

Manage Complex Option Portfolios: Simplifying Option Greeks – Part III

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Streamlined Investment Management

About the Speaker



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Co-Founder & Director - iRageCapital & QuantInsti®

Rajib leads the prop trading business for high frequency prop trading firm iRage as its CEO, focusing on strategy development, risk management & internal processes. He is a regular speaker at algorithmic trading conferences across Asia, America & Europe

His prior experiences include high frequency trading (Optiver, Amsterdam); data analytics technology (Oracle); business strategy for a trading firm & derivatives exchanges (Strategy Consulting, PwC)

Rajib has thrice represented India at the World Puzzle Championship (2004, 2011, 2017). His was also a finalist at the Indian National Biology Olympiad (top 24 nationwide).

Rajib holds a post-graduate management degree from the Indian Institute of Management (IIM) Calcutta, a bachelor's degree in Computer Engineering from National Institute of Technology (NIT) Surathkal; and has internship experiences with Bloomberg in New York (equity option derivatives research) & Solutia's EMEA strategy HQ in Belgium.

Manage Complex Option Portfolios

- 1) Moving from Individual Option Risks to Portfolio Risks**
- 2) Analysing Multiple Underlying Portfolios**
- 3) Building Scenario Management Tools for Analysing Complex Option Portfolios**
- 4) Managing additional sources of risk like dividend and stock borrowing risks**

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Inter-instrument spreading

- Creating spreads between two delta-one instruments
 - Equate the monetary value on each side
 - $\text{No_contracts}_1 \times \text{Price_contract}_1 \times \text{Point_value_contract}_1$
 - Weight-ages to beta / volatility
- $\$delta = (\text{contract price} \times \text{point value})/100$
 - Change in value for 1% change in price of underlying
- Equate $\$delta$ on both sides

Manage Complex Option Portfolios

Inter-option instrument spreading

- Creating spreads between two options instruments
 - Equate monetary value of options value that are at risk
- option $\$delta = \text{underlying } \$delta \times \text{option delta}$
 - Change in value of option for 1% change in price of underlying
- Equate option $\$delta$ on both sides

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Inter-option instrument spreading

- Greeks of the spread
 - option $\$delta$ = underlying $\$delta$ X option delta
 - option $\$gamma$ = underlying $\$delta$ X option gamma X underlying point value / 100
 - option $\$vega$ = underlying point value X option vega
 - option $\$theta$ = underlying point value X option theta

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Inter-option instrument spreading

- Incorporating volatility characteristics into options spreads
 - Adjust equated monetary value as per volatility expectations
- Volatility corrected option $\$delta = \text{underlying } \$delta \times \text{option delta} \times \text{Ratio of volatilities}$
 - Change in value of option for 1% change in price of base instrument
- Equate Volatility corrected option $\$ delta$ on both sides

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Inter-option spread portfolio greeks

- Total $\$gamma = instr_1\$gamma + (instr_2\$gamma * volatility_instr_2 / volatility_instr_1)$
- Total $\$vega = instr_1\$vega + (instr_2\$vega * volatility_instr_2 / volatility_instr_1)$
- Total $\$theta = instr_1\$theta + (instr_2\$theta * volatility_instr_2 / volatility_instr_1)$

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