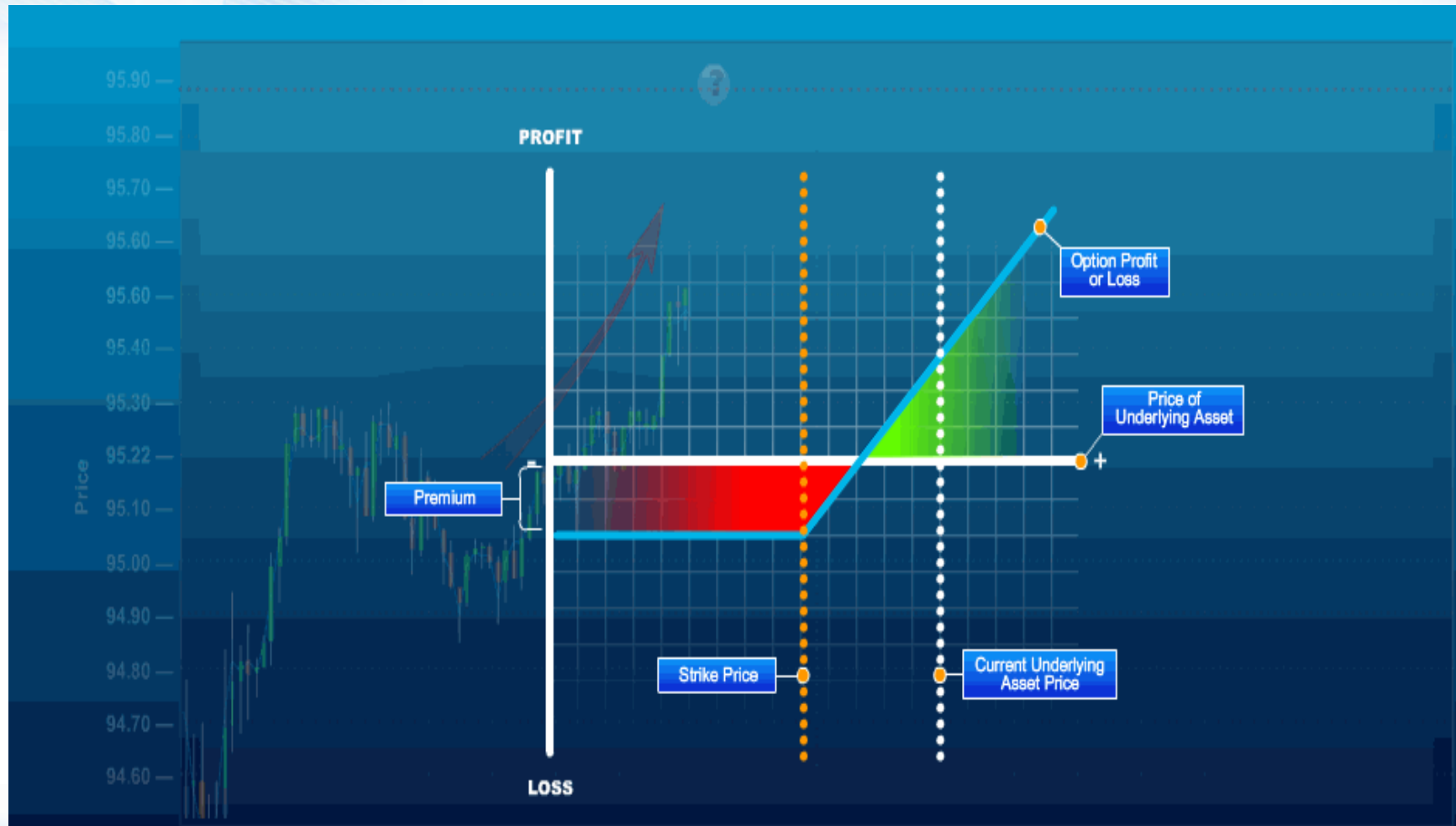
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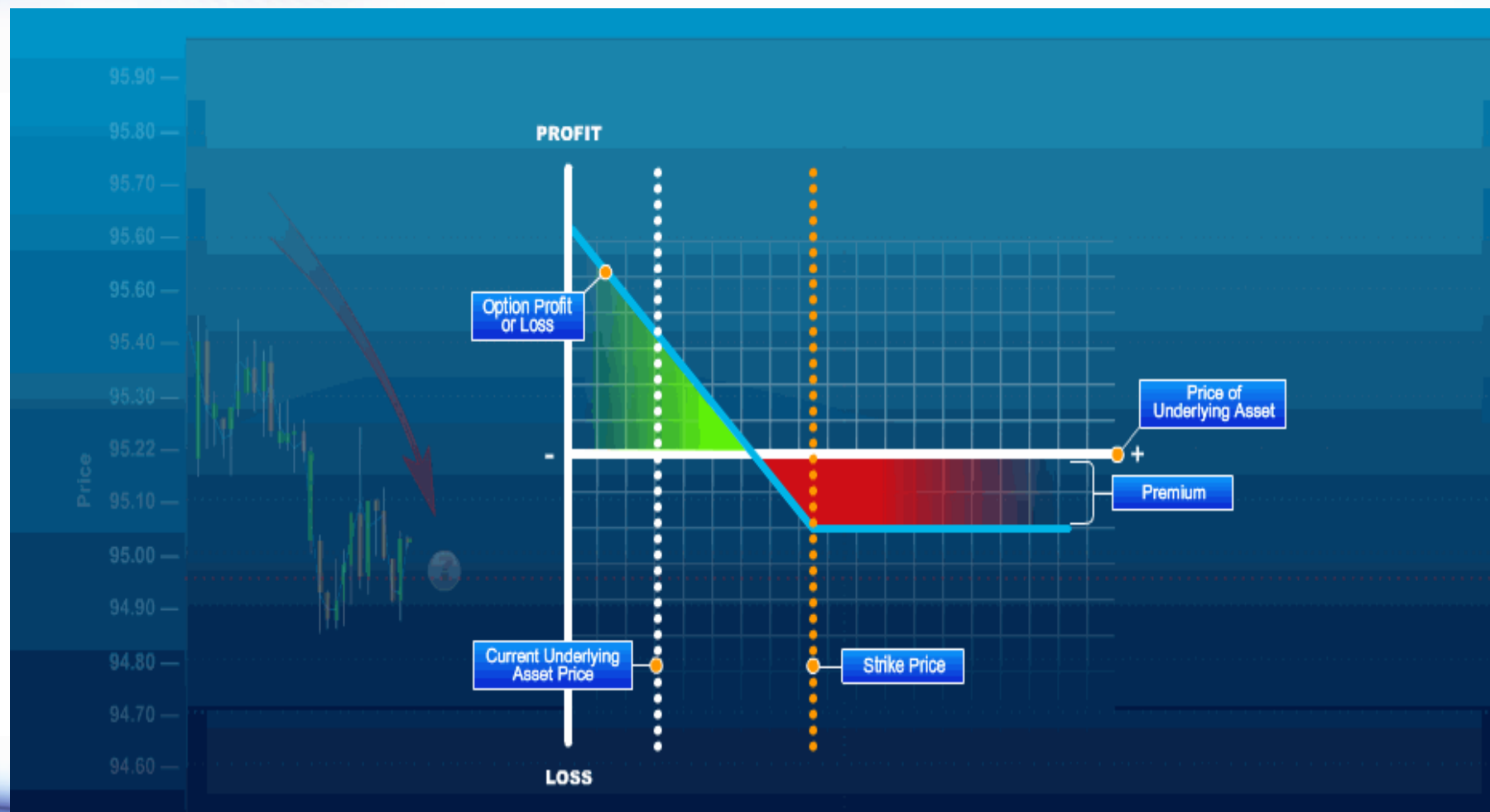
Options Pricing

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

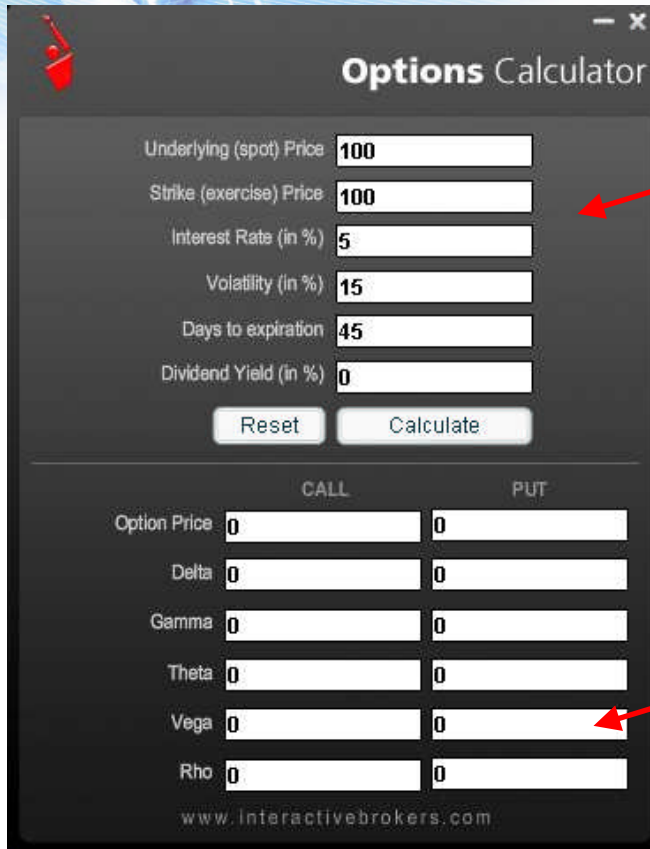
Profit & Loss Profile of a Call Option



Profit & Loss Profile of a Put Option



IB Option Pricing Calculator



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"/>	<input type="text" value="0"/>
Delta	<input type="text" value="0"/>	<input type="text" value="0"/>
Gamma	<input type="text" value="0"/>	<input type="text" value="0"/>
Theta	<input type="text" value="0"/>	<input type="text" value="0"/>
Vega	<input type="text" value="0"/>	<input type="text" value="0"/>
Rho	<input type="text" value="0"/>	<input type="text" value="0"/>

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User-defined inputs....

Option prices and risk outputs....

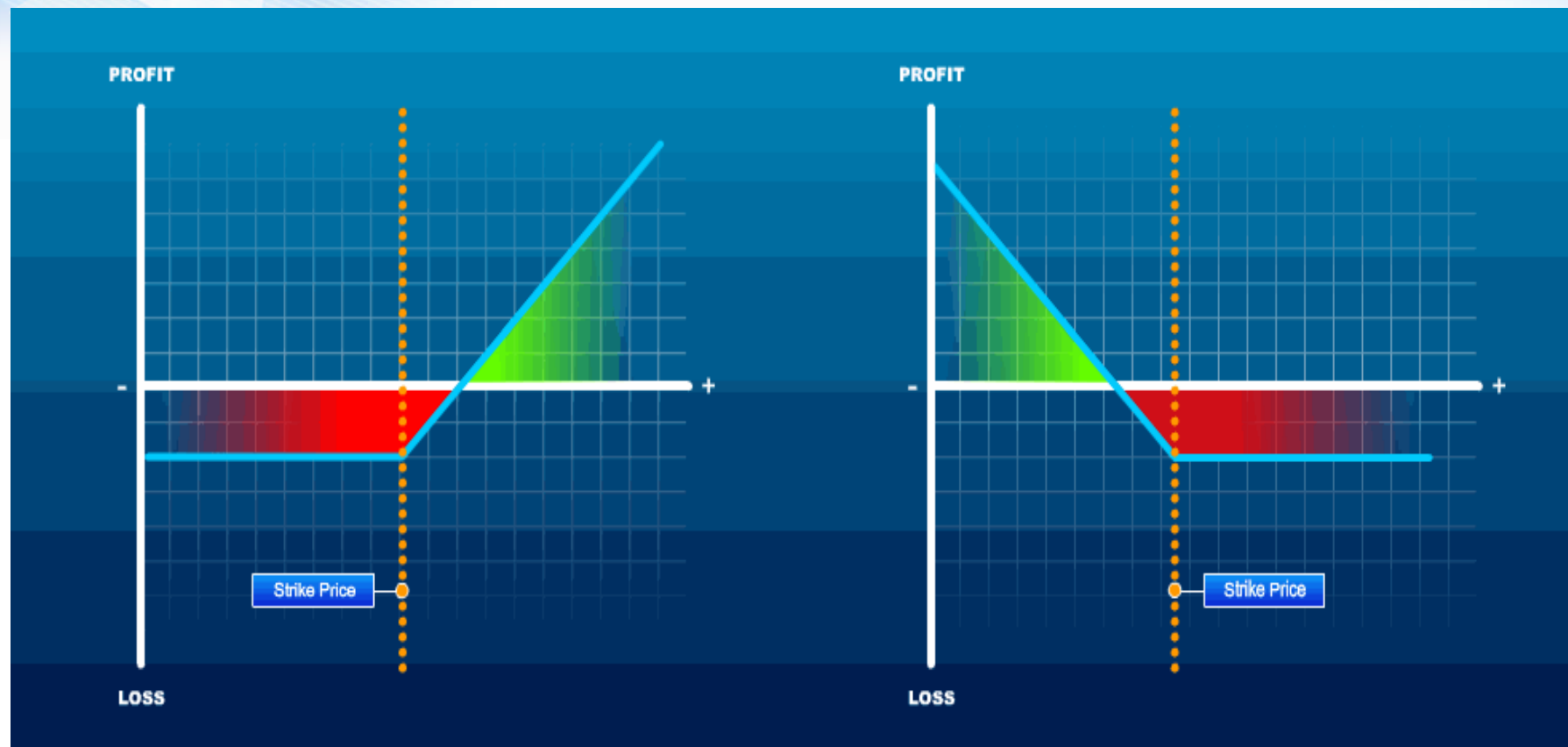
- ❑ Available for download from http://individuals.interactivebrokers.com/en/general/education/TradersUniversity.php?ib_entity=llc



Option Pricing Model Inputs

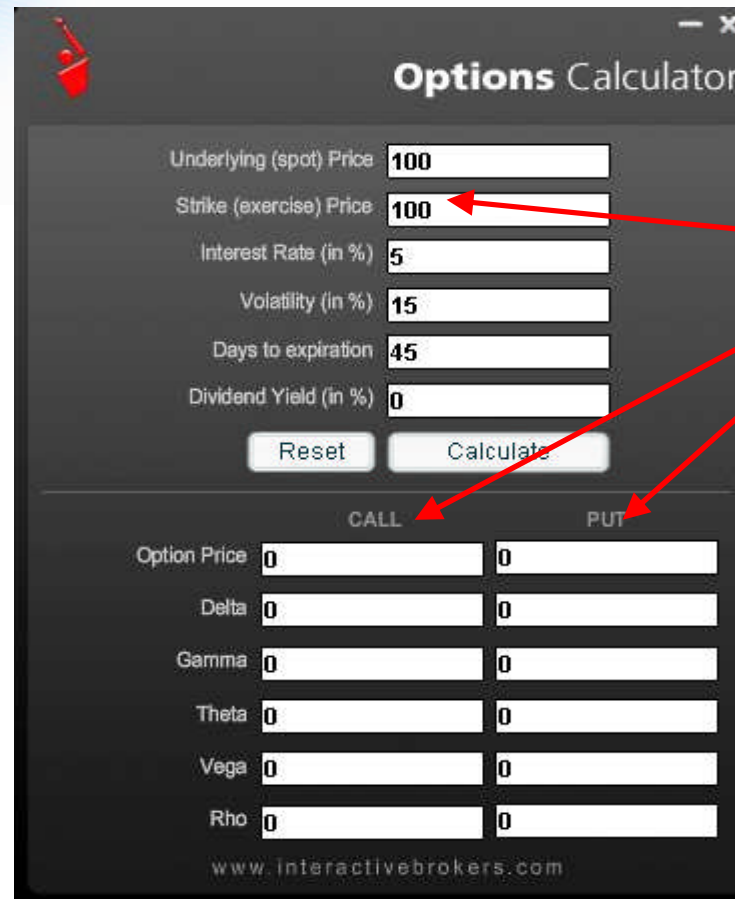
- ☐ Strike Price
- ☐ Rate of Interest
- ☐ Implied Volatility
- ☐ Underlying Asset Price
- ☐ Time Value
 - Intrinsic and extrinsic value
- ☐ Dividends, Exercise

Strike Price



Interest Rates

Try varying the Interest Rate field and notice the impact on the Call and Put output values



The image shows a screenshot of the 'Options Calculator' window from Interactive Brokers. The window has a dark grey background and a small red logo in the top left corner. It contains several input fields for option parameters, a 'Reset' button, and a 'Calculate' button. Below these are two columns of output fields for 'CALL' and 'PUT' options. Red arrows point from the text on the right to the 'Interest Rate' field and the 'CALL' and 'PUT' output columns.

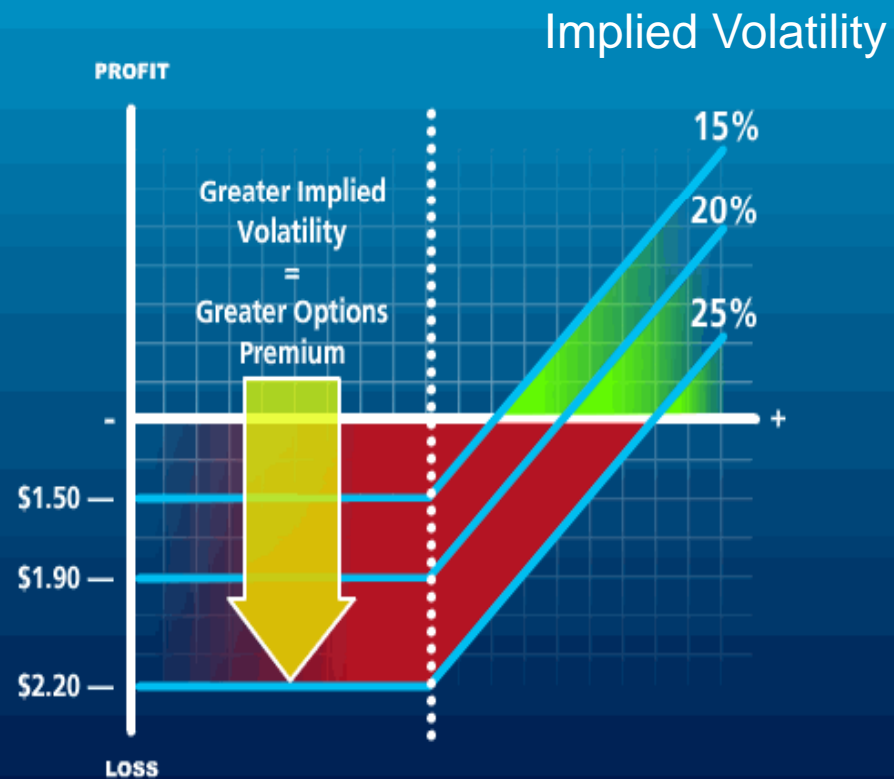
Parameter	Value
Underlying (spot) Price	100
Strike (exercise) Price	100
Interest Rate (in %)	5
Volatility (in %)	15
Days to expiration	45
Dividend Yield (in %)	0

Buttons: Reset, Calculate

	CALL	PUT
Option Price	0	0
Delta	0	0
Gamma	0	0
Theta	0	0
Vega	0	0
Rho	0	0

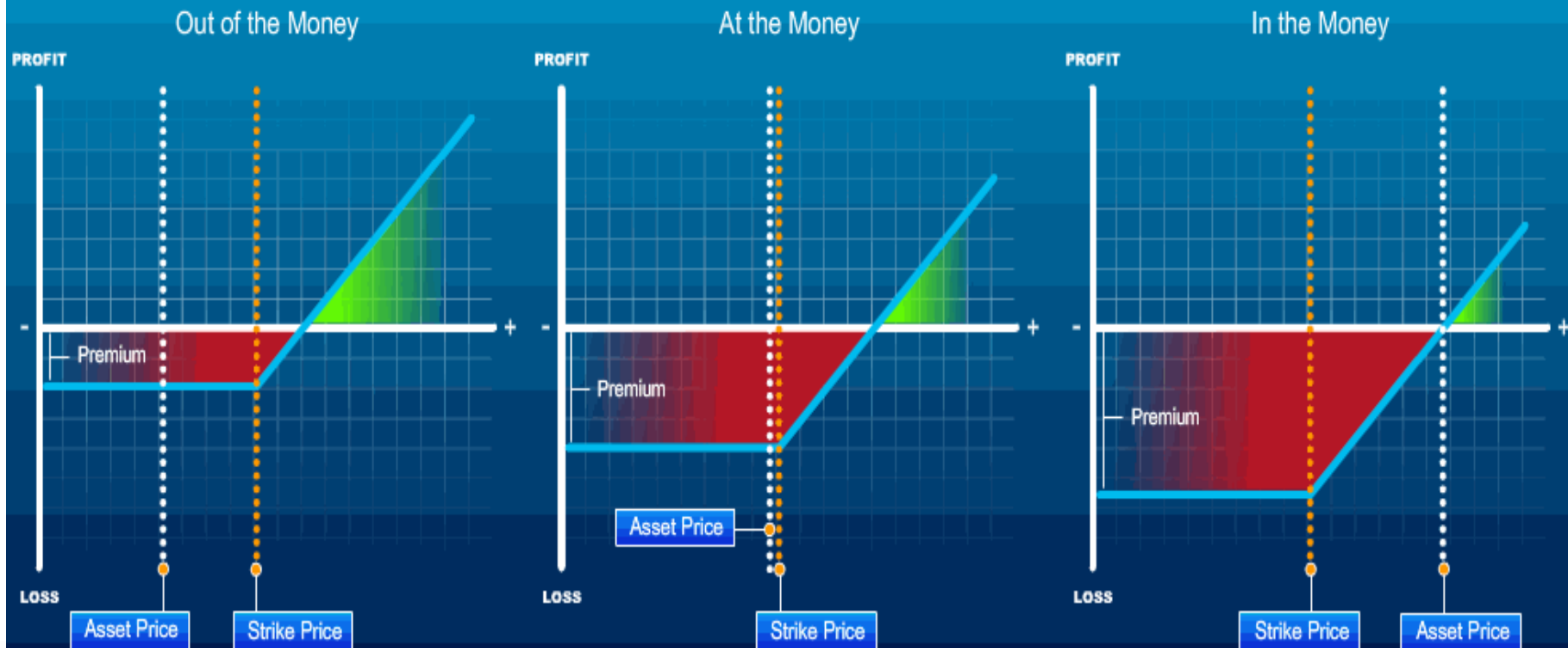
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Implied Volatility



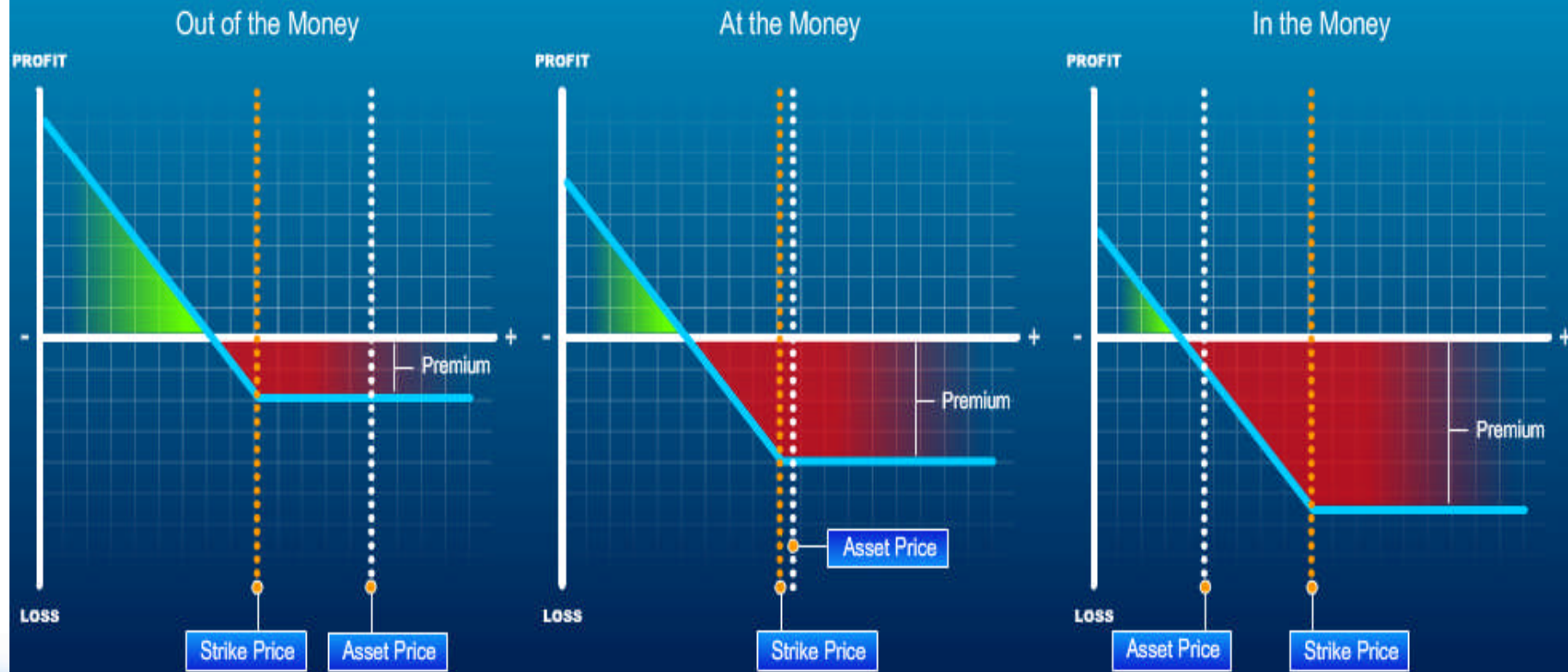
Underlying Asset Price

Underlying Asset Price Input - CALLS



Underlying Asset Price

Underlying Asset Price Input - PUTS

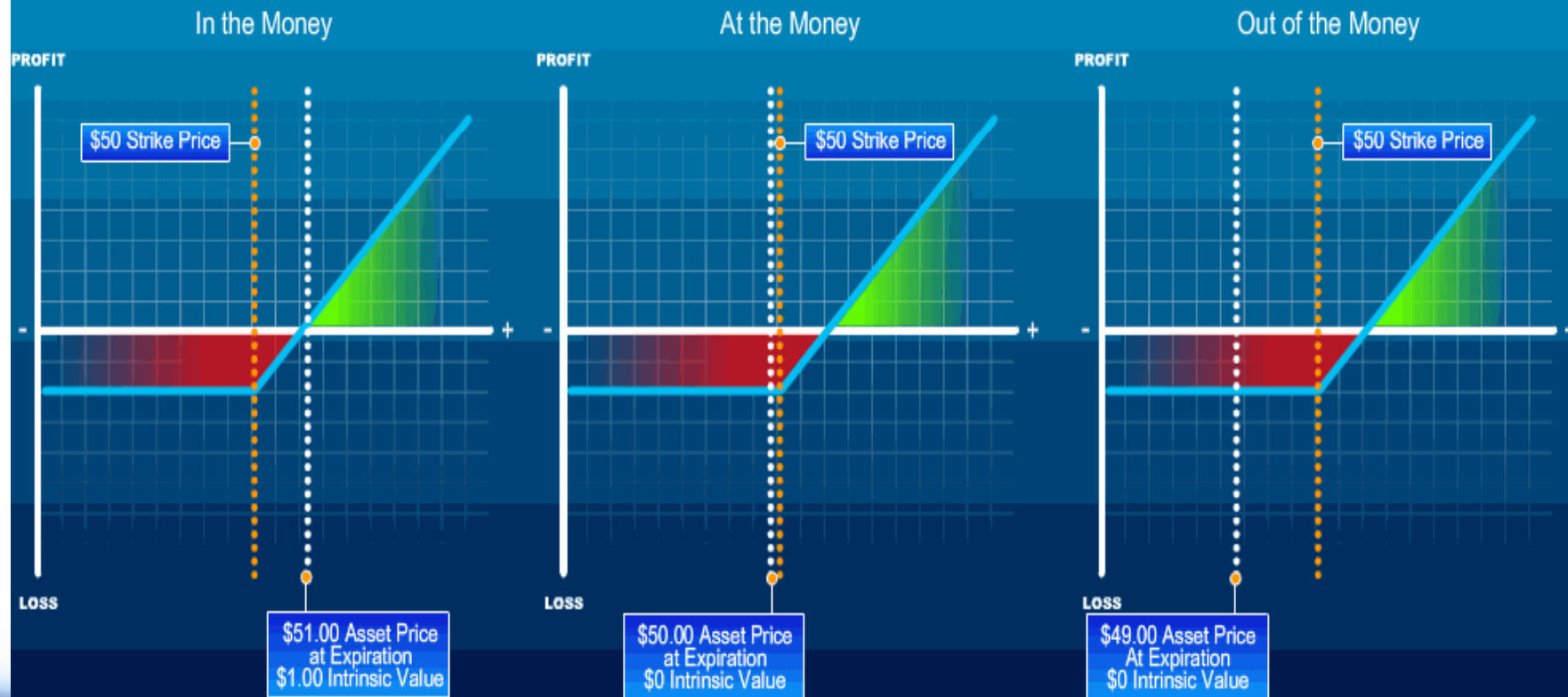


Time Value

- ❑ Current Value of an option is made up of:
 - Time Value
 - Extrinsic Value
 - Adjusted for Volatility

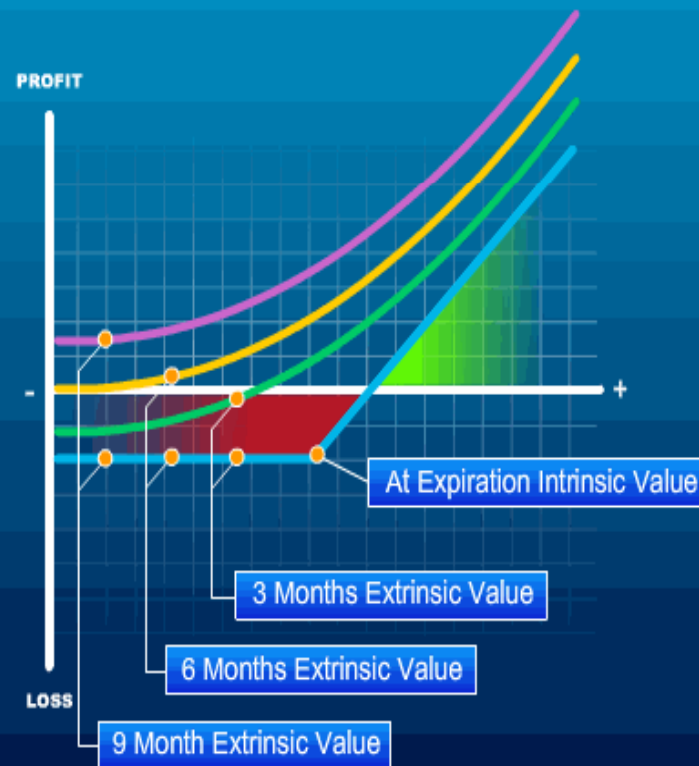
Intrinsic Value

Time Value - Intrinsic Value

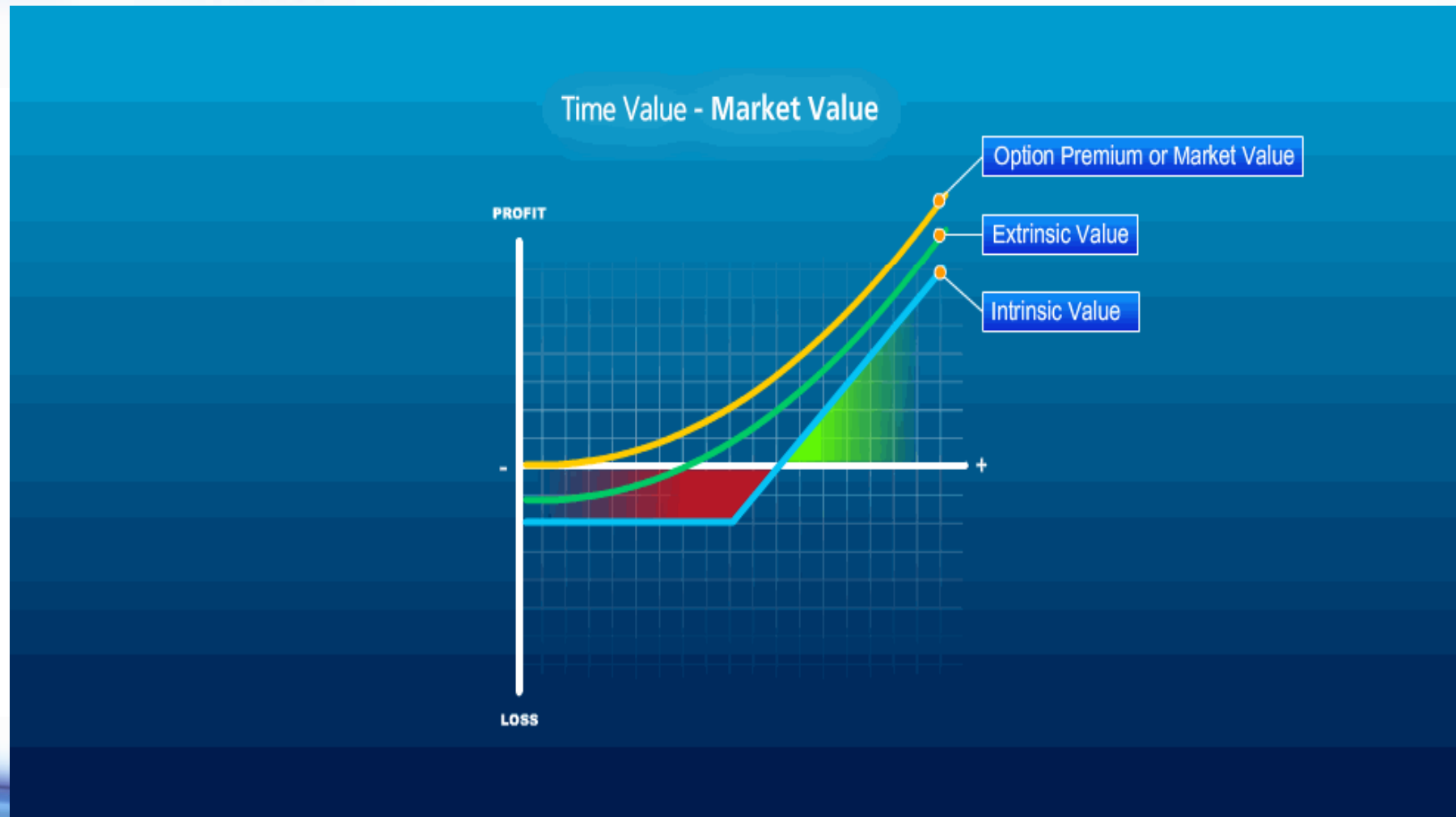


Extrinsic Value

Time Value - Extrinsic Value

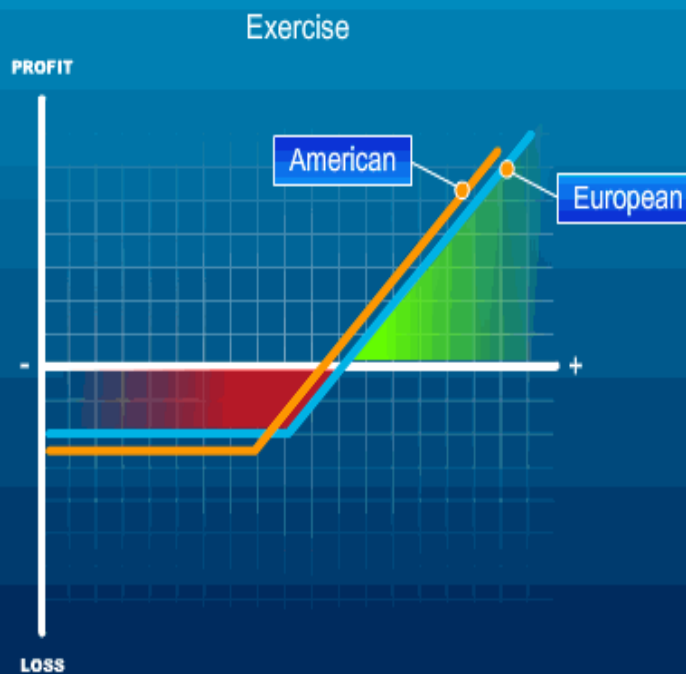


Current Value



Other Factors

Underlying Price Input - OTHER

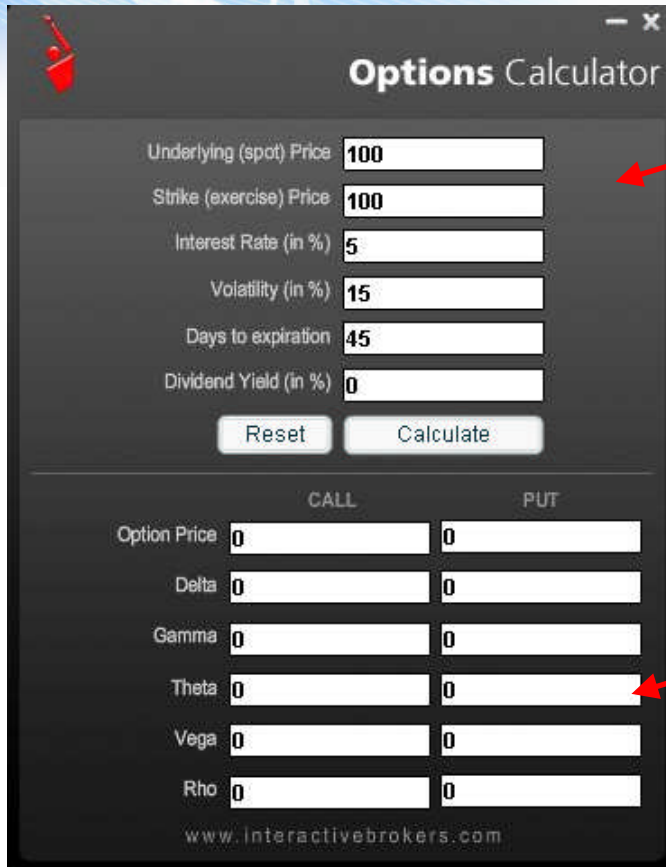




Option Pricing Model Inputs

- ☐ Strike Price
- ☐ Rate of Interest
- ☐ Implied Volatility
- ☐ Underlying Asset Price
- ☐ Time Value
 - Intrinsic and extrinsic value
- ☐ Dividends, Exercise

IB Option Pricing Calculator



The screenshot shows the 'Options Calculator' window. It has a dark grey background with white text and input fields. At the top left is the Interactive Brokers logo. The title 'Options Calculator' is in the top right. Below the title are six input fields for user-defined parameters: 'Underlying (spot) Price' (100), 'Strike (exercise) Price' (100), 'Interest Rate (in %)' (5), 'Volatility (in %)' (15), 'Days to expiration' (45), and 'Dividend Yield (in %)' (0). Below these are 'Reset' and 'Calculate' buttons. A horizontal dotted red line separates the inputs from the outputs. The output section has two columns: 'CALL' and 'PUT'. Each column has six rows for 'Option Price', 'Delta', 'Gamma', 'Theta', 'Vega', and 'Rho'. All output fields currently show '0'. At the bottom left of the window is the URL 'www.interactivebrokers.com'.

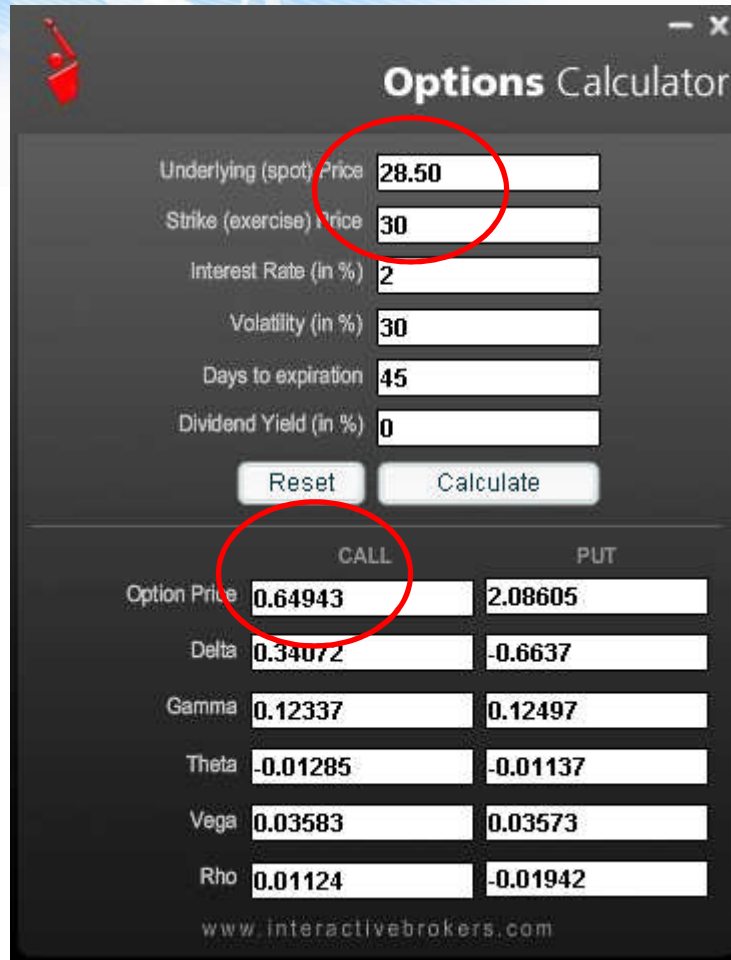
	CALL	PUT
Option Price	0	0
Delta	0	0
Gamma	0	0
Theta	0	0
Vega	0	0
Rho	0	0

User-defined inputs....

Option prices and risk outputs....

- ❑ Available for download from http://individuals.interactivebrokers.com/en/general/education/TradersUniversity.php?ib_entity=llc

Call Option Example



The image shows a screenshot of the Interactive Brokers Options Calculator. The interface is dark-themed. At the top, the title "Options Calculator" is displayed. Below the title, there are input fields for various parameters: Underlying (spot) Price (28.50), Strike (exercise) Price (30), Interest Rate (in %) (2), Volatility (in %) (30), Days to expiration (45), and Dividend Yield (in %) (0). Below these fields are "Reset" and "Calculate" buttons. The results are shown in a table with two columns: "CALL" and "PUT". The "Option Price" for the CALL is 0.64943, and for the PUT is 2.08605. Other metrics like Delta, Gamma, Theta, Vega, and Rho are also provided for both call and put options. Red circles highlight the "Underlying (spot) Price" field and the "Option Price" for the CALL.

	CALL	PUT
Option Price	0.64943	2.08605
Delta	0.34072	-0.6637
Gamma	0.12337	0.12497
Theta	-0.01285	-0.01137
Vega	0.03583	0.03573
Rho	0.01124	-0.01942

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❑ Share price \$28.50

❑ Call premium 65 cents

Share Price Increase

Options Calculator

Underlying (spot) Price

Strike (exercise) Price

Interest Rate (in %)

Volatility (in %)

Days to expiration

Dividend Yield (in %)

	CALL	PUT
Option Price	0.64943	2.08605
Delta	0.34072	-0.6637
Gamma	0.12337	0.12497
Theta	-0.01285	-0.01137
Vega	0.03583	0.03573
Rho	0.01124	-0.01942

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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	1.05638	1.48902
Delta	0.46693	-0.53605
Gamma	0.12903	0.13021
Theta	-0.01454	-0.01303
Vega	0.04135	0.04134
Rho	0.01575	-0.01733

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Time Decays by One Week

Options Calculator

Underlying (spot) Price

Strike (exercise) Price

Interest Rate (in %)

Volatility (in %)

Days to expiration

Dividend Yield (in %)

	CALL	PUT
Option Price	1.05638	1.48902
Delta	0.46693	-0.53605
Gamma	0.12903	0.13021
Theta	-0.01454	-0.01303
Vega	0.04135	0.04134
Rho	0.01575	-0.01733

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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	0.95093	1.394
Delta	0.45887	-0.54385
Gamma	0.14011	0.14127
Theta	-0.01572	-0.0142
Vega	0.03802	0.038
Rho	0.01316	-0.01482

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Conclusion and Questions

- ☐ Session 2 – Greeks
- ☐ Question time