Package 'butterflyOptions'

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Type Package

Title Trading Butterfly Options Strategies

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Imports ggplot2, dplyr, magrittr, tibble

Description

Trading of Butterfly Options Strategies is represented here through their Graphs. The graphic indicators, strategies, calculations, functions and all the discussions are for academic, research, and educational purposes only and should not be construed as investment advice and come with absolutely no Liability.
Guy Cohen ("The Bible of Options Strategies (2nd ed.)", 2015, ISBN: 9780133964028).
Zura Kakushadze, Juan A. Serur ("151 Trading Strategies", 2018, ISBN: 9783030027919).
John C. Hull ("Options, Futures, and Other Derivatives (11th ed.)", 2022, ISBN: 9780136939979).

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Contents

`longCallbutterfly` *Calculates per share Profit and Loss (PnL) at expiration for Long Call Butterfly Option Strategy and draws its Bar Plot displaying PnL in the Plots tab.*

Description

This is a volatility strategy consisting of a long position in an ITM (in the money) call option with a strike price $X1L, short positions in two ATM (at the money) call options with a strike price $X, and a long position in an OTM (out of the money) call option with a strike price $X3H. The strikes are equidistant: $X3H minus $X equals to $X minus $X1L (Kakushadze & Serur, 2018).

Usage

```
longCallbutterfly(
  ST,
  X,
  X1L,
  X3H,
  C,
  C1L,
  C3H,
  hl = 0,
  hu = 2,
  spot = spot,
  pl = pl,
  myData = myData,
  myTibble = myTibble,
  PnL = PnL
)
```

Arguments

`ST`	Spot Price at time T.
`X`	Strike Price or eXercise price for two ATM sold Calls.
`X1L`	Lower Strike Price or eXercise price for one ITM long Call.
`X3H`	Higher Strike Price or eXercise price for one OTM long Call.
`C`	Call Premium or Call Price received for the two ATM sold Calls.
`C1L`	Call Premium or Call Price paid for the first ITM long Call.
`C3H`	Call Premium or Call Price paid for the one OTM long Call.
`hl`	lower bound value for setting lower-limit of x-axis displaying spot price.
`hu`	upper bound value for setting upper-limit of x-axis displaying spot price.
`spot`	Spot Price
`pl`	Profit and Loss column of the data frame

myData	Data frame
myTibble	Tibble
PnL	Profit and Loss

Details

According to conceptual details given by Cohen (2015), and a closed form solution provided by Kakushadze and Serur (2018), this method is developed, and the given examples are created, to compute per share Profit and Loss at expiration for Long Call Butterfly Option Strategy and draw its graph in the Plots tab.

Value

graph of the strategy

Author(s)

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References

Cohen, G. (2015). The Bible of Options Strategies (2nd ed.). Pearson Technology Group.
Kakushadze, Z., & Serur, J. A. (2018, August 17). 151 Trading Strategies. Palgrave Macmillan. https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3247865
R Graphics Cookbook. (n.d.). Coloring Negative and Positive Bars Differently. https://r-graphics.org/recipe-bar-graph-color-neg
Gross C, Ottolinger P (2016).*ggThemeAssist: Add-in to Customize 'ggplot2' Themes*. R package version 0.1.5, <URL: https://CRAN.R-project.org/package=ggThemeAssist>.

Examples

```
longCallbutterfly(100,100,80,120,8,24,1,hl=0.55,hu=1.45)
```

`longPutButterfly` *Calculates per share Profit and Loss (PnL) at expiration for Long Put Butterfly Option Strategy and draws its Bar Plot displaying PnL in the Plots tab.*

Description

This consists of a long position in an OTM (out of the money) put option with a strike price $X1L, short positions in two ATM (at the money) put options with a strike price $X, and a long position in an ITM (in the money) put option with a strike price $X3H. The strikes are equidistant: $X3H minus $X equals to $X minus $X1L (Kakushadze & Serur, 2018).

Usage

```
longPutButterfly(
  ST,
  X,
  X1L,
  X3H,
  P,
  P1L,
  P3H,
  hl = 0,
  hu = 2,
  spot = spot,
  pl = pl,
  myData = myData,
  myTibble = myTibble,
  PnL = PnL
)
```

Arguments

ST	Spot Price at time T.
X	Strike Price or eXercise price for two ATM sold puts.
X1L	Lower Strike Price or eXercise price for one OTM long put.
X3H	Higher Strike Price or eXercise price for one ITM long put.
P	put Premium or put Price received for the two ATM sold puts.
P1L	put Premium or put Price paid for the first OTM long put.
P3H	put Premium or put Price paid for the one ITM long put.
hl	lower bound value for setting lower-limit of x-axis displaying spot price.
hu	upper bound value for setting upper-limit of x-axis displaying spot price.
spot	Spot Price
pl	Profit and Loss column of the data frame
myData	Data frame
myTibble	Tibble
PnL	Profit and Loss

Details

According to conceptual details given by Cohen (2015), and a closed form solution provided by Kakushadze and Serur (2018), this method is developed, and the given examples are created, to compute per share Profit and Loss at expiration for Long put Butterfly Option Strategy and draw its graph in the Plots tab.

Value

graph of the strategy

Author(s)

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References

Cohen, G. (2015). The Bible of Options Strategies (2nd ed.). Pearson Technology Group.
Kakushadze, Z., & Serur, J. A. (2018, August 17). 151 Trading Strategies. Palgrave Macmillan. https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3247865
R Graphics Cookbook. (n.d.). Coloring Negative and Positive Bars Differently. https://r-graphics.org/recipe-bar-graph-color-neg
Gross C, Ottolinger P (2016).*ggThemeAssist: Add-in to Customize 'ggplot2' Themes*. R package version 0.1.5, <URL: https://CRAN.R-project.org/package=ggThemeAssist>.

Examples

```
longPutButterfly(100,100,80,120,6,1,20,hl=0.55,hu=1.45)
```

`shortCallbutterfly` *Calculates per share Profit and Loss (PnL) at expiration for Short Call Butterfly Option Strategy and draws its Bar Plot displaying PnL in the Plots tab.*

Description

This is a volatility strategy consisting of a short position in an ITM (in the money) call option with a strike price X1L, a long position in two ATM (at the money) call options with a strike price X, and a short position in an OTM (out of the money) call option with a strike price X3H. The strikes are equidistant: X3H minus X equals to X minus X1L . This is a net credit trade. In this sense, this is an income strategy. The trader or investor has neutral outlook (Kakushadze & Serur, 2018).

Usage

```
shortCallbutterfly(
  ST,
  X,
  X1L,
  X3H,
  C,
  C1L,
  C3H,
  hl = 0,
  hu = 2,
  spot = spot,
  pl = pl,
  myData = myData,
  myTibble = myTibble,
  PnL = PnL
)
```

Arguments

ST	Spot Price at time T.
X	Strike Price or eXercise price for two ATM bought Calls.
X1L	Lower Strike Price or eXercise price for one ITM shorted Call.
X3H	Higher Strike Price or eXercise price for one OTM shorted Call.
C	Call Premium or Call Price paid for the two ATM bought Calls.
C1L	Call Premium or Call Price received for the first ITM shorted Call.
C3H	Call Premium or Call Price received for the one OTM shorted Call.
hl	lower bound value for setting lower-limit of x-axis displaying spot price.
hu	upper bound value for setting upper-limit of x-axis displaying spot price.
spot	Spot Price
pl	Profit and Loss
myData	Data frame
myTibble	tibble
PnL	Profit and Loss

Details

According to conceptual details given by Cohen (2015), and a closed form solution provided by Kakushadze and Serur (2018), this method is developed, and the given examples are created, to compute per share Profit and Loss at expiration for Short Call Butterfly Option Strategy and draw its graph in the Plots tab.

Value

graph of the strategy

Author(s)

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References

Cohen, G. (2015). The Bible of Options Strategies (2nd ed.). Pearson Technology Group.
Kakushadze, Z., & Serur, J. A. (2018, August 17). 151 Trading Strategies. Palgrave Macmillan. https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3247865
R Graphics Cookbook. (n.d.). Coloring Negative and Positive Bars Differently. https://r-graphics.org/recipe-bar-graph-color-neg
Gross C, Ottolinger P (2016).*ggThemeAssist: Add-in to Customize 'ggplot2' Themes*. R package version 0.1.5, <URL: https://CRAN.R-project.org/package=ggThemeAssist>.

Examples

```
shortCallbutterfly(400,400,375,425,6,17.5,7.5,hl=0.9,hu=1.1)
```

shortPutButterfly *Calculates per share Profit and Loss (PnL) at expiration for Short Put Butterfly Option Strategy and draws its Bar Plot displaying PnL in the Plots tab.*

Description

This strategy consists of a short position in an OTM (out of the money) put option with a strike price $X1L, a long position in two ATM (at the money) put options with a strike price $X, and a short position in an ITM (in the money) put option with a strike price $X3H. The strikes are equidistant: $X3H minus $X equals to $X minus $X1L (Kakushadze & Serur, 2018).

Usage

```
shortPutButterfly(
  ST,
  X,
  X1L,
  X3H,
  P,
  P1L,
  P3H,
  hl = 0,
  hu = 2,
  spot = spot,
  pl = pl,
  myData = myData,
  myTibble = myTibble,
  PnL = PnL
)
```

Arguments

ST	Spot Price at time T.
X	Strike Price or eXercise price for two ATM bought puts.
X1L	Lower Strike Price or eXercise price for one OTM shorted put.
X3H	Higher Strike Price or eXercise price for one ITM shorted put.
P	put Premium or put Price paid for the two ATM bought puts.
P1L	put Premium or put Price received for the first OTM shorted put.
P3H	put Premium or put Price received for the one ITM shorted put.
hl	lower bound value for setting lower-limit of x-axis displaying spot price.
hu	upper bound value for setting upper-limit of x-axis displaying spot price.
spot	Spot Price
pl	Profit and Loss column of the data frame

myData	Data frame
myTibble	Table
PnL	Profit and Loss

Details

According to conceptual details given by Cohen (2015), and a closed form solution provided by Kakushadze and Serur (2018), this method is developed, and the given examples are created, to compute per share Profit and Loss at expiration for Short put butterfly Options Strategy and draw its graph in the Plots tab.

Value

graph of the strategy

Author(s)

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References

Cohen, G. (2015). The Bible of Options Strategies (2nd ed.). Pearson Technology Group.
Kakushadze, Z., & Serur, J. A. (2018, August 17). 151 Trading Strategies. Palgrave Macmillan. https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3247865
R Graphics Cookbook. (n.d.). Coloring Negative and Positive Bars Differently. https://r-graphics.org/recipe-bar-graph-color-neg
Gross C, Ottolinger P (2016).*ggThemeAssist: Add-in to Customize 'ggplot2' Themes*. R package version 0.1.5, <URL: https://CRAN.R-project.org/package=ggThemeAssist>.

Examples

```
shortPutButterfly(400,400,375,425,7,5,18,hl=0.9,hu=1.1)
```

Index